

Resource Mobilization and the Status of Funding of Activities Related to Land Degradation

Report prepared for
The Global Environment Facility (GEF)
and The Global Mechanism of the
United Nations Convention to
Combat Desertification (UNCCD)

Resource Mobilization and the Status of Funding of Activities Related to Land Degradation

Report prepared for
The Global Environment Facility (GEF)
and The Global Mechanism of the
United Nations Convention to
Combat Desertification (UNCCD)



For millennia, humans have enjoyed a close and intrinsic relationship with land. As the biophysical foundation of agriculture, land has been instrumental in helping humans make the transition from hunter-gatherers to food-cultivating societies. Indeed, the quality and fertility of land has frequently been an indicator of economic advance (as in the Nile valley) or regress (as was the case of early civilizations in Mesopotamia, Central America, and elsewhere).

In 2005, the Millennium Ecosystem Assessment (MA)—a global effort involving some 1,360 scientists and experts worldwide to gauge the earth’s well-being—assessed the consequences of ecosystem change for human well-being and the scientific basis for actions needed to enhance the conservation and sustainable use of those systems.

The MA’s findings, aptly titled *Living beyond Our Means*, are stark. Human activity is putting such strain on the Earth’s natural functions that the ability of the planet’s ecosystems to sustain future generations can no longer be taken for granted. The report warns that “humans have made unprecedented changes to ecosystems in recent decades to meet growing demands for food, fresh water, fiber, and energy” and that “pressures on ecosystems will increase globally in coming decades unless human attitudes and actions change.” The report further stresses that among all ecosystems, drylands are the most endangered.

Sustainable land management (SLM) is a topic of contemporary significance. Keeping in mind the severity of the problems facing ecosystems highlighted by the MA, the immediate, overarching challenge is to sustain the productivity of land and promote prudent use of this globally important resource.

Recognizing the immediacy of the challenge, the Global Environment Facility (GEF), in partnership with the Global Mechanism of the United Nations Convention to Combat Desertification (UNCCD), commissioned this study to provide a synoptic overview of funding activities and resource mobilization relating to land degradation, the GEF’s newest focal area.

The report, a contribution to the United Nations (UN) International Year of Deserts and Desertification (IYDD) campaign, presents an overview of this area.

One of the key findings is that land degradation is a threat especially to the poor, and sustainable land management is the response with a potential to improve income and well-being and to reduce the loss of environmental services. Improved reporting systems are needed to learn about the scopes and levels of effort deployed in combating land degradation both at the local level and in global

programs. The costs of land degradation are estimated at around US\$ 65 billion annually whereas the international investments appear to be around US\$ 4 billion annually.

The report recommends high political commitment and mainstreaming of sustainable land management in national development policy followed by a long-term, multisectoral approach in broad partnerships to reduce the barriers to sustainable land management.

The creation of a conducive, enabling environment is essential for combating land degradation. Sound national policy frameworks, effective and responsive institutions, new knowledge and human, financial, and technical resources are needed to meet the multifaceted challenges posed by land degradation.

The GEF and Global Mechanism are committed to promoting sustainable land management and offer this report as a contribution to the IYDD campaign and the ongoing debate on strengthening efforts to protect the global environment.

Monique Barbut
CEO, Global Environment Facility

Christian Mersmann
Managing Director, Global Mechanism

Table of Contents

Executive Summary	1
Introduction	3
Background	5
Role of SLM in UNCCD Implementation	6
Socioeconomic and Cultural Importance	7
Extent of Land Degradation and Desertification	9
Economic Cost	9
Food Security	11
Land Degradation and Poverty	11
Environmental	12
Rangeland	12
Forest	13
Cropping Systems	14
Cost and Benefits of Investing in SLM	15
Responses to Land Degradation	19
Institutional, Policy, and Governance Barriers	20
Economic and Social Incentive Barriers	20
Scientific Knowledge Generation Barriers	21
Country Response	23
Identifying the Poverty/Environment Problem	23
Mainstreaming	24
International Response	25
Institutional	25
Mainstreaming	26
Financial and Economic Responses in Relation to Needs	26
Multilateral Assistance	27
World Bank	28
GEF	29
UNEP	32
UNDP	33
IFAD	34
Global Mechanism	35
Bilateral Official Development Assistance	36
Country Financial Commitments	38

Private Sector	39
Nongovernmental Organizations	40
Need for a New Level of Financial Response	40
Conclusions	41
Appendixes	45
Appendix 1 Regional and World Cereal Yield, 1961–2005	45
Appendix 2 Cereal Production Per Capita, 1960–2005	46
Appendix 3 The Economics of the Rural Poor Depending on Intact Natural Ecosystems	47
Appendix 4 Experience of Mainstreaming Environmental Issues: Tanzania	48
Appendix 5 Mainstreaming NAPs into the PRSPs: Burkina Faso	49
Appendix 6 India’s Uttar Pradesh Sodic Lands Reclamation Project I	51
Appendix 7 The Global Mechanism Financial Information Engine on Land Degradation (FIELD)	52
Appendix 8 CACILM 10-Year Program Financing Plan	54

Acknowledgements



Drafting Team

Len Berry, Center for Environmental Studies, Florida Atlantic University
Lakhdar Boukerrou, Center for Environmental Studies, Florida Atlantic University
Jennifer Olson, Michigan State University

Special Adviser

Per Rydén, World Bank

Peer Reviewers and Contributors

Jan Bojö, World Bank
Thomas E. Walton, World Bank
Michael Stocking, University of East Anglia
Marc Bied-Charreton, Université de Versailles
Maryam Niamir-Fuller, UNDP
Anna Tengberg, UNEP
Freddy Nachtegaele, FAO
David McCauley, ADB
Andrea Kutter, GEF
Christian Mersmann, Global Mechanism

Participants in June 5 Workshop

Enos Esikuri, World Bank
Goodspeed Kopolo, UNCCD
Roshan Cook, Global Mechanism
Khalida Bouzar, IFAD
Daniele Ponzi, AfDB
Moctar Toure, GEF
Walter Lusigi, GEF
Jozef Lubbers, GEF
Simone Quatrini, Global Mechanism

Coordination

Jozef Lubbers, GEF
Simone Quatrini, Global Mechanism
Asha Richards (photo research and coordination of production)

Abbreviations and Acronyms

AA	Amelioration Association
ADP	Agricultural Domestic Product
AHWG	Ad Hoc Working Group
AIDS	Acquired Immune Deficiency Syndrome
AfDB	African Development Bank
ARD	Agriculture and Rural Development (World Bank department)
ADB	Asian Development Bank
BODA	Bilateral Official Development Assistance
CACILM	Central Asian Countries' Initiative for Land Management
CAS	Country Assistance Strategy
CBD	Convention on Biological Diversity
CCD	Convention to Combat Desertification
CBO	Community-Based Organization
CIDA	Canadian International Development Agency
CPP	Country Partnership Program
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture (Centro Internacional de Agricultura Tropical)
COP	Conference of the Parties
CRIC	Committee for the Review of the Implementation of the Convention
DAC	Development Assistance Committee
DK	Denmark
EA	Environmental Assessment
EC	European Commission
ECA	Europe and Central Asia
EIB	European Investment Bank
ENRM	Environment and Natural Resources Management
EU	European Union
FA	Focal Area
FAO	Food and Agriculture Organization of the United Nations
FIELD	Financial Information Engine on Land Degradation

FND	National Desertification Control Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEF Sec.	Secretariat of the GEF
GER	Germany
GLASOD	Global Assessment of (Human-Induced) Soil Degradation
GM	Global Mechanism
GOC	Government of China
GTZ	German Agency for Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit)
ha	Hectare
HIPC	Heavily Indebted Poor Country
IA	Implementing Agency (GEF)
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRAF	International Centre for Research in Agroforestry (now World Agroforestry Centre)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDA	International Development Assistance
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
IW:LEARN	International Waters Learning Exchange and Resource Network (GEF)
JPN	Japan
kg	Kilogram
LAC	Latin America and the Caribbean
LADA	Land Degradation Assessment in Drylands
LD	Land Degradation
LUCID	Land Use Change, Impacts and Dynamics
MA	Millennium Ecosystem Assessment
MDG	Millennium Development Goal
MEA	Multilateral Environmental Agreement
MIGA	Multilateral Investment Guarantee Agency
mt	Metric Ton
NAP	National Action Plan
MSP	Medium Size Project (GEF)
NCB	National Coordinating Body
NEPAD	New Partnership for Africa's Development
NGO	Nongovernmental Organization
NL	The Netherlands
NOR	Norway

NPV	Net Present Value
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OP#15	GEF Operational Program No. 15 on Sustainable Land Management
PER	Public Expenditure Review
PLEC	People, Land Management and Ecosystem Conservation
PRS	Poverty Reduction Strategy
PRSP	Poverty Reduction Strategy Paper
REG	Regional Environmental Governance
RMB	Renminbi (Chinese currency)
SDC	Swiss Agency for Development and Cooperation
SHG	Self-Help Group
SIDS	Small Island Developing States
SLM	Sustainable Land Management
SPA	Strategic Partnership Agreement
TA	Technical Assistance
UK	United Kingdom
UNCCD	United Nations Convention to Combat Desertification
UNCCD Sec.	Secretariat of the UNCCD
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	United States Dollar
USDA	United States Department of Agriculture
WB	World Bank
WRI	World Resources Institute

All dollar amounts are U.S. dollars unless otherwise indicated.



Executive Summary

The Millennium Ecosystem Assessment (MA) confirmed the findings of earlier assessments—that land degradation is a major insidious global problem. It is especially important in the world's drylands, which are home to more than 2 billion of the world's poorest people. Overall, land degradation probably affects more than 2.6 billion people in more than 100 countries. The Millennium Development Goals addressing poverty and environment issues, likewise, direct attention to the links between environmental degradation and poverty in the widespread areas where the economy depends directly on the natural resources base.

The costs of land degradation have been variously estimated, but the monetary value of lost productivity alone is probably around \$65 billion annually. Other costs include off-site impacts of erosion, plus external costs such as food insecurity, increased poverty, and lost environmental services.

A growing response to the problem has included a new, integrated focus on reducing poverty and environmental deterioration in programs of the major multilateral and bilateral donors and on lifting this topic to a higher level in country priorities. Sustainable land management has become an important response to land degradation, involving policy, capacity building, and community involvement, as well as production-oriented and environmental enhancement components.

The new Operational Program on Sustainable Land Management No. 15 (OP#15) in the Global Environment Facility (GEF) has provided a catalyst for some of this new attention, and the Global Mechanism (GM) of the UN Convention to Combat Desertification (UNCCD) and its Facilitating Committee have been a focus for new initiatives. The new partnership programs on land degradation in dryland ecosystems have all brought attention to the size of the problem, the needs of the countries, and some institutional solutions.

Although comparable data are hard to find, it appears that international investment in sustainable land management (SLM) in response to land degradation is at best about \$4 billion annually. The country response to OP#15 (which has been overwhelming, suggesting a pent-up demand at the national level) and the growing identification globally of land degradation as a problem of the poorest of the poor indicate that significant additional resources of financing, capacity building, and research still must be invested. Additional investment would need to be scaled up over time, but a total increase in investment of 10–15 percent annually would be needed over the next few years. This increase would begin to address removing the barriers to sustainable land management and would provide a vital contribution to on-the-ground programs to prevent further degradation.

This paper presents five main conclusions:

1. Degradation has a massive impact on the poor, especially the poor in dryland areas. SLM has the potential to improve directly their income and well-being as well as providing multiplier effects that include an improved local and national economy and a reduction in the loss of environmental services.
2. SLM requires a long-term, multisector approach, integrating technical, policy, and economic interventions aimed at reducing barriers to SLM such as lack of markets and services. This is facilitated by a collaboration of all levels of government, donor, nongovernmental (NGO), and private sector actors.
3. Current levels of donor and national investments in SLM are an order of magnitude less than what the size of the problem would suggest are necessary.
4. There is a critical need for an improved system of financial reporting of multilateral, bilateral, and national investments in UNCCD-related activities.
5. There is a compelling need to increase basic knowledge management, evaluation, and feedback in SLM programs.

The United Nations (UN) Assembly has dedicated 2006 as the “International Year of Deserts and Desertification.” In this context, the Global Environment Facility (GEF), in cooperation with the Global Mechanism (GM) of the UN Convention to Combat Desertification (UNCCD), has undertaken this study on resource mobilization¹, including the current status of funding for activities related to combating desertification.

The GEF Council (GEF/C.27/11) has indicated that this study has the following objectives:

- To contribute to the celebrations of the International Year of Deserts and Desertification (IYDD) and clarify the role of the GEF in SLM as an important approach for the implementation of the Convention
- To contribute to the development of national financing strategies for mainstreaming the UNCCD/National Action Plan (NAP) into national development frameworks
- To highlight the specific contribution of the GEF to SLM over the past decade

This report provides a summary of the extent and impact of land degradation, the role of the natural resources base in economic development and poverty alleviation, a brief discussion on sustainable land management, and a strategy to address land degradation. It will also present the following:

- The results of a stock-taking analysis of SLM and other UNCCD-related investments made by the major multilateral (GEF, WB, UNDP, IFAD, UNEP, ADB, and the GM) and bilateral (Japan, Netherlands, Germany, UK, Denmark, Norway, US, EU) development agencies (in later work, the coverage of the analysis will be expanded to reflect all GEF IAs and EAs and all bilateral donors)²
- Based on the above stock-taking analysis, some of the key issues and challenges associated with SLM/UNCCD implementation
- A set of recommended responses, options, and solutions to the above issues, based on the experience and evidence gathered by the GEF, the GM, and their partner agencies

This report also highlights the need to move to more “integration” of the land degradation issue within national economic development priorities and within donor development and environmental protection programs. It is intended to serve as a communication and information tool.

¹ In this report, resource mobilization refers to the status of funding and financial inputs to combat land degradation (desertification and deforestation).

² See Abbreviations and Acronyms section for meaning of these acronyms.



Land degradation has been recognized as a global problem associated with desertification and loss of biological diversity in arid, semi-arid, and dry subhumid zones (commonly called “drylands”).³ As recognized by the GEF, “arid and semi-arid lands have suffered some of the worst forms of degradation, because of their fragility and increased pressure from growing and partially sedentarized populations.”⁴ Land degradation probably affects about 2.6 billion people in more than 100 countries and more than 33 percent of the Earth’s land surface.⁵

Around 73 percent of rangelands in drylands are currently being degraded, together with 47 percent of marginal rainfed croplands and a significant percentage of irrigated croplands.⁶ In the low- and middle-income countries, deforestation is a major cause of land degradation, causing an average annual loss of 99,087 square kilometers (representing an average annual deforestation rate of 0.3 percent) between 1990 and 2000. Desertification and deforestation also have strongly adverse environmental impacts globally. Impacts include loss of biodiversity, degradation of watersheds, increased stream sedimentation, silting of dams and dust storms, reduced climate moderation, and lowered levels of carbon sequestration.

The goals of the United Nations Convention to Combat Desertification (UNCCD) address both the environment and developmental aspects of land degradation. They include “...to involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation, and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.” A strategy that addresses this integrated people-and-environment approach is sustainable land management (SLM).

While there are varying definitions of SLM, this paper uses this one:

SLM combines technologies, policies, and activities aimed at integrating socioeconomic principles with environmental concerns so as to simultaneously maintain or enhance production,

³ The interlinkages between land degradation and biodiversity are well recognized. See GEF, “Report of the STAP Expert Group Workshop on Land Degradation,” Bologna, Italy, June 14–16, 1999. http://www.gefweb.org/COUNCIL/GEF_C14/gef_c14_inf15.doc.

⁴ GEF Operational Program 1, *Arid and Semi-Arid Zone Ecosystems*, paragraph 1.23, 1–10.

⁵ C. R. Adams and H. Eswaran, “Global Land Resources in the Context of Food and Environmental Security,” in *Advances in Land Resources Management for the 20th Century*, ed. S. P. Gawande et al., 35–50 (New Delhi: Soil Conservation Society of India, 2000).

⁶ “Secretary General’s Report on Land Chapter of Agenda 21 to Commission on Sustainable Development” (New York: CSD8, UN, 2000; Rio de Janeiro: UNCED Agenda 21, 1992; and Paris: UNCCD, 1994).

reduce the level of production risk, protect the potential of natural resources, prevent [buffer against] soil and water degradation, and be economically viable and socially acceptable.⁷

SLM activities may include 1) land resources management (e.g., rotational systems, pastoral/range or forest land management practices, land use planning to, for example, protect watersheds, fragile areas or to develop mixed-use forests), 2) sustainable agricultural practices to improve long-term productivity, such as soil and water conservation and land quality management, and 3) other activities such as changes in land tenure systems, administration or policies to remove barriers to SLM.

Role of SLM in UNCCD Implementation

The UNCCD Convention states the following:

1. The objective of this Convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach that is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas.
2. Achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land and on the rehabilitation, conservation, and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.

Thus, right from the beginning, the Convention language directed attention to addressing the combined well-being of people and the environment. However, the first 10 years of the UNCCD have seen a modest start to the fulfillment of these important goals. The Joint Inspection Unit, mandated by the sixth session of the Parties (decision 23/COP.6), identified a number of constraints that the Convention had to face during its first 10 years of existence.

The most acute of the findings is the insufficiency of financial resources: "The Inspectors are of the view that the financial resources made available so far to UNCCD cannot be described as substantial; neither can they be considered adequate, timely, or predictable.⁸ It may be that as the world directs attention to the Millennium Development Goals (MDGs) and begins to deal directly with poverty issues, now is the time for a new commitment in the context of a well-grounded action program. The World Summit on Sustainable Development held in Johannesburg in 2002 labeled the UNCCD as an important tool for poverty eradication. The ensuing Conference of the Parties, as well as the sessions of the UN General Assembly, went further to urge development partners to use the Convention as a tool to reach the MDGs, as they relate to poverty and hunger, essentially forming a platform for concerted international response to SLM.

⁷ A. Smyth and J. Dumanski FESLM: An International Framework for Evaluating Sustainable Land Management. World Soil Resources Report, Food and Agriculture Organization of the United Nations, Rome (1993). The FESLM definition is used by FAO, TerrAfrica and other U.N. agencies and programs.

⁸ Comprehensive Review of the Activities of the Secretariat, ICCD/COP(7)/4, Nairobi, 12 August 2005

In some initial responses, programs tended to be focused on physical environment issues and less on policy and integrated approaches. But as the National Action Plan (NAP) process got underway, the GM provided support and advice, and as the Committee for the Review of the Implementation of the Convention (CRIC) evolved, many countries and agencies began to embrace conceptually the core of the Convention thinking.

This became institutionalized with the development of the Poverty Reduction Strategy Paper (PRSP) process in the World Bank, with 70 NAPs supported by UNCCD and the GM, and with the initiation of the Land Degradation focal area by the GEF and its designation as a funding mechanism for the UNCCD. With these changes, a focus on sustainable land management became natural and logical. Sustainable land management can integrate the objectives of the PRSP, the NAP, and UNCCD.

Socioeconomic and Cultural Importance

Drylands are now inhabited by more than two billion (2.038 billion) people, 37 percent of the world's total population.⁹ Asia, Africa, and South America have the larger population living in drylands, both in numbers and percentage: 1.4 billion, 268 million, and 87 million people, or 42, 41, and 30 percent of each region's population, respectively.¹⁰ The drylands are the home of the world's poorest and the world's most marginalized populations—economically and geographically. The number of poor rural people living in drylands is estimated to be near 1 billion.¹¹ In the long history of adaptation to harsh conditions, dryland communities have gained unique knowledge in resource utilization and management. This local or indigenous knowledge is now recognized as having significant value to dryland development; yet, there are also varying perceptions as to the importance and value of drylands (see box 1).

Scenarios developed by the Millennium Ecosystem Assessment (MA) show that, if unchecked, desertification and degradation of ecosystem services will threaten future improvements in human well-being and possibly reverse gains in some regions.¹² Therefore, desertification ranks among the greatest environmental challenges today and is a major impediment to meeting basic human needs in drylands.

With regard to the ecosystems that are in most need of additional attention from the international community, it is clear from the MA that land degradation is one of its major environmental and development challenges. It is also clear that land degradation in drylands is of particular concern. Nations with vast areas of drylands and with a high number of people living in the drylands—such as Ethiopia, Kenya, and the West African Sahelian countries—tend to be at the bottom of the United

⁹ L. R. Oldeman, R. T. A. Hakkeling, and W. G. Sombroek, *World Map of the Status of Human-Induced Soil Degradation: A Brief Explanatory Note* (Wageningen/Nairobi: International Soil Reference and Information Centre/United Nations Environmental Programme, 1991).

¹⁰ This section is quoted from the LADA GEF Project Brief (2005)

¹¹ P. Dobbie, *Poverty and Drylands* (Nairobi: The Global Drylands Partnership, 2001); also quoted by Kofi Annan in the *UN Convention to Combat Desertification*.

¹² Millennium Ecosystem Assessment, *Ecosystems And Human Well-Being: Scenarios; Findings of the Scenarios Working Group*, Millennium Ecosystem Assessment Series, Washington, D.C., Island Press, (2005).

BOX 1

Summary of Importance and Challenges of the World's Drylands

Drylands are critically important. They:

- Occupy 47 percent of the global land area (excluding Greenland and Antarctica), including the African Sahel, Australian Outback, South American Patagonia, and North American Great Plains.
- Support more than 2 billion people, or nearly 40 percent of the world's population.
- Consist of many land cover types, including shrubs, forest, cropland, and urbanized areas.
- Produce forage for livestock, which in turn supports human livelihoods with meat, dairy products, and clothing materials such as wool and leather.
- Originated many staple food crops, such as wheat, barley, sorghum, and millet.
- Serve as sources of genetic plant material for developing drought-resistant crop varieties.
- Provide habitat for species uniquely adapted to variable and extreme environments.
- Store large amounts of carbon, most of it in the soil rather than in vegetation.

Yet, drylands are at the root of many misconceptions: many see drylands as:

- Empty, barren, and unproductive places where people are unable to survive.
- Unable to support plant and animal life.
- Degraded beyond restoration because of misuse and overuse from human activity.
- Always dry, with drought the main hardship to survival.
- Low priority for attention.

Source: From LADA GEF Project Brief (2005), adapted from World Resources Institute 2003: http://biodiv.wri.org/pubs_description.cfm?PubID=3813.

Nations Development Programme (UNDP) Human Development Index. Some large countries with more diverse conditions, such as Brazil, China, and India, also have the majority of their poor inhabitants living in their dryland regions.

Extent of Land Degradation and Desertification

It has been estimated that around 73 percent of rangelands in drylands are currently being degraded, together with 47 percent of marginal rainfed croplands and a significant percentage of irrigated croplands.¹³ The lost production resulting from erosion alone has been estimated to be around 0.5 percent annually in Africa and Asia.¹⁴ The impact of this degradation on productivity and other services is examined in this paper in three categories:

- The economic impact of reduced productivity
- The social cost in food security and poverty
- The loss of environmental services at the global to local levels

Economic Cost

The economic cost of degradation, though difficult to estimate, is undoubtedly large. The cost of reduced agricultural production in developing countries has been estimated to range between 1 and 7 percent of Agricultural Domestic Product (ADP) in selected developing countries.¹⁵ A paper reviewing studies in Africa concluded that between 1 and 9 percent of agricultural (cropping) gross domestic product (GDP) was lost in these countries annually.¹⁶ These ranges reflect the varying rates of degradation between countries and the lack of a consensus on how to measure the cost of land degradation. Assuming that low- and middle-income countries are experiencing from 1 to 9 percent loss of agricultural productivity, the annual cost to these countries would be in the order of \$10 billion to \$89 billion. The annual loss globally would sum to between \$13 billion and \$116 billion.

However, the actual financial cost of lost productivity resulting from land degradation is difficult to calculate, and there is no commonly accepted method. The typical approach has been to estimate costs in reduced production or in costs to restore land and replace nutrients lost in the land degradation process (for example, erosion, degradation of soil structure, loss of biodiversity, salinization, water logging, and loss of fertility). These costs are in turn most accurately calculated in cases where the ownership of the land is very well defined and costs of capital over specific periods can be taken into consideration. This is not the case in most developing countries, and few estimates

¹³ "Secretary General's Report on Land Chapter of Agenda 21 to Commission on Sustainable Development" (New York: CSD8, UN, 2000; Rio de Janeiro: UNCED Agenda 21, 1992; and Paris: UNCCD, 1994).

¹⁴ C. den Biggelaar, R. Lal, K. Wiebe, and V. Breneman, 2003, "The Global Impact of Soil Erosion on Productivity. II. Effects on Crop Yields and Production over Time," *Advances in Agronomy* 81 (2003): 49–95.

¹⁵ S. Scherr, "The Future Food Security and Economic Consequences of Soil Degradation in the Developing World," in *Response to Land Degradation*, E. Bridges, ed., Enfield, NH: Science Publishers, 155–170 (2001).

¹⁶ M. Requier-Desjardins and M. Bied-Charreton, *Evaluation Des Coutes Economiques Et Sociaux De La Dégradation Des Terres Et De La Désertification En Afrique* (St Quentin-en-Yvelines: Université de Versailles, 2006).

have been made of the cost borne by developing countries. A widely cited (although dated) analysis by Dregne and Chou provides a rough estimate of global annual income lost because of degradation of rangelands at \$23 billion, loss in irrigated land at \$11 billion, and loss in rainfed cropland at \$8 billion in 1990 U.S. dollars.¹⁷ An inflation-adjusted estimate would be approximately \$35 billion lost from rangeland productivity, \$12 billion from rainfed agriculture, and \$17 billion from irrigated lands, or a total annual cost of \$64 billion.¹⁸

Land degradation to date has had significant impacts on the productivity or quality of cropland in some areas, but not in others. This is also the conclusion arrived at by Scherr,¹⁹ who stated that major productivity declines caused by land degradation have resulted in parts of Africa, Latin America, and Asia, with hot spots in degradation-prone soils in Sub-Saharan Africa, in inadequately managed irrigation schemes in South Asia, and through rapidly intensified production pursued without the technology or the economic incentives for good land husbandry. That study also concludes that large land areas—5 million to 7 million hectares per year—have gone out of production because of land degradation. The local impact of land degradation can also often be devastating because poor people depending directly on land for their daily livelihood are severely hit by land degradation. (The link between food security and land degradation is a case in point and is discussed elsewhere in this report.)

To assess the economic impact of land degradation and to define an approach on how to finance remedial actions, it is necessary to go beyond the farm level and look at the off-site effects, the external consequences (externalities) of land degradation, and the long-term consequences (generational) of ignoring the phenomenon. It is a question of assessing the costs, both in space and in time. Very little has been done on these issues, but there is sufficient knowledge to be able to outline the type of policy and financial support that will be required to remedy the situation. Some analyses have been made of the costs of ecosystem destruction on environmental services. These show net present value (NPV) losses of 20–90 percent.²⁰

On-farm investments such as earthwork, fencing, and application of fertilizer should in principle be borne by the farmer, but this is only likely to happen if the farmer has appropriate information, a dependable market, secure land tenure, and can justify long-term investments of labor and capital. It also requires access to credit and inputs at affordable prices. The capital needed for such investments is in principle private sector-related even though government guaranteed schemes and government-supported low-interest loans have often had an important impact during the starting-up phase. Off-farm investments required to support the process will often have to be borne by the public sector and could include such things as an upgrading of the agricultural extension and veterinary service, development of marketing and transport infrastructure, and targeted payment for better land husbandry to protect public investments (for example, in hydro power and water supply). In some cases, it will also be possible to facilitate contracts between private beneficiaries and land managers.

¹⁷ H. E. Dregne and N.-T. Chou, "Global Desertification Dimensions and Costs," in *Degradation and Restoration of Arid Lands* (Lubbock: Texas Tech. University, 1992).

¹⁸ Thanks to Jan Boj  for providing the inflation-adjusted estimate.

¹⁹ S. Scherr, "The Future Food Security and Economic Consequences of Soil Degradation in the Developing World." in *Response to Land Degradation*, ed. E. Bridges, 155–170, Enfield, NH : Science Publishers (2001).

²⁰ Millennium Ecosystem Assessment, Synthesis Report (2005)

The data available on what is currently invested in sustainable land management or in combating land degradation are very incomplete. This is particularly the case with regard to governments' own investments in the type of support measures referred to above. It is therefore difficult to provide an estimate as to how much it would be advisable and realistic to increase current levels of investments, both by the international community and by governments. However, judging from the increased attention, over the past five years or so, that the World Bank has given to agriculture and rural development and that the International Fund for Agricultural Development (IFAD) has given to projects addressing land degradation, it might be realistic to recommend that an annual increase of 5 to 15 percent above current levels of investment of the international community would be a reasonable target.

Food Security

Land degradation may not pose a direct threat to global food production, but it is a serious threat to food security, rural incomes, and rural livelihoods in many parts of the world. The food gap (the difference between what is produced and what is needed to maintain minimal per capita consumption needs) is widening in 66 low-income developing countries, most in Africa. This is occurring as food needs are increasing as fast as or faster than food production increases because of population growth, lower rates of new land being put into production, and declining yields (Appendixes 1 and 2). Almost all rural households purchase food, so the relationship between production and food security includes wider issues of poverty such as the distribution of land, availability of nonfarm income, the availability of communal natural resources, and economic returns to agriculture. Indeed, studies have recently documented the close dependence of the poor, especially the poorest of the poor, on natural resources (Appendix 3).²¹ The World Bank estimates that 90 percent of the world's 1.1 billion poor (those living on less than one dollar a day) depend on forests for part of their income.²²

The cost of land degradation in food security is articulated in a United States Department of Agriculture (USDA) report that emphasizes that in Africa there will be an increase in malnourished people by 15 percent this decade.²³ It concluded that land degradation has the greatest impact on food security in Africa. Similarly, a recent report by Henao and Baanante points out that Sub-Saharan Africa was forced to import 19 million tons of cereals at a cost of \$3.8 billion in 2003.²⁴ By 2020, imports are expected to rise to 34 million tons at a cost of \$8.4 billion in 2003 dollar value.

Land Degradation and Poverty

Land degradation is often closely related to poverty and to food insecurity. Rural regions or households with high poverty levels often overlap with those suffering from food insecurity and low and declining

²¹ For example, see World Bank, *Where Is the Wealth of Nations? Measuring Capital for the XXI Century* (Washington, DC: World Bank, 2005); World Resources Institute, *The Wealth of the Poor: Managing Ecosystems to Fight Poverty*, WRI, Washington, D.C. (2005); E. Sjaastad, A. Angelsen, P. Vedeld, and J. Bojö, "What Is Environmental Income?" *Ecological Economics* 55 (1, October 2005): 37–46.

²² World Bank. *The Environment and the Millennium Development Goals*. Washington, DC: World Bank (2002).

²³ Keith Wiebe, ed., *Land Quality, Agricultural Productivity, and Food Security: Biophysical Processes and Economic Choices at Local, Regional, and Global Levels* (Cheltenham [U.K.] and Northampton, MA [U.S.]: Edward Elgar Publishing, 2003).

²⁴ J. Henao and C. Baanante, *Agricultural Production and Soil Nutrient Mining in Africa: Implications for Resource Conservation and Policy Development Summary* (Muscle Shoals, AL: IFDC, 2006).

agricultural productivity. The close relationship between poverty and land degradation can be the result of several factors:²⁵

- Poor people tend to be farming in marginal areas with low productivity (“marginal people on marginal lands”). These lands are often semi-arid areas, with steep slopes and poor soils, and/or are relatively isolated from roads, markets, or population centers.
- A household’s or group’s availability of labor, land, livestock, and nonfarm income is often closely associated with the level of soil management, particularly the application of manure but also chemical fertilizers and soil conservation measures. These management factors, themselves, are closely associated with changes in land productivity.
- The variability between households in land management and declining productivity is frequently correlated with the gender of the acting head of household. In farms with low and declining productivity, husbands often leave to seek employment elsewhere and leave the wife behind; usually, she is then even less able to invest in land management because of poverty and social disparities.
- In regions in which the agricultural sector is not profitable or where other problems such as insecurity affect the local economy, farmers invest significantly fewer labor or capital resources in their land, and the effects are reflected in lower productivity and worsening soil degradation. The effects of the AIDS pandemic, particularly in Africa, have further aggravated the situation for many households.

Environmental

The severity and impact of land degradation on the wider environment is estimated to be large at both the local and the global levels. A brief summary follows of what is known about the current rates of degradation and the linkages of land degradation to rangeland, forest, and cropping systems.

Rangeland

Despite the uncertainties in quantification,²⁶ the amount of rangeland that is degraded is probably the largest extent of all degraded land globally.²⁷ The Global Assessment of (Human-Induced) Soil Degradation (GLASOD) study concluded that most countries had more than 50 percent of their rangelands degraded, with many countries in tropical areas having up to 90 percent of their rangelands degraded.²⁸

Analyses using remote sensing data and groundwork have found that degradation is often severe in localized areas (that is, around bore holes) because of a concentration of people or livestock or a conversion of land use, but rangeland productivity has generally rarely worsened over a large area for

²⁵ J. Olson et al., *Spatial Patterns of Land Use Change in East Africa*, LUCID Working Paper 47 (Nairobi: International Livestock Research Institute, 2004).

²⁶ The amount of degraded rangeland has been difficult to quantify, compared with deforestation or productivity loss in cropping systems. This is the result of the lack of a consensus of the definition of rangeland degradation or how to measure it, and the difficulty of using remotely sensed data to identify changes in sparsely vegetated areas. Two current efforts to assess rangeland degradation include the Land Degradation Assessment in Drylands (LADA) project and the U.S. Department of Agriculture’s Natural Resources and Sustainable Agricultural Systems project (Pers. Comm. Mark Weltz, National Program Leader, Natural Resources and Sustainable Agricultural Systems, USDA/ARS).

²⁷ Dregne and Chou, “Global Desertification Dimensions and Costs.”

²⁸ Oldeman, Hakkeling, and Sombroek, *World Map of the Status of Human-Induced Soil Degradation*.

an extended period of time. In the Sahel, however, a recent study of changing rangeland vegetation, using satellite imagery and controlling out the effect of rainfall, concluded that since the 1980s there has been anthropogenic degradation of the rangelands, except for areas that have received intensive technical inputs. This has implications for forage productivity and for the impact of drought on the local population.²⁹ The extent of degraded rangeland globally has recently been estimated at about 12 percent over the past 40 years and worsening at approximately 0.3 percent annually.³⁰

Rangeland degradation is commonly blamed on overgrazing and removal of woody biomass for fuelwood. These can be associated with the concentration of people and livestock following expansion of rainfed cropping into grazing areas, an increase in livestock numbers, or the sedentarization of pastoralists. In Ethiopia, for example, there are 67 million head of camel, cattle, sheep, and goats, which is more than the human population of 62 million.³¹ The numbers of livestock have increased 30 percent since 1993, approximately the same rate as that of the human population, illustrating not only the importance of livestock in the rural economy but also the critical nature of developing proactive sustainable land management programs.

Environmental conditions associated with rangeland degradation include reduction of plant cover, especially woody vegetation and palatable species, invasion by shrubs of low grazing value, and soil compaction and erosion. Rangeland ecosystems may be more resilient than formerly assumed. Many ecological analyses have concluded that rangeland vegetation follows a nonequilibrium path because of inherently highly variable climate and stocking conditions, and it can recover from temporary pressures given the right weather and land management conditions. What is uncertain are to what extent the recovery process leads to the original plant species composition and how this may affect forage quality. Climate change, particularly temperature increases, may be already placing additional stress on rangeland vegetation and soils.

Forest

The tropical humid forest ecosystem is much more vulnerable to long-term damage to its soil and biodiversity following the removal of vegetative cover than rangeland ecosystems are. Although deforestation is usually thought of as the loss of humid tropical forest, the conversion of woodlands in drier zones to pasture or cropland may be as extensive, if not more so, because woodlands are less likely to be under protected status.

Deforestation can be driven by a search for land to cultivate crops or to graze livestock or driven by an international market for high-value timber. Once converted to pasture or crops, however, productivity rapidly declines and remains low if the forest is not allowed to regenerate or if the land is not well managed. The negative effects of deforestation are often observed at the local level because of this low productivity and at the regional or global levels because of biodiversity loss and reduction of ecosystem services such as climate moderation and watershed conservation. The rate of forest loss is particularly worrisome because of the often-irreversible impact on biodiversity.

²⁹ L. Hein and N. de Ridder, "Desertification in the Sahel: A Reinterpretation," *Global Change Biology* 12 (2006): 751–58.

³⁰ P. Crosson, "Future Supplies of Land and Water for World Agriculture," in *Population and Food in the Early Twenty-First Century: Meeting Future Food Demands of an Increasing Population*, ed. N. Islam (Washington, DC: International Food Policy Research Institute, 1995).

³¹ FAOSTAT (Rome: FAO, 2006). Accessed online at <http://faostat.fao.org>.

Deforestation is relatively easy to estimate from satellite images. Average annual rates of deforestation vary widely by country. Some of the highest annual rates of forest loss between 1990 and 2000 occurred in Burundi (9 percent), Haiti (5.7 percent), Côte d'Ivoire (3.1 percent), and Indonesia and Malaysia (1.2 percent).³² The estimate for Brazil for that decade is 0.4 percent, but its deforestation rate has historically rapidly risen or fallen with changes in policy. The average annual deforestation rate was very high between 1990 and 2000 in Brazil (0.4 percent or 23,093 square kilometers), Indonesia (1.2 percent or 13,124 square kilometers), Mexico (1.1 percent or 6,306 square kilometers), Sudan (1.4 percent or 9,589 square kilometers), and Zambia (2.4 percent or 8,509 square kilometers). In the low- and middle-income countries, deforestation is a major cause of land degradation, causing an average annual loss of 99,087 square kilometers (representing an average annual deforestation rate of 0.3 percent) between 1990 and 2000.

Cropping Systems

Production losses in cropping systems are directly related to deteriorating soil conditions such as declines in organic matter, nutrient losses, soil structure following erosion, removal of vegetative cover, nutrient mining, and other processes that are greatly affected by land management practices. Although field-level soil management techniques are more easily understood and measured, landscape and higher-level land management practices are being increasingly recognized as critical to (a) understanding the socioeconomic root causes of land degradation-inducing practices and (b) developing sustainable and effective prevention and mitigation programs.

The impact of land degradation on cropping systems is outlined because it has perhaps the most direct impact on rural populations. In sum, our best estimate is that agricultural production in developing countries is lowered by 3–7 percent annually because of the impact of land degradation on cropping systems. The losses are proportionately greater in irrigated areas, where salinization has led to land abandonment in highly productive areas.

Irrigated land can be among the most productive, but its productivity can be substantially reduced through salinization. Salinization is a major issue in Asia. In India, 48 percent of soils experienced more than 33 percent productivity loss; in China, losses caused by waterlogging and salinization are estimated at 25 percent; and in Pakistan, salinization is regarded as the most serious environmental problem in relation to crop productivity.

At the regional level, Africa's agriculture has fallen behind that of other regions of the world as measured by trends in cereal yields (Appendix 2). The stagnation of yields in Africa is probably the result of a combination of relatively slow growth in the use of pesticides, fertilizers, irrigation, and high-yielding cultivars; land degradation; and the fact that the new land being put into production by the growing population is less productive than the land that was already being cultivated.

The need to maintain productivity is of critical importance elsewhere, as well. Fifty-seven developing countries have only 1 million to 10 million hectares of cropland, and land pressure is already high (0.16 to 0.30 hectare per person) or very high (under 0.15 hectare per person) in half of these countries. Conserving farmland quality must necessarily be a strategic long-term food security concern.³³

³² World Bank, *World Development Indicators 2005* (Washington, DC: World Bank, (2005).

³³ S. Scherr, *Soil Degradation: A Threat to Developing-Country Food Security by 2020?* (Washington, DC: International Food Policy Research Institute, (1999).

Worldwide, the rate of increase in yields is slowing while population continues to rise, leading to a leveling off of food production per capita in many regions and globally (Appendixes 1 and 2). The reasons for the slowing of yield increases globally could be (a) that the land available to be put under new cultivation is less productive and more prone to land degradation than previously cultivated land and (b) that water is a limiting resource for expansion of irrigation. Another factor could be diminishing returns to fertilizer application, implying that further applications may not be effective at increasing yields.³⁴ The diminishing returns of fertilizer may be the result of inherent limitations of current crop cultivars. Thus, the critical importance of preventing and mitigating land degradation for maintaining adequate food production levels cannot be overemphasized.

Cost and Benefits of Investing in SLM

This section does not attempt a rigorous cost-benefit analysis because the data are not readily available; rather, it provides a sample of case studies of projects that have provided sound cost-benefit analysis. (This database is in obvious need of expansion.)

Investment in land productivity is a vital engine in development. The rural development strategy documented for the World Bank (2005), for example, shows that for the 35 developing countries in the analysis, a 1 percent increase in agricultural GDP led to a 1.6 percent gain in the per capita income of the poorest fifth of the population. A 10 percent increase in crop yields led to a reduction of 6–10 percent of people living on less than US\$1 per day. Thus, if land degradation is allowed to continue, major opportunities for the creation of new wealth and the reduction of poverty will be passed by.

The benefits of a productive, sustainable rural sector are multiple. Food production issues are as critical as social and civil issues such as investment in education and reducing out-migration and conflict over grazing resources. On-site and off-site environmental services sustainability is also crucial. The costs and benefits of these nonmonetary factors need to be combined with more easily quantifiable production issues as part of a true cost-benefit analysis.

There are, however, few examples of robust cost-benefit analyses of integrated, institutional SLM projects and programs. Those that are documented tend to be success stories or calculated by the implementing institution.³⁵ Scientific studies,³⁶ as well as governmental reports (such as from Conference of the Parties [COP] 7), stress that further research is necessary to provide a broader, long-term perspective of costs and benefits of investing in SLM and the price of inaction at the farm level to the national level.

³⁴ Tilman et al., "Agricultural Sustainability and Intensive Production Practices," *Nature* 418 (2002): 8.

³⁵ See, for example, M. Winslow, B. I. Shapiro, R. Thomas, and S. V. R. Shetty, *Desertification, Drought, Poverty, and Agriculture: Research Lessons and Opportunities* (Aleppo, Syria; Patancheru, India; and Rome, Italy: joint publication of the International Center for Agricultural Research in the Dry Areas [ICARDA], the International Crops Research Institute for the Semi-Arid Tropics [ICRISAT], and the UNCCD Global Mechanism [GM], 2004); C. Reij and D. Steeds, *Success Stories in Africa's Drylands: Supporting Advocates and Answering Skeptics* (Rome: GM-UNCCD, 2003); UNEP, *UNEP Initiative on Success Stories in Land Degradation-Desertification Control: Summaries of 'Saving the Drylands' Award-Winning Projects, 1995–1998* (Nairobi: UNEP, 1999); and the website <http://www.lk.iwmi.org/brightspots/>.

³⁶ E. Barbier, "The Economic Linkages between Rural Poverty and Land Degradation: Some Evidence from Africa," *Agriculture, Ecosystems, and Environment* 82 (2000): 355–70; L. Berry, J. Olson, and D. Campbell, *Assessing the Extent, Cost, and Impact of Land Degradation at the National Level: Findings and Lessons Learned from Seven Pilot Case Studies* (commissioned by the GM with support from the World Bank, Boca Raton, 2004); S. Pagiola, "Economics of Soil Management in Developing Countries," in *Encyclopedia of Soil Science*, ed. R. Lal, Marcel Dekker Publishing, New York, 378–92 (2002); Scherr, "The Future Food Security and Economic Consequences of Soil Degradation in the Developing World."

The following case studies, however, provide examples of the type of SLM programs that have led to positive returns of investments:

- (a) The Keita Valley Integrated Rural Development Project in Niger (1984–99; \$65 million) rehabilitated 20,000 hectares of degraded lands through a wide range of interventions. Trees were planted, sand dunes were fixed, stream banks were stabilized, dams and wells were built, farmers were trained, credit was extended, schools were upgraded, and health clinics established. The payoff may justify the project cost over the long term, because its results increased incomes in the area by an estimated \$6 million annually.³⁷
- (b) In eastern Morocco, rehabilitation of severely degraded rangelands during the 1990s was achieved by establishing clan-based cooperatives encompassing 8,250 herders over an area of 3 million hectares. They were provided with 30 kilograms of barley per year as compensation for setting aside 450,000 hectares for recuperation for two years. The set-aside vegetation recovered, and its productivity jumped from 150 kilograms/hectare to 800 kilograms/hectare of dry matter per year, a gain worth 50 percent more than the cost of the set-aside. Controlled rotational grazing now generates enough benefits that the herders pay grazing fees to their cooperatives.³⁸
- (c) In China, the objective of the Second Loess Plateau Watershed Rehabilitation Project (1999–2004; US\$150 million) was to achieve sustainable development by increasing agricultural production and incomes and by improving ecological conditions in the Yellow River watershed.³⁹ Key elements included (a) the construction of terraces to create high-yielding farmland on slopes of less than 20 degrees, replacing cropping on eroded slopelands; (b) the protection of slopelands from grazing and planting them with income-earning trees, shrubs, and grasses; and (c) other income-generating farming activities, including stall-fed livestock, dairy cattle, and irrigated agricultural production.

The project has substantially raised agricultural productivity, increased and diversified farm incomes, improved the environment, and created conditions for soil and water conservation. From 1999 to 2004, the average annual per capita income of project households increased from renminbi (RMB)783 to RMB1,624, compared with an income increase from RMB794 to RMB1,318 in the adjacent nonproject areas. Average annual project per capita grain production increased from 365 kilograms to 591 kilograms, compared with an increase from 397 kilograms to 504 kilograms in the nonproject areas.

The accumulated sediment retention caused by the project has reached an estimated total of 53.4 million tons. Tree, grass, and shrub planting increased vegetation cover from 17.3 percent to 33.5 percent. A grazing ban dramatically changed the landscape of the entire region. Realizing the success of the project's grazing ban, political leadership responded by adopting a grazing ban throughout most of the Loess Plateau area. Today, more animals with much higher productivity are being raised in the Loess Plateau than ever before.

³⁷ Winslow et al., *Desertification, Drought, Poverty, and Agriculture*.

³⁸ *Ibid.*

³⁹ World Bank, "Implementation Completion Report (SCL-44770, IDA-32220, TF-25677, TF-51385) for the Second Loess Plateau Watershed Rehabilitation Project," Report 34612 (Washington, DC: World Bank, 2005).

The Loess Watershed project investment has an overall economic rate of return of 21 percent, with the livestock component having the highest, at 27 percent.

(d) The Millennium Ecosystem Assessment (MA)⁴⁰ gives two examples from developing countries, in which it compares the NPV of an intact ecosystem with the NPV of that same ecosystem converted into a different use. One example is from a mangrove ecosystem in Thailand, in which the NPV of shrimp farming is about 20 percent of the value of the intact ecosystem. With regard to a tropical forest in Cambodia, the difference is even more striking, with the NPV of the converted system (unsustainable timber harvesting) being only about 11 percent of the traditional use regime. The MA recognizes that the conversion of an ecosystem leads to an economic benefit for those immediately involved, but that the multiple benefits that a natural system provides to a much larger group of citizens most of the time are lost. In the case of unsustainable timber harvesting in a tropical forest, this is immediately clear, while with regard to a shrimp farming system in place of a mangrove, it might be less obvious because a shrimp farm can generate income opportunities and, if managed well, can be sustained over long periods.

⁴⁰ Millennium Ecosystem Assessment, Synthesis Report, Island Press, Washington, D.C. (2005).



Responses to Land Degradation

The history of investment to improve productivity in rural areas is a long one, documented by a number of different names and programs, such as “Integrated Rural Development,” “Land Quality Improvement,” “Integrated Land and Water Management,” and the like. Drylands have been an important focus, with attention paid to range management, agroforestry, soil and water conservation, and large- and small-scale irrigation as common management strategies. Generally speaking, the interest in investment in dryland has tended to diminish, with donor attention directed to quicker, less complex projects with more visible returns or on basic services such as health and education.

Several intersecting trends have helped to begin to change this picture:

- A stronger realization of the global problem of resource deterioration, including land degradation
- More-specific analyses of world poverty and its links with land degradation
- The definition of millennium goals, with two (1 and 7) directly related to land degradation and poverty and the others with strong links⁴¹

A World Resource Institute (WRI) report⁴² identified four factors that are of importance to safeguard environmental income for the poor:

- Using an ecosystem approach to manage natural resources
- Getting the governance right to ensure access to environmental income (in particular for the poor, through a decentralized management system and a system that allows the poor to meet their needs through negotiation)
- Commercialization of ecosystem goods and services so that products can be turned into income (calling for better marketing structures and provision of supportive services)
- Finding innovative sources of environmental income (for example, for environmental services and eco-labeled produce), diversifying the source of income and making people less vulnerable to shocks in the system

It is becoming increasingly accepted, however, that addressing the problem of land degradation is not simple. It requires not only technical approaches but also addressing the socioeconomic causes

⁴¹ P. Dobie and M. Goumandakoye, *The Global Drylands Imperative: Achieving the Millennium Development Goals in the Drylands of the World* (New York, UNDP, 2005).

⁴² World Resource Institute (WRI). *A Guide to World Resources 2005—The Wealth of the Poor: Managing ecosystems to fight poverty*. WRI, Washington D.C., (2005).

behind the unsustainable practices and removing the barriers to the adoption of a more sustainable system. These barriers can be related to the lack of technical or institutional capacity, a lack of appropriate or effective policy, a lack of information or knowledge, or a lack of social or economic incentives.

The dust storms in the United States and Canada in the 1930s triggered much research, and the degradation of soils was stopped by using a number of physically based techniques. It is, however, often forgotten that those technical solutions were accompanied by a package of incentives that included loans for new machinery and an extension service to advise farmers on how to make their farming systems compatible with the dryland ecological conditions.

Today, in developing countries, the most important response to land degradation (LD) at the farm level is by the land managers as they adapt their system to declining productivity. Responses often include switching to less-demanding crops such as tubers, and adding inputs such as fertilizers and manure (if economically viable). We have these and other techniques to reverse the biophysical process of land degradation. What we are lacking is methodologies to identify effective approaches that address the root causes and how to design intervention strategies to remove the barriers to sustainable management.

By working to address not just the physical manifestations of land degradation but also its root causes, it is acknowledged that land degradation is a complex issue that requires a broad approach. It leads to the recognition that people who so often are blamed for the problem must be made part of the solution. The policy implication that results from this broader approach is that integrated analyses must be fed into decision-making processes to guide local, national, and international development and investment strategies. Sustainable land management is the approach that incorporates all these aspects and puts mitigation of land degradation at the core of the development process.

Institutional, Policy, and Governance Barriers

Institutional, policy, and governance barriers have plagued both donor and recipient systems. Such barriers include government and international pricing policies, centralization of government control, the lack of local institutions (such as market and extension services), and the lack of local decision-making structures. Other barriers may include policy and legislative issues such as the link between land tenure and the ability to invest in improvements, the impact of taxation and subsidies on production and distribution, the role of health and educational services, and access to labor and effective extension services. Conflicts between modern and traditional systems of management may also be a factor. The key to removing these barriers is the realization that the problem is multifaceted and important, and responses need to be mainstreamed into the decision-making process on all sides. The new attention given to poverty reduction, linked with combating land degradation, has created new momentum in the institutional, policy, and governance arena. The current international and national responses to these barriers are outlined below.

Economic and Social Incentive Barriers

Economic and social barriers relate to issues or structures that have prevented investment in sustainable land management. Common economic barriers at the farm level include low returns to crops or livestock products that reduce the incentive to invest in productivity-enhancing practices;

the relatively high labor, land, or capital requirements in a sustainable system, compared with those in a conventional system; and the lack of markets for products produced in a sustainable system. Social barriers can include wealth, ethnic, or other societal divisions that prevent groups from working together to develop or implement a sustainable land management plan. Ineffective leadership or institutions, combined with unclear land tenure, can lead to a lack of the necessary trust for successful land use or other land management plan. Yet, the inherent strength of many rural systems is their ability to use the natural resources base in communal, integrated, and effective ways, and building on past or existing social structures and local knowledge is often the most effective and sustainable approach.

Scientific Knowledge Generation Barriers

Compared with other conventions or sectors, LD and SLM have had at best a modest research base. The research and knowledge generation that has occurred tends not to be well coordinated and not easily available to the practitioners. Funding for research and research coordination has been small. Monitoring and evaluation followed by feedback has not always been a high-priority activity.

Although SLM involves new approaches to project and framework development, it also involves new approaches to research and to knowledge generation and management. More important, there is a need first to integrate the biophysical and social science knowledge base and second to involve local community knowledge and participation in SLM activities. Winslow et al.⁴³ have identified the differences in approaches from a Consultative Group on International Agricultural Research (CGIAR) perspective (Table 1), and the CGIAR has oriented some of its research activities to these objectives. Some current CGIAR research activities include scientific analyses of the environmental dimensions of degradation and the socioeconomic causes of the change in land management. With the collaboration with local partners, these studies develop and implement technological and institutional intervention strategies. Past UNCCD-related interventions have included hardy crop varieties, land productivity improvement technologies, and policy reforms.

A central response to the lack of research and data is LADA (Land Degradation Assessment in Drylands), a (UN) Food and Agricultural Organization/United Nations Environment Programme (FAO/UNEP) activity designed to develop and test an assessment methodology for land degradation in drylands. Once the tools and data are together to understand the root causes, driving forces, and functioning of the degradation process, LADA will assess land degradation at global, regional, national, and subnational levels. It has ongoing activities in several countries in Africa, Asia, and Latin America.⁴⁴

UNEP's Desert Margins Programme, led by the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), is active in benchmark sites on the border of the desert in nine African countries. Some of the program activities include the development of indicators of land degradation, capacity building, and the testing and promotion of "best bet" technologies (including indigenous technologies) for conserving and restoring biodiversity and degraded lands.⁴⁵

⁴³ Winslow et al., *Desertification, Drought, Poverty, and Agriculture*.

⁴⁴ LADA Project website at <http://lada.virtualcentre.org/pagedisplay/display.asp>.

⁴⁵ Desert Margins Programs website at <http://www.dmpafrica.net>.

TABLE 1.**Distinguishing Features of Conventional versus Integrated Ecosystem Approaches to Agricultural Research and Development**

Aspect	Conventional approach	Integrated ecosystem approach
Perspective	Natural ecosystems seen as input suppliers (land, fertility, and so forth) for current or future commodity production	Natural and managed ecosystems viewed as part of one interdependent whole, providing a wide range of goods and services
Products	A few commodities or products	A wide array of both managed and natural goods and services
Strategy	Maximize yield, production, and net present value by intensifying the use of land, labor, and capital	Optimize total ecosystem goods and services output over time
Methodology	Reductionist: high-resolution measurement of a small number of factors	System-oriented, including both quantitative and qualitative assessments, with close attention to interactions, flows, asset balances, and trade-offs
Approach to diversity	Reduce diversity for more-predictable results, more-targeted interventions, and greater economies of scale	Take advantage of diversity to exploit niche potential, meet a wider range of needs, preserve future options, and reduce total system risk
Scales of work	Field, political, and ownership boundaries	Ecosystem, community, and landscape; societal plus biophysical
Role of science	Applied science focused on biophysical resources, geared toward specific technology outputs	Combine biophysical with social and policy analysis; create prototypes, toolkits, and models of development processes for local adaptation

Source: Winslow et al., *Desertification, Drought, Poverty, and Agriculture*.

People, Land Management and Ecosystem Conservation (PLEC), a UNEP/United Nations University project, has conducted research at the field level in agricultural areas in Africa, Asia, and Latin America to develop and test improved land management practices to reduce land degradation and promote agrobiodiversity. It has produced many publications and methodological guides.⁴⁶

The UNDP Alternatives to Slash-and-Burn Programme, led by the World Agroforestry Centre (ICRAF), has been working on the forest edge in six countries in Africa, Asia, and Latin America. It has a strong scientific component that has resulted in numerous international publications on, for example, the impact of land use changes on above- and below-ground carbon sequestration, greenhouse gas fluxes in slash-and-burn and alternative land use systems, and the effects of macroeconomic factors on deforestation. Among its successes are (a) the reclamation of unproductive *Imperata cylindrica* grasslands in Indonesia through land tenure reforms and smallholder options and (b) an approach to identify environment and development trade-offs of potential interventions.⁴⁷

⁴⁶ PLEC website at <http://www.unu.edu/env/plec>.

⁴⁷ ASB website at <http://www.asb.cgiar.org/>.

Land Use Change, Impacts and Dynamics (LUCID) is a UNEP project (led by the International Livestock Research Institute) that is examining the linkages between changes in land use, land degradation, and biodiversity. It used research results from studies crossing ecological gradients in East Africa to identify the root causes and spatial patterns of change in socioeconomic and environmental processes, using a variety of methods. Based on these findings, LUCID scientists designed, tested, and wrote methodological guides to conduct such analyses to be used as the basis for designing effective land degradation mitigation projects.⁴⁸

While these and other projects have generated a significant knowledge base, the challenge is now to incorporate these findings into project and framework design, both by donors and by host countries, and to significantly expand the research effort.

Alongside the development of the integrated knowledge frameworks from a scientific and social science perspective, there is also a need to bring community knowledge and know-how into the planning and implementation of SLM. While some of the project examples cited in this document do that effectively (see Appendix 6), this is not universally the case. However, there are some good examples in West Africa, particularly where local communities' knowledge and action have been the key driving force for SLM and new economic growth.⁴⁹

Country Response

Although available statistics tend to identify donor investments, those investments and priorities are based on country assessments and include considerable allocation of scarce resources of people and finance, including borrowing from multilateral institutions. From this perspective, there has been a wide spread country institutional, policy, and investment initiatives.

Identifying the Poverty/Environment Problem

Many countries, including Brazil, China, India, and Indonesia (four of the most populous), plus Bolivia, Mexico, the Central Asian group, and many of the Sub-Saharan African countries, have identified land degradation as a major national problem and sustainable land management and other poverty and environment responses as a high national priority. The countries are in various stages of turning this assessment into practical responses, including policy, institutional, and financial sectors. Within countries, there have been good examples of regional response to land degradation by developing sustainable land management. These include Burkina Faso, Kenya, Mali, Niger, and Tanzania.⁵⁰ These are sometimes the result of local initiatives, with nongovernmental organization (NGO) support, and important lessons learned can be derived from these successes. The local level is the scale where it is easier to integrate the various components of sustainable land management, providing that appropriate infrastructure, policies, and markets are in place.

⁴⁸ LUCID website at www.lucideastafrica.org.

⁴⁹ Reij and Steeds, *Success Stories in Africa's Drylands*.

⁵⁰ *Ibid.*

Mainstreaming

When the UNCCD supported the development of National Action Plans (NAPs), the initial general country response was to treat this activity as distinct from most other national planning and implementation activities. The NAPs tended to be the responsibility of less powerful ministries, and moving from planning to action was difficult. Financial allocation lagged seriously behind. Hence, the more recent effort to bring the NAPs into the central planning process will help in the mainstreaming of the land degradation issue.

While mainstreaming at country level is still far from universal, some good examples of mainstreaming are available, even if we use the strict definition, which implies not only priority setting but also fiscal allocation. The country that has some of the most intense and widespread land degradation problems is China, and the Government of China (GOC) has responded by identifying the problem as a priority, allocating significant internal resources to it, and obtaining major loans and grants to assist in the process. For example, the GOC has allocated at least \$13 billion to land degradation work over the next 10 years. China is also the major recipient of international assistance for UNCCD-related activities.

Tanzania is another country whose government has incorporated the SLM process into its Poverty Reduction Strategy Paper (PRSP) and has set up a system for mainstreaming progress in tackling these issues (Appendix 4). Burkina Faso has undertaken a similar task and has outlined the issues for donors and the national government in moving from principle to practice (Appendix 5).

A report of the UNCCD Secretariat⁵¹ identified six actions by which mainstreaming National Action Plans into the PRSP could move from planning to action on SLM:

- Incorporating NAP analyses and approaches directly into the PRSP process
- Focusing on the spatial distribution of poverty, as NAPs are intended to do, and identifying remedial action at the subnational and community-based levels through the selection of NAP-identified catalytic actions with win-win potential (combating land degradation and reducing poverty)
- Exploring the proximate and root causes of poverty, taking duly into account the loss of ecosystem services in the vulnerable drylands and further analyzing land degradation issues and their impact on poverty in expanding NAP-related assessment
- Improving the analysis of the poverty-environment relationship at the household, community, regional, and macroeconomic levels while determining the relationship of poverty with other factors, such as land degradation, lack of access to private and common resources and services (for example, health care, education, land, and markets), social and economic policies, and so forth
- Reviewing the status and inclusion of sustainable land management perspectives in the PRSP process and creating equal and win-win structures
- Defining specific cross-sectoral programs, projects, and investments to address SLM issues

⁵¹ "Mainstreaming of National Action Programmes and their contribution to Overall Poverty Eradication ICCD/CRIC(3)/MISC.1, GM-UNCCD, Bonn, (2005).

In a few cases, all six steps have been followed, but in many countries, this process is just beginning.⁵²

International Response

An initial international response to land degradation was a formal recognition of the problem in the form of a UN convention following severe droughts and famines in semi-arid Africa. This was followed by many individual technical, project level initiatives, and more recently by the adoption of land degradation (desertification and deforestation) as a focal area for investment in the GEF.

Institutional

The central global response to the problem of land degradation was the overarching intergovernmental treaty establishing responsibility of both developed and developing countries—the United Nations Convention to Combat Desertification (UNCCD). The Global Mechanism (GM) was established as an innovation-supporting financial mechanism.

We can identify the 2002 World Summit on Sustainable Development; the 2002 designation of land degradation as a focal area in the Global Environment Facility (GEF); the World Bank's focus on Poverty Reduction Strategies; the Millennium Ecosystem Assessment (MA); the Report of the Commission for Africa: Our Common Interest (the so-called "Blair Commission Report"); the creation of the New Partnership for Africa's Development (NEPAD), with its Common African Agricultural Development Programme and Environmental Strategy; and the growing role of the UNCCD and the GM as international responses to institutional barriers. These actions by the international community brought the issues of land degradation to the forefront and renewed the debate on how to best address them. International agencies—including UNDP, UNEP, the International Fund for Agricultural Development (IFAD), the regional development banks, and the World Bank—renewed their support of land degradation mitigation programs. Specialized framework initiatives such as GEF Country Partnership Programmes (CPP) projects, the World Bank's TerrAfrica, and the People's Republic of China/Global Environment Facility/Asian Development Bank (PRC/GEF/ADB) Partnership on Land Degradation in Dryland Ecosystems were initiated. An important feature of the renewed interest was the realization that the answer to land degradation was not just physical or technical responses (terraces, dune vegetation, small dams, and so forth) but also a concerted, integrated approach to sustainable land management with strong links to water management.

Sustainable land management is now understood to involve a range of policy and institutional issues. Some are local, such as security of land tenure and rights of access, participatory decision making, community-level land use planning, and local institutional capacity. Others are more universal, such as economic incentives for land management related to access to market and credit and opportunity costs of sustainable production technologies. Also important are national-level macroeconomic and multisectoral policies influencing the environment-poverty nexus. Reducing both poverty and land degradation may require strategic investments and stimulation of complementary secondary and tertiary activities. The framework approach involving long-term investment and support are a logical follow-up of this realization.

⁵² *Ibid.*

Mainstreaming

Generally both multilateral and bilateral institutions have started to become more proactive in giving recognition and priority to land degradation and SLM issues, particularly given the incentive of GEF support for many of these projects. However, the donors and many countries regard the priority as applying to incentive funds such as GEF provides and in many cases have not seriously reallocated their core funding. Given the attention to the MDGs (and to poverty reduction in general) and the worsening environmental problem in some areas (such as North China), this situation may be changing.

The World Bank's PRSP process, the relatively new Rural Development Strategy, and the renewed attention to Sustainable Natural Resource Management are all initiatives that could lead to greater investment in SLM. IFAD has already clearly altered the focus of some of its newer projects, and UNDP and UNEP have a stream of pipeline projects directed to SLM.

The bilateral donor response is more mixed, but the five major national bilateral providers appear to be committed to a long-term investment in this area. In all cases, additional financing is needed to move from plans to activities. Some countries, particularly the United Kingdom and Germany, see resources mobilization for LD coming mainly through investments in economic opportunities in drylands.

Many policy and governance issues such as pricing, the degree of local authority, and market structures have still to be mainstreamed in both multilateral and bilateral donors' policies.

Financial and Economic Responses in Relation to Needs

In taking on the task of presenting financial data on LD or SLM, there are formidable problems of data collection and comparison. One of the biggest challenges is the lack of a common definition of land degradation activities, UNCCD-related activities, and sustainable land management activities across agencies and between donors. Projects in rural development, forestation, rural infrastructure, forest management, rural water management, and SLM may have sometimes been included by donors. Double-counting is another problem. For example, almost every GEF project has cofinancing from both bilateral donors and host countries, and so these amounts are repeated in some sections of this report. In many cases, the same contributions are included in bilateral data and separately in reports to the Committee for the Review of the Implementation of the Convention (CRIC). Periods of reporting vary by country and by agency.

The problem is illustrated by the EU compilation of national reports and by the incompatibility of data sets reported to the CRIC. Previous reports have illustrated the difficulty of accounting for components within projects.⁵³ A number of initiatives to coordinate data have been launched by the GM (FIELD),⁵⁴ the UNCCD Secretariat, the Organisation for Economic Co-operation and Development/Development Assistance Committee (OECD/DAC), and the EU countries. An Ad Hoc Working Group (AHWG) to improve the procedures for communication of information, as well as the quality and format of reports on the implementation of the Convention, has been established

⁵³ L. Berry and J. Olson, "Land Degradation Linkage Study," Working Paper 6, Global Environment Facility (Washington, DC: World Bank, 2000).

⁵⁴ FIELD (Financial Information Engine for Land Degradation) is GM's financial database for UNCCD-related activities. See Appendix 7. The authors received data from the FIELD database in May 2006 for this report.

by Decision 8/COP7. The deliberations and recommendations of the AHWG will be of crucial importance to guide future assessments of progress in UNCCD implementation.

We have attempted to bring different reports into the same time frame. We have provided references to the data source wherever possible. As sustainable land management activities continue, it will be important for evaluation and comparison to establish a more coherent database. The FIELD system of GM, with a more consistent input from contributors, provides a base for such a system (Appendix 7).

Equally, definition of needs is hard to pin down, except in relation to the issues of continuing rural poverty, widespread lack of food security, and ongoing land degradation. The evidence shows that land degradation, an important global problem, is a significant factor in both food security and rural poverty, and there is a widespread, regionally focused need for SLM investment on a scale greater than at present.

The financial review encompasses a preliminary analysis of bilateral, multilateral, and national funding of UNCCD-related activities. This section outlines financial and economic responses to land degradation (as much as the incomplete and conflicting data sources allow). A preliminary analysis of the financial data indicates that approximately \$4 billion are spent annually on UNCCD-related activities.

Multilateral Assistance

Between 1999 and 2003, multilateral donors accounted for more than two-thirds of total investment in UNCCD-related activities, while bilateral donors accounted for about one-fourth, according to information submitted to the Conference of the Parties (COP)/CRIC by country parties and additional information provided by multilateral agencies and the OECD/DAC. This ratio is confirmed by portfolio reviews recently undertaken by the GM in collaboration with major International financial institutions and by the latest analysis of "Rio marker" data on bilateral aid activities targeting the UNCCD.⁵⁵

A summary of contributions to SLM by the multilateral agencies is shown in Figure 1. The data include contributions from other cofinanciers or recipient governments (or both); thus, the amounts do not represent the exact contribution by each multilateral agency. Data sets from different agencies and donors show significantly different numbers because of differing methods of estimating financial contributions.

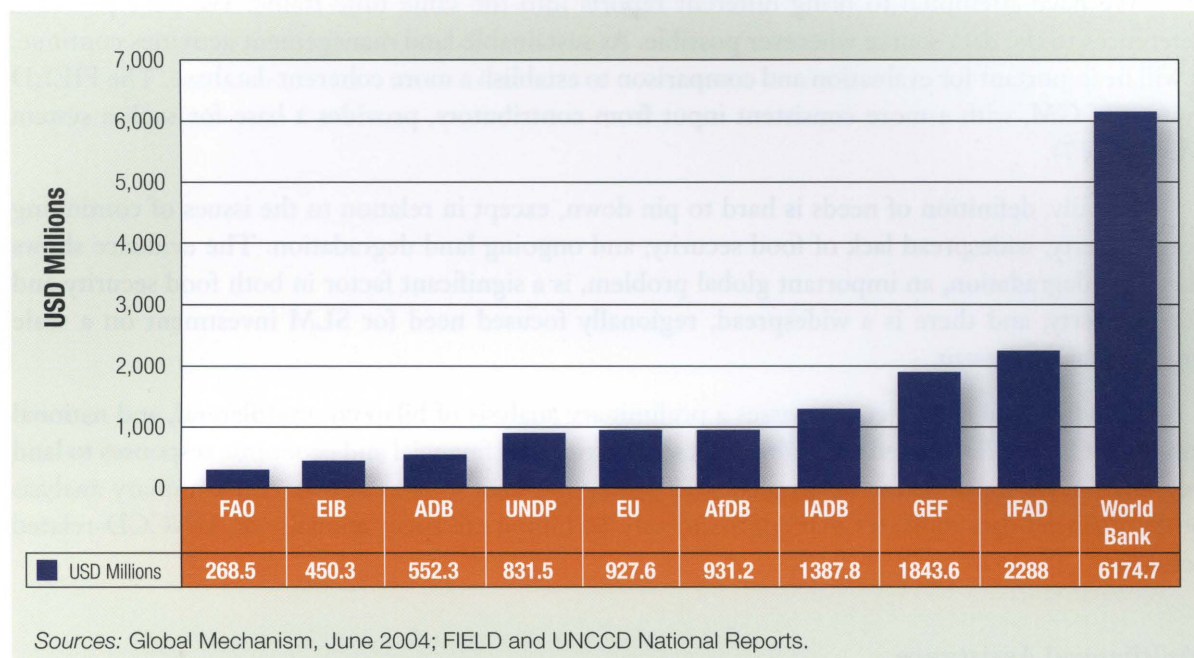
Among the top 10 multilateral donors from 1996–2001, the World Bank contributed 38 percent of the total amount (mostly loans), followed by IFAD with 15 percent and GEF with 12 percent. As noted above, these amounts are inflated because of the contributions by cofinanciers or recipient governments (or both).

A more detailed analysis of each of the main multilateral donors is presented in the following sections.

⁵⁵ Source: GM. See Appendix 7 for more information on Rio markers.

FIGURE 1.

Top 10 Multilateral Donors for UNCCD-Related Activities, Cumulative Amounts from 1996–2001



World Bank

The World Bank’s initiative in working with recipient countries to develop Poverty Reduction Strategies was a good vehicle to begin to address rural poverty and its links to land degradation and SLM. But (as a recent World Bank publication points out)⁵⁶ while each of the Bank’s sector strategies contains commitment and approaches to achieve SLM, these strategies have (for the most part) not yet been integrated into a comprehensive approach. The development of a comprehensive approach to SLM across these sectors would allow further mainstreaming of this issue within the World Bank.

In the same way in many instances, a focus on SLM has not yet been incorporated in country macroperspectives. In some of the Poverty Reduction Strategy Papers (PRSPs) and Country Assistance Strategies (CASs), the issue is addressed, in others not. While many countries clearly identify the destruction of natural resources (and, in particular, land degradation), as a major issue, this recognition has not been followed by making this a priority. However, there are some good examples where this has happened (for example, Burkina Faso, China, and Uganda). Recent experiences have shown that it is not enough to get recognition in the PRSPs, the CASs, or corresponding documents of other donors. Unless a provision is made in the financing plans that are derived from such policy documents, nothing has in effect been achieved.

⁵⁶ L. Berry and E. Esikuri, “Sustainable Land Management Activities (OP#15) within the World Bank”, The World Bank, Washington, D.C. (2005).

Interest in rural development can be assessed in several ways (for example, in the early 1980s, lending to agriculture accounted for more than 30 percent of the Bank's total lending); however, agriculture lending declined markedly between 1982 and 2002, to 8 percent. Table 2 illustrates trends in World Bank investments in rural areas and agriculture for the period 1999–2005. Lending to rural areas has increased from about \$5 billion to almost \$9 billion from 2002 to 2005; however, investment in agriculture (including agroindustry and marketing) did not change as dramatically and continues to represent between 7 and 10 percent of the Bank's total lending.

At the close of FY 2004, the total active projects with environment and natural resources management (ENRM) content amounted to US\$11.2 billion, constituting 12.2 percent of the Bank's total active portfolio. During the same year, global bank investment in sustainable land management accounted for US\$1.6 billion, 14 percent of total investment in ENRM.⁵⁷

TABLE 2. World Bank Commitments to Rural Areas and Agriculture as Percentage of the Total Bank, Excluding Supplementary Projects

Fiscal year	Rural areas		Agriculture	
	US\$ millions	Percentage	US\$ millions	Percentage
1999–2001	5,031	25	1,405	7
2002	4,936	25	1,536	8
2003	7,578	41	1,289	7
2004	7,399	37	1,495	7
2005	8,714	40	2,122	10
Change FY2004–FY2005	1,315	3	627	2

Source: Agriculture and Rural Development department (ARD)/World Bank (2005), Rural Portfolio Review for Fiscal Year 2005.

Among case studies of successful SLM projects are the Loess Plateau Watershed Rehabilitation Project in China and the Uttar Pradesh Sodic Land Reclamation Project in India (Appendix 6).

GEF

In most cases, Global Environment Facility (GEF) projects have two interlinked parts: one focusing on the improvement of people's livelihoods (associated with baseline funding contributed by governments, NGOs, bilateral institutions, the private sector, and so forth), and the other contributing to the global environmental system (associated with incremental funding that is eligible for GEF support, but often shared between GEF and other contributors).⁵⁸ Since the inception of the GEF, funding to combat

⁵⁷ *Ibid.*

⁵⁸ All data on GEF resources are of June 2006 (before closure of the GEF-3 period) and do not include projects in the last work program.

land degradation has been provided for threat-reducing activities in focal areas such as biodiversity, climate change, and international waters through activities linking LD with the other focal areas. In 2002, the GEF Assembly approved a new focal area on land degradation (desertification and deforestation). In May 2003, the GEF Council approved a new operational program on sustainable land management as a framework to operationalize the land degradation focal area

The third replenishment (2002–2006) of the GEF agreed to a proposed programming level totaling US\$500 million to support land degradation prevention and control activities. Of this amount, US\$250 million was programmed as new and additional funds to the focal area (FA) of land degradation (desertification and deforestation) and another US\$250 million for land degradation activities in linkage projects

The GEF has a catalytic role in promoting investment in SLM activities. Despite its relatively small funding portfolio compared to its implementing agencies, it has exerted a large influence by successfully promoting environmental stewardship in large development projects, by promoting integrative environmental and social approaches for SLM at the community level, and by successfully promoting the mainstreaming of SLM in some countries and regions. This has occurred as countries and implementing agencies have molded their wider project design to accommodate the environmental mandate of GEF in order to obtain GEF grants. GEF's focus in OP#15 on the productive sectors of agriculture, forestry and grazing has meant that it has particular relevance for and potential to impact economic development projects and programs.

The following section summarizes the magnitude of resources programmed for land degradation activities under the land degradation focal area, as well as the focal areas biodiversity, international waters, and climate change in GEF-3.

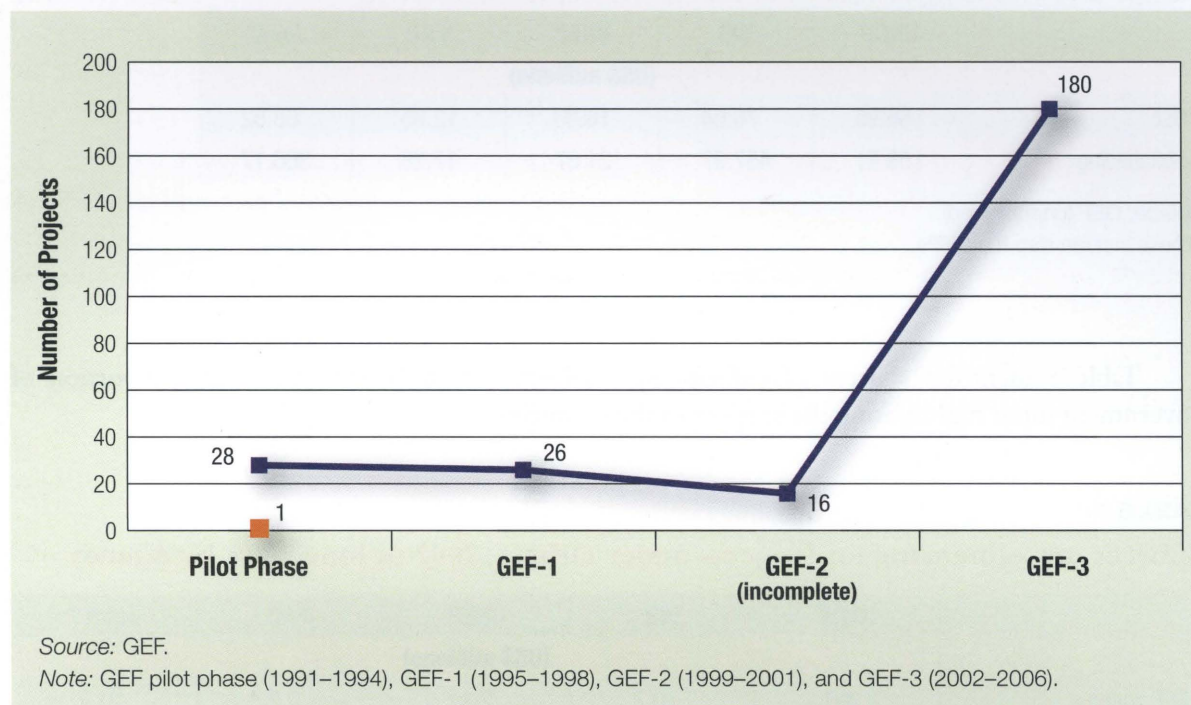
An analysis of the portfolios of the GEF Pilot Phase, GEF-1, GEF-2, and GEF-3 (1991 to June 2006) was conducted and shows a rapid increase in number of projects during GEF-3 (Figure 2). This growth is an expression of the enhanced recognition of land degradation as an important global environmental issue because it poses a serious threat to global commons such as biodiversity, international water bodies, and global and regional climate patterns.

In GEF-3, projects allocated a total of US\$197.3 million in 180 projects to activities addressing land degradation as a threat to biodiversity, international water bodies, and global and regional climate patterns, with two-thirds being linked to biodiversity.

Since the approval of the land degradation focal area, the demand for projects under the operational program on sustainable land management has been overwhelming. All resources allocated to the LD FA in GEF-3 (\$250 million) have been approved and pipelined in the form of projects and programs. Cofinancing for these projects was \$1.06 billion, making a total GEF and cofinancing of more than \$2.3 billion over the four-year period.

The regional distribution of the OP#15 funding for 2002–2006 is shown in Table 3.

Table 4 illustrates the allocation of funds from OP#15 to implementing (WB, UNDP, UNEP) and executing (IFAD, FAO, ADB, AfDB) agencies and the level of cofinancing generated by each. The cofinancing of World Bank projects resulted in a 7.7 fold increase in total project funding, while cofinancing of joint mostly CPP projects resulted in a five fold increase.

FIGURE 2.**Trend Analysis: Projects with Land Degradation Linkage****TABLE 3.****Regional Distribution of GEF Funding, 2002 to June 2006**

Region	Distribution of funds	
	Percentage	US\$ millions
Africa	43.5	106
Latin America and the Caribbean	16.4	40
Europe and Central Asia	14.6	36
Eastern Asia and the Pacific	6.8	17
Middle East and North Africa	0.4	1
Global	18.2	44
Total	100	244

Source: GEF (unpublished).

TABLE 4.**Financing for Projects under OP#15 by Agency, 2002 to June 2006**

	UNDP	WB	UNEP	IFAD	Joint*
(US\$ millions)					
GEF	66.95	79.64	18.60	12.95	68.52
Cofinancing	159.81	457.97	21.67	17.28	360.17

Source: GEF (unpublished).

*These include also the CPPs.

Table 5 identifies sources of cofinancing (cash and in-kind), with the high proportion of government input highlighting the support of the countries:

TABLE 5.**Sources of Cofinancing for Projects under OP#15, 2002 to June 2006, by Agency**

	UNDP	WB	UNEP	IFAD	Joint *
(US\$ millions)					
GEF agency	4.0	0.7	2.1	0.2	21.7
Government (incl. loans)	74.3	388.1	8.3	16.9	263.2
Bilaterals	53.9	41.5	0.2	0.3	49.1
Other multilaterals	12.7	7.0	8.0	0.1	20.2
Others**	15.0	20.8	3.2	0.1	5.9

Source: GEF (unpublished).

* These include also the CPPs.

** Includes (for example) NGOs, beneficiaries, and private sector.

UNEP

In addition to being the implementing agency for many GEF land degradation projects, the United Nations Environment Programme (UNEP) has been a strong supporter of several research and information-sharing activities that promote sustainable land management:⁵⁹

- UNEP program on Success Stories in Land Degradation and Desertification publicizes projects and community-based initiatives that have successfully addressed the problem of dryland degradation.
- Sustainable Agri-food Production and Consumption Forum provides a network of key information sources on agri-food production and consumption, related environmental impacts, and practices to prevent or respond to these impacts.

⁵⁹ Unfortunately, no financial data are available for these activities.

- Environmental and Sustainability Indicators—with the International Center for Tropical Agriculture (CIAT) and the World Bank—work to improve policy and decision making for sustainable land and environmental management.
- The Global Environment Outlook, GEO-3, provides an overview of the main environmental developments over the past three decades and how social, economic, and other factors have contributed to the changes that have occurred.
- Earthwatch provides “integrated” information gathered from across the UN system relevant for policy making by building essential partnerships across the UN system with the scientific community, governments, and NGOs.

The role of UNEP as implementing agency of GEF land degradation projects has grown in the number of projects and the amount of funding over the past few years. Many of the successful land degradation targeted research projects, for example, were implemented by UNEP (see section “Scientific Knowledge Generation Barriers”). Financial data for UNEP-GEF are provided in Table 6; the totals include some joint projects, so they are not comparable to the data in the previous section on GEF, but they do provide an indication of the impact of OP#15.

TABLE 6.

UNEP-GEF Land Degradation Portfolio, as of May 2006

Operational program	GEF-2: cross-cutting LD projects (1999–2001)		GEF-3: approved LD projects under implementation or appraisal (2002–2006)	
	No. of projects	GEF funding	No. of projects	GEF funding
	(US\$ millions)			
OP#1	6	25*	1	5.3
OP#12	1	1	2	9.7 **
OP#13			1	1
OP#15			9	27
Total	7	26	13	43
Total GEF-2 and GEF-3: US\$69 million				

Source: UNEP (unpublished).

*Of which \$17 million is complemented with UNDP.

** Of which \$4.7 million is complemented with IFAD.

UNDP

The United Nations Development Programme (UNDP) has been supporting the mitigation of desertification and land degradation since the inception in the 1970s of the United Nations Sahelian Office (UNSO), now the Drylands Development Centre. In recent years, UNDP’s level of activity has grown through its activities in the Drylands Development Centre, as an important implementing agency of GEF land degradation projects, and by providing other UNCCD support activities. For example, it has provided technical and financial support through the NAP process: direct financial

assistance to the NAPs and SRAPs has been provided to 59 countries in all regions of the world, for a total of more than US\$41 million (see Table 7):

TABLE 7.

UNDP- UNCCD- NAP-Related Investments from 2002 to 2006

Region	UNDP	Leveraged funds (GEF and other)
	(US\$)	
Africa	9,767,947	7,500,000
Arab States	959,924	5,419,924
Asia	137,419	10,500,000
Central Asia	290,000	
Latin America and the Caribbean	367,263	6,500,000
Total	11,522,553	29,919,924

Source: UNDP Report to the UN Convention to Combat Desertification (2006).

UNDP is also contributing by supporting the integration of critical land degradation issues into the national development frameworks, PRSPs, and policy reforms. This is done through several mechanisms at the country level: (a) donor harmonization; (b) MDG and PRSP integration and reporting; and (c) several integrated national development programs, such as the Dryland Development Centre's Integrated Dryland Development Programs,⁶⁰ the GEF CPPs,⁶¹ and various regional capacity-building and environmental governance programs. UNDP also played an important role in the establishment of the Global Drylands Imperative, a policy and advocacy mechanism at the global level, and it established a GEF MSP to catalyze a partnership of around \$60 million to support the World Initiative for Sustainable Pastoralism. UNDP has leveraged both GEF and cofinancing for implementation of priority projects within the NAP, as well as projects addressing deforestation issues in line with the United Nations Forum on Forests.

IFAD

The International Fund for Agricultural Development (IFAD), as host of the GM and with its focus on agriculture, has been a major responder to the challenge of SLM even though many of its projects, while related, were not specifically directed to integrated land management and poverty reduction.

A review of IFAD's programs and projects portfolio related to UNCCD objectives shows that the share of UNCCD-related projects increased from 35 to 63 percent between 2002 and 2006. These projects represented an investment of \$1.850 billion in loans and \$119 million in grants over the seven-year period. Of the total, 47 percent were invested in Africa.⁶²

⁶⁰ UNDP Drylands Development Centre Support to UN Convention to Combat Desertification Report.

⁶¹ UNDP is the lead agency for the following pilot CPPs: Burkina Faso, Cuba, and Namibia.

⁶² IFAD-GM, "Portfolio Review of IFAD-Funded Programs and Projects Related to UNCCD Objectives," Review Summary, IFAD-GM, Rome (2006).

IFAD has also been successful in leveraging an additional nearly \$2 billion in cofinancing from its partners, particularly governments, beneficiaries, the OPEC Fund, the West African Development Bank, GEF, and the World Bank. The main IFAD partners in the implementation of the projects are the ministries of agriculture and of the environment, CGIAR centers, NGOs, and communities groups.

Many of the grants and loans that are targeting more precisely the UNCCD-related activities are recent and ongoing. This includes funding for a growing emphasis on community-based activities (mainly in the form of small grants) and more integrated projects (often in the form of loans).

Global Mechanism

The Global Mechanism (GM) was established as a financial mechanism, not a fund. Its core responsibility is to promote the mobilization of investments for UNCCD implementation through the provision of information, catalytic resources, and advisory services on finance. GM's approach to resource mobilization emphasizes country-driven identification of development priorities, the importance of domestic public budget allocations, and the need for countries and their development partners to position the UNCCD and SLM in relevant policy processes.

To support favorable conditions for investments in SLM, the GM assists affected developing countries in the establishment of National Financing Strategies. This involves analyzing the investment climate, identifying financing instruments and sources of finance, increasing the complementarity of finance from different sources, including domestic budgets, and promoting partnerships between national stakeholders and international development cooperation partners. This process facilitates the mainstreaming of UNCCD activities into national and external development frameworks.

Since 1997, the GM has supported the formulation and implementation of more than 70 National Action Plans (NAPs). Several countries, such as Burkina Faso, Tunisia, and Uganda, have mainstreamed UNCCD objectives into their national development frameworks or PRSPs, opening channels for increased financing for land degradation activities. At the regional level, the GM has promoted initiatives such as the Strategic Partnership Agreement (SPA) for UNCCD implementation in Central Asian Countries,⁶³ the Central Asian Countries' Initiative for Land Management (CACILM), TerrAfrica in Sub-Saharan Africa, and SolArid in the Sahel and Sahara countries. The primary focus of these initiatives is mainstreaming SLM into national planning and budgetary processes.

An example of an outcome of the SPA is CACILM, which was launched as a GEF multicountry CPP led by the Asian Development Bank. A task force comprising the countries, the GM, the GEF Secretariat, all of the GEF IAs, and several EAs and SPA members assisted with the design of a 10-year program seeking to reverse the effects of land degradation through addressing bottlenecks at all levels. It is anticipated that over the 10-year period, an estimated investment of \$1.378 billion shall be invested in SLM-related activities, of which \$400 million is to be contributed by the countries

⁶³ Members of the SPA are the Global Mechanism of the UNCCD; the Asian Development Bank (ADB); the CCD Project of the German Agency for Technical Cooperation (CCD Project of GTZ); the Canadian International Development Agency (CIDA); the International Fund for Agricultural Development (IFAD); the Swiss Agency for Development Cooperation (SDC); the International Centre for Agricultural Research in the Dry Areas (ICARDA); the United Nations Development Programme (UNDP); the United Nations Environment Programme (UNEP); and the World Bank (WB).

concerned (Appendix 8). The launching phase has identified approximately \$155 million, of which the countries, the development partners, and the GEF are contributing roughly US\$24 million, US\$110 million, and US\$20 million, respectively.

In light of COP and GEF Council decisions concerning the complementary role between the GM and the GEF, the GM has provided entry points for the integration of GEF activities into GM-initiated processes for UNCCD financing at national and subregional levels. These have resulted in the identification and formulation of 20 initiatives under the GEF OP#15, for which the GM has provided cofinancing or facilitated the mobilization of cofinancing. The collaboration between the GM, the GEF Secretariat, and GEF implementing and executing agencies have led to the mobilization of significant financing during the GEF-3 replenishment period. With IFAD, for example, the GM has collaborated with and cofinanced GEF proposals in nine countries. The total investment mobilized for these proposals amounts to approximately US\$262.2 million, including US\$44.6 million from the GEF.

Bilateral Official Development Assistance

Recent data for bilateral aid is not easy to obtain, but a recent GM report based on OECD/DAC data shows that for 1998–2004, activities related to land degradation and desertification represented between 1.2 and 2.0 percent of the total Bilateral Official Development Assistance (BODA).⁶⁴

The share of UNCCD-related funding as a percentage of the total BODA has been decreasing over time (Figure 3). In total funding for UNCCD-related activities, allocations have also decreased between 1998 and 2005⁶⁵ from US\$1.05 billion to US\$1.03 billion.

The top six bilateral donors to UNCCD-related activities for 1998–2000 were Germany, the Netherlands, Japan, Norway, the United Kingdom, and Denmark. In 2001–2003, Denmark, Germany, Japan, the Netherlands, and Norway were the top five donors. However, the source of these data does not indicate whether some of the contributions were channeled through multilateral agencies such as GEF.⁶⁶

Table 8 provides a summary of the contributions to developing countries in Africa by members of the EU (data on contributions to non-African countries is not available). The reporting varies widely from country to country and from year to year, making it difficult to compare contributions between donors and to examine trends over time. Also, some countries reported projected contributions while others did not, and the data on contributions by the Netherlands includes multilateral funding and cannot be directly compared with the data for other countries.

In addition to EU countries, other major donors to UNCCD-related activities include the United States, which contributed approximately US\$42.1 million in 2003; Canada, with an average annual contribution of US\$52.7 million in 2001–2003; Japan, with an annual average contribution of US\$380 million in 2001–2002; and Switzerland, with an annual average of US\$24 million in 2001–

⁶⁴ UNCCD Funding Trends and Outlook, Global Mechanism, June 2005 (GM PowerPoint Presentation). *Data sources for the PowerPoint:* FIELD—Financial Information Engine on Land Degradation, OECD/DAC Rio markers data, OECD Study on Aid Targeting the Objectives of the Rio Conventions, UNCCD National Reports.

⁶⁵ The 2005 data are an estimate; no current data were available.

⁶⁶ UNCCD Funding Trends and Outlook.

TABLE 8.**Estimated Annual Average Contribution to UNCCD-Related Activities in Africa, by EU countries (in euros)**

Country	Reporting period	No. of years	Reported resources mobilized	Indicative annual average
European Commission	2000–2003	4	624,957,827	156,239,457
Germany	2001–2002 ^a	2	166,484,000	83,242,000
Finland	1997–2008	12	59,018,000	4,918,167
Czech Republic	1997–2005	9	6,895,667	766,185
Greece	2001–2002	2	1,048,326	524,163
Netherlands	2003	1	196,968,131	196,968,131 ^b
France	2003	1	62,131,707	62,131,707
United Kingdom	2002–2003	2	138,673,677	69,336,839
Italy	1999–2008	10	100,063,560	10,006,356 ^c
Denmark	1994–2008	15	488,477,589	32,565,173
Poland	2002–2006	5	480,000	96,000
Sweden	Last decade	10	250,000,000	25,000,000
Total indicative annual contribution to the UNCCD				641,794,177

Source: EU Compilation of National Reports on the Implementation of the UNCCD, with a focus on developing countries in Africa (2005).

- a. For 2001–2002, the data were obtained from the official CRS statistics of the German development cooperation. The statistics are restricted to projects carried out by the governmental implementation agencies GTZ and KfW and do not include projects from other (non)governmental organizations. The reported figures over 2001–2002 refer to commitments. This means that the amounts disbursed may cover a longer period than indicated (correspondence with Dr. Jost on Feb. 2, 2005).
- b. The amount contributed to the UNCCD-related activities by the Netherlands includes bilateral and multilateral funding, as well as resource flows through NGOs.
- c. This figure is based on Annex 1 to the Italy National Report describing a selection of relevant projects covering 1999–2008. For the years 2002–2004, an annual contribution of around €30 million on CCD-related activities have been realized.

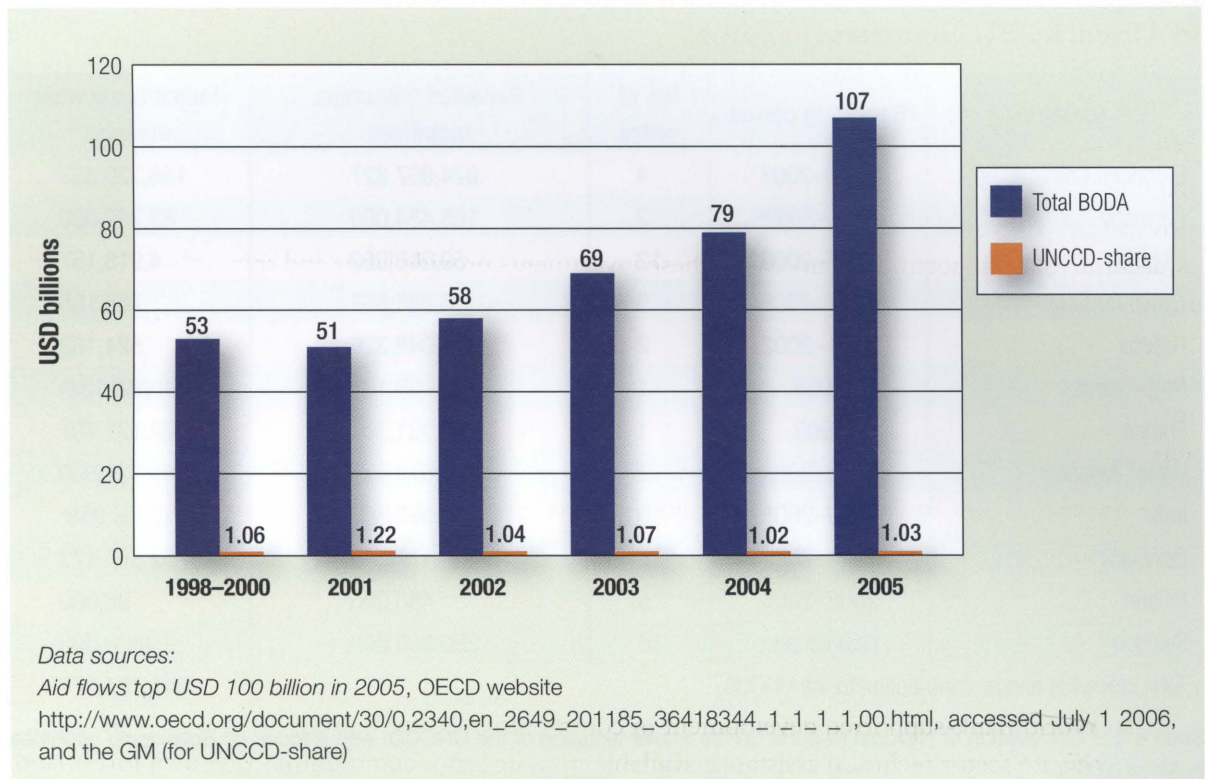
2003.⁶⁷ Therefore, our estimate of the bilateral indicative annual average contributions would be generally in line with the OECD/DAC figure of just more than US\$1 billion (Figure 3).⁶⁸

⁶⁷ *Ibid.*

⁶⁸ The euro conversion was based on a June 2003 rate of 1 euro = US\$1.17.

FIGURE 3.

Bilateral Official Development Assistance (BODA) and UNCCD Share, 1998–2005



Country Financial Commitments

While donor commitments are hard to quantify, country contributions to SLM are even more difficult. There is some evidence that countries have been more eager to get grants rather than loans for SLM based on the lack of clarity on the costs and benefits of investment in this area. This issue of fiscal as well as more general costs and benefits is addressed in the next section.

However, in some cases, country commitment has been strong, especially where the problem is clearly identified as a costly national problem. This can be illustrated by examples from China, Burkina Faso, and Central Asia.

As noted earlier, China has allocated at least \$13 billion to land degradation work over the next decade in response to an assessment that direct costs are more than \$10 billion a year and indirect costs more than \$30 billion per year.⁶⁹

Burkina Faso, whose process of integrating the NAP is outlined in Appendix 5, has allocated some \$170 million to its CPP process, a large contribution for a very poor country.

⁶⁹ L. Berry, "Land Degradation in China: Its Extent and Impact," In "Assessing the Extent, Cost and Impact of Land Degradation at the National Level: Findings and Lessons Learned from Seven Pilot Case Studies" by L. Berry, J. Olson, and D. Campbell, Report commissioned by the GM with support from the World Bank, Boca Raton, FL (2003).

In summary, when countries and donors alike identify the important nature and extent of land degradation, the willingness to invest in sustainable land management is clear. However, even in the best of these responses, the planned investment is still well below that needed to deal with the issue.

Private Sector

While international agencies are important agents in SLM, the private sector (internationally, nationally, and locally) is an important actor in many countries, less so in others. International private sector investments tend to be large-scale, export-oriented activities in citrus, coffee, flowers, aquaculture, and so forth. In many cases, these investments provide labor and spin off small capital to invest in local crop production and SLM. In most cases, these activities are not linked effectively with government and international donors' work, which could benefit from private-public partnerships. At the national and local scale, integrating critical loan and infrastructure needs for the local companies may be the most effective way of promoting SLM. The GM is carrying out an inventory of private support potential in Kenya and South Africa.

A recent World Bank document provides some examples of private sector involvement in SLM:⁷⁰

- Multilateral Investment Guarantee Agency (MIGA)–guaranteed loan support for a coffee-processing facility in Uganda (US\$7 million) and a flour mill in Guyana (US\$9 million)
- Development of private sector Amelioration Associations (AAs) in Georgia to manage irrigation and drainage
- World Bank-supported development of community forestry in Mexico, primarily by making private sector technical assistance available to indigenous communities that own forest land
- Support Fund to help farmers work with microfinance institutions such as e-Choupal in India.

The last project cited is a good win-win example. To enable farmers to better negotiate with these traders, a private company (ITC, India's largest tobacco company) established e-Choupal, which links rural poor farmers to market information via the Internet, using a VSAT⁷¹ or phone connection.⁷²

The e-Choupal system allows farmers to assess information that gives them more control over their choices. They have used this information to achieve a higher profit margin on their crops (on average, a higher margin of US\$6 per metric ton of soya), cheaper procurement of farm inputs, and improved productivity. In mid-2003, e-Choupal services reached more than 1 million farmers in nearly 11,000 villages. The computer, typically housed in a selected farmer's house, serves about a five-kilometer radius. In areas covered by e-Choupals, the percentage of farmers planting soya has increased 50–90 percent, while the volume traded in formal market auctions has dropped by 50 percent (that is, much of the soya volume is sold via the e-Choupals). In addition to soya, e-Choupals provide information on wheat, coffee, and aquaculture (shrimp).

⁷⁰ L. Berry and E. Esikuri, "Sustainable Land Management Activities (OP#15) within the World Bank", The World Bank, Washington, D.C. (2005)

⁷¹ Very small aperture terminal (VSAT), used in satellite communication of data, voice, and video signals. A VSAT consists of two parts, a *transceiver* that is placed outdoors in direct line of sight to the satellite and a device that is placed indoors to interface the transceiver with the *end user's* communications device, such as a PC.

⁷² *The Economist* (June 3, 2004). Internet-enabled PCs were placed in homes of selected farmers in the rural hinterland, allowing them to find prices of soya prevailing in local and international markets, as well as what ITC is ready to pay at its local buying centers; hence, the farmer need not travel to find out the price.

Nongovernmental Organizations

Nongovernmental organizations (NGOs) play an important part in many aspects of rural development, including SLM. The importance of NGOs in providing hands-on assistance at the local level is a key component of many of the funding processes discussed here. However, in the time available, there has not been opportunity to identify and separate out the NGO component of this process.

Need for a New Level of Financial Response

Although the numerical data on financial responses are far from complete, a rough estimate of the total bilateral and multilateral loans and grants to recipient countries is approximately US\$4 billion annually.⁷³ However, the on-site costs of land degradation from lost productivity can be estimated to be US\$65 billion annually. Other costs of land degradation generally not quantified include the off-site costs (which a Chinese analysis estimated to be approximately four times the value of the on-site costs)⁷⁴ and external costs (for example, inadequate food security, increased poverty, lost economic development, and loss of environmental services).

The estimated contributions to land degradation mitigation activities is thus an order of magnitude less than the direct cost of lost productivity in affected countries. This points to the need for a new level of investment in SLM. This need is illustrated by the following:

- The great compelling need to deal with linked poverty and resource management issues in degraded areas
- The relatively high economic and productivity rates of return of SLM projects, and their providing direct benefits to poor land managers
- The growing awareness by countries of the problem and the increase in mainstreaming SLM issues in PRSPs and other government programs
- The synergy between improved land management (to reduce land degradation) and improved biodiversity conservation, climate change moderation, and watershed management
- The flood of project activity in Africa, Latin America, and the Caribbean as a result of GEF/OP#15, reflecting huge pent-up demand at the country level
- The expressed need in Southeast Asia for framework programs based on their assessment of SLM as a major goal
- The scale of the proposed investment in Central Asia (Appendix 8)

Conservatively, an additional 10–15 percent a year of new investment, with a total international investment approaching US\$10 billion to US\$12 billion a year by the end of the decade, would begin to address removing the barriers to sustainable land management and would provide a vital contribution to on-the-ground programs to prevent further degradation.

⁷³ Estimate derived from the best available data, as provided by the funding agencies (for sources, see earlier sections in this report). The total was calculated, assuming the following: bilateral assistance US\$1.0 billion, the World Bank US\$1.5 billion, Asian Development Bank US\$0.5 billion, Inter-American Development Bank US\$0.3 billion, African Development Bank US\$0.2 billion, GEF US\$0.1 billion, and IFAD US\$0.3 billion.

⁷⁴ Anonymous, *Chinese Journal of Population, Resources, and Environment* 12 (2, 2002).

As SLM becomes an important focus for dealing with land degradation and poverty, a set of guidelines and conclusions emerge:

1. Millennium Ecosystem Assessment scenarios of future development show that if unchecked, degradation of ecosystem services will threaten future improvements in human well-being and possibly reverse gains in some regions. Land degradation ranks among the greatest environmental challenges today and is a major impediment to meeting basic human needs in drylands.
2. SLM is basically a long-term commitment for both donor and host countries, but the returns from that commitment are critical in national, local, and international perspectives. Investing in the prevention and mitigation of land degradation provides multiple, synergistic benefits—more so than investing in sectorally specific economic development or environmental programs. It requires moving away from relying on technological approaches and addressing the wider economic, policy and societal barriers to adoption of SLM.

Local benefits derive from improved resilience of the natural environment; higher investments in the local economy; growing economic stability; rising incomes and food security; improved social well-being, including better education and health; and increased production from the national resources base.

National benefits derive from reduced poverty and inequality, improved food security, sustainable income and growth in rural areas, reduced out-migration, and improved rural environment and natural resources base.

International benefits arise from improved global environment, reduction in inequality, and reduction in the need for international relief.

3. Increased financing of SLM is important if these above-listed benefits are to be achieved. This implies both donor and country commitment to long-term mainstreaming of this issue. Additional funding should be long-term, be subject to country priorities, and adopt adaptive management principles.

Country mainstreaming implies that this is a priority for grant, loan, and national budget investment. Successful national programs have been cross-sectoral, interministerial programs with high levels of political commitment. Donor commitment implies a mid- to long-term (approximately 10-year) focus on the development of an integrated SLM strategy.

Coordination is vital in this context. GM has an important role in both venues (that is, in supporting the mainstreaming process and in developing and coordinating donor support at the national and regional levels).

The rapid rise in numbers of, and investment in, GEF SLM projects has been impressive. There are numerous challenges and positive lessons learned from these experiences in promoting agency collaboration and in attracting cofinancing and country investments. These lessons should be incorporated into future planning.

The role of GEF in combating land degradation should continue to be as a catalyst for ensuring that an integrated, cross-sectoral sustainable land management approach is incorporated into development projects and programs of agencies and governments. It should also, however, continue to provide leadership in providing capacity building particularly for mainstreaming, and it should provide leadership in generating high quality, innovative and useful knowledge for improved investment targeting, and for project design and monitoring to ensure that environmental and societal objectives are being met.

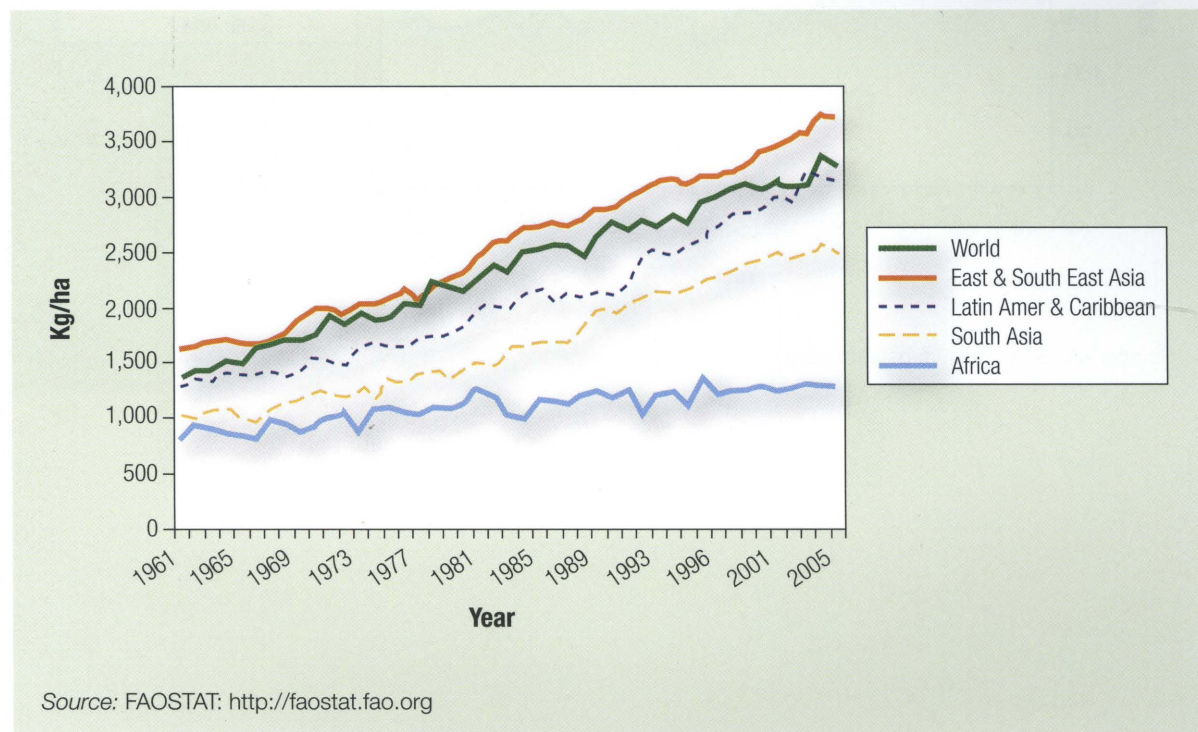
4. The priority areas for investment in SLM are in the semi-arid rangelands, irrigated areas threatened by salinization, areas of rapid deforestation, and mixed crop-livestock systems in the semi-arid to subhumid zones (where degradation processes are occurring and where poverty rates are high). The face of land degradation is different in different areas, and there is no single global solution.
5. To improve our understanding of progress in this endeavor, better analysis and accounting procedures of both country and donor investments and priorities are needed. UNCCD-related activities should be defined uniformly across donor agencies. Reporting based on the Rio markers (or some other agreed-upon system) should be standardized or revised (or both). Ultimately, this should lead to unified GM and other agency databases to enable better understanding of the funding mechanisms and the allocation of funds by both the donor community and the countries. The Facilitation Committee of the GM and the UNCCD/CRIC should address this issue.
6. Knowledge generation and incorporation into project and framework design are critical for successful SLM activities, particularly because of their interrelated social and environmental aspects and the multiple scales of interventions (field, landscape, and national). Applied knowledge should be strengthened on how to locate, monitor, and restore degraded rangelands; how to determine the costs and benefits of land degradation and SLM strategies; and how to develop land use plans to best benefit communities and ecosystems. A common, informed approach to the collection of socioeconomic and environmental information would improve project design, monitoring, and evaluation. There should be a well-articulated and -funded process of knowledge generation and exchange as part of the project process. The GEF IW: LEARN model is a good one to build on. In addition, knowledge generation activities by projects such as LUCID and LADA should be continued and the results communicated to policy makers and planners.
7. Close coordination between GEF, GM, and the facilitating committee will be needed to ensure complementarity between activities and synergy with national goals and objectives.

8. The Country Pilot Programs of GEF and the World Bank's TerrAfrica initiative are framework activities designed to address SLM in a comprehensive way. Frameworks such as these will become increasingly important to coordinate donor investments—to prevent concentration or overlap of efforts and to ensure coverage of critical locations and activities. Although initial negotiations may take time, this approach is appropriate to the problem and should be expanded.
9. While there is some cause for cautious optimism, there are also significant challenges to be overcome:
 - Donors should develop long-term cross-sectoral programs and adjust success criteria to a new set of project objectives and priorities.
 - Countries must develop cross-sectoral and high-level policy, institutional, and financial structures appropriate to address their sustainable land management needs.
 - Donors and governments should find synergistic ways of working closely with the private sector and nongovernmental organizations in promoting SLM and reducing rural poverty.
 - Nongovernmental organizations should work closely with donors and government agencies to support sustainable land management efforts at the local level.



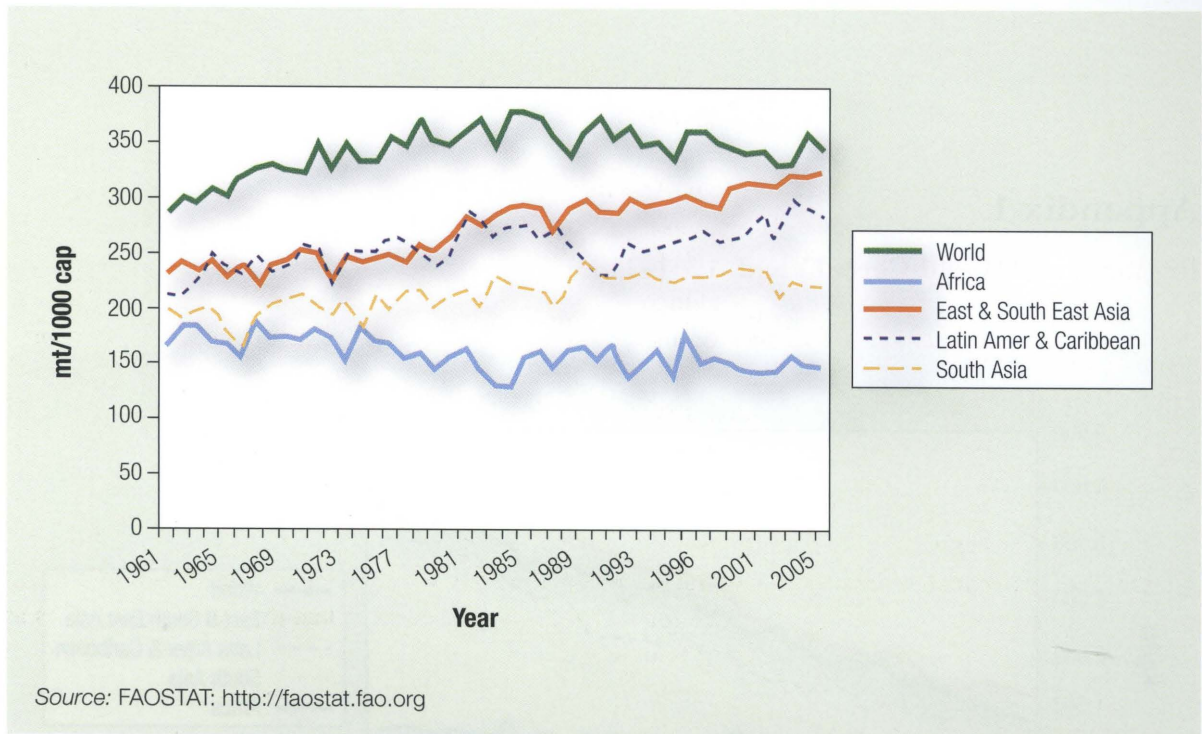
Appendix 1

Regional and World Cereal Yield, 1961–2005



Appendix 2

Cereal Production Per Capita, 1961–2005



Appendix 3

The Economics of the Rural Poor Depending on Intact Natural Ecosystems

Economies in developing countries are heavily dependent on the renewable natural resources base. A recent study by the World Bank, *Where Is the Wealth of Nations? Measuring Capital for the XXI Century*,⁷⁵ shows that in 8 of the 10 poorest countries, renewable natural capital makes up 39.4 percent of total capital, while in 9 of the 10 richest countries, the proportion of total capital represented by renewable natural capital is only 1.5 percent. Another study, *What Is Environmental Income?*⁷⁶ points to the importance of the natural environment as a source of income for the poorest segment of the rural population. A study from Zimbabwe found that as much as 40 percent of the income of the poorest of the rural population was environmental income, not including crop production. And a meta study, drawing upon data from numerous developing countries, found that more than 20 percent of income was derived from forest products. The 2005 report of the World Resources Institute (WRI), entitled *The Wealth of the Poor: Managing Ecosystems to Fight Poverty*,⁷⁷ points out that in Africa, more than 7 in 10 poor people live in rural regions and most of them are engaged in natural resources-dependent activities.

All these research results point to the importance of the natural resources base in addressing poverty and, in particular, the situation of the poorest of the poor. From that perspective, it is important to define what conditions must be in place for the poor to be able to utilize the natural resources as efficiently as possible and the barriers and bottlenecks that must be overcome to allow them to earn a living from efficient use of natural resources. The WRI study includes five case studies drawn from Africa and Asia. Three of the five cases are from dryland areas, while one is from a tropical forest, and one is from a coastal fishery village.⁷⁸ A common theme from these studies is that governance of the natural resources base is of fundamental importance. This does not translate into a call for privatization of all land, but rather for a system wherein the rights of individuals and groups of the society are well known, recognized, and respected.

The study points out not only that environmental income should be seen as a way of safeguarding against poverty but also that proper management of the natural resources base, be it from wild natural resources or from agriculture or livestock production, is the first step in the development ladder. This requires a broader view of the natural resources base, recognizing that an understanding of how the total ecosystem functions is a prerequisite for optimizing the outputs from components of it. It further requires that the natural resources-based economy gradually becomes more and more integrated with, and part of, a larger economy. It is, however, becoming increasingly clear that unless people living in drylands are brought into the main development process, it will not be possible to reach the Millennium Development Goals. Both the poverty goal and the environmental sustainability goal will be in jeopardy unless special efforts are made to more actively incorporate drylands in the development process.

⁷⁵ World Bank (2005).

⁷⁶ Sjaastad et al., "What Is Environmental Income?"

⁷⁷ WRI (2005).

⁷⁸ The case studies are from Namibia, the Shinyanga District in Tanzania, the Maharashtra State in India, the Sulawesi Island in Indonesia, and a coastal village in Fiji.

Appendix 4

Experience of Mainstreaming Environmental Issues: Tanzania

Institutional mechanisms to promote the mainstreaming of NAP issues into the Poverty Reduction Strategy (PRS) process and into governmental poverty reduction policies and programs are most productive when initiated and coordinated at the national level with strong political will and support. The Tanzania experience provides insights into how environmental issues related to poverty can be directly addressed throughout the government structure at a fairly rapid rate. The Tanzania Parliament established a Parliamentary Committee on Environment in 2001, and soon afterward, the Cabinet approved an institutional framework for environmental management. This led to the drafting of a single environmental framework law the following year in the Vice President's Office. The goal is to streamline existing policies to enhance synergy and complementarity. Issues identified in the NAP were integrated into the government's Rural Development Strategy and the Agricultural Sector Development Strategy of 2001. Recently, a cross-sectoral Environmental Working Group was established to integrate environment into governmental policies and plans to ensure sustainable use of natural resources for poverty reduction, and it was announced that environmental units will be integrated into sectoral programs throughout the government.

Meanwhile, the environment was included as a critical cross-cutting issue in the PRS process, and outputs of the PRS process included (a) identification of poverty-environment issues, (b) incorporation of environmental data in the poverty-monitoring system, and (c) capacity building of government and nongovernment stakeholders. A series of workshops and a newsletter are providing information to government and nongovernmental stakeholders on poverty-environment issues to integrate into the PRS process. A Strategic Environmental Assessment was completed concerning sustainable environmental management for poverty reduction. Poverty-environment indicators are now included in a revised indicator list for the PRS monitoring system, and environmental sustainability has been explicitly included in the performance action section of the Poverty Reduction Support Credit.

Financially, the first Public Expenditure Review (PER) of the environment was initiated to provide inputs into the government's medium-term expenditure framework and guidelines to mainstream environmental expenditures into sectoral PERs. Priority NAP issues have been integrated into the EU Partnership Agreement. To reduce duplication of efforts and to promote efficient utilization of these and other financial resources, a National Synergy Workshop was held in 2001 to explore opportunities of coordinating the implementation of the four Conventions (UNCCD, UNFCCC, CBD, and Ramsar). A Multi-Sectoral Technical Committee, comprising private sector, NGOs, and community-based organizations (CBOs), was established during this workshop to address issues of synergy. Also, the National Coordinating Body (NCB) of the UNCCD initiated a procedure of regularly meeting with the NCBs of other Conventions.

Sources: "Poverty Reduction Strategy: The Third Progress Report 2003/3," the United Republic of Tanzania, April 2004; "Second National Report on the Implementation of the UN Convention to Combat Drought and Desertification," Vice President's Office, Division of Environment, The United Republic of Tanzania, May 2002; Berry et al., "Mainstreaming the NAP into the PRSP Process and Implementation on the Ground," UNCCD, July 2004.

Appendix 5

Mainstreaming NAPs into the PRSPs: Burkina Faso⁷⁹

Financing the struggle against desertification through classic funding channels turned out to be a frustrating exercise in many African countries following their efforts to elaborate and adopt National Action Plans (NAPs) in the framework of the UNCCD. In Burkina Faso, the NAP elaboration and adoption followed a long participatory process and was launched in June 2000.

The government also developed a first Poverty Reduction Strategy Framework document in 2000. The following year, Burkina Faso was declared eligible for enhanced Heavily Indebted Poor Country (HIPC) assistance, bringing the total HIPC assistance to US\$424 million.

The evolution of these two initiatives as parallel frameworks for socioeconomic development in Burkina Faso ended with the recent integration of the former into the latter.

The NAP in Burkina Faso includes critical Local Development Funds for financing community-level development plans. Community projects have been implemented for many decades in the country. Given the fact that funds provided for the projects are subject to spatial and temporal fragmentation and that their devolution to the local people has not always been effective, the NAP retained a National Desertification Control Fund (FND) as the best mechanism to provide sustainable funding for UNCCD-related activities. It would hold all financial resources devoted to the UNCCD and redistribute them appropriately. Unfortunately, for institutional, legal, and procedural reasons, including those related to the donor community, this FND has not yet been put into operation, despite governmental budgetary allocations. Activities thus continue to be implemented in the framework of bilaterally and multilaterally funded rural development projects.

The first three-year period of PRSP application (2000–2002) yielded mixed results. The vulnerability of the national economy (which depends on agriculture) to climatic fluctuations prevented the goal of 5.5 percent annual economic growth to be reached (the actual figure was 3.9 percent). Poverty incidence went up from 45.3 percent in 1998 to 46.4 percent in 2003. To improve the country's PRSP implementation, the government paid new attention to the coherence between the PRSP and other sector-oriented development strategies. In October 2003, the PRSP was revised to reflect new thoughts on the relevance of its initial objectives, widen the priority sectors, decentralize the PRSP process, and strengthen the role of the private sector and civil society.

The Environment Agency of Burkina Faso, noting a persistent lack of enthusiasm from the development agencies regarding resource mobilization for the NAP, realized that funding the NAP as a classic "autonomous" program was not meeting the expectations of the government. No direct funding for the NAP was being received from donors.

Thus, in 2002, a feasibility study on including the NAP in the PRSP concluded that the PRSP strategy could and should be improved, that capacity building of the leadership team would strengthen

⁷⁹ Andre Bassole, Directeur Général du Centre d'Etude, de Recherche et de Production en Information pour l'Environnement et le Développement Durable (CERPINEDD) 249, Avenue de l'Armée, Immeuble J, Espace J28—Cité An III—01 BP 6398 Ouagadougou 01—Burkina Faso. *Source*: Mainstreaming of National Action Programmes and their contribution to Overall Poverty Eradication ICCD/CRIC(3)/MISC.1, GM-UNCCD, Bonn, 2005.

the process, and that many of the actions should be implemented jointly with other ministries. The study also recommended that indicators specific to desertification should be included in the PRSP.

In 2002 and 2003, other studies were conducted (with the support of the Global Mechanism), which had a major impact on the process of integrating the NAP into the PRSP. These included a review of past UNCCD-related projects and programs, a NAP financial needs assessment (including an analysis of the spatial distribution of assistance), and the development of an operational plan for the funding and implementation of the NAP.

The new version of the PRSP was extended to include five additional sectors, including NAP-related sectors. The revised PRSP was discussed at a roundtable meeting, and the donor community announced its contribution. The global amount of financial resources announced was around US\$170 million. Funding the UNCCD NAP through this channel was thus achieved.

The experience of Burkina Faso in mainstreaming the NAP is at its beginning; time is too short to draw conclusions. Nevertheless, this approach appears promising, provided the following conditions are met:

1. The challenge is great because of institutional barriers affecting cooperation. A strong and regular campaign of sensitization and training to acquaint all actors with the UNCCD, the NAP, and its operational implementation plan are critical. Memoranda of understanding between agencies are necessary.
2. Two main challenges are related to the donor community: how to encourage their flexibility, including how to address their desire for institutional visibility related to specific projects, and how to convince donors to support fragmented, community-level activities without micromanaging the finances.
3. In operational terms, one of the challenges is the agreement on the monitoring and evaluation mechanism of the NAP. Little progress was made in this area by Burkina Faso. Another challenge relates to the local NGOs and CBOs, because some have been established indirectly by political leaders and are not independent nor truly represent the rural population.

Appendix 6

India's Uttar Pradesh Sodic Lands Reclamation Project I

The World Bank–supported Uttar Pradesh Sodic Lands Project in the Indian plains worked toward the reclamation of land that had become barren because of inadequate water drainage techniques that had resulted in sodification (severe soil salinization) and almost total loss of production. The project worked with poor, often landless people. It organized groups of landless farmers into small cooperatives and provided technology and land reclamation advice.

Sodification in poorly managed irrigated areas had left an estimated 1.25 million hectares of land barren in Uttar Pradesh. A further 1.25 million hectares of low-yielding, salt-affected lands cover about 10 percent of the net cultivated area.

The project had four main components: land reclamation, including environmental protection; institutional development; agricultural development and technology dissemination; and reclamation technology development and special studies. The targets for project coverage were increased at midterm by 50 percent (to 68,800 hectares) for land reclamation, drainage, and cultivation. This increased the number of target beneficiaries to more than 1 million people.

The project invested substantially in participatory processes and in community mobilization and organization before and during implementation. This enabled the physical targets of land reclamation to be scaled up substantially and led to effective models for poverty alleviation, notably for landless people, environmental protection, and improved agricultural production. Local NGOs helped organize water users into basic units of four to five hectares, each of which typically comprised 10–15 families. Project staff worked with farmers to divide the land into parcels and negotiate the complex process of ensuring clear title.

As a result, thousands of formerly landless farmers have obtained titles to land. Yields of rice and wheat doubled, wage rates doubled, and land values quadrupled. Farmers have planted income-generating, high-value crops. Animal husbandry has improved, and fewer farmers abandoned their fields to seek work in nearby cities. Women's savings and credit groups were established to supplement family incomes. Loan repayments have been prompt, and arrears are negligible. Farmers have launched private sector microbusinesses to provide inputs and services like seeds and tree seedlings, agricultural extension, and soil testing. Farmers have continued cultivating reclaimed lands even after the end of project assistance—a strong measure of project sustainability. The project achieved its objectives of rehabilitating the land; values increased fourfold, and productivity exceeded expectations. A wide range of collateral benefits ensued to women as well as men, and the project has become a model for replication.

Sources: “Good Practice Note on Integrated Land and Water Management,” Environment Department, World Bank, 2003; and *Training Handbook on the Global Environment Facility's Sustainable Land Management Approach*, UNEP, July 2004.

Appendix 7

The Global Mechanism Financial Information Engine on Land Degradation

The UNCCD specifies that country Parties shall seek the full use and continued qualitative improvement and rationalization of all existing national, bilateral, and multilateral funding sources and mechanisms, while at the same time mobilize additional financial resources from the private sector and other sources, including nongovernmental organizations (article 20). In the above context, the Global Mechanism (GM) was specifically requested to identify and monitor funding sources, financial opportunities, investment patterns, and trends related to UNCCD implementation.

To discharge the above mandate, the GM built a large database on relevant project activities, donor profiles, aid policies, and development cooperation strategies. This information is made available online through the Financial Information Engine on Land Degradation (FIELD): <http://field.gm-unccd.org>.

The GM believes that better use of accurate statistics and knowledge will lead to improved policies and better development outcomes. FIELD operates in this context, with the objective of supporting evidence-based policy making, by generating knowledge specific to the resource mobilization process. It is used not only to inform and sensitize the stakeholders on the financial risks, opportunities, costs, and returns of investments in SLM and other activities relevant to UNCCD implementation but also to inform the policy dialogue, monitor progress, and facilitate overall coordination in SLM/UNCCD implementation.

The FIELD database currently contains more than 12,000 cross-referenced records, including more than 7,000 projects and 1,700 publications related to the implementation of the Convention in 191 countries and regions, collected from about 4,700 official sources of more than 550 organizations worldwide. It also contains more than 400 profiles of funding organizations involved in UNCCD implementation, including information on their policies, strategies, priorities, eligibility criteria, and application modalities. This information is classified according to a multidimensional set of about 150 thematic topics. Between 2003 and 2005, access to the FIELD website increased 2.5 times, from an average of 13,000 to more than 32,000 monthly visits from more than 150 countries worldwide.

In the framework of the GM's consolidated strategy and enhanced approach to resource mobilization, this large information base is instrumental for the identification of the drivers, incentive measures, and strategies for engaging stakeholders and for mainstreaming SLM into relevant policies, programs, and investment frameworks. Furthermore, FIELD increases the visibility of emerging financial opportunities arising from foreign and domestic private investments, trade, subsidies and market development, carbon finance, renewable energy finance, payments for ecosystem services, and private philanthropy.

The Rio markers, developed by the OECD/DAC in consultation with the secretariats of the three Rio Conventions, represent a first step toward more accuracy, harmonization, and quality in the relevant data, reports, and analyses prepared by the donor countries. A joint letter sent in January 2004 by the Executive Secretaries of the Rio Conventions to the Chair of the DAC recognized the

importance of the Rio markers, which would allow countries “not only to estimate the ODA financial flows and identify trends, but can also serve as the basis for streamlining the reporting of the aid-related activities under the Rio Conventions by Parties, thus ensuring provision of consistent data and avoiding double reporting.”

Source: Text provided by the Global Mechanism.

Appendix 8

CACILM 10-Year Program Financing Plan

Country	Kazakhstan	Kyrgyz Republic	Tajikistan	Turkmenistan	Uzbekistan	Multicountry	PDF B Funding	Total
	(USD thousands)							
Financier								
Kazakhstan	294,310					1,000	100	295,410
Kyrgyz Republic		5,412				1,000	100	6,512
Tajikistan			5,830			1,000	100	6,930
Turkmenistan				5,455		1,000	100	6,555
Uzbekistan					89,100	1,000	100	90,200
Donors	333,303	48,509	66,080	5,530	401,529	16,166	550	871,667
ADB	*	20,700	17,350	*	100,800	1,700	500	141,050
UNDP	2,400	805	700	1,000	2,696	1,950		9,551
World Bank	241,800	*	15,000	*	*	*		256,800
UNEP	*	*	*	*	*	*		—
IFAD	9,000	6,000	6,000	*	*	400		21,400
FAO	*	*	*	*	*	300		300
CIDA	*	*	*	*	*	*		—
CCD - GTZ	*	*	*	*	*	3,750		3,750
SDC	*	*	*	*	*	*		—

ICARDA	*	*	*	*	*	800		800
GM	*	*	*	*	*		50	50
Other/to be obtained	80,103	21,004	27,030	4,530,000	298,033	7,266		437,966
GEF (adjusted)	20,000	14,424	13,850	16,110	20,000	15,616	700	100,700
Total	647,613	68,345	85,760	27,095	510,629	36,782	1,750	1,377,974

Sources: World Bank-GEF database.

* To be determined.

Note:

1. Initial estimate based on current national programming frameworks and development cooperation partner programmed funding.
2. Donor funding updated based on List of Approved Projects from GEF-3 Replenishment.
3. GEF adjustments made to reduce total GEF funding to \$100,700,000.
4. Requests for Kazakhstan and Uzbekistan reduced to \$20,000,000.





GLOBAL ENVIRONMENT FACILITY
1818 H Street, NW
Washington, DC 20433, USA
Tel: 202-473-0508
Fax: 202-522-3240
www.theGEF.org



GLOBAL MECHANISM OF THE UNCCD
c/o IFAD International Fund for
Agricultural Development
via del Serafico 107, 00142 Rome, Italy
Tel. +39-06-54592154
Fax +39-06-54593154
www.gm-unccd.org