



**GEF**

**Global Environment Facility**

June 5, 2003

---

**OPERATIONAL PROGRAM ON  
SUSTAINABLE LAND MANAGEMENT (OP#15)**

## Table of Contents

<b>I.</b>	<b>Introduction</b> .....	1
<b>II.</b>	<b>Background</b> .....	1
	Land Degradation and Its Global Implications .....	1
	Global extent and impacts.....	1
	The conventions .....	2
	Causes of land degradation .....	3
	Unsustainable agricultural practices .....	3
	Overgrazing.....	4
	Deforestation.....	4
<b>III.</b>	<b>GEF and Land Degradation Prevention and Control</b> .....	5
<b>IV.</b>	<b>Strategic Considerations and Lessons Learned</b> .....	6
<b>V.</b>	<b>GEF Operational Program on Sustainable Land Management</b> .....	7
	Program Objective .....	7
	Expected Outcomes .....	8
	Program Assumptions.....	8
<b>VI.</b>	<b>Financing Sustainable Land Management</b> .....	9
	GEF Incremental Financing .....	9
	Co-financing .....	9
<b>VII.</b>	<b>Eligible Activities for GEF Support</b> .....	10
	Capacity Building .....	10
	On-the-ground investments.....	11
	Sustainable agriculture.....	11
	Sustainable rangeland/pasture management .....	12
	Forest and woodland management.....	12
	Targeted research .....	13
<b>VIII.</b>	<b>Monitoring and Evaluation</b> .....	13
<b>IX.</b>	<b>Public Involvement</b> .....	14

## **I. INTRODUCTION**

1. The Global Environment Facility (GEF) has been providing incremental grant financing to assist developing countries and countries with economies in transition to address land degradation, a major global environment and sustainable development issue, since its establishment in 1991. Until October 2002, the GEF's support focused on addressing land degradation issues as they relate to its focal areas – biological diversity, climate change, international waters, and ozone layer depletion.

2. To further improve GEF assistance, the Second GEF Assembly in Beijing, October 2002 designated land degradation, primarily desertification and deforestation, a focal area of the GEF as a means to support the implementation of the United Nations Convention to Combat Desertification (UNCCD). This designation makes sustainable land management a primary focus of GEF assistance to achieve global environment benefits within the context of sustainable development.

3. This document – GEF Operational Program on Sustainable Land Management – operationalizes the designation of land degradation as a focal area. It provides a framework for the development of activities eligible for GEF incremental financing to address the root causes and negative impacts of land degradation on ecosystem stability, functions, and services as well as on people's livelihoods and economic well-being through sustainable land management practices. The document outlines, among other things, program objective, expected outcomes, and activities eligible for GEF support.

## **II. BACKGROUND**

### **Land Degradation and Its Global Implications**

#### *Global extent and impacts*

4. Land degradation is broadly defined as "... any form of deterioration of the natural potential of land that affects ecosystem integrity either in terms of reducing its sustainable ecological productivity or in terms of its native biological richness and maintenance of resilience<sup>1</sup>." It is a worldwide phenomenon substantially affecting productivity in over 80 countries on all continents, except Antarctica. Land degradation is especially serious in Africa where 36 countries face dryland degradation or desertification.

5. Land degradation adversely affects the ecological integrity and productivity of about 2 billion ha or 23% of landscapes under human use. Agricultural lands in both dryland and forest areas have been most severely affected by land degradation. They cover about one-fourth of the world's total land area and account for 95% of all animal and plant protein and 99% of calories

---

<sup>1</sup> GEF 1999. Report of the STAP Expert Group Workshop on Land Degradation (GEF/C.14/Inf. 15).

consumed by people. About two-thirds of agricultural land have been degraded to some extent during the last 50 years<sup>2</sup>.

6. The negative impacts of land degradation are both ecological and socioeconomic. Land degradation undermines the structure and functions of ecological systems such as the biogeochemical cycles (i.e. carbon, hydrological, and nutrient cycles) that are critical for the survival of human beings. This impact has already put at risk the livelihoods and economic well-being, and the nutritional status of more than 1 billion people in developing countries.

7. The World Summit on Sustainable Development (WSSD) in September 2002 reaffirmed land degradation as one of the major global environment and sustainable development challenges of the 21<sup>st</sup> Century, calling for action to "...address causes of desertification and land degradation in order to restore land, and to address poverty resulting from land degradation." The summit also emphasized that "sustainable forest management of both natural and planted forest and for timber and non-timber products is essential to achieving sustainable development and is a critical means to eradicate poverty". Addressing land degradation would, therefore, contribute significantly to the Millennium Development Goals of reducing by half the proportion of people in poverty by 2015 and ensuring environmental sustainability.

8. Specifically, on the contribution that the GEF can make to address land degradation, the Summit also called on the GEF Assembly to "...take action on the recommendations of the GEF Council concerning the designation of land degradation (desertification and deforestation) as a focal area of the GEF as a means to support the successful implementation of the Convention to Combat Desertification; and consequently making GEF a financial mechanism of the Convention, while recognizing the complementary roles of the GEF and the Global Mechanism of the Convention in providing and mobilizing resources for elaboration and implementation of action programmes<sup>3</sup>." The GEF Assembly, on the recommendation of the GEF Council, has since WSSD approved the designation of land degradation as a GEF focal area.

#### *The conventions*

9. The three post Rio<sup>4</sup> global environment conventions that are most relevant to land degradation prevention and control are the UNCCD, Convention on Biological Diversity(CBD), and the United Nations Framework Convention on Climate Change (UNFCCC). Consensus on land degradation as a global environment and sustainable development issue, as well as the need for coordinated international action to address it, led to the adoption of the UNCCD in June 1994.

10. The objective of the UNCCD is to "... combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective actions at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21,

---

<sup>2</sup> World Resources Institute. 2000. World Resources 2000-2001. People and Ecosystems: The Fraying Web of Life.

<sup>3</sup> World Summit on Sustainable Development. Plan of Implementation. September 2002.

<sup>4</sup> United Nations Conference in Environment and Development, Rio de Janeiro, Brazil, June 1992.

with a view to contributing to the achievement of sustainable development in the affected areas<sup>5</sup>.”

11. The CBD recognizes the importance of addressing land degradation. For example, the program priorities of the convention highlight the role that land degradation and deforestation prevention and control can play in the conservation and sustainable use of biodiversity.

12. Programs to implement the objectives of the UNFCCC also recognize the relationship between climate change and land degradation (i.e. desertification and deforestation). In fact, deforestation contributes more to climate change than any other forms of land degradation as it results in the release of carbon dioxide and the loss of sequestered carbon in biomass and soils. The work program of the UNFCCC, therefore, emphasizes the role of conservation and sustainable management of forests and woodland in carbon sequestration and carbon dioxide emission.

13. To promote synergies, these three conventions are developing joint work programs to address land degradation and deforestation to achieve multiple global benefits, including poverty alleviation; and preservation of ecosystem stability, functions, and services such as soil and watershed protection, carbon uptake and storage, water purification, climate regulation; and nutrient retention.

#### *Causes of land degradation*

14. Land degradation damages soil structure and leads to the loss of soil nutrients through processes such as water or wind erosion; waterlogging and salinization; and soil compaction. The main causes of land degradation are inappropriate land use, mainly unsustainable agricultural practices; overgrazing; and deforestation. These practices are most prevalent in places where land, water, and other natural resources are under-priced. In addition, people who do not have land tenure security and/or water rights have little or no incentive to invest in sustainable land management. Instead, they tend to focus on meeting their short-term economic needs, to the detriment of the environment.

#### **Unsustainable agricultural practices**

15. Soil stability and fertility on rainfed agricultural lands, with little or no fertilizer use, can be restored by leaving farmland to fallow for a time period, typically 15-20 years. However, when the fallow period for land under intensive cropping is shortened, it weakens the natural ability of soil to recover its fertility, leading ultimately to land degradation, lower crop productivity, and reduced incomes.

16. In the case of irrigated cropland, the main cause of land degradation is poor water and irrigation system management, leading to waterlogging and soil salinization. This loss of arable land leads to lower production and incomes.

---

<sup>5</sup> United Nations Convention to Combat Desertification. Article 2, paragraph 1.

17. The main causes of degradation on croplands are inappropriate land use, weak capacity for sustainable water and land use planning and implementation, and inappropriate agricultural policies and incentives. These factors lead to inefficient and wasteful use of land and water resources; inappropriate crop intensification, especially under monocropping systems; expansion of agriculture to marginal lands; and the use of farm machinery and agronomic practices that are not suitable for local soil and water conditions.

### **Overgrazing**

18. Overgrazing affects land in two major ways. It leads to the loss of the vegetative cover of rangeland or pasture in areas where livestock density is beyond the carrying capacity. High livestock density also results in soil compaction because of trampling. In both cases the soil becomes more vulnerable to water or wind erosion. Rangeland or pasture in such a condition lowers livestock growth and survival, leading to loss of income and people's nutritional well-being.

19. The main causes of degradation of rangeland or pasture are the breakdown of traditional land management protocols that regulate grazing; weak policy and institutional capacity to manage rangeland sustainably; shrinking rangeland amidst rapidly growing human and livestock populations; increased demand for other land uses such as agriculture, industry, and infrastructure development; development of settlements for pastoralists and associated unplanned land and water development; and limitations on the movements of nomadic pastoralists along traditional corridors across national boundaries.

### **Deforestation**

20. Deforestation, which occurs in both woodlands (in semi-arid, and sub-humid areas) and dense forests (in humid tropical areas) is a major cause of forest cover loss, leading to further land degradation. Three major causes of woodland degradation are overharvesting of fuelwood for energy; conversion of woodland for large-scale crop or livestock production; and uncontrolled forest fires often started to clear land or to facilitate hunting of wildlife. In forest areas, the main causes of land degradation are illegal commercial logging; and conversion of forest land for agriculture and/or human settlements and associated infrastructure. The loss of forest or woodland puts at risk the survival and incomes of communities that depend on forest products.

21. The main reasons for deforestation are policy failures such as under-pricing of timber stocks, thereby providing economic incentives for inefficient and wasteful logging practices; agricultural subsidies that favor the conversion of forest for large-scale cropland or pasture; and fragmented and weak institutions that are unable to effectively conserve and sustainably manage forest resources.

### III. GEF AND LAND DEGRADATION PREVENTION AND CONTROL

22. The GEF, since its establishment in 1991, has been providing incremental funding to assist developing countries and countries with economies in transition to prevent and control land degradation, primarily desertification and deforestation, as it relates to its four focal areas (i.e. biodiversity conservation, climate change, international waters, and ozone layer depletion) in accordance with its Instrument<sup>6</sup> and Operational Strategy.

23. Countries, however, have been facing operational problems in developing projects to address land degradation prevention and control because of difficulties in defining the linkages between land degradation and the focal areas; and in applying the incremental cost principle. Limited in-country policy environment to support land degradation prevention and control has also been a constraint.

24. The situation improved modestly following the approval of a GEF operational program on integrated ecosystem management. This program provided a framework for GEF assistance to strengthen public policy and enabling environment for addressing land degradation, including facilitating integrated and cross-sectoral approaches to natural resource management. Eligible projects addressing land degradation had to meet the requirement of generating global environment benefits in at least two of the GEF focal areas.

25. An independent study was commissioned by the GEF Secretariat in 2000 to identify the constraints to the development of land degradation projects for GEF funding and to recommend measures to enhance GEF support<sup>7</sup>. The specific findings of the study included the following:

- (a) Since the GEF addresses land degradation only through linkages with its focal areas, projects tend to focus largely on focal area objectives with little or no significant focus on land management activities.
- (b) The requirement for focal area linkages has resulted in projects with land degradation components that tend to focus more on biophysical issues. If land degradation had been a central issue, these projects would have focused primarily on improving land management and sustainable use options for natural resources management. In addition, key issues affecting people and their interactions with ecological systems such as land tenure and gender issues are often poorly integrated into project design.

26. The study recommended a fundamental change in the way land degradation is addressed in the GEF if it is to have significant impacts on the global environment.

27. To further improve the GEF's assistance for land degradation prevention and control, the GEF Assembly in October 2002, on the recommendation of the Council, amended the Instrument to designate land degradation as a focal area, as a means to enhance GEF support for the

---

<sup>6</sup> GEF 1994. Instrument for the Establishment of the Restructured Global Environment Facility.

<sup>7</sup> Berry, L and J. Olson. GEF Land Degradation Linkage Study.

successful implementation of the United Nations Convention to Combat Desertification (UNCCD). This designation makes sustainable land management a primary focus of GEF assistance, helping to optimize the global environment benefits of GEF-funded activities to address desertification and deforestation in arid, semi-arid, sub-humid and humid areas of the world.

28. In addition to the designation of the focal area, the GEF Assembly confirmed "...that the GEF shall be available as a financial mechanism of the UN Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa, pursuant to paragraph 21 of the Convention, if the Conference of the Parties should so decide<sup>8</sup>."

#### **IV. STRATEGIC CONSIDERATIONS AND LESSONS LEARNED**

29. Well-meaning past efforts to address land degradation have had mixed results. They have, however, generated lessons that provide important strategic directions for the successful implementation of future programs and projects. The main strategic considerations that will guide the development and implementation of programs in the GEF focal area on land degradation include the following:

- (a) Since land degradation has both poverty and global environment dimensions, sustainable solutions require packages of finance to support interventions that address both dimensions. Therefore, countries should seek to integrate sustainable land management practices into their priority national sustainable development frameworks such as national sustainable development plans, poverty reduction strategy papers (PRSPs), and comprehensive development framework (CDF). Such integration can facilitate coordinated mobilization of funding for successful implementation of cost-effective and sustainable programs.
- (b) Many land degradation prevention and control programs were largely based on a sector-by-sector approach and this had the unintended effect of fragmenting policies, institutions, and on-the-ground measures. Successful land degradation prevention and control, therefore, require scientifically sound and cross-sectoral approaches to land management that integrate the ecological, economic, and social dimensions of land degradation issues in program design.
- (c) Development and implementation of programs and projects to address land degradation are most successful when effective participation of stakeholders, including women, occurs at all stages.

---

<sup>8</sup> Beijing Declaration of the Second GEF Assembly, October 18, 2002.

- (d) Early intervention in areas vulnerable to land degradation such as ecologically sensitive marginal lands is essential in preventing and controlling land degradation.
- (e) An appropriate enabling environment, including policies, regulations, and economic incentives to support sustainable land management is necessary for effective local, national, and international response.
- (f) Capacity building at the community and national levels is necessary for the successful implementation of on-the-ground activities.
- (g) On-the-ground activities most effectively facilitate innovation, demonstration, and replication of good sustainable land management practices, including indigenous management systems.
- (h) Promote synergies among the program priorities on sustainable land management of the UNCCD, CBD, UNFCCC, and other relevant conventions in projects developed for GEF funding.

## **V. GEF OPERATIONAL PROGRAM ON SUSTAINABLE LAND MANAGEMENT**

30. The overall operational goal of the GEF focal area on land degradation (i.e. desertification and deforestation) is to catalyze partnerships with other organizations working on land management issues, land users, and other stakeholders at the local, national, regional, and global levels to provide coordinated financial and technical support to address land degradation in a way that achieves long-term global environment benefits within the context of sustainable development.

### **Program Objective**

31. The objective of the Operational Program on Sustainable Land Management (OP#15) is to mitigate the causes and negative impacts of land degradation on the structure and functional integrity of ecosystems through sustainable land management practices as a contribution to improving people's livelihoods and economic well-being.

32. GEF assistance would focus on funding the agreed incremental costs of accelerating country-driven actions on sustainable land management to preserve the structure and functional integrity of ecosystems; reduce carbon dioxide emission and improve carbon sequestration; or stabilize sediment storage and release in waterbodies.

33. Under the operational program countries are expected to address land degradation issues, using integrated and cross-sectoral approaches, within the framework of sustainable development at the local, national, and/or transboundary levels. GEF support would be consistent with the work program priorities of the UNCCD as well as the program priorities on sustainable land management of the CBD and UNFCCC.

## **Expected Outcomes**

34. The expected outcomes of GEF-supported activities on sustainable land management include the following:

- (a) Institutional and human resource capacity is strengthened to improve sustainable land management planning and implementation to achieve global environment benefits within the context of sustainable development.
- (b) The policy, regulatory, and economic incentive framework is strengthened to facilitate wider adoption of sustainable land management practices across sectors as a country addresses multiple demands on land resources for economic activities, preservation of the structure and functional integrity of ecosystems, and other activities.
- (c) Improvement in the economic productivity of land under sustainable management and the preservation or restoration of the structure and functional integrity of ecosystems.

## **Program Assumptions**

35. The following assumptions will guide the development and implementation of GEF-supported activities to achieve successful outcomes:

- (a) Strong country commitment to address land degradation within the context of its sustainable development and poverty alleviation priorities.
- (b) GEF Implementing and Executing Agencies mainstream sustainable land management into their regular programs and activities.
- (c) Building of partnerships involving governments and their development partners (such as local communities, bi-lateral and multi-lateral agencies, private sector, foundations, and non-governmental organizations) to develop innovative financial and technical packages for poverty alleviation and preservation/restoration of the structure and functional integrity of ecosystems through sustainable land management.
- (d) Adoption of integrated and cross-sectoral policies and approaches to sustainable land management.
- (e) Program and project design tailored to meet the priorities and absorptive capacity of the recipient country, including the intended beneficiaries.
- (f) Collaboration among the GEF and its agencies, governments, and other development partners and stakeholders to create appropriate policy environment and institutional capacity to enable countries to successfully achieve both the

global environment and sustainable development outcomes of GEF-supported activities.

## **VI. FINANCING SUSTAINABLE LAND MANAGEMENT**

### **GEF Incremental Financing**

36. Programs and projects to address land degradation would comprise packages of interventions to address both livelihoods and economic well-being (baseline actions) and global environment (incremental actions) issues. GEF assistance would focus on funding the agreed incremental costs of accelerating country-driven actions on sustainable land management to achieve global environment benefits within the context of sustainable development.

37. The GEF would specifically provide catalytic or incremental funding for the implementation of activities, complementary to development and poverty alleviation related activities, aimed at helping countries to alter or adapt existing or planned land use practices to ensure the preservation or restoration of stability, functions, and services. To a large extent, incremental GEF funding for sustainable land management activities will be based operationally on cost sharing (see the Section VII for examples of baseline and incremental actions).

### **Co-financing**

38. GEF eligible country governments would mobilize co-financing to cover baseline or sustainable development activities from budgetary sources and from their external partners, including bilateral and multilateral donor agencies, private investors, non-governmental organizations, and foundations.

39. The GEF's Implementing and Executing agencies can assist countries to mobilize co-financing from external sources. In addition, the UNCCD has established the Global Mechanism to "... promote actions leading to mobilization and channeling of financial resources, including the transfer of technology, on a grant basis, and/or concessional or other terms, to affected developing country parties ..."<sup>9</sup>. The Global Mechanism, therefore, has a major role to play in assisting countries to mobilize co-financing (i.e. non-GEF funds) to cover the cost of baseline activities.

40. The Global Mechanism is expected to coordinate with the GEF Implementing and Executing Agencies and other donors in financial resource mobilization. The Facilitation Committee of the Global Mechanism could assist in supporting such coordination. The committee was established to provide support and advice to the Global Mechanism as well as for institutional collaboration. Members of the committee include the following GEF Implementing and Executing Agencies -- UNDP, UNEP, World Bank, IFAD, FAO, Asian Development Bank, African Development Bank, Inter-American Development Bank, and the GEF Secretariat.

---

<sup>9</sup> United Nations Convention to Combat Desertification, Article 21, paragraph 4.

## VII. ELIGIBLE ACTIVITIES FOR GEF SUPPORT

41. GEF assistance would cover three inter-related types of interventions – capacity building, on-the-ground investments, and targeted research – at the community, national, and/or transboundary levels. The interventions presented below represent a menu of likely areas of GEF support from which countries may choose depending on their needs and priorities.

### Capacity Building

42. Capacity building at the local, national, and regional levels would initially focus on country-driven activities aimed at creating the appropriate enabling environment and institutional capacity to support sustainable land management.

- (a) Mainstreaming sustainable land management into national development priorities. Baseline actions would include activities related to the formulation of a national development plan, poverty reduction strategy paper (PRSP), or Comprehensive Development Framework (CDF). GEF incremental assistance may specifically focus on providing coordination support for the following baseline actions to facilitate the implementation of country-driven priorities:
  - (i) Harmonization, if necessary, of sustainable land management priorities identified in action programs such as national environment action programs, National/Sub-Regional/Regional Action Programs (NAPs/SRAPs/RAPs) to combat desertification, national biodiversity strategies and action plans, national communication for UNFCCC, and National Adaptation Programmes of Action, and forest action programs.
  - (ii) Integration of country-driven desertification and deforestation prevention and control priorities outlined in national environmental action programs, NAPs/SRAPs/RAPs, national biodiversity strategies and action plans, national communication for UNFCCC, and forest management action plans into national development plans, PRSPs, and/or CDF. Such integration would facilitate coordinated financial resource mobilization, from both in-country and external sources, and the successful implementation of priority activities.
- (b) Integration of land use planning systems. Baseline activities may include the establishment of development planning systems and the development of systems for drought preparedness and for other extreme climatic events at the national and local levels. GEF incremental activities may include the following:
  - (i) Strengthening of participatory institutional mechanisms and capacity for integrated land use planning and implementation, including land suitability analysis, at the national and local levels and across sectors as a

contribution to improving livelihoods and protecting ecosystem stability, functions, and services.

- (ii) Incorporation of sustainable land management practices into systems developed for drought preparedness and for other extreme climatic events.
  - (iii) Development of policies, regulations, and incentive structures such as improved land tenure systems and pricing systems to appropriately value renewable natural resources, including water, to encourage efficient and sustainable use and management.
  - (iv) Strengthening of information management systems to support decision-making at the national and local levels on integrated land use planning and management.
  - (v) Dissemination and replication of good management practices, technologies, and lessons learned.
- (c) Agreements and mechanisms for management of transboundary resources. Building on appropriate national policies (baseline actions) to develop agreements and modalities for management of transboundary natural resources through sustainable land management (GEF incremental actions). For example, countries may collaborate at the sub-regional level to protect transboundary grazing corridors for nomadic pastoralists from overgrazing. They may also collaborate to jointly adopt sustainable land use management programs to reduce sedimentation of shared waterbodies.

### **On-the-ground investments**

43. On-the-ground interventions to address land degradation at the community level would comprise packages of interventions to improve both livelihoods and economic well-being of local people (baseline actions) and to preserve or restore ecosystem stability, functions, and services through sustainable land management (GEF incremental actions). Examples may include the following activities:

#### **Sustainable agriculture**

44. Sustainable agricultural practices can help to improve and sustain the productivity of rainfed agriculture. This may involve crop diversification to reduce the risk of failure; introduction of high-yielding and drought resistant crop varieties; adoption of mixed cropping systems; crop rotation to recycle soil nutrients; water harvesting; and improved access to credit, extension, and marketing services (baseline actions).

45. For irrigated cropland, sustainable agriculture may involve a shift from large-scale irrigation schemes to small-scale systems that can be more easily managed by user groups;

improved drainage to prevent waterlogging and salinization; improved water use efficiency; and judicious use of fertilizers and other agrochemicals, including the use of integrated pest management (baseline actions).

46. The GEF may provide incremental funds for complementary pilot or demonstration activities such as adoption of improved tillage methods that do not adversely affect the stability of soil structure; establishment of windbreaks, buffer strips, and filter strips to reduce water or wind erosion; protection from farming or rehabilitation of riverine or coastal wetlands to stabilize hydrological flows; introduction of indigenous crop varieties to reduce the risk of crop losses because of their adaptation to variations in local climatic and soil conditions; and improved management of agricultural waste to improve soil and water conservation.

47. These interventions would have additional benefits related to the conservation of biological diversity; sequestration of soil carbon; and reduction in carbon dioxide emissions.

### **Sustainable rangeland/pasture management**

48. Baseline activities to improve and sustain the economic productivity of rangeland and pasture may include reducing livestock stocking density to ensure that the carrying capacity of a range or pasture is not exceeded; distribution of water points to prevent high concentration of livestock in one area; adoption of rotational grazing systems; and improved access to credit, veterinary, and marketing services.

49. The GEF may complement these measures with incremental pilot or demonstration activities such as strengthening of viable traditional rangeland management systems; establishment of mechanisms to help resolve wildlife-livestock-agriculture conflicts; enhancement of range management systems; introduction of indigenous plants for rehabilitation of rangeland; development of community-based rangeland fire management programs; introduction of indigenous livestock varieties to minimize losses because of their natural adaptation to extreme climatic events and environmental conditions; establishment of windbreaks to reduce water and wind erosion; protection and/or rehabilitation of riparian forest or woodland; and protection and/or rehabilitation of the natural vegetation of groundwater recharge areas.

50. These above measures would improve soil and water conservation and they would also help to protect biodiversity, including agrobiodiversity; increase carbon sequestration; and reduce carbon dioxide emission.

### **Forest and woodland management**

51. Baseline activities at the community level to improve and sustain the economic productivity of forest or woodland management may include development of community-based management arrangements for multiple use of forest/woodland resources; establishment of forests or tree crop farms; and minimizing agricultural expansion, especially shifting cultivation,

to forest/woodlands by improving soil fertility through crop rotation using nitrogen fixing crops and crop residue.

52. Complementary incremental actions for GEF financing may include pilot or demonstration activities aimed at strengthening viable indigenous forest/woodland management systems; use of indigenous multiple use tree species to rehabilitate degraded area; rehabilitation and protection of degraded ecologically sensitive areas; protection and/or rehabilitation of riparian forest and wetlands, and groundwater recharge areas; establishment of community woodlots to provide fuel wood as an alternative source to natural forests and woodland; and piloting of mechanisms to compensate local communities that protect ecosystem stability, functions and services in watersheds to ensure stable flow of high quality water for downstream users.

53. These interventions would have additional global environment benefits such as conservation of biodiversity, carbon sequestration, and reduction in carbon dioxide emission.

### **Targeted research**

54. GEF-supported targeted research is aimed at providing information, knowledge, and tools to improve the quality and effectiveness of GEF projects and programs. The specific objectives of targeted research under OP#15 are to: (a) better understand the policy and institutional failures that drive land degradation; and (b) facilitate the refinement and adoption of innovative sustainable land management practices and technologies, including early warning and monitoring systems, to improve and sustain the preservation/ restoration of ecosystem stability, functions and services as well as the economic well-being of people under different socioeconomic conditions.

55. Targeted research may initially focus on partnerships with small farmers, pastoralists, and other natural resource users and stakeholders to demonstrate under field conditions cost-effective agronomic practices to improve soil fertility management as alternatives to shifting agriculture; methodologies for valuing environmental services; tillage methods that have minimal impacts on soil structure and improve soil and water conservation; and systems to improve livestock production in areas with limited rangeland/pasture. Targeted research may also focus on the development of analytical tools and frameworks to assist countries to assess the environmental and economic costs of land degradation and the benefits of early intervention to prevent or control degradation.

## **VIII. MONITORING AND EVALUATION**

56. The GEF will develop program and project level indicators to provide a framework to monitor the performance and impacts on land degradation prevention and control, and on the global environment of GEF-supported sustainable land management activities. The program level indicators will cover the expected outcomes outlined above (see section V).

57. The GEF will establish scientifically recognized methodologies to measure the incremental impacts of sustainable land management activities on the preservation or

rehabilitation of stability, functions, and services and on livelihoods. The monitoring framework would, therefore, include indicators to measure both the global environment and sustainable development impacts of GEF-supported activities.

58. Using the appropriate methodology, each project will generate baseline information based on its impact indicators by the end of the first year of implementation. It is expected that monitoring of these indicators will continue during and beyond project implementation. Best practices and lessons that emerge from monitoring and evaluation activities would be widely disseminated

## **IX. PUBLIC INVOLVEMENT**

59. Land degradation has global environment, poverty, and socioeconomic development implications. Therefore, addressing it will require effective participation by a broad range of stakeholder groups, including local communities, government and non-governmental organizations, private sector, GEF Implementing and Executing agencies, and other donors to coordinate the development of programs and projects and financial resource mobilization.

60. Public participation is one of the key principles of project development and implementation adopted by the GEF Council in 1996. Mechanisms will be established during the development of a sustainable land management project, including those on capacity building, to ensure effective stakeholder participation in the design, implementation, monitoring, and evaluation phases.