



GLOBAL ENVIRONMENT FACILITY  
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# combating LAND DEGRADATION IN PRODUCTION LANDSCAPES

*Learning from GEF Projects Applying Integrated Approaches*



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A large crowd of people and cattle, likely at a market or festival, with a blue semi-transparent box overlaid on the right side containing the word "Foreword".

# Foreword



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Land degradation is a critical global environmental issue. It directly affects the livelihoods of millions of people, many of them poor and vulnerable in the world's drylands, where more than 500 million hectares of land is degraded. It also negatively affects the world's ability to increase the production of food that is necessary to feed the rapidly growing global population. It is therefore critical to maintain the environmental health and sustainability of production landscapes. This requires land management approaches that take into account all key natural resource components, principally soil, water and biomass.

For this reason, the GEF's work in land degradation, specifically desertification and deforestation, emphasizes the need to take an integrated approach to sustainable land management. This publication reviews the GEF's portfolio of experiences dating back to 2002. Since that time the GEF has invested close to US\$0.5 billion in more than 100 integrated land management projects, and leveraged more than US\$2 billion in co-financing.

This report analyzes how the GEF financing has been able to catalyze the application of integrated approaches to combat land degradation. The analysis unpacks the processes, practices, tools and knowledge innovation embodied in the various projects and programs. It shows that we have come a long way in demonstrating the value-added of these approaches for safeguarding ecosystem services in the context of improving the livelihoods of poor and vulnerable communities.

The analysis also shows how appropriate management of production landscapes can help achieve multiple environmental benefits—from biodiversity conservation, to climate change mitigation and adaptation, and protection of international water resources. A key message is that livelihoods and environmental protection are absolutely inseparable, especially in many of the world's dryland areas: Only by ensuring that land-user's livelihood needs are met can the risk of further degradation of fragile land ecologies be mitigated.

It is my hope that this publication will be a source of inspiration for countries and their partners, as they seek to combat land degradation and ensure sustainable rural livelihoods, in particular for smallholder farmers, pastoralists and herders.







# Executive Summary

During the Fifth Replenishment Phase of the Global Environment Facility (GEF-5), portfolio monitoring and learning review were introduced as key components of knowledge management in the GEF Secretariat. These strategies were intended to address the need to generate knowledge on innovative practices, experiences, and lessons from projects financed by the GEF. In that regard, the Land Degradation focal area strategy for GEF-5 specifically included a learning objective on the catalytic effect of the GEF integrated approaches—practices focused on integrating the management of land, soil, water, biodiversity, and biomass—in production systems (agriculture, rangelands, and forest landscapes). The focal area strategy embodies the landscape approach and integrated ecosystem management principles to maximize the global environmental benefits of combating land degradation. As a result of that focus, the strategy also addresses the need to harness and safeguard ecosystem services (carbon cycling, biodiversity, hydrological flows, and healthy soils).

The portfolio review focused specifically on projects financed under the Operational Programs on Integrated Ecosystem Management (OP12) and Sustainable Land Management (OP15), which were the financing windows for countries to receive GEF resources to combat land degradation. The process involved reviewing project implementation reports, assessing trends in projects financed under OP12 and OP15, and going on learning missions to selected projects. The overall findings and lessons learned have been synthesized in a number of different forms during the course of GEF-5, including contributions to the Annual Monitoring Report and briefing notes from learning missions.

This report synthesizes the review of the catalytic role of the GEF in promoting integrated approaches in production systems, which are the primary focus of the Land Degradation focal area. The report highlights the context and rationale for GEF financing under OP12 and OP15, the catalytic role of GEF financing in promoting integrated approaches, and lessons from the application of integrated approaches to combat land degradation. Because the focus was entirely on learning, this report offers no specific judgments or interpretations about environmental or development impacts of GEF investments. Rather, it highlights the processes, practices, tools, and knowledge innovations embodied in projects that apply integrated approaches.

## Context and rationale for integrated approaches in the GEF

The GEF, through its investment in sustainable land management, is helping to advance innovative approaches to promoting stewardship of production landscapes—agricultural, rangeland, and forest—in the developing world. An important contribution in this regard has been the promotion of integrated approaches for combating land degradation in those landscapes. This aim was initially fostered through OP12, for integrated ecosystem management, which enabled countries to address natural resource management issues using GEF resources across multiple focal areas. Until subsequent creation of OP15, on sustainable land management, the OP12 funding window was used by many countries in which land degradation—specifically desertification and deforestation—was considered a major threat to the global environment. The creation of OP15 in 2003 formally operationalized the designation of land degradation as a focal area.

## Trends in GEF financing to advance integrated approaches

Under OP12 and OP15, the GEF financed 101 projects specifically for promoting integrated approaches to management of land, water, and biodiversity in production systems. The projects accounted for a total GEF grant of over US\$469 million, with 68 projects under OP12 (US\$323 million) and 33 projects under OP15 (US\$146 million). The funding also generated US\$2.07 billion in cofinancing. Regionally, countries in Africa accounted for nearly 27 percent of the total GEF grant, followed by the Latin America and the Caribbean (20 percent) and Asia (17 percent) regions. In addition to country programs, OP12 and OP15 resources went to regional and global projects to advance the integrated ecosystem and sustainable land management approaches. The cohort of projects followed a cross-focal area approach to the management of production systems and were designed to produce synergistic benefits geared toward overall sustainability and resilience of the system. Project components for GEF financing demonstrate countries' commitment to investing in priorities for integrated ecosystem and sustainable land management. That approach includes creating enabling conditions through capacity development and policy reforms, engaging stakeholders at appropriate scales, piloting and demonstrating integrated approaches, and developing frameworks for monitoring and learning.

## Learning from integrated approaches in practice

The learning missions visited four projects, in Burkina Faso, China, and India, for observation and consultations on the application of integrated approaches in production systems. The projects cover lowland agropastoral systems (Burkina Faso) and highland irrigated terraces (China and India), and all were designed to integrate institutionally across local (village) and landscape (or watershed) levels up to subnational (state or province) and national levels. The focus of the learning missions was to observe the mechanisms and strategies used for integrated approaches, including the baseline and context for the GEF catalytic effect, best practices for integrated management, approaches to generating

and monitoring multiple benefits, and approaches for enhancing the sustainability of outcomes. Major findings are as follows:

- **Baseline and context for the GEF catalytic effect**
  - The prioritization of production sectors in national development is a key driver of the GEF catalytic effect in promoting integrated approaches.
  - GEF financing enables countries to pilot integrated approaches for global environmental benefits linked to development projects.
  - The overall framework for OP12- and OP15-financed projects demonstrates, based on incremental reasoning, the value added of the GEF on advancing of integrated approaches..
- **Project approach and good practices for integrated management**
  - The integrated approach presents challenges and opportunities for institutional frameworks in creating ownership at all levels.
  - Ownership by all stakeholders at the local level creates a platform for promoting integrated approaches in production systems.
  - Participatory planning in community-driven development enhances the integration of environmental priorities at the local level.
  - Community and grassroots empowerment, including consideration of gender and vulnerable groups, promotes integrated approaches.
  - Comprehensive treatment of degraded watersheds reflects the good practices and principles of integrated ecosystem and sustainable land management.
- **Global environmental benefits and approach to monitoring**
  - Global environmental benefits are directly linked to community-driven interventions that improve livelihoods and create options for income generation.
  - Multiple global environmental benefits from integrated approaches present challenges for monitoring and measuring, as well as potential trade-offs at landscape scales.





## ■ Approach to enhancing the sustainability of outcomes

- Projects implemented a monitoring framework with well-established baselines and a participatory process with communities.
- Formal agreements with communities and convergence with the government institutions promote sustainability of project outcomes.
- Knowledge sharing, documentation, and communication help raise awareness of integrated approaches.

These findings also serve as evidence of the GEF catalytic role in promoting the ecosystem approach for management of production systems. The four projects provide clear examples of how GEF financing promotes the use of an ecosystem approach, as established by the Convention on Biological Diversity. The convention's underlying principles cover all relevant dimensions of integrated ecosystem and sustainable land management, as embodied in the GEF strategies for OP12 and OP15.

## Lessons and Conclusions

Against the backdrop of findings on the catalytic effect of GEF financing to promote integrated approaches in

integrated ecosystem and sustainable land management, this report highlights several important lessons. The lessons learned (what is working and what is not) and evidence of best practices (methods, tools, and approaches used) suggest an important catalytic role of the GEF that occurs through the OP12 and OP15 financing windows. Although OP12 and OP15 no longer exist, the growing focus on programming of GEF resources for multi-focal area projects and the new Integrated Approach Pilots (IAPs) in GEF-6 present an opportunity to harness the lessons learned from those operational programs. With the increase in multi-focal area projects, countries need constructive guidance, especially with regard to links between the Land Degradation focal area and the Biodiversity, Climate Change, and International Waters focal areas. Such guidance will include details on strategic priorities for multi-focal area programming, baseline scenarios to justify GEF incremental financing, types of integrated approaches for investing GEF resources, and expectations for global environmental benefits. Guidance will ensure improvement in the quality of multi-focal area projects at entry, options for achieving synergies in global environmental benefits at full scale, and indicators for monitoring and quantifying the benefits.





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## Abbreviations

<b>CPP</b>	Country Partnership Program
<b>CBRD</b>	community-based rural development
<b>GEF</b>	Global Environment Facility
<b>IEM</b>	integrated ecosystem management
<b>OP</b>	Operational Program
<b>PRC</b>	People's Republic of China
<b>SILEM</b>	Sahel Integrated Lowland Ecosystem Management
<b>SLEM</b>	Sustainable Land and Ecosystem Management
<b>SLEM-CPP</b>	Sustainable Land and Ecosystem Management Country Partnership Program (India)
<b>SLM</b>	sustainable land management
<b>STAP</b>	Scientific and Technical Advisory Panel
<b>UNCCD</b>	United Nations Convention to Combat Desertification
<b>UNEP</b>	United Nations Environment Program
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change





# Introduction

This report synthesizes trends, lessons, and experiences of projects financed by the Global Environment Facility (GEF) under the Operational Programs on Integrated Ecosystem Management (OP12) and Sustainable Land Management (OP15) financing windows to combat land degradation. It is the result of a portfolio monitoring and learning review under the Land Degradation focal area, which was launched during the Fifth Replenishment of the GEF Trust Fund (GEF-5). Portfolio learning is now a key component of knowledge management in the GEF Secretariat to address the need for knowledge generation on innovative practices, experiences, and lessons from projects financed by the GEF. The portfolio review focused specifically on projects financed under OP12 and OP15 to promote integrated ecosystem management and sustainable land management in production landscapes.

This report includes an analysis of GEF financing for projects that apply integrated approaches—that is, practices focused on integrating the management of land, soil, water, biodiversity, and biomass—to combat land degradation in production systems (crop, range-land, and forest landscapes). The report then synthesizes actual experiences of selected projects that implemented the approaches. Because the portfolio review focused entirely on learning, no specific judgments or interpretations are made about environmental or development impacts of GEF investments. Rather, the report highlights processes, practices, tools, and knowledge innovations embodied in projects that apply integrated approaches. The knowledge generated will contribute to advancing the Land Degradation focal area strategy, including approaches to foster links with other focal areas, such as Biodiversity, Climate Change, and International Waters. It will also increase understanding about how project assumptions and risks associated with integrated ecosystem management are addressed during project implementation.

## Background

In its role as a financial mechanism for the global environment, the GEF has a specific mandate on combating land degradation. This mandate is based on the recognition that land stewardship is essential for sustaining the many environmental benefits that humanity obtains from ecosystems. Stewardship implies a concerted effort to manage the different components of ecosystems that underpin production practices for obtaining food, fiber, fuel, and other important livelihood needs. The GEF, through its investments, is helping to advance innovative approaches to promoting stewardship of production landscapes in the developing world.

An important contribution in this regard has been the promotion of integrated approaches for combating land degradation in production systems. That objective was fostered by the launching in 2000 of an Operational Program on Integrated Ecosystem Management (OP12),<sup>1</sup> which enabled countries to invest in and address natural resource management issues through cross-focal area programming of GEF resources. Until the subsequent creation of a separate Operational Program on Sustainable Land Management (OP15) in 2003,<sup>2</sup> many countries where land degradation—specifically desertification and deforestation—was considered to be a major threat to the global environment used that window. The creation of OP15 formally operationalized the designation of land degradation as a focal area.

This report represents the first attempt at understanding the catalytic effect of GEF financing in promoting integrated approaches to combat land degradation in production systems. A previous study by the GEF Office of Monitoring and Evaluation focused on the quality at entry of the projects financed under the OP12 window, including evidence of cross-focal area

synergies that could be achieved through integrated ecosystem management (IEM).<sup>3</sup> That study generated useful insights on the design and complexity of IEM projects, and it concluded that OP12 was in fact a “valid and important program for the GEF.”<sup>4</sup> An important recommendation of the study proposed moving forward by monitoring and learning from implementation of the IEM approaches.

The OP12 strategy provided a comprehensive framework through which the GEF would invest in the management of natural resources across sectors and across political or administrative boundaries within the context of sustainable development. The framework facilitates intersectoral and participatory approaches to planning and implementing natural resource management strategies at a landscape scale. The framework also promotes the prioritization and strategic sequencing of needed policy reforms, investments, and other interventions. The OP12 GEF projects were designed to invest in practices and tools that promote integration of agroecosystem components (land, soil, water, vegetation) for sustainable ecosystem services that are essential to the productivity of crops, livestock, and forest resources.

## Purpose and Rationale

The portfolio review was guided by a GEF-5 corporate objective to assess the catalytic effects of GEF financing. For the Land Degradation focal area, the purpose was to learn how integrated approaches to combat land degradation in production systems had been applied in the cohort of GEF projects financed under OP12 and OP15. Focal area learning objectives, which were established in coordination with the GEF agencies and the Scientific and Technical Advisory Panel (STAP), focused on (a) facilitating learning that is broader than one project, (b) testing focal area strategy assumptions, and (c) validating GEF policy assumptions. Hence, the learning process emphasized the need to identify best practices for potential scaling up and replication; to improve the evidence base for projects, strategies, and policies; and to incorporate learning from demonstrations across all GEF focal areas.

The portfolio review builds on the Land Degradation focal area strategy for GEF-5, which embodies the landscape approach and integrated ecosystem management principles to maximize the global environmental benefits of combating land degradation. The focal area strategy emphasizes the need for harnessing and safeguarding ecosystem services (carbon cycling, biodiversity, hydrological flows, and healthy soils) through sustainable management of production landscapes (agriculture, forestland, and landscape mosaics). Therefore, learning from projects financed through OP12 will contribute to effective understanding of the GEF’s catalytic effect—in particular, how integrated approaches contribute to multiple benefits for the global environment and improvements in the livelihoods of populations affected by land degradation.

The OP12 financing window offered countries a practical option to access GEF financing for improving the efficiency of national programs to combat land degradation. Thus, the study looked at the GEF’s role in terms of potential replication strategies (for example, models for overcoming knowledge, capacity, and institutional barriers); mobilization of cofinancing through baseline investments (governments, GEF agencies, and other donors); and coordination and development of successful partnerships. Those findings will increase understanding of the integrated ecosystem management approach to combating land degradation as implemented by the cohort of GEF-funded projects.

To enrich the learning experience, the study also considered projects financed under OP15. Although OP15 focused exclusively on combating land degradation in production landscapes, countries also used this financing window to design multi-focal area projects linked to biodiversity conservation, climate change mitigation, and management of international waters. In principle, such cross-focal area projects should demonstrate integrated approaches to management of ecosystem components. The overall portfolio review therefore contributes to advancing the Land Degradation focal area strategy, including links between the Biodiversity, Climate Change, and International Waters focal areas.





## Approach to the Portfolio Review

The portfolio monitoring and learning review for the Land Degradation focal area focused on four main issues relevant to GEF financing for integrated ecosystem and sustainable land management: (a) understanding the GEF catalytic effect, (b) identifying activities and good practices that generate global environmental benefits, (c) understanding how global environmental benefits are being monitored, and (d) documenting the tools and approaches being applied in monitoring. The monitoring and learning process involved reviewing project implementation reports, assessing trends in projects financed under OP12 and OP15, and going on learning missions to selected projects.

### Annual Review of Project Implementation

This component was linked primarily to the GEF annual monitoring and review process, which takes into account only projects that are at midterm and completion (with midterm reports and terminal evaluation of implementation completion). The annual area review involved assessing progress toward expected focal area outcomes and synthesizing lessons and emerging trends on the basis of focal area learning objectives. Progress was tracked relative to targets established in the focal area results framework, which included areas

under sustainable land management, plans developed for sustainable land management at multiple scales, beneficiaries reached, and global environmental benefits generated. In addition to considering lessons and trends emerging from sustainable land management implementation, the review also considered examples of best practices linked to learning objectives. The data were generated from individual project reports submitted by GEF agencies and aggregated at portfolio level as focal area input into the GEF-wide annual monitoring report.<sup>5</sup> The Land Degradation focal area inputs to the annual monitoring report during GEF-5 were therefore an important contribution from the portfolio review and are fully reflected in this report.

### Analysis of GEF Financing

The review analyzed projects financed under the OP12 and OP15 financing windows to determine trends in GEF financing for integrated ecosystem and sustainable land management. The analysis was used to determine how GEF resources were leveraged by recipient countries to advance integrated approaches for combating land degradation. The entire GEF project database was screened for all projects identifying OP12 or OP15 as the window for GEF financing. The OP12 projects included in the portfolio review were selected on the basis of their focus on combating land





degradation in production systems, and specifically their application within integrated ecosystem and sustainable land management interventions. The analysis considered the range of activities used in advancing integrated approaches, from establishing capacity and institutional frameworks, to investing in on-the-ground projects for environment and development benefits.

A total of 101 projects financed by the GEF under OP12 and OP15 were identified as relevant for the portfolio review. All of the projects were financed during GEF-3 and GEF-4 and therefore either are in the late stages of implementation or have been completed. For the sake of consistency, the original proposal for each project in the cohort was analyzed to determine the nature of GEF investments in integrated ecosystem and sustainable land management approaches. To analyze trends, the review took into account the full amount of GEF resources invested and cofinancing in all 101 projects and programs. Regional trends were based on the four GEF regions: Africa (including North African countries), Asia (including the Pacific Islands), Europe and Central Asia, and Latin America and the Caribbean. Regional trends also included regional projects targeting specific geographies and global projects covering multiple countries.

### Learning Missions

The purpose of learning missions was to engage and consult with key stakeholders on each project's overall goal of generating multiple benefits through integrated approaches in production systems, with a specific focus on understanding the catalytic effect of the GEF's financing in the project. Of the cohort of 101 projects included in the portfolio review, four were visited during learning missions by a team from the GEF Secretariat. The four selected were subprojects under the Country Pilot Partnerships Program between the GEF and the governments of Burkina Faso, China, and India, and they offered opportunities for learning across multiple scales. At the time of the learning mission, the projects were either completed or in an advanced stage of implementation. Prior to each mission, the GEF Secretariat team reviewed relevant project documentation, including project implementation reports, GEF agency monitoring reports, and project publications. During the mission, the project-



executing partners offered additional documentation, such as an assessment of overall progress of the implementation and all relevant background information on the approach to the project. These documents were complemented by consultations between the team and key stakeholders on the project, which took into consideration instances of the catalytic effect of GEF financing. The stakeholders included government officials, personnel of other GEF agencies, executing partners, and target beneficiaries.

## Synthesis and Reporting

The findings and lessons from the portfolio monitoring and learning review have been synthesized as input into the annual monitoring reports for fiscal years 2010 to 2013 and as briefing notes from learning missions.<sup>6</sup> In addition, this report presents a detailed synthesis of the overall GEF experience with integrated approaches to combat land degradation in production systems. The report specifically covers the following:

- Portfolio assessment of projects financed under OP12 and OP15, including trends in GEF financing and investments in project components to promote integrated approaches
- Drivers and evidence of the GEF catalytic effect in promoting integrated approaches at multiple scales, from local to national and regional, and typology of project components to combat land degradation
- Synthesis of best practices for integrated ecosystem and sustainable land management, including institutional and policy frameworks, approaches to planning and stakeholder engagement, approaches to gender dimensions, and capacity and skills development
- Approaches to sharing and managing knowledge, monitoring project outcomes and global environmental benefits, enhancing the sustainability of outcomes, and scaling up projects

## Structure of the Report

The report is organized into five chapters, including this introduction. Chapter 2 establishes the context and rationale for integrated approaches in the GEF context based on the OP12 and OP15 windows, with emphasis on land degradation as a global priority. It highlights the importance of the OP12 and OP15 as windows for countries affected by land degradation. These programs ultimately paved the way for a dedicated focal area supporting the implementation of the United Nations Convention to Combat Desertification.

Chapter 3 presents analyses of the cohort of projects that OP12 and OP15 have financed for the specific purpose of promoting integrated approaches to management of land, water, and biodiversity in production systems. The chapter presents trends in GEF financing based on project components to support integrated approaches, including breakdowns by region to highlight differences in project entry points as they relate to implementing integrated approaches at multiple scales.

Chapter 4 presents a synthesis of findings from learning missions to Burkina Faso, China, and India. Learning missions involved visits to selected OP12 and OP15 projects for observation and for consultations on integrated approaches to combat land degradation in production systems.

Chapter 5 highlights major lessons and conclusions in relation to future GEF programming to advance integrated approaches through multi-focal area investments. The catalytic effect of GEF financing in promoting the ecosystem approach in production systems is consistent with the need for countries to demonstrate synergies in implementing the three Rio conventions initiated at the 1992 Rio Summit.





# Integrated Approaches in the GEF Context

Early in its history, the GEF recognized that land degradation was a major global challenge because of the underlying threat to biodiversity, ecosystem stability, and global climate. Furthermore, the interconnectivity between ecosystems across multiple scales means that land degradation can trigger destructive processes that have cascading effects across the entire biosphere. For example, loss of biomass through clearing of vegetation and the resulting increased soil erosion produce greenhouse gases that contribute to global warming and climate change. Because the impacts of land degradation extend far beyond local or regional scales, there is a clear need for interventions that involve the integrated management of all components of the affected areas at appropriate scales.

Land degradation was first addressed in the GEF as a cross-cutting issue linked to other focal areas—primarily

biodiversity, climate change, and international waters. The extent of GEF support linking these efforts has been previously documented.<sup>7</sup> The cross-cutting activities targeted for investment, such as integrated land and water management and integrated ecosystem management, laid the foundation for a primary focal area on land degradation. Although the amount of GEF resources allocated specifically for combating land degradation was modest, the cross-cutting approach showed clearly that consequences of land degradation were widespread and required more focused attention. As a result, affected countries were given the opportunity to harness GEF resources through two operational programs, Integrated Ecosystem Management (OP12) and Sustainable Land Management (OP15), which eventually paved the way for a dedicated Land Degradation focal area (table 2.1).

**TABLE 2.1 OBJECTIVES, EXPECTED OUTCOMES, AND ELIGIBLE ACTIVITIES FOR OP12 AND OP15**

OPERATIONAL PROGRAM COMPONENTS	INTEGRATED ECOSYSTEM MANAGEMENT (OP12)	SUSTAINABLE LAND MANAGEMENT (OP15)
Objective	Catalyze widespread adoption of comprehensive ecosystem management interventions that integrate ecological, economic, and social goals to achieve multiple and cross-cutting local, national, and global benefits.	Mitigate the causes and negative effects of land degradation on the structure and functional integrity of ecosystems by implementing sustainable land management (SLM) practices that contribute to improving people's livelihoods and economic well-being.

OPERATIONAL PROGRAM COMPONENTS	INTEGRATED ECOSYSTEM MANAGEMENT (OP12)	SUSTAINABLE LAND MANAGEMENT (OP15)
Expected outcomes	<p>Creation of an enabling environment: Appropriate policies, regulations, and incentive structures are developed to support integrated ecosystem management (IEM).</p> <p>Institutional strengthening: The capacity of institutions to implement IEM approaches is strengthened through training and logistical support.</p> <p>Investments: Investments are made on the basis of integrated ecosystem approaches and stakeholder partnerships to simultaneously address local, national, and global environmental issues within the context of sustainable development.</p>	<p>Strengthened institutional and human resource capacity: Strengthened capacity will improve SLM planning and implementation to achieve global environmental benefits within the context of sustainable development.</p> <p>Strengthened policy, regulatory, and economic incentive framework: A stronger framework will increase the adoption of SLM practices across sectors (as countries address multiple demands on land resources for economic activities) and will increase the preservation of the structure and functional integrity of ecosystems.</p> <p>Improvements in the economic productivity of land and ecosystem services: Productivity will improve under sustainable management and the preservation or restoration of the structure and functional integrity of ecosystems.</p>
Eligible activities	<p>Technical assistance:</p> <ul style="list-style-type: none"> <li>■ Ecological, economic, and sociological surveys to provide information, including indigenous knowledge, to guide IEM planning and implementation</li> <li>■ Development or modification of appropriate policies, regulations, incentives, and markets to support IEM</li> <li>■ Human resource development in IEM</li> <li>■ Development of mechanisms for conflict resolution among resource users and other stakeholders</li> <li>■ Development of public, community, and private sector partnerships for IEM planning and implementation</li> </ul> <p>Investments:</p> <ul style="list-style-type: none"> <li>■ Rehabilitation or improved management of rangelands to restore indigenous vegetation and improve water management</li> <li>■ Rehabilitation or improved management of a forested watershed or floodplain wetlands, such as sustainable forest management to achieve multiple benefits</li> <li>■ Integrated management of coastal and marine ecosystems to improve coastal land use planning and protect globally important habitats from degradation</li> <li>■ Development of measures to control pollution from point and nonpoint sources to prevent the degradation of globally important habitats and minimize public health risks</li> </ul> <p>Targeted research:</p> <ul style="list-style-type: none"> <li>■ Development of integrated natural resource management systems to respond to natural resource use patterns under different intensities of human uses and the effects on ecosystem structure and function</li> <li>■ Development of innovative and cost-effective IEM approaches for managing natural resources across different ecosystems</li> </ul>	<p>Capacity building:</p> <p>Creation of the appropriate enabling environment and institutional capacity to support SLM:</p> <ul style="list-style-type: none"> <li>■ Mainstreaming of SLM practices into national development priorities</li> <li>■ Integration of land use planning systems</li> <li>■ Agreements and mechanisms for management of transboundary resources</li> </ul> <p>On-the-ground investments:</p> <p>Interventions to address land degradation to improve both livelihoods and economic well-being of local people (baseline actions) and to preserve or restore ecosystem stability, functions, and services through SLM (GEF incremental actions), focusing on the following:</p> <ul style="list-style-type: none"> <li>■ Sustainable agricultural practices</li> <li>■ Sustainable rangeland and pasture management</li> <li>■ Sustainable forest and woodland management</li> </ul> <p>Targeted research:</p> <ul style="list-style-type: none"> <li>■ Better understanding of the policy and institutional failures that drive land degradation</li> <li>■ Refinement and adoption of innovative SLM practices and technologies, including early warning and monitoring systems (such as criteria and indicators for sustainable forest management), and of practices to preserve and restore ecosystem stability, functions, and services as well as the economic well-being of people under different socioeconomic conditions</li> </ul>



## Integrated Ecosystem Management

Prior to designation of the dedicated Land Degradation focal area, the Operational Program on Integrated Ecosystem Management (OP12) was established during the Third Replenishment Phase (2002–06). OP12 was the primary entry point for projects addressing land degradation. Although no specific definition was provided, OP12 presented a comprehensive framework for the GEF to invest in management of ecosystems across sectors and across political or administrative boundaries within the context of sustainable development. That framework required projects to address intersectoral and participatory approaches to natural resource management planning and implementation on an ecosystem scale and to prioritize appropriate policy reforms, investments, and other interventions.

The integrated approach embodied in OP12 was framed in the context of implementing the ecosystem approach, as adopted at the Convention on Biological Diversity.<sup>8</sup> In the descriptions presented in the decision, the ecosystem approach was promoted as an opportunity for parties to pursue holistic and integrated management of ecosystems in a way that meets the needs of society while safeguarding ecosystem components (box 2.1). The GEF created OP12 as a financial mechanism for the convention to support actions by the countries, including potential support for promoting synergy with other conventions.

The operational program was aimed at catalyzing widespread adoption of comprehensive ecosystem management interventions that integrate ecological, economic, and social goals to achieve multiple and cross-cutting local, national, and global benefits. As a result, projects submitted under OP12 addressed multiple priorities under the Biodiversity, Climate Change, and International Waters focal areas. Multiple benefits were targeted, including the following:

- Conservation and sustainable use of biological diversity, as well as equitable sharing of benefits arising from biodiversity use
- Reduction of net emissions and increased storage of greenhouse gases in terrestrial and aquatic ecosystems

- Conservation and sustainable use of water bodies, including watersheds, river basins, and coastal zones
- Prevention of the pollution of globally important terrestrial and aquatic ecosystems

Under OP12, the GEF envisioned a sustainable transition from conventional to integrated ecosystem management (IEM) approaches by providing incremental financing for costs of technical assistance, investments, financial services, and targeted research to address constraints on the adoption of integrated approaches. In addition to addressing strategic priorities of the focal areas, project eligibility was also assessed on two important aspects: capacity building for IEM, and innovative or indigenous approaches to IEM using a combination of natural resource management approaches. As an approach to combating land degradation, IEM is the foundation of the GEF's commitment to catalyzing innovation in the context of generating global environmental benefits in production systems. That commitment was reinforced through the Land Degradation focal area, which is now the primary window for GEF investment in sustainable land management globally.

## Sustainable Land Management

In October 2002, the GEF mandate was expanded when the Second GEF Assembly approved the designation of land degradation as a focal area, with a primary focus on desertification and deforestation.<sup>9</sup> The designation opened new opportunities for the GEF to support implementation of the United Nations Convention to Combat Desertification (UNCCD). The UNCCD recognizes land degradation as the root cause of the desertification process in arid, semiarid, and subhumid zones and provides a global framework for addressing desertification. The convention was the first legally binding instrument that was initiated at the UN Conference on Environment and Development held in Rio in 1992 (the Rio Summit or Earth Summit) and entered into force in 1996. A 10-Year Strategy and Implementation Plan was launched in 2007 as guidance for countries to develop strategic and operational priorities for combating land degradation.<sup>10</sup>

## BOX 2.1 THE ECOSYSTEM APPROACH

The ecosystem approach is a strategy for the integrated management of land, water, and living resources that promote conservation and sustainable use in an equitable way.

An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions, and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

This focus on structure, processes, functions and interactions is consistent with the definition of “ecosystem” provided in Article 2 of the Convention on Biological Diversity.

The ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning.

The ecosystem approach does not preclude other management and conservation approaches, such as biosphere reserves, protected areas, and single-species conservation programs, as well as other approaches carried out under existing national policy and legislative frameworks, but could, rather, integrate all these approaches and other methodologies to deal with complex situations.

Source: Secretariat of the Convention on Biological Diversity, “The Ecosystem Approach,” Quebec, 2004, 6, <https://www.cbd.int/doc/publications/ea-text-en.pdf>.

To further its commitment to addressing land degradation, and to strengthen its ability to support the UNCCD, the GEF Council in May 2003 approved the Operational Program on Sustainable Land Management (OP15), under the Land Degradation focal area. Like all other GEF operational programs, OP15 was initially a way to operationalize projects in the focal area portfolio. However, the GEF Council adopted new focal strategies in 2006 to replace operational programs, so OP15 is no longer used. Since then, GEF-financed activities in the Land Degradation focal area help recipient countries meet the objectives of the UNCCD through targeted investment in projects for capacity building as well as for the implementation of innovative land management practices. Sustainable land management (SLM) remains at the heart of the Land Degradation focal area, and the GEF has continued to integrate its approach to land degradation with other focal areas, taking into account a variety of factors that affect land use at local, national, and regional scales.

The overall goal of the GEF Land Degradation focal area is to contribute to arresting and reversing current global trends in land degradation, specifically desertification and deforestation. The GEF mandate under the focal area focuses on advancing SLM.<sup>11</sup> In that context, unsustainable agricultural practices, soil erosion, overgrazing, and deforestation are considered the main drivers of land degradation and contributors to the deterioration of ecosystem services. The GEF mandate thus addresses underlying causes while developing

sustainable solutions. Desertification and deforestation are both caused, in part, by unsustainable agricultural practices, but their impacts also result in lower agricultural productivity.

The interaction of rising global deforestation rates and the resulting loss of ecosystem services highlights the urgent need for SLM innovations to address livelihood needs for forest-dependent populations. SLM practices can limit these human migration patterns and reduce the stress on natural resources as humans migrate to new areas in search of life-supporting services. The GEF emphasizes the need for SLM practices to combat land degradation in agricultural and forest landscapes as a way to reduce the risk of further deterioration and fragmentation of ecosystems.

## Context for GEF Financing

### GEF Project Areas

GEF investments in the Land Degradation focal area focus primarily on three major production systems: agricultural (crop and livestock, or agropastoral, systems); pastoral and rangeland; and forest and woodland landscapes. The investments are intended to increase global environmental benefits in country-driven projects that embody SLM practices. The GEF contribution adds value as it strengthens national-level SLM processes, such as capacity building, institutional collaboration, knowledge management, and main-



streaming across sectors. GEF projects also deliver on-the-ground interventions that link the livelihoods and economic well-being of local communities to the preservation or restoration of ecosystem services.

**Agriculture.** GEF investments in sustainable agriculture focus on maintaining or improving the productivity of both rainfed and irrigated systems. With the growing demand for food production, investing in the sustainability of existing production systems will contribute to the health of the ecosystem services that underpin productivity. The GEF supports SLM interventions that integrate environmental health, economic profitability, equity (including gender), and social objectives. Examples of on-the-ground interventions supported by the GEF include on-farm diversification, conservation agriculture, agroforestry, integrated soil fertility management, erosion control, water harvesting, and small-scale irrigation schemes.

**Pastoral systems and rangelands.** The GEF promotes sustainable management of rangelands through the strengthening of viable traditional systems and other measures that improve soil and water conservation. Rangeland management in dryland areas is a priority because an estimated 73 percent of dryland areas globally are vulnerable to degradation.<sup>12</sup> GEF-funded projects help to improve and sustain the economic productivity as well as environmental sustainability of rangeland and agropastoral systems, with emphasis on projects that enable livestock producers to maintain sustainable livelihoods through effective planning, animal selection, nutrition and reproduction, herd health, and grazing management. The GEF complements these interventions through support for mechanisms that generate global environmental benefits, such as resolution of conflicts between wildlife, livestock, and crops; conservation of indigenous genetic resources (for example, livestock varieties that can adapt to extreme climatic events and environmental conditions); reduction of water and wind erosion; protection and rehabilitation of riparian forests and woodlands; and protection and rehabilitation of the natural vegetation of groundwater recharge areas.

**Forest and Woodland Landscapes.** Rising demands on forest resources have increased the threat of forest

degradation and deforestation in both drylands and humid environments. Factors that drive deforestation have far-reaching ecological impacts, including loss of biodiversity and degradation of ecosystem services. Global deforestation and forest degradation account for an estimated 20 percent of greenhouse gas emissions. The GEF recognizes that improved management of forest landscapes and woodlands offers the dual opportunity to address livelihood needs of rural populations and reduce pressure on threatened ecosystems. GEF activities support the introduction and strengthening of sustainable forest management schemes, including participatory decision making, tenure and use rights (especially by indigenous communities), sustainable market chains for forest products, payments for ecosystem service schemes, development and implementation of forest management plans, and reforestation.

### Baselines and Incremental Reasoning

The GEF support under the Land Degradation focal area initially focused on creating or improving an enabling environment for SLM, including policy, institutional, and human capacity development. As enabling conditions have improved, the support has gradually shifted to catalyzing on-the-ground investments in preventing and controlling land degradation to achieve both global environmental benefits and sustainable development benefits. Over the years, the catalytic role of the GEF under the Land Degradation focal area has helped to promote integrated approaches, linking the rural poverty and environment agendas, combining conservation of ecosystem functions with a human dimension in productive landscapes, and increasing the visibility of SLM in national development agendas. The portfolio review is therefore an opportunity to better understand this catalytic effect with respect to creating environmental and local development benefits, including the potential for influencing transformational change at larger scales.

A fundamental principle of the GEF is to provide incremental financing that is linked directly to planned or existing baseline investments in the recipient country or countries. This approach includes, for example, investing in initiatives and projects that are financed by the government, development partners,

civil society organizations, and local communities and that address issues related to production landscapes. As an incremental support to such initiatives and projects, the GEF finances SLM activities that generate global environmental benefits in the context of managing agricultural, rangeland and pasture, and forest landscapes for improved productivity. The global environmental benefits are linked directly to ecosystem services that underpin the sustainability and resilience of production lands, including soil health, biodiversity, hydrological flows, and carbon cycling.

## Implementation of the Conventions

The importance of integrated approaches is considered in the context of the United Nations Convention to Combat Desertification as well as in relation to synergies with the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change (UNFCCC).

### UN Convention to Combat Desertification

Because of the focus on combating land degradation, the portfolio review takes into account priorities of the UNCCD, for which the GEF is a financial mechanism. According to article 2.1 of the convention, “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 action at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach ..., with a view to contributing to the achievement of sustainable development in affected areas.” Article 2.2 notes that 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, which lead to improved living conditions, in particular at the community level.

The parties to the UNCCD are requested to (a) coordinate their efforts through bilateral or multilateral arrangements; (b) adopt an integrated approach addressing the physical, biological, and socioeconomic aspects of the processes of desertification and drought; and (c) provide an appropriate enabling environment,

promote awareness, and establish strategies and priorities within the framework of sustainable development plans and policies. The emphasis on an integrated approach is reflected in the definition of *sustainable land management*, which encompasses other established approaches, such as soil and water conservation and natural resource management. Sustainable land management involves a holistic approach to achieving productive and healthy ecosystems by integrating social, economic, physical, and biological needs and values. The basic principles of SLM in relation to the IEM approach can be considered as follows:

- Land user-driven and participatory approaches
- Integrated use of natural resources at ecosystem and farming system levels
- Multilevel and multistakeholder involvement
- Targeted policy and institutional support, including development of incentive mechanisms for SLM adoption and income generation at the local level

### Convention Synergies

Parties to the three Rio conventions are encouraged to coordinate their activities carried out under the conventions, to derive maximum benefit while avoiding duplication of effort. Such coordination includes the possibility of conducting joint programs, particularly in the fields of research, training, systematic observation, and information collection and exchange, all of which are fully in line with GEF priorities for advancing integrated approaches. The strategies for OP12 and OP15 take into account the GEF role as the financial mechanism of all three conventions, with potential for synergies from integrated approaches to combating land degradation in production systems (table 2.2). Land degradation prevention and control is recognized by the Convention on Biological Diversity and UNFCCC as a global priority in light of consequences for ecosystems services, such as loss of genetic resources, species and habitat loss, and carbon and other greenhouse gas emissions resulting from poor land use practices in production systems. Integrated approaches enhance the potential for synergies in implementation of the conventions, with multiple benefits toward preservation of ecosystem stability, functions, and services in the production systems.



Sustainable Development Context

The rationale for GEF assistance to countries for preventing and controlling land degradation is to achieve global environmental benefits in the context of sustainable development. Sustainable land management is considered imperative for sustainable development and plays a key role in harmonizing the complementary yet historically conflicting goals of increasing or maintaining production and protecting the environment.[AQ: Previous sentence okay?] Thus, one of the most important aspects of SLM is the critical merger of agriculture and environment through twin objectives: (a) maintaining long-term productivity of the ecosystem functions (land, water, and biodiversity) and (b) increas-

ing productivity (that is, the quality, quantity, and diversity of goods and services—particularly safe and healthy food).

The GEF plays a key role in promoting the integration of conservation and sustainable use of land resources into sustainable development plans, policies, and programs. In the context of sustainable development, the notion of mainstreaming refers to the process of integrating principles into country policies and programs at the local, national, and regional levels to ensure sustainability and to reverse the loss of environmental resources. IEM and SLM provide an appropriate context to link land to water management, climate change, biodiversity conservation, poverty alleviation, and sustainable development.

TABLE 2.2 SYNERGIES BETWEEN THE THREE RIO CONVENTIONS THROUGH INTEGRATED APPROACHES IN PRODUCTION SYSTEMS: EXCERPTS FROM THE OP12 AND OP15 STRATEGIES

RIO CONVENTION	OP12	OP15
United Nations Convention to Combat Desertification (UNCCD)	Actions to combat desertification (or land degradation in arid, semi-arid, and dry subhumid areas) should be undertaken within the framework of an integrated approach that can contribute to sustainable development.	The UNCCD's objective 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, with a view to contributing to the achievement of sustainable development in the affected areas."
Convention on Biological Diversity	Conservation and sustainable use of biological diversity and its components are to be addressed in a holistic manner, with the ecosystem approach as primary framework.	Program priorities highlight the role that prevention and control of land degradation and deforestation can play in the conservation and sustainable use of biodiversity.
United Nations Framework Convention on Climate Change (UNFCCC)	Emphasis is on the need for countries to have comprehensive policies and measures to address issues related to the sources, sinks, and reservoirs of greenhouse gases, taking into account different socioeconomic contexts.	Programs recognize the relationship between climate change and land degradation. Deforestation contributes more to climate change than any other forms of land degradation because 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 woodlands in carbon sequestration and carbon dioxide emissions.





# Portfolio Assessment of GEF Financing

This chapter presents an analysis of Global Environment Facility (GEF) financing under the Operational Programs on Integrated Ecosystem Management (OP12) and Sustainable Land Management (OP15), focusing specifically on the cohort of projects designed to promote integrated approaches to management of land, water, and biodiversity in production systems. It shows trends in GEF financing for project components to support integrated approaches, including breakdowns by region. The projects' use of GEF resources is illustrated on the basis of reports and other documentation on file in the GEF Secretariat.

## Trends in Overall Project Financing

A total of 101 out of 208 discrete projects financed under the GEF OP12 and OP15 windows focused primarily on combating land degradation through integrated approaches. The trends in financing are indicative of the global importance of integrated approaches for combating land degradation and are evidence of the GEF commitment to helping countries advance such approaches for long-term sustainability and resilience of production systems.

**TABLE 3.1 GEF GRANT AND COFINANCING FOR OP12 AND OP15 PROJECTS FOR COMBATING LAND DEGRADATION**

GEF WINDOW	NUMBER OF PROJECTS	GEF GRANT (US\$)	COFINANCING (US\$)
OP12	68	322,788,756	1,333,258,136
OP15	33	146,343,950	737,178,107
Total	101	469,132,706	2,070,436,243

Table 3.1 shows the total GEF grant for the cohort of 101 projects and the amounts for the projects under OP12 and OP15. The GEF grant was cofinanced at a ratio of 1.0:4.4. Regionally, countries in Africa accounted for nearly 27 percent of the total GEF grant, followed by Latin American and Caribbean countries (20 percent) and Asia countries (17 percent) (table 3.2), with a similar cofinancing ratio. In addition to country programming, OP12 and OP15 resources also went to regional and global projects to support overall advancement of the integrated ecosystem management (IEM) and sustainable land management (SLM) approaches.

**TABLE 3.2 GEOGRAPHIC BREAKDOWN OF THE GEF GRANT AND COFINANCING**

REGIONS	GEF GRANT (US\$)	COFINANCING (US\$)
Africa	124,670,696	550,212,705
Asia	81,800,460	361,012,267
Europe and Central Asia	73,920,439	326,235,046
Latin America and the Caribbean	93,110,545	410,927,288
Regional	34,110,196	150,539,467
Global	61,520,370	271,509,470
Total	469,132,706	2,070,436,243

With respect to country programming, 47 countries had at least one project in the cohort, with 19 from Africa, 10 each from Asia and Latin America and the Caribbean, and 8 from Europe and Central Asia (figure 3.1). In terms of resources used, Brazil accounted for the largest amount of GEF grants (US\$69 million), followed by China (US\$21 million), Kenya (US\$20 million), Mexico (US\$16 million), and Namibia (US\$15 million). The majority of the countries (42) used less than US\$10 million each, and 13 used less than US\$2 million each.

## Typology of Project Components for GEF Financing

The portfolio review showed that the components prioritized for GEF financing are in the following five categories: (a) capacity building and policy reforms, (b) promotion of technologies and best practices, (c) stakeholder participation and community livelihood improvement, (d) monitoring of global environmental benefits, and (e) information.

### Capacity Building and Policy Reforms

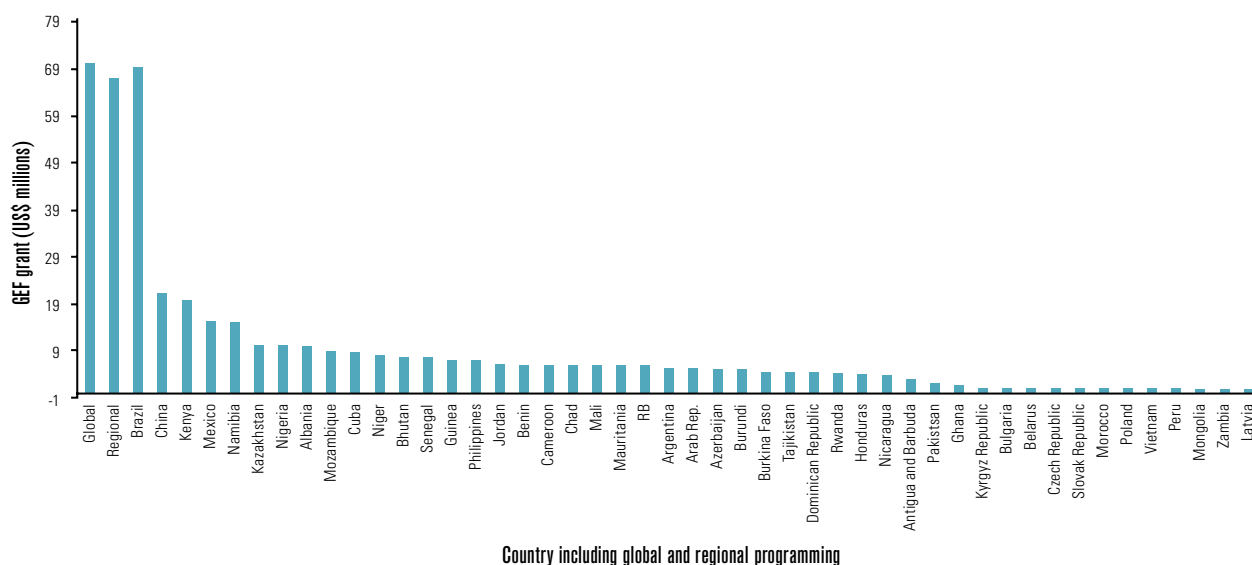
Integrated management of ecosystems is complex and knowledge intensive. It is a challenge that requires (a) appropriate capacity and institutional frameworks and (b) supportive regulatory and policy environments. As a result, the OP12 and OP15 windows presented an opportunity for recipient countries and development partners to use GEF resources to build the foundation for IEM and SLM. Examples of project components for GEF financing included training and institutional strengthening, improvements in governance and legal frameworks, provision of extension services, and

development of knowledge management systems. In their Country Pilot Partnerships with the GEF, Burkina Faso and China, for example, prioritized capacity and policy reform components for investment at multiple scales (box 3.1).

### Promotion of Technologies and Best Practices

Although the drivers of land degradation depend on the social and geographic context, the direct effects on ecosystem services are often attributed to poor land use practices in the production systems. In most countries, changing demographics and increasing impacts of climate change are exacerbating the effects of land degradation. As a result, innovative technologies and practices are needed to improve productivity while safeguarding the soil, water, and biodiversity. However, application of technologies and practices must take into account potential synergies and trade-offs in combating land degradation at appropriate scales. GEF financing enabled recipient countries and development partners to pilot and demonstrate options for IEM and SLM. Examples of project components targeting integration of ecosystem components

**FIGURE 3.1 DISTRIBUTION OF THE GEF OP12 AND OP15 GRANTS FOR INTEGRATED ECOSYSTEM MANAGEMENT, BY COUNTRY**





## BOX 3.1 CAPACITY BUILDING AND POLICY REFORMS FOR INTEGRATED ECOSYSTEM MANAGEMENT

In Burkina Faso, the World Bank–Global Environment Facility (GEF) Sahel Integrated Lowland Ecosystem Management Project was designed to pilot integrated ecosystem management practices in targeted microwatersheds. A major component of the project was to strengthen capacities at the local level, with a focus on village-level institutions to facilitate decision making and conflict resolution. Because the project was linked directly to a nationwide rural development program, the local piloting of natural resources governance in agropastoral systems was designed to influence the government's decentralization policy. Growing tensions between farmers and herders in the country's fragile Sahelian agroecologies required an appropriate policy and regulatory framework to help promote integrated approaches for addressing multiple environmental and livelihood needs.

In China, the Asian Development Bank–GEF project on Management and Policy Support to Combat Land Degradation specifically targeted legal and policy frameworks for controlling land degradation as a means of strengthening the enabling environment and building capacity for integrated approaches to sustainable land management in six affected provinces. During the framework development, the integrated ecosystem management approach was incorporated into current provincial laws and regulations. Capacity building was used to raise awareness of the benefits of integrated ecosystem management, to increase the knowledge and skills of decision makers at provincial and local levels, and to establish entry points for integrated approaches in existing legal instruments relevant to natural resources and land degradation.

included watershed management, natural resource management, sustainable land and ecosystem management, conservation and sustainable use of natural resources, and forest landscape management. The cohort of 101 projects includes 13 that focused on mainstreaming biodiversity in production systems through IEM (box 3.2).

### Stakeholder Participation and Community Livelihood Improvement

Integrated approaches to natural resource management require full engagement of stakeholders, including those whose livelihoods depend directly on those resources. Engagement of different stakeholders through appropriate participatory processes not only ensures sustainability and ownership of projects, but also helps to reconcile competing land uses and antagonistic claims of different land users. This approach ensures that environmental and socioeconomic interests are aligned at appropriate scales, rather than segregated. GEF financing under OP12 and OP15 enabled recipient countries to mobilize key stakeholders—including land users and experts from the natural and social sciences—for planning and implementation of integrated approaches. Examples of project components include community mobilization, participatory watershed planning, payments for ecosystem services, and community-based income generation.

### Monitoring of Global Environmental Benefits

The underlying rationale for GEF financing is to generate global environmental benefits; however, monitoring multiple global benefits in production

landscapes is especially challenging when projects are designed to implement integrated approaches. Hence, recipient countries and partners used GEF resources to develop frameworks for monitoring benefits such as carbon sequestration (box 3.3).<sup>13</sup> Project components included assessment of baselines and indicators, development of tools for quantifying environmental benefits, establishment of databases and standards, and development of knowledge management systems. In addition to financing country-level investments, the GEF also financed a number of regional and global projects specifically to address the need for assessment of baselines and trends for monitoring global environmental benefits in production systems across multiple scales (box 3.4).

### Information Dissemination

Because integrated approaches are knowledge intensive, an important project component is documenting experiences and lessons from their application in different circumstances and spatial scales. The information generated can feed directly into ongoing projects or contribute as a public good in some form, such as best practice guidelines, video documentaries, or a technical document. The GEF invested in developing these knowledge resources for dissemination at different scales to be used for awareness raising, training and education, and scaling up of interventions. Project components supporting information dissemination involved raising awareness on sustainable use of ecosystems, land, and biodiversity and synthesizing best practices and lessons learned from the application of IEM and SLM practices.

## BOX 3.2 MAINSTREAMING BIODIVERSITY THROUGH INTEGRATED ECOSYSTEM MANAGEMENT

Mainstreaming biodiversity in production systems is a major priority of the biodiversity focal area, for which 13 projects were financed under OP12 to apply the integrated ecosystem management approach. The framework for these projects included components on (a) conservation planning to integrate biodiversity in production landscapes and in the context of protected area management; (b) practices to safeguard biodiversity in the context of alternative livelihoods from production systems; (c) financial incentives to promote mainstreaming, such as payments for ecosystem services; and (d) improvement of enabling conditions through policy, regulatory, and institutional frameworks. All of these components are consistent with principles of the ecosystem approach, including focusing on sustainable land management and improving the socioeconomic conditions of local communities to reduce pressure on natural habitats. Project investments contributed to capacity building for resource users and other relevant stakeholders by increasing access to knowledge, technologies, and best practices for sustainable use and management of resources in production systems.

The mainstreaming projects demonstrate synergy between the Biodiversity and Land Degradation focal areas with respect to safeguarding ecosystem services that underpin the sustainability of production systems. In Africa, the projects enhanced synergy through integrated ecosystem management in agricultural and forest production landscapes, with a strong focus on capacity building and improvement of the livelihoods of communities. In Asia, projects focused on rangeland and forest production landscapes in the context of protected area management, with emphasis on institutional strengthening, assessment, and monitoring of global environmental benefits. In Europe and Central Asia and Latin America and the Caribbean, mainstreaming projects in agriculture and forest production landscapes addressed legal and regulatory frameworks, scaling up of resource management practices, and capacity building.

## BOX 3.3 MONITORING GLOBAL ENVIRONMENTAL BENEFITS AT FARM SCALE

The World Bank–Global Environment Facility Drylands Management Project in Kazakhstan was designed to promote the conservation, rehabilitation, and sustainable use of natural resources in marginal cereal-growing areas in the Shetsky rayon of the Karaganda oblast in Kazakhstan. The focus was on advancing sustainable land use systems, with potential for replication in similar areas across the country and in other Central Asian countries. A key feature of the project's approach was improving knowledge for quantification and monitoring of carbon sequestration under different land use types as evidence of sustainable land use. As a result, 140,000 hectares of restored land that was brought into sustainable production could be assessed for its contribution to carbon sequestration, in addition to biodiversity conservation and control of land degradation. By engaging small and medium farmers, the project also established the foundation for scaling up the approach to include other farmers, which increased the potential for generating quantifiable global environmental benefits in the context of improving productivity.

### GEF Financing for Project Components

As shown in table 3.3, 76.2 percent of the 101 projects targeted capacity building and policy reforms to support IEM and SLM. Next came promotion of technologies and best practices (48.5 percent) and stakeholder participation and community livelihood improvement (38.6 percent). The emphasis on capacity building and policy reform is consistent with the fact that creation of OP12 and OP15 introduced new perspectives into the overall GEF financing, which required the establishment of appropriate enabling conditions for successful implementation.

Project components that focused on promoting technologies and best practices involved mainly pilots

and demonstrations of integrated approaches, with the intention of scaling up across larger spatial scales depending on lessons and experiences. Components linked to stakeholder participation and community livelihoods involved efforts to promote engagement and social inclusiveness, which are essential for aligning environmental and development priorities in IEM and SLM. The result that these were the top three categories prioritized in the portfolio suggests a strong foundation for the GEF catalytic effect in promoting integrated approaches. The relatively limited focus on the components for monitoring of global environmental benefits and information dissemination implies, however, that very few projects addressed the need for learning in advancing the GEF priorities under the operational programs.



## BOX 3.4 FRAMEWORK FOR MONITORING GLOBAL ENVIRONMENTAL BENEFITS IN PRODUCTION SYSTEMS ACROSS MULTIPLE SCALES

The Food and Agricultural Organization of the United Nations–United Nations Environment Programme (UNEP)–Global Environment Facility (GEF) Land Degradation and Assessment in Drylands project was a global effort to increase understanding of land degradation trends. Using a multiscale approach (local, national, and global), the project developed and piloted strategies, tools, and methods to assess and quantify the nature, extent, and severity of land degradation and the overall ecosystem resilience of dryland ecosystems. In addition to a global framework, the project also facilitated opportunities for baseline assessment and monitoring at the subregional level, based on six pilot countries from different regions: Latin America (Argentina); East Asia (China); the Caribbean (Cuba); West Africa (Senegal); Southern, Central, and Eastern Africa (South Africa); and the Near East, North Africa, and Mediterranean region (Tunisia).

The United Nations Development Programme–GEF project Ensuring Impacts from SLM—Development of a Global Indicator System (called KM:Land) was also designed as a global effort to strengthen adaptive management of sustainable land management projects for generating and monitoring environmental benefits. The focus was specifically on developing indicators for monitoring benefits from combating land degradation in production systems, including strategic guidance on metric measurement methodologies and project intervention logic. The project approach enhanced links with the United Nations Convention to Combat Desertification and also helped to inform the development of a tracking tool and knowledge management system for the GEF Land Degradation focal area.

The UNEP–GEF Carbon Benefits Project was designed to promote carbon as a global environmental benefit from sustainable land management in production systems. The focus was on developing a cost-effective, user-friendly, yet scientifically rigorous methodology for modeling, measuring, and monitoring carbon and greenhouse gas mitigation benefits in projects dealing with natural resources in different land use systems. This methodology will ensure a standardized approach for quantifying and assessing carbon benefits in projects addressing natural resource management. The tools will allow project teams to establish baselines for carbon and greenhouse gases at the landscape level and to monitor and account for changes in carbon stocks during project implementation.



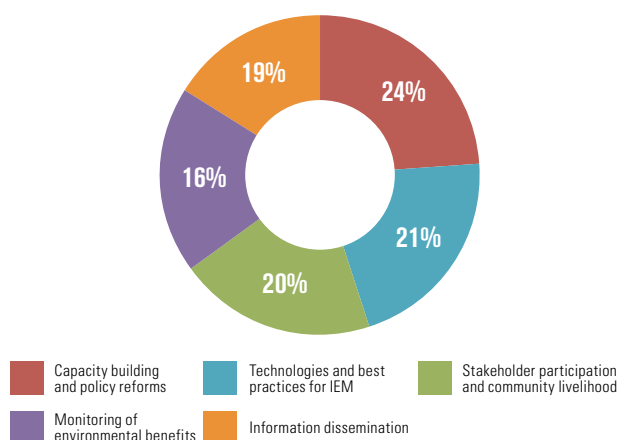
**TABLE 3.3 CATEGORIES OF PROJECT COMPONENTS PRIORITIZED FOR GEF OP12 AND OP15 FINANCING**

PROJECT COMPONENTS	PERCENTAGE OF PROJECTS
Capacity building and policy reforms	76.2
Promotion of technologies and best practices	48.5
Stakeholder participation and community livelihood improvement	38.6
Monitoring of global environmental benefits	27.7
Information dissemination	25.7

The use of GEF resources breaks down fairly evenly among the different categories of project components, although the top three categories together account for 65 percent of the total GEF grant (figure 3.2).

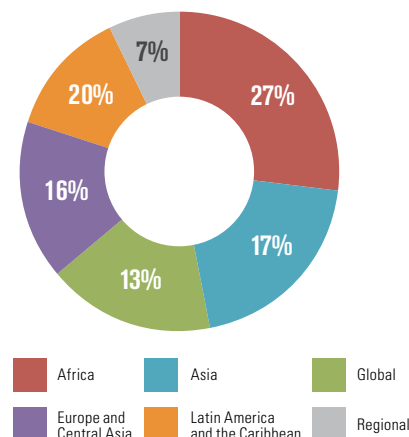
The breakdown of resources by region shows Africa accounting for the most, followed by Latin America and the Caribbean, Asia, and Europe and Central Asia (figure 3.3). Regional and global projects account for 7 percent and 13 percent of the GEF resources, respectively. This trend suggests differences in the extent to which project components were prioritized for GEF financing by countries in the different regions, as well as for the regional and global projects.

**FIGURE 3.2 PROPORTIONAL BREAKDOWN OF GEF RESOURCES BY CATEGORIES OF PROJECT COMPONENTS**



Note: IEM = integrated ecosystem management.

**FIGURE 3.3 PROPORTIONAL SHARES OF GEF GRANTS INVESTED IN ALL PROJECT COMPONENTS BY REGION**



**FIGURE 3.4 REGIONAL SHARES OF GEF GRANTS AT COMPONENT LEVEL**

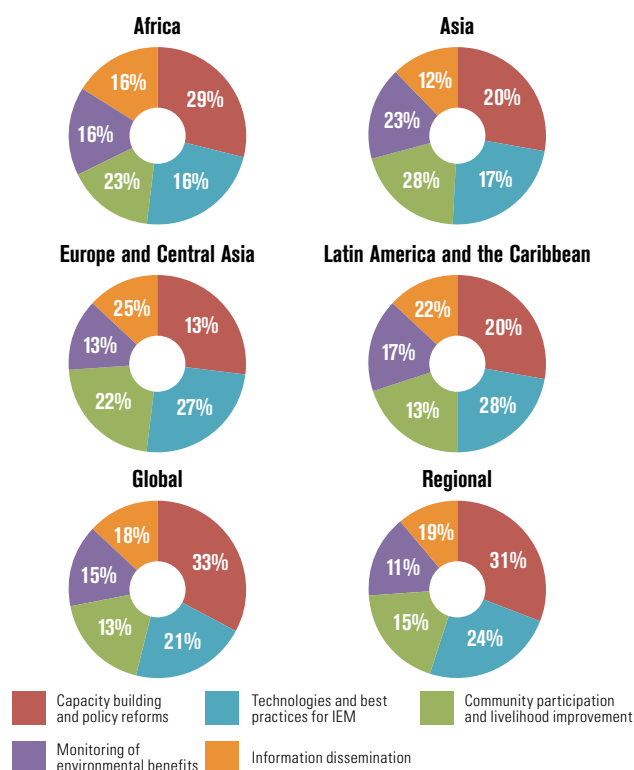






Figure 3.4 shows the proportions of GEF resources allocated to the five categories of project components in each region and in the regional and global projects. The spending likely reflects regional differences in project entry points. Although Africa emphasized creating enabling conditions and stakeholder engagement, Asia, Europe and Central Asia, and Latin America and the Caribbean focused mainly on piloting and demonstrations through stakeholder mobilization and investment in on-the-ground activities. With respect to the other categories of project components, Asia programmed a proportionally higher amount for monitoring of global environmental benefits. The proportion of resources for information dissemination was highest for Europe and Central Asia and Latin America and the Caribbean; it was lowest for Africa and Asia.

In regional and global projects, the breakdown of resources for categories is consistent. The proportion is highest for capacity building and policy reforms, followed by promotion of technologies and best practices. This finding suggests that the GEF emphasizes providing scientific and technical support to countries through investments in knowledge resources for training and decision making.

## Summary of Trends

The portfolio assessment demonstrates clearly that the OP12 and OP15 financing enabled countries across all GEF-eligible regions to use GEF resources for integrated approaches in production systems. The 101 projects in the portfolio cover a wide range of geographic

contexts in Africa, Asia, Europe and Central Asia, and Latin America and the Caribbean and involve multiple scales, from local to national, regional, and global. In addition, project components for GEF financing demonstrate countries' commitment to investing in priorities for IEM and SLM. This commitment includes creating enabling conditions through capacity building and policy reforms, engaging stakeholders at appropriate scales, piloting and demonstrating integrated approaches, and developing frameworks for monitoring and learning. The nature of GEF financing for project components also reflects regional differences in entry points for integrated approaches.

In Africa, where management of production systems is strongly linked to rural livelihoods, projects put greater emphasis on capacity building and policy reform and on stakeholder participation and community livelihood improvement. In other regions with appropriate enabling conditions, the emphasis was on improving stakeholder participation and community livelihoods (Asia), on applying the technologies and best practices (Europe and Central Asia and Latin America and the Caribbean), or on disseminating information (Europe and Central Asia). In addition to these country-driven trends, the GEF support for regional and global projects also contributed to (a) strengthening the knowledge base for monitoring and (b) increasing the availability of tools to support decision making and investments in integrated approaches. The catalytic effect of GEF financing was demonstrated in this portfolio review and in lessons from project implementation, as presented in the subsequent chapters.





# Integrated Approaches in Practice: Findings from Learning Missions

This chapter presents a synthesis of findings on application of integrated ecosystem management (IEM) and sustainable land management (SLM) practices in production systems. The synthesis is based primarily on learning missions to projects and programs in the three countries visited—Burkina Faso, China, and India. It also draws on documentation from the cohort of Global Environment Facility (GEF) projects financed under the Operational Programs on Integrated Ecosystem Management (OP12) and Sustainable Land Management (OP15) to highlight examples from other countries as appropriate.

## Description of Projects for Learning Missions

The projects visited by the learning missions represent a range of dryland geographic contexts, agroecologies,

and scales of implementation. They mainly cover lowland agropastoral systems in the Sahel (Burkina Faso) and highland irrigated terraces (China and India). Each of the four projects was designed to integrate institutional management across local (village) and landscape (or watershed) levels, to subnational (state or province) and national levels. That approach ensures that projects are aligned with existing governance and policy frameworks, which are essential for decision making on integrated management of agroecosystem components. The projects also demonstrate cross-focal area links, with emphasis on synergies between (a) the Land Degradation focal area and (b) the Biodiversity and Climate Change (mitigation and adaptation) focal areas. Table 4.1 shows the projects and GEF financing details.

**TABLE 4.1 PROJECTS VISITED ON LEARNING MISSIONS**

COUNTRY AND PROJECT NAME	GEF AGENCY	GEF GRANT (US\$ MILLION)	COFINANCING (US\$ MILLION)	GEF APPROVAL DATE <sup>A</sup>	STATUS
Burkina Faso: Sahel Integrated Lowland Ecosystem Management (SILEM), Phase I	World Bank	4.50	20.5	October 2002	Completed 12/2010
China: PRC-GEF Partnership: Capacity and Management Support for Combating Land Degradation in Dryland Ecosystems	Asian Development Bank	7.70	7.30	October 2002	Completed 6/2012
India: Sustainable Land, Water, and Biodiversity Conservation and Management for Improved Livelihoods in Uttarakhand Watershed Sector	World Bank	9.24	90.0	11/2008	Completed 8/2013
India: Sustainable Rural Livelihoods Security through Innovations in Land and Ecosystem Management	World Bank	7.34	88.0	11/2007	Completed 8/2013

A. Date of work program entry.

### Sahel Integrated Lowland Ecosystem Management (SILEM) Project

This project was designed under a Country Pilot Partnership between the government of Burkina Faso and the GEF. It was a five-year pilot demonstration project for using the integrated approach to address natural resource degradation. The project was linked to a 15-year community-based rural development program, which was funded jointly by the government and the International Development Association (which is part of the World Bank Group) and covered 302 communes across the country. The program was established to tackle rural poverty. As a pilot within the larger development program, SILEM used GEF resources to target selected watersheds and combat land degradation using integrated approaches to manage land, water, and forests with local communities of farmers and herders.

### Capacity and Management Support for Combating Land Degradation in Dryland Ecosystems

The project was the second phase of the PRC-GEF Partnership Program for Combating Land Degradation in Dryland Ecosystems. The PRC-GEF Partnership Program was initiated in 2002 as a long-term cooperation agreement between the government of China, the GEF, and other donors to introduce an IEM approach to combating land degradation and desertification in dryland ecosystems. To promote and strengthen those efforts, the program was linked to the Sloping Land Conversion Program, a major rural development program (Grains for Green) financed by the government. In addition to the capacity-building project, the learning mission also included site visits to the World Bank-GEF Gansu and Xinjiang Pastoral Development project.

### Sustainable Land, Water, and Biodiversity Conservation and Management for Improved Livelihoods in Uttarakhand Watershed Sector

This project is a component of the Sustainable Land and Ecosystem Management Country Partnership Program (SLEM-CPP) in India, which included six subprojects designed to foster integrated approaches for improving natural resource management across the country. The overall goal of the Uttarakhand watershed

project was to restore and sustain ecosystem functions in the Uttarakhand Himalaya watersheds as a basis for enhancing income, food, and livelihood security. The project was linked to a decentralized watershed management project (referred to as *Gramya*) funded by the World Bank and the government of India and was designed to improve the productive potential of natural resources and increase incomes of rural inhabitants in 75 microwatersheds. GEF resources were specifically targeted on 20 of the 75 microwatersheds, all of which were selected based on severity of erosion, extent of poverty, and lack of infrastructure facilities.

### Sustainable Rural Livelihoods Security through Innovations in Land and Ecosystem Management

This project was also designed under the Indian SLEM-CPP and was in its final year of implementation at the time of the learning mission. The project is linked to the National Agricultural Innovation Program, a nationwide initiative designed to pilot and demonstrate natural resource management innovations for increasing the sustainability and resilience of production systems. The GEF financing contributed to mainstreaming the management of sustainable land and ecosystems into development and implementation of the innovations through collaboration among farmers and private sector, civil society, and public sector organizations. The project embodies the integrated approach to ecosystem management, with emphasis on developing and deploying innovative technologies to enable decision making by poor farming and fishing communities.

### Framework for Learning

The focus of learning missions was on mechanisms and strategies for realizing the GEF catalytic effects of integrated projects that were incorporated into project design. Discussions and consultations with stakeholders and beneficiaries were guided by the following questions:

- What global environmental benefits of SLM are being measured by projects at different scales: local (site or farm scale), landscape or watershed, regional, or national?



- What tools are being used for monitoring and measuring global environmental benefits?
- How appropriate are the tools relative to others being developed by GEF-funded projects and others?
- How are global environmental benefits being linked to project-level impacts at the different scales?
- What are the major trade-offs associated with generating ecosystem services from SLM projects in different production systems?
- How are synergies achieved in generating global environmental benefits from implementing SLM projects at multiple scales?
- How is the GEF catalytic effect manifested in SLM projects with respect to scaling up and replication?

The findings are structured around the following four elements for learning, which are based on the original objectives of the portfolio review:

- Context for the overall GEF catalytic effect, including drivers and baselines
- Project approach and best practices for integrated management
- Global environmental benefits and approach to monitoring
- Approach to enhancing sustainability

### Context for the GEF Catalytic Effect

Because GEF financing is specifically targeted toward global environmental benefits, projects are required to demonstrate the catalytic effect of this financing on the basis of value added relative to the baseline context and proposed approach. For the projects visited by the learning missions, the GEF catalytic effect in promoting integrated approaches is reflected in three ways: (a) national context for natural resource management, (b) baseline investments and framework for GEF financing, and (c) approach to project design.

#### **Prioritization of Production Sectors as Driver of the GEF Catalytic Effect**

National strategies and action plans that link rural development and poverty alleviation to sustainable

agricultural and natural resource management were important drivers of the GEF catalytic effect in promoting integrated approaches to combat land degradation. The OP12 and OP15 portfolio includes a number of national-level programmatic approaches that demonstrate the importance of the catalytic effect, such as the Country Pilot Partnerships (CPPs) in Burkina Faso, China, Cuba, India, and Namibia. A major rationale for CPPs was the potential for aligning environmental and development priorities at the national level to influence and inform policies that promote integrated approaches. Because programs were linked to specific sectors, the countries embraced the opportunity to influence policy reforms to support IEM and SLM.

In Burkina Faso, design of the SILEM project was specifically driven by the need to integrate natural resource management priorities into a nationwide community-based rural development (CBRD) program. That need was influenced by the *Lettre de Politique de Développement Rural Décentralisé*, which outlined the basic principles of decentralization, institutional support, and investment in community-based actions, plus some key triggers agreed to by the government and its development partners to ensure an enabling environment for implementation of the CBRD project.

In China, the PRC-GEF Partnership to Combat Land Degradation in Dryland Ecosystems was linked to the national Sloping Land Conversion Program (Grains for Green), which also integrated climate change mitigation and adaptation for improved livelihoods. The partnership focused specifically on advancing the integrated approach through mainstreaming at the national level and in the provinces and autonomous regions that were affected by land degradation.<sup>14</sup> The Asian Development Bank-GEF project catalyzed mainstreaming of the IEM approach in strategies and action plans, which ensures investment and financial flows for SLM and livelihood activities. As a result, IEM is now an important element in the sustainable development process for the provinces and autonomous regions involved in the partnership.<sup>15</sup>

In India, the GEF catalytic effect was demonstrated both at the national level, through the National Agricultural Innovation Project, and at the state level, through



the Uttarakhand watershed project. Nationally, the government of India is committed to increasing sustainability and climate resilience in the agricultural sector through innovative practices for management of land, water, and genetic resources. In Uttarakhand, where agriculture and livestock production are the dominant economic activities for over 80 percent of the population, particularly in the fragile Himalaya watersheds with steep slopes that are highly prone to soil erosion, the state government has embarked on watershed management as a development priority. The aim is to ultimately transform an estimated 1.6 million hectares to sustainable management, thereby establishing a stronger foundation for prosperity and resilience to climate change in the highlands.

***GEF Financing for Global Environmental Benefits was Linked to Development Projects***

The OP12 and OP15 financing windows essentially positioned the GEF as a strategic partner in helping developing countries to catalyze innovations that generate global environmental and national development benefits. GEF financing enabled the countries to invest in global environmental benefits through baseline projects addressing national development priorities. Resources were targeted toward (a) harnessing the power of public-private partnership to promote the use of mobile technology in sustainable land and ecosystem management, (b) demonstrating the value added by the use of mobile technology for sustainable management and resilience of production systems in poor communities, (c) creating resource centers to facilitate access to knowledge and tools by the communities, and (d) promoting adaptive management and learning between scientific institutions and the communities.

In Burkina Faso, a CBRD project that was financed jointly by the government and the World Bank provided the foundation for the SILEM project, which was financed under OP12. Because the CBRD project was designed as a 15-year rural development and poverty alleviation program covering all 302 rural communes in the country program, GEF financing enabled the government and the World Bank to pilot the IEM approach as a means of mobilizing sustainable solutions that could be implemented nationally.

In China, the Asian Development Bank–GEF Capacity and Management Support Project was financed under the umbrella of the PRC-GEF Partnership Program to Combat Land Degradation in Dryland Ecosystems. The partnership was guided by China’s Western Development Strategy, which is based on the principle of sustainable development. Funding to the IEM plans and strategies of the provinces in western China was mobilized through mainstreaming of IEM into provincial strategies—for example, development of carbon management forestry and application of the IEM concept in the forest compensation and forest rights systems in Inner Mongolia and Qinghai. In Shaanxi, ecological compensation mechanisms at the watershed level contribute to funding of IEM. Collaboration on IEM has facilitated cross-sectoral cooperation not only on SLM but also on poverty reduction, support to economic and social development, and the green economy.

In India, the World Bank–GEF Uttarakhand watershed project was linked to the World Bank–aided decentralized watershed management project Gramya, which was designed to improve the productive potential of natural resources and increase incomes of rural inhabitants in selected watersheds. Several important features of the Gramya project, such as the decentralized approach, institutional convergence, links between local organizations, and participatory processes based on local governance structures, created the foundation necessary for integrated management of natural resources in the watersheds.

#### ***Project Framework was Based on GEF Value Added to Promote Integrated Approaches***

GEF financing for projects under OP12 and OP15 was modest relative to baseline cofinancing investments (average ratio of 1:4.4). The project components were therefore targeted on the basis of GEF value added to promote IEM and SLM. This effort included creating enabling conditions through capacity development and policy reforms, engaging stakeholders at appropriate scales, piloting and demonstrating of integrated approaches, and establishing frameworks for monitoring and learning. In countries where projects were implemented across multiple scales, the potential for GEF value added was maximized through cross-scale integration of institutional frameworks.

In Burkina Faso, the SILEM project was embedded within a CBRD project financed jointly by the government and the World Bank. It focused on microwatersheds covering 160 selected villages in 15 of the 302 rural communes. GEF financing was used to pilot integrated ecosystem management as a relatively new and untested approach to combating land degradation in the country. By focusing on selected microwatersheds within the larger lake and river basins, the SILEM project allowed natural resource management to be more directly integrated through the decentralized governance and decision-making process that was embodied in CBRD.

In China, the Capacity and Management Support Project was implemented under the umbrella of the PRC-GEF Partnership for Combating Land Degradation. Overall cofinancing of more than US\$800 million went into various investment projects that mainstream the IEM approach into provincial strategies, laws, and regulations. In that context, the incremental value of the relatively small GEF investment (6 percent) becomes apparent. For instance, a total of 54 laws and regulations have been formulated and 17 revised at the provincial and regional level in support of IEM. At the central government level, the Law on Water and Soil Conservation was revised in 2011 to incorporate the IEM approach.

In India, the approach to the overall programming of GEF resources demonstrates the crucial need to apply innovative approaches for agroecosystem management to address vulnerability risks to communities that depend on sustainability of ecosystem services in production systems (agriculture, livestock, fisheries, and forests). For the Uttarakhand watershed project, the GEF’s catalytic role was demonstrated by focusing on comprehensive treatment of watersheds to restore and sustain ecosystem functions and biodiversity while simultaneously enhancing income and livelihoods. GEF resources specifically targeted 20 of 76 microwatersheds included under the baseline project. These 20 were selected on the basis of severity of erosion, extent of poverty, and lack of infrastructure facilities. Hence the potential for generating global environmental benefits was anchored on a strong foundation for sustainable development.



## Project Approach and Best Practices for Integrated Management

Given the expected outcomes and priorities for GEF financing under OP12 and OP15, the project approach and best practices for integrated management were also assessed for the GEF catalytic effect. The findings and observations are related to five main aspects that demonstrate the catalytic effect: (a) institutional framework for implementation, (b) mobilization of stakeholders at the local level, (c) participatory planning at scale, (d) community empowerment, and (e) comprehensive treatment of watersheds. The experiences highlighted here are both driven and supported by the national context and baseline for GEF financing.

### ***Institutional Framework***

The integrated approach presents challenges and opportunities for institutional frameworks by creating ownership at all levels. The separation of institutions dealing with issues related to the environment, agriculture, and rural development and poverty presents inherent difficulties for implementing and coordinating projects designed to advance integrated approaches to natural resource management. Hence, GEF financing presented opportunities for the development of institutional frameworks to facilitate stakeholder engagement and decision-making support at multiple scales. This hierarchical arrangement facilitates information flow and decision making and takes into consideration the needs of all stakeholders and beneficiaries associated with the particular geographic context for project implementation. Furthermore, it enhances ownership of the overall project approach at all levels.

In Burkina Faso and China, the project framework included entities designated at the national level, in the affected provinces, and at the local and site levels (village committees), as well as individual farmers and land users. Project implementation involved engagement by a wide range of stakeholders and partners, including government institutions at provincial and district (or commune) levels, national technical agencies and institutions, and civil society organizations. However, the World Bank–GEF SILEM project in

Burkina Faso was executed by the national program coordination unit, with staff members located in all provinces across the country, and the PRC–GEF Capacity and Management Support Project for Combating Land Degradation in Dryland Ecosystems was executed by a central project management unit of the State Forestry Administration, with links to provincial project management units in each province and autonomous region.

In India, the Ministry of Environment and Forests served as national executing agency for the overall SLEM–CPP, which included six subprojects. Because of the considerable differences between the individual projects in geographic scale, degree of knowledge generated and synthesized, and institutional framework and extent of implementation, India’s national agency had a crucial role in facilitating coordination and consolidation. One of the projects was specifically designed with a program-level management and coordination function led by the Indian Council of Forestry Research and Education. However, the diversity of institutions and partners involved in the SLEM–CPP meant that the potential for influencing policy to scale up the integrated approaches depended on the extent to which project-level achievements were consolidated nationally.

At the local level, village communities were both major stakeholders and beneficiaries, and the communities’ role underpinned the entire project’s focus on integrated approaches. Project staff members located in pilot sites (watersheds or microwatersheds) were in position to respond directly to the demands of communities, including serving as liaisons with other key stakeholders at the provincial or district level.

### ***Mobilization of Stakeholders at the Local Level***

Ownership by all stakeholders at the local level creates a platform for promoting integrated approaches in production systems. The organization of project management, including locally based staff members working directly with communities and gaining the participation of all stakeholders—from village communities, to local governments, to provincial and national-level coordination—promotes ownership of integrated

approaches. In Burkina Faso, local governments provided strong involvement in and support of project implementation, which enhanced recognition of local land use priorities in provincial-level development plans. For example, the provincial-level management planning of Kompienga Lake, in one of the pilot watersheds, fully integrated village-level priorities, such as designation of restricted fishing areas (*frayères*), which are monitored by the village communities.

The institutional framework for project implementation also presented opportunities for adaptive management and learning at multiple scales, including within communities. For example, in the India SLEM-CPP, the combination of mobile technology, rural resource centers, and innovative practices for sustainable land and water management created space for interaction between scientists and local communities. The catalytic effect of the GEF financing enhanced stronger links between the research in the national agencies and the needs of farmers, with potential for scientists to assess (a) the costs and benefits of IEM and SLM practices relative to prevailing local conditions and (b) the potential for generating multiple environmental benefits that could be rewarded through incentive mechanisms.

The approach of empowering communities, including women and different ethnic groups, to make decisions and manage conflicts in a participatory manner is an important development tool for advancing IEM and SLM. The catalytic effect of the GEF represents a unique and promising opportunity for the communities to combine rural development efforts with activities to combat land degradation and desertification. In addition, the targeted approach to capacity building, including the use of local languages during training, enables communities to directly apply new techniques and tools in accordance with the needs they have prioritized and adopted. Also, the organization of farmer field visits to other villages and areas where integrated approaches are applied, as well as exchanges between farmers themselves, is an important element in capacity-building efforts.

An effective coordination mechanism across sectors, multiple government agencies, and development partners contributes to an expanded project ownership

framework. That benefit is also demonstrated through public-private partnerships to enhance the engagement of businesses and civil society in IEM and SLM. In India, a consortium approach involving public-private partnerships was used to develop and pilot a mobile technology platform for decision-making support in the management of production systems, which helped to open new opportunities for local stakeholders to implement integrated approaches. The network of institutions also contributes to addressing training and capacity needs, demonstrating new technologies, introducing microfinance, and developing market value chains for communities. The network enables communities to take advantage of improvements in land and water resources for income generation, such as through cultivation of high-value crops and rearing of adaptive livestock breeds.

### ***Participatory Planning at Watershed Scale***

Participatory planning in community-driven development enhances integration of environmental priorities at the local level. The participatory approach empowers local communities through bottom-up planning processes, the establishment of institutional and knowledge frameworks for village-level actions, and the provision of access to funding and economic incentives. GEF financing catalyzes participatory planning as a means of facilitating the integration of natural resource management and development priorities at the community level. In Burkina Faso and India, where projects were designed and implemented in the context of watershed management, the planning approach enabled communities to integrate approaches to address environmental concerns into means to fulfill their livelihood needs, such as for food, water, and energy.

The projects demonstrated the use of various participatory approaches and tools for identifying and implementing interventions, taking into consideration the knowledge and traditions of local communities. In the Uttarakhand project in India, the use of focus groups enabled communities to prioritize development needs (for example, crop and livestock production, household energy, income generation, and drinking water) for integration with interventions to safeguard or restore ecosystem functions and services in the



watersheds (for example, surface water protection, groundwater recharge, forest restoration and management, and agrobiodiversity). For the SILEM project in Burkina Faso, planning started with a participatory problem analysis, which resulted in village land use plans and activity plans for identifying microprojects for natural resource management.

Participatory land use planning at the village level primarily delineates land resources to accommodate multiple livelihood needs and helps the communities avoid or manage conflicts. In the drylands, such land use conflicts are often associated with competition between farmers focused on crop production and herders focused on livestock production. The formulation of resource management regulations, the translation of these regulations into written contracts, the establishment of physical signs and demarcation posts, and the enforcement of these regulations by local guards and protection groups play important roles in integrated approaches, allowing for better conflict negotiations and for diversification and intensification of production systems.

Because land degradation problems are often not restricted to village boundaries, the planning also facilitates collaboration through the creation of intervillage committees. As a result, building capacity for intervillage interventions encourages spatial integration of land use priorities at a greater scale. In addition to local benefits, this collaboration is essential for maximizing regional, national, and global environmental benefits.

### **Community Empowerment**

Community and grassroots empowerment, including consideration of gender and vulnerable groups, promotes integrated approaches. Stakeholder mobilization and participatory planning create the platform for collective action, which is essential for implementing integrated approaches. But it is the empowerment of communities that ultimately determines how the approaches are implemented to achieve global environmental and development benefits. Hence, the projects in Burkina Faso, China, and India (Uttarakhand), which focused on implementing integrated



approaches in specific local contexts, all demonstrated a major focus on community and grassroots empowerment. In Burkina Faso and India, the empowerment of stakeholders also granted oversight of project funds for microprojects.

In the SILEM project, the process of empowering communities, including women and different ethnic groups, to make decisions and manage conflicts in a participatory manner was an important development tool in the pilot microwatersheds. Within each pilot project, microwatershed committees were created, which were then organized into intervillage committees. These committees were empowered to facilitate village-level planning and implementation, including acting as liaisons with the district-level administration for mediation and enforcement of local rules and regulations and with the project management team for financial and technical support. The bottom-up, community-driven process for decision making on land use priorities and the top-down support for implementation of the priorities (financial, technical, and legal support) helped to create an atmosphere of trust among the various stakeholders.

In China, villages in pilot watersheds were empowered to integrate fulfillment of their livelihood and productivity needs into sustainable land management options. As a result, diverse production and development options are being introduced to help improve the quality and sustainability of ecosystem services (carbon cycling, biodiversity, hydrological flows, and healthy soils). The integrated approach also enabled the villages to work collectively on SLM activities and resolve resource conflicts across watersheds. For example, in the Hudan catchment pilot site in Qinghai province, resolving conflicts between upstream and downstream communities helped to improve hydrological flow (quality and quantity) for irrigation. This resolution also created an opportunity to evaluate the mechanism of payment for ecosystem services as possible a incentive for upstream communities that would demonstrate the value of land degradation control in the watershed.

In the Uttarakhand project in India, traditional entities known as *Gram Panchayats* were reinforced as the local

governance authorities for administration, management, and development of village resources in microwatersheds. The approach also took into account the crucial link between ecosystem services and livelihoods of women and vulnerable groups in the fragile watersheds. Women played a significant role in social and economic aspects of the project because of their use and management of forests and other natural resources. The inclusion of women in decision-making process was achieved through various tools and mechanisms, such as “women motivating women” in awareness raising and social mobilization, participation of women in various committees and institutions, emphasis on women-led income-generating activities, and promotion of interventions to reduce the drudgery of some traditional practices, such as carrying water and collecting fuel wood.

### ***Comprehensive Treatment of Watersheds***

Comprehensive treatment of degraded watersheds reflects good practices and principles of IEM and SLM. The piloting and demonstration of IEM and SLM in the OP12 and OP15 portfolio focused largely on production systems in watersheds, microwatersheds, and catchments. That focus ensured that multiple priorities of the GEF can be addressed at the appropriate scale, including biodiversity conservation, climate change mitigation and adaptation, and water resource management. Ensuring a functioning watershed was at the heart of the SILEM project in Burkina Faso and the Uttarakhand project in India.

In the cohort of projects financed under OP12 and OP15, a wide range of interventions were implemented to restore ecosystem functions at watershed, subwatershed, and microwatershed scales, such as improving soil and water conservation, reducing erosion and siltation, using forest resources sustainably, and introducing alternative energy sources to reduce deforestation that results from the need for fuel wood and charcoal. Priority interventions reflected strong links between livelihood needs and drivers of ecosystem degradation in the watersheds, thereby creating opportunities for GEF catalytic effect through the integrated approaches. The highest-priority projects in the portfolio review included interventions that would

control land degradation at the watershed level, reduce pressure and dependence on the natural resource base by fostering markets for nonwood forest products, promote biodiversity conservation and management, and increase adaptation to climate change in natural resource-based production systems.

The Uttarakhand project in India exemplifies the most comprehensive approach to watershed management, including multidisciplinary perspectives covering ecological, social, economic, and institutional priorities across multiple scales. By building on economic activities that addressed existing needs in the baseline Gramya project, GEF resources were catalysts for ecosystem services at the watershed scale to (a) integrate sustainable watershed management approaches into Gram Panchayat watershed development plans, (b) enhance biodiversity at the watershed level through domestication and cultivation of threatened medicinal and aromatic plants, and (c) enhance understanding of climate change impacts on the mountain ecosystems and help devise adaptation and mitigation strategies. The GEF catalytic effect was therefore essential to ensure flexibility in applying the wide range of interventions to treat the watersheds and restore ecosystem functions in accordance with the demand-driven needs of the communities.

The global environmental benefits from project interventions include forest protection (contributing to biodiversity conservation and sustainable flows of water resources), reduction in land degradation and improvements in soil carbon, reductions in greenhouse gas emissions from deforestation, and sustainability of the overall production systems.

### Global Environmental Benefits and Approaches to Monitoring

GEF financing under OP12 and OP15 was in accordance with the GEF's mandate for investment in global environmental benefits. This catalytic role is reflected in the following aspects: (a) linking environmental and human development benefits and (b) monitoring and quantifying benefits.

### ***Global Environment and Local Development Benefits are Linked***

Global environmental benefits are directly linked to community-driven interventions that improve livelihoods and create options for income generation. Activities in the cohort of projects financed under OP12 and OP15 showed that IEM and SLM in production systems address specific needs for improving agricultural productivity, livestock management, and income generation. Participatory planning enables communities to streamline livelihood and productivity needs into land management options across landscapes and watersheds. As a result, a variety of production and development options are introduced in an integrated manner to help improve the quality and sustainability of ecosystem services (carbon cycling, biodiversity, hydrological flows, and healthy soils). Projects demonstrated the GEF catalytic effect by linking the communities' livelihood priorities to potential global environmental benefits in the production systems.

In the Uttarakhand project in India, global environmental benefits were possible at watershed, subwatershed, and microwatershed levels because of the integrated approaches applied. The project interventions included forest protection (contributing to biodiversity conservation and sustainable flow of water resources), improvements in soil carbon and reductions in greenhouse gas emissions from deforestation (contributing to climate change mitigation), and reduction or reversal of soil erosion and degradation (contributing to land quality improvement). In the PRC-GEF partnership project in China, integrated approaches used in the pilot watersheds and demonstration sites targeted global environmental benefits in the form of improvements in hydrological flows, vegetation cover, carbon sequestration, and biodiversity conservation.

Similarly, the SILEM project in Burkina Faso promoted a range of IEM and SLM practices in microwatersheds with considerable potential for generating global environmental benefits. SLM interventions by communities to promote water harvesting, reduce erosion, and improve grazing also contributed directly to increases in vegetation cover, carbon sequestration or storage, and conservation of native biodiversity. The interven-



tions also contributed to climate change adaptation by increasing the resilience of the production systems to drought and flood risks.

### **Monitoring Global Environment Benefits Presents Challenges**

Multiple global environmental benefits from integrated approaches present challenges for monitoring and measuring, as well as potential trade-offs at scale. Although global environmental benefits are adequately targeted by the integrated approaches in the cohort of projects financed under OP12 and OP15, monitoring and quantifying the benefits present clear challenges. By focusing on the sustainability and resilience of the overall production landscape (watershed or microwatershed), the extent to which particular benefits are delivered will depend on the nature of the interventions prioritized by communities and land users. Hence, trade-offs will likely be made with respect to maximizing ecosystem services in relation to livelihood priorities in the production systems. However, the portfolio indicates some progress toward assessment and monitoring of land degradation at multiple scales, including training and capacity development for application of tools and methods.

The PRC-GEF partnership developed a framework based on monitoring of hydrological flows, vegetation cover, carbon sequestration, and biodiversity conservation. For example, one of the projects, the World Bank-GEF Gansu-Xinjiang pastoral project in Xiangquan township, involved explicitly monitoring and

measuring biodiversity benefits (for example, species recovery) from grazing land management during the four-year implementation period (2004–08). Participatory monitoring and evaluation methods that involved farmers and land users were also applied in pilot watersheds, on the basis of indicators that are useful for management decisions that take ecosystem services into account.

The Uttarakhand project effectively used national institutions and civil society organizations to harness technical support for interventions and monitoring in the watersheds. Monitoring of global environmental benefits focused mainly on SLM and climate change mitigation. The project measured silt loading in drainage lines in representative streams using a turbidity meter and monitored discharge and durability of flow for water sources using time-series measures. To address climate change mitigation, the project determined carbon benefits by estimating emissions avoided through alternative energy intervention (for example, biogas, water mills, and pine needle briquettes). Biodiversity benefits were not established as clearly because they were derived only from vegetation surveys in the watershed and areas of forest protected by communities.

### **Approach to Enhancing Sustainability of Outcomes**

GEF financing supports the long-term sustainability of both environmental and development outcomes of projects. Because the integrated approaches promoted through OP12 and OP15 projects are relatively untest-



ed in the context of generating global environmental benefits, the programs emphasized monitoring and enhancing the sustainability of outcomes during implementation. Those aims are demonstrated in several ways: (a) using a participatory approach to project monitoring, (b) formalizing community ownership and converging with relevant institutions at appropriate scales, and (c) raising awareness through documentation and knowledge management.

### ***Using a Participatory Approach to Project Monitoring***

Projects implemented a monitoring framework with well-established baselines and a participatory process with communities. The framework for monitoring and evaluation in the projects crossed multiple dimensions and institutions, with roles for the executing agencies, partner institutions, and beneficiaries. Project management units coordinated and managed the overall process, including documentation and reporting as required. In addition to standard procedures for monitoring project activities and progress toward outcomes, practices such as random field visits, monthly meetings, checklists, and brainstorming were all considered integral parts of the internal monitoring. This approach helped to create an atmosphere of learning and adaptive management, which was backed by the use of information technology for data and knowledge management.

The Uttarakhand watershed project used a particularly innovative participatory approach that empowered communities to play a central role in project monitoring. The approach involved teams of the traditional entities known as *Gram Panchayat*, which included representatives from all stakeholder groups at the local level, to engage in social auditing of interventions. The result was widespread disclosure of project information through wall writings, awareness-raising campaigns, radio programs, publications, and so forth, all of which created trust, transparency, accountability, and openness with the communities. GEF financing also catalyzed the engagement of scientific institutions to address specific needs for knowledge generation, monitoring and assessment of interventions, and quantification of environmental and development benefits.

### ***Formalizing Community Ownership and Converging with Institutions***

Formal agreements with communities and convergence with government institutions promote sustainable project outcomes. Because of the emphasis on creating project ownership and empowering communities in the targeted watersheds, the projects established a foundation for ensuring sustainable outcomes. This foundation was further reinforced by aligning project activities with the priorities of government agencies and departments, so that outcomes were integrated into future plans within the budgeting process. The line ministries involved with project-executing entities could maintain the focus on integrating environmental and development needs in the watersheds for the long term.

In the Uttarakhand watershed project, a state government order introduced at the end of the project formalized the convergence of outcomes with line departments through the Watershed Management Directorate. In addition to providing oversight, such formalization ensures the maintenance and improvement of all assets created during project implementation. At the level of microwatersheds, the communities assumed full ownership of all assets created to improve ecosystem functions. The communities also signed a memorandum of understanding with the Watershed Management Directorate for the operation and maintenance of the assets.

### ***Raising Awareness through Documentation and Knowledge Management***

Knowledge sharing, documentation, and communication contribute to raising awareness in integrated approaches. The complexity of integrated approaches requires a systematic focus on documentation, knowledge management, and communication to help raise public awareness and inform decision makers. In the OP12 and OP15 cohort of projects, knowledge management activities were implemented at different levels and reflected the importance of linking scientific and traditional sources. Traditional knowledge was taken into account during the planning phase and was fully harnessed by implementation teams using consultations with communities and surveys. Knowledge



sharing also flowed from the implementing team and civil society organizations involved in the project to the beneficiaries, resulting in the dissemination of information and knowledge about new techniques and methodologies to harness and preserve water resources, increase and diversify agricultural productivity, and create alternative livelihoods.

In Burkina Faso and India, farmer field schools and community resource centers were established as hubs for training and knowledge sharing within and between communities. Lessons learned and best practices applied within the projects were shared with other government agencies, partners, and donors to scale up practices beyond the project areas. The manuals, methodologies, community resource maps, watershed work plans, and documentation of lessons learned from the project will be invaluable for informing the design of other projects and transforming policies to support the integrated approach at the state and national levels. Projects have created video documentaries of the project approach and specific interventions to disseminate as training tools.

### **The Ecosystem Approach Catalyzed by GEF Financing**

Findings from the learning missions also serve as evidence of the GEF catalytic role in promoting the ecosystem approach for management of production systems. The four projects provide clear examples of how GEF financing promotes the application of

underlying principles of the ecosystem approach as established by the Convention on Biological Diversity.<sup>16</sup> The principles cover all relevant dimensions of IEM and SLM as embodied in the GEF strategies for OP12 and OP15. They include support for decision making and policy formulation, stakeholder engagement and participatory planning, recognition of services provided by ecosystems, and approaches to harnessing ecosystem services while acknowledging their limits.

The financing is also relevant in the context of the GEF role as financial mechanism of the three Rio conventions—specifically in relation to synergies from combating land degradation in production systems (table 4.1). Integrated approaches enhance the potential for synergies in the implementation of the conventions, resulting in multiple benefits through the preservation of ecosystem stability, functions, and services in the production systems. By linking global environmental benefits to interventions aimed at improving livelihoods and creating options at the local level, multi-focal area projects can increase the potential for synergies while minimizing negative trade-offs in production systems. The Uttarakhand watershed project provides a good example of how multi-focal area synergies can be achieved through integrated approaches (box 4.1). Interventions to improve management of soil and water can be linked to direct use values, such as increased availability of surface and groundwater for domestic use, irrigation, and livestock. Such outcomes, in turn, can lead to reduction in top soil erosion and reduced vulnerability to flooding and erosion during extreme events.

**TABLE 4.1 APPLICATION OF THE PRINCIPLES OF THE ECOSYSTEM APPROACH IN THE GEF PROJECTS**

PRINCIPLE	APPLICATION
1. The objectives of management of land, water, and living resources are a matter of societal choice.	There was clear commitment by the governments and communities to integrate management of land, water, and forests in production systems. GEF financing was linked to baseline investments in sectors that matter to countries' social and economic structure: food, water, energy, and income security.
2. Management should be decentralized to the lowest appropriate level.	Management of the projects and decision making on interventions were decentralized to village and intervillage committees in the SILEM project (Burkina Faso), provincial and pilot villages in the PRC-GEF partnership project (China), Gram Panchayats in the Uttarakhand watershed project (India), and fishing villages in the National Agricultural Innovation Project (India).
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.	Three of the projects involved piloting or demonstration of integrated approaches in watersheds, with farmers, herders, and fishers as managers. Achieving sustainable and healthy watersheds through integrated approaches was the overriding priority, as opposed to managing each production system separately.
4. To recognize potential gains from management, projects need to understand and manage ecosystems in an economic context.	The projects all focused on management of production systems, with an emphasis on social and economic empowerment. Interventions were tailored to address livelihood needs of vulnerable communities and to create options for income generation from agriculture, forestry, and fisheries.
5. Conservation of ecosystem structure and functioning in a way that maintains ecosystem services should be a priority target of the ecosystem approach.	By focusing on watersheds and microwatersheds, the projects addressed the need for restoring and maintaining the ecosystem functions that underpin production systems. These ecosystem services addressed hydrological flows, forest cover, biodiversity, and biomass.
6. Ecosystems must be managed within the limits of their functioning.	Because the project watersheds were largely affected by land degradation—specifically deforestation and desertification—the integrated approaches focused on restoration and maintenance of ecosystem services. The limits on functioning of the watersheds ultimately depended on how trade-offs were managed relative to land use dynamics in the production systems.
7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.	The projects focused on watersheds and microwatersheds that were defined by geographic and jurisdictional boundaries. The integrated approaches were based on local realities, including priorities of land users. Project objectives took into account spatial links of watershed components, as well as short-term and long-term needs of the local communities.
8. Because varying temporal scales and lag effects characterize ecosystem processes, objectives for ecosystem management should be set for the long term.	Although the projects were designed as pilots or to demonstrate integrated approaches, the emphasis on building grassroots ownership reflects a commitment to long-term sustainability of outcomes. Project objectives recognized restoring and maintaining ecosystem services in watersheds and microwatersheds as a long-term priority.
9. Management structures and entities must recognize that change is inevitable.	The watersheds and microwatersheds targeted by the projects were essentially coupled social-ecological systems, which are subject to both anthropogenic and biophysical changes. Managing these changes was therefore a key priority for the communities, including addressing risks and vulnerabilities caused by climate change.
10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.	The approach to biodiversity conservation was driven by the need to protect native vegetation (for example, forests) and the sustainable use of high-value species (for example, medicinal and aromatic plants) in the targeted watersheds and microwatersheds.
11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations, and practices.	The participatory planning processes applied in the watersheds and microwatersheds ensured that all forms of knowledge and information were considered. Where appropriate, the choice of interventions by local communities was informed by scientific knowledge and backed by appropriate technology and tools during implementation.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.	All four projects demonstrate the value of partnerships in advancing integrated approaches. In addition to local communities and government entities, many civil society groups, scientific institutions, and private sector institutions were involved in varying degrees.





## BOX 4.1 ACHIEVING MULTI-FOCAL AREA SYNERGIES THROUGH INTEGRATED APPROACHES

The Uttarakhand watershed project demonstrates how multi-focal area synergies can be achieved through an integrated approach that links global environmental benefits to local livelihoods. The OP12 project was designed to integrate management of land, water, and forests on the basis of the food, water, energy, and income security needs of local communities and depending on their vulnerability to climate change in microwatersheds. In particular, GEF financing helped to generate global environmental benefits:

**Integrated watershed management.** Capturing and efficiently managing runoff for year-round availability of water was a major priority for farmers, especially women, who also spent considerable time fetching water for domestic needs. Hence, interventions were selected to increase water security and reverse degradation on the fragile slopes. Ponds and pits were used to capture water on the upper levels of slopes, while practices such as terrace repairs with vegetative boundaries, rainwater harvesting, dry stone check dams, irrigation channels, and riverbank protection were used for soil conservation and erosion control.

**Renewable energy alternatives.** In addition to restoring traditional water mills by improving hydrological flows, the project promoted pine needle briquettes, solar stoves, and biogas as alternative sources of energy for cooking and heating. These options arose out of the practice of fuel wood collection by women, which was a major driver of deforestation and soil degradation on the slopes. Making pine needle briquettes for fuel was also embraced by communities because removal of pine needles reduced the risk of dry-season fires in the watershed. These interventions were therefore important for community livelihoods because they addressed household energy needs, but at the same time, they also reduced greenhouse gas emissions in the watersheds.

**Forest conservation.** To protect fragile slopes and rejuvenate hydrological flows, the project focused on reducing the felling of trees for fuel wood, which also addressed the need to protect natural forests as critical habitat for wildlife. Communities were empowered by the state government to assume responsibility over reserve forests, including practices for restoration of degraded areas. To further reduce pressure on the native oak forest vegetation, high-value species such as medicinal and aromatic plants were cultivated on the slopes.

By integrating all of the interventions within the same microwatersheds, communities can more effectively contribute to the overall functioning of production systems, as well as the sustainability of ecosystem services that underpin those production systems and the communities' livelihoods. These essential services include hydrological flows for irrigation, drinking, and power mills; forest cover to protect the slopes and conserve native species; and vegetative cover, including high-value perennial grasses for feeding livestock and pine trees, which are a source of alternative fuels as pine needle briquettes.





# Lessons and Conclusions

Against the backdrop of Global Environment Facility (GEF) financing for integrated ecosystem and sustainable land management (chapter 3), several important lessons are presented in this chapter. The lessons are drawn from the findings of a portfolio review and learning missions to assess the catalytic effect of GEF financing in promoting integrated approaches in the three countries and four projects visited (chapter 4). The findings highlight the potential for using cross-focal area programming in the GEF to promote the sustainable management of production systems (agriculture, rangelands, and forest landscapes) while achieving multiple environmental and development benefits.

## Lessons

The portfolio review highlighted the catalytic role of the GEF in advancing integrated approaches for sustainably managing production systems, which is the primary aim of the Land Degradation focal area. The learning missions for this review visited a cohort of projects that followed an approach designed to use the synergies of integrated interventions to focus on the sustainability and resilience of the ecosystems on which production systems depend. The following are five key lessons from the portfolio review that are particularly relevant for future GEF programming:

- ***Cross-sector development priorities at the national level are important drivers of integrated approaches.*** The portfolio review has shown that overall design of projects to combat land degradation through integrated approaches is driven by country priorities for achieving food, water, and energy security. Furthermore, projects promoting sustainable land management are generally linked to baseline investments that are associated with rural development and poverty reduction. Because of

governments' strong ownership of the development and poverty reduction measures implemented through their baseline investments, their commitment to the projects also tends to be strong. This commitment is an important driver of the GEF catalytic effect; that is, the GEF investment also enables the government to demonstrate mainstreaming of environmental priorities at the national level. As shown by the project in China, lessons learned from these projects have the potential to feed directly into development strategies that could benefit from budgetary allocations by the government as well as from investments by bilateral and multilateral sources.

- ***Integrated approaches generate global environmental benefits by promoting local development benefits in production systems.*** The GEF incremental financing is justified on the basis of the potential for global environmental benefits in the production landscapes, such as biodiversity conservation, increased vegetative cover, reduced soil erosion and loss, and reduced greenhouse gas emissions. Although project activities were focused on generating these benefits through improvements in community practices, there was a clear emphasis on seeking a balance with local development needs. The choice of activities and interventions was influenced by short-term needs for food, water, and fuel in the local communities. Empowering communities—especially women and vulnerable groups—to make decisions on these priorities at microproject scale promotes integrated approaches in landscapes where effects of land degradation and desertification are pervasive. Participatory processes enhance the alignment of community-driven priorities with technical and financial assistance from the government and donor partners. The GEF catalytic role is



demonstrated through its financing of microprojects that address these livelihood needs and have direct links to the creation of multiple environmental benefits.

- Integrated approaches promote synergies for ecosystem services, and negative trade-offs can be avoided through management of production systems at larger scales. One of the most striking observations from the learning missions is that win-win situations are indeed possible when integrated approaches are applied in production systems to gain environmental and development benefits. In other words, the creation of multiple environmental benefits in the context of improving livelihoods is possible, especially where the land degradation is not so advanced that interventions require sacrificing other ecosystem services. But because interventions are carefully weighed by communities to accommodate multiple needs, both positive and negative trade-offs are possible in securing ecosystem services. For example, applying soil conservation measures at an early stage of land degradation will reduce the risk of increased sedimentation from excessive runoff into water bodies. Similarly, resolving conflicts between herders and farmers by designating corridors for livestock movement creates opportunities for increased vegetative cover, biodiversity conservation, and carbon sequestration in those corridors. However, promoting the use of biogas as a source of energy will create incentives for more livestock and, consequently, increase grazing pressure. The avoidance or management of trade-offs is mainly driven by the negotiation support processes and structures that are created during project implementation. Such structures help to build trust and confidence in decision making at the community level so that the need for maintaining a healthy and productive agroecosystem takes precedence over individual interests.
- Integrated approaches in production systems provide a model for replication and scaling up through multi-focal area programming in drylands. The pilot and demonstration projects provide evidence that integrated approaches in practice represent a major GEF catalytic effect. The interventions applied, including reforestation, soil erosion control, use of greenhouses for vegetable production, mulching, grazing management, and irrigation control, are all based on the integration of priorities for improved function of production systems. The practices are implemented alongside development priorities such as rural infrastructure, rural energy, biogas, and solar energy, as well as options for income generation and improved livelihoods in the pilot sites. Those activities are supported by policy options, legislation, thematic studies, capacity building, and knowledge management to empower communities and land users. In the process, communities are increasingly empowered with knowledge and tools to become highly effective custodians of innovative practices that ultimately drive major transformations at multiple scales. Thus, a generic model for combating land degradation in dryland ecosystems can embody the underlying principles of the ecosystem approach because of the potential for achieving multiple environmental benefits. Such a model is therefore relevant for programming in production systems, with projects that integrate priorities of the Land Degradation, Biodiversity, Climate Change, and International Waters focal areas.
- The dynamic nature of production systems presents challenges for monitoring and quantifying global environmental benefits. A major lesson from the portfolio review is the difficulty of measuring global environmental benefits from integrated approaches in production landscapes. The challenge is mainly attributable to the dynamic nature of those landscapes, which are driven by the changing and multiple needs of communities. Most conventional methods for ecosystem monitoring do not accommodate such dynamic changes, and there was little evidence of reliable methodology being applied in any of the projects visited on learning missions. For the most part, regular and sound monitoring of global environmental benefits was considered difficult and costly, and interpretation of results was not considered meaningful. Multiple benefits can accrue over long periods as the ecosystem services improve, with appropriate interventions for sustainability of land, water, and biodiversity in the production systems. These conditions imply the need for

indicators and monitoring tools that accommodate the dynamic nature of production landscapes. Tools and indicators for measuring ecosystem-level benefits of the integrated approaches are also difficult to define. Although the projects did not measure integration or monitor and evaluate synergies between or among the focal areas, their approach was clearly based on guidance in the GEF strategies for Operational Programs on Integrated Ecosystem Management (OP12) and Sustainable Land Management (OP15). Moreover, the concept of integration was consistently applied to management and not to the ecosystem, including integration of management-induced participation, cooperation, partnerships at multiple scales, and the search for synergies. Therefore, achievement of integrated, synergistic effects in terms of global environmental benefits was advanced according to OP12 and OP15 objectives—that is, through community participation and empowerment, genuine stakeholder involvement, project ownership, sectoral integration, enabling frameworks, and fit with country priorities.

## Conclusions

The findings in this portfolio review have highlighted the need for increased consideration of integrated approaches in GEF support to countries for sustainable management of production systems (crop, rangeland, and forest landscapes). Because the focus of the review was on learning with respect to the application of the practices, no generalizable statements can be made about effects of GEF financing. However, the lessons learned (what is working and what is not) and evidence of best practices (methods, tools, and approaches used) suggest an important catalytic role of the GEF through the OP12 and OP15 windows. Although OP12 and OP15 no longer exist, the growing focus on integrated approaches—through multi-focal area programming of GEF resources and the new Integrated Approach Pilots in GEF-6—presents an opportunity to harness the lessons from this portfolio review.

With increasing multi-focal area programming for the Land Degradation focal area, the portfolio review clearly reinforces a need for more constructive guidance to countries, especially with regard to links with the Biodiversity, Climate Change, and International Waters focal areas. The guidance will include details on strategic priorities for multi-focal area programming, baseline scenarios to justify GEF incremental financing, types of integrated approaches for investing GEF resources, and expectations for global environmental benefits. Such an approach will ensure improvements in quality at entry for multi-focal area projects, options for achieving synergies in global environmental benefits at multiple scales, and indicators for monitoring and quantifying the benefits. Potential entry points for the GEF catalytic effect in this regard are multiple and range from weak policy and regulatory frameworks, inadequate knowledge and tools to support decision making, lack of or ineffective institutional frameworks, and inadequate attention to the importance of key stakeholders such as local communities—especially women and vulnerable groups.

By helping countries to overcome challenges to cross-sectoral collaboration at all levels—regional, national, and local—GEF financing can foster the integration of development priorities with the need for enhancing sustainability and resilience in countries' production systems. At the regional level, where threats to production systems such as watersheds and lake or river basins may extend across national boundaries, integrated approaches require transboundary collaboration to influence policy, regulatory, and institutional frameworks between two or more countries. At the national level, the government-driven decentralization policies and associated legislative and institutional changes facilitate decision making regarding management of natural resources at the subnational and local levels. GEF projects in Burkina Faso and China were therefore able to promote integrated approaches at the provincial or district levels and at the same time empower local communities through participatory processes.

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## ABOUT THE GEF

The Global Environment Facility is a partnership for international cooperation where 183 countries work together with international institutions, civil society organizations and the private sector, to address global environmental issues.

Since 1991, the GEF has provided \$12.5 billion in grants and leveraged \$58 billion in co-financing for 3,690 projects in 165 developing countries. For 23 years, developed and developing countries alike have provided these funds to support activities related to biodiversity, climate change, international waters, land degradation, and chemicals and waste in the context of development projects and programs.

Through its Small Grants Programme (SGP) the GEF has made more than 20,000 grants to civil society and community based organizations for a total of \$1 billion.

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