



# INDIA

Sustainable Land and Ecosystem Management  
Country Partnership Program (SLEM-CPP)

KNOWLEDGE FROM THE FIELD



The GEF Secretariat Learning Mission to India was focused on the **Sustainable Land and Ecosystem Management Country Partnership Program (SLEM-CPP)** designed to pilot and demonstrate integrated approaches to the management of production systems in the country. The Learning Mission was jointly organized with the World Bank as lead GEF Agency for the program and with full support of the Ministry of Environment and Forests and State Government Agencies involved in the Program.

In addition to consultations with Government and GEF Agencies and partners involved in the program, field visits were conducted to enhance learning about the approaches and practices applied with local communities and land users.



# GEF Learning Missions

Learning Missions are a key component of the GEF knowledge management initiative. They aim at producing on-ground analysis of the execution of GEF funded projects. Lessons derived from the learning missions will be used to improve focal area strategies and policies, and inform project design and implementation. In coordination with the Scientific and Technical Advisory Panel (STAP), the GEF Secretariat has identified a list of “learning questions” relevant to each focal area strategy with the ultimate objective of enhancing the:

- a. Catalytic effect of GEF through identifying, up-scaling, and replicating best practices
- b. Global Environmental Benefits (GEBs) through improved understanding of social impacts
- c. The potential for sustainability of project outcomes across GEF focal areas.

For the Land Degradation focal area in particular, the learning missions try to determine how effectively the Integrated Ecosystem Management (IEM) approach is being applied to combat land degradation in drylands. The knowledge generated will contribute

## The Integrated Ecosystem Management (IEM)

The IEM Approach is based on the ecosystem approach adopted by the Convention on Biological Diversity. It aims at integrating land, water and living resources management to promote conservation and sustainable use in an equitable way. The approach (a) applies scientific methodologies focused on levels of biological organization, in which humans, with their cultural diversity, are an integral component of many ecosystems; (b) requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning; and (c) does not preclude other management and conservation approaches but could rather integrate several approaches and other methodologies to deal with complex situations.

The Learning Mission included the following:

- A visit to the State of Uttarakhand to engage with the Watershed Management Directorate and key stakeholders for the World Bank/GEF project on “Sustainable Land, Water, and Biodiversity Conservation and Management for Improved Livelihood in Uttarakhand Watershed Sector”;
- A visit to the State of Maharashtra for consultations with consortium partners and communicates for the World Bank/GEF project on “Strategies to Enhance Adaptive Capacity to Climate Change in Vulnerable Regions”;
- A visit to New Delhi for consultations with Government officials, other GEF Agencies (FAO and UNDP), and national partners on the overall experience with the IEM approach as embodied within the SLEM-CPP.

The Consultations were guided by the following questions:

- a. What are the drivers that generate catalytic effect?
- b. How does the GEF’s catalytic role influence the choice of activities to GEBs?
- c. How is progress toward targeted IEM outcomes being tracked?
- d. What tools and indicators are being applied for monitoring the IEM approach?

## India's SLEM-CPP targets multiple global environmental benefits in the context of improving livelihoods through community-driven interventions

The SLEM-CPP represents an important learning opportunity on the catalytic effect of GEF financing to pilot and demonstrate integrated approaches to management of production systems for multiple environment and development benefits, including adaptation to climate change. The overall program design reinforces the crucial need to apply innovative approaches for agro-ecosystem management. These approaches address vulnerability risks to communities that depend on sustainability of ecosystem services in production systems (agriculture, livestock, fisheries and forests). This places the local people, especially poor rural farmers and fisher-folks, at the heart of SLEM CPP.

The SLEM-CPP includes six sub-projects located in different parts of the country, mainly in dryland regions. They all embody multidisciplinary perspectives covering ecological, social, economic, and institutional priorities across multiple scales. Five of the six projects were specifically targeted on the most vulnerable states and sub-regions where degradation of land, water, and forest resources are likely to be exacerbated by the effects of climate change. As a result, multiple global environmental benefits can be addressed through innovations and interventions for soil and water conservation, carbon sequestration, conservation of biodiversity, and climate change adaptation.

## The Uttarakhand Watershed Project highlights the GEF catalytic effect on integrated ecosystem management in practice

The **Uttarakhand Watershed Project** was designed with the overall goal of restoring and sustaining 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, designed to improve the productive potential of natural resources and increase income for rural inhabitants in 75 micro-watersheds. GEF resources were specifically targeted on 20 of the 75 micro-watersheds, all of which were selected based on severity of erosion, extent of poverty, and lack of infrastructure facilities. The focus was on interventions

for controlling land degradation at watershed level; promoting sustainable use through fostering markets for non-timber forest products; biodiversity conservation and management through watershed planning and community participation; and increasing adaptation to climate change in natural resource based production systems.

## An effective multi-stakeholder and institutional framework is essential for implementing IEM in watersheds.

The project in Uttarakhand was a unique opportunity to implement the watershed guidelines of the Government of India approved a few times before the beginning of the project. The Watershed Management Directorate serves as a State Level Nodal Agency to manage all the watershed projects in the State. Multi-disciplinary teams of 4-6 specialists seconded from line departments played a key role in providing technical support across the watersheds. In addition, **several national institutions and civil society organizations were mobilized to harness technical support for delivering interventions**. The institutions contributed training and capacity needs, demonstration of new technologies, microfinance, and development of market value chains for communities across the targeted watersheds.

The project also engaged scientific institutions to address specific needs for knowledge generation, monitoring and assessment of interventions, and quantification of environment and development benefits. A key example is The Energy and Resource Institute (TERI), which served as a partner for baseline and final impact assessments for the project, including the development of a sampling framework, designing and refining questionnaires, field testing, pilot surveys, field surveys, data cleaning and entry, and finally data compilation and aggregation.

## Participatory processes with communities, including strong gender consideration and inclusiveness of vulnerable groups enhances project ownership at the local level.

The project in Uttarakhand used various approaches and participatory processes toward building ownership at multiple levels – from development and management of watershed plans, to creating options for enhancing livelihoods and institutional strengthening. The project approach took into account the crucial link between ecosystem services and livelihoods of women and vulnerable groups in the fragile watersheds. Village

communities actively participated in project activities, from planning and implementation to monitoring and evaluation.

Various participatory mechanisms and tools, such as focus groups, were used to select and implement interventions, covering aspects of community-level development based on natural resources. The project focused on the inclusion of women, using various tools and mechanisms: “women motivating women” for awareness and social mobilization, empowerment of women in decision making processes, improving participation of women in various committees and institutions, greater emphasis on women-led income generating activities, and promoting drudgery reducing interventions that also generate global environment benefits.

**Multiple global Environment Benefits are possible through community-driven interventions that improve livelihoods and create options for income generation.**

Project activities for integrated ecosystem and sustainable land management in production systems address specific needs for improving agricultural productivity, livestock management, and income generation opportunities. Participatory planning enables communities to streamline livelihood and productivity needs into land management options across landscapes and watersheds. As a result, a diversity of production and development options are introduced in an integrated manner to help improve quality and sustainability of ecosystem services (land, water, vegetation cover). The GEF catalytic effect is demonstrated by linking livelihood priorities to potential global environment benefits in production systems.

This is achieved through interventions for improving livelihoods and creating options at the local level. For example, interventions for restoring sustainable ecosystem functions in fragile watersheds were linked directly to options for income generation and food production. Water surplus from improved practices in the watersheds has enabled farmers to introduce high-value crops, including twenty different varieties of off-season vegetables, leading to higher income levels. Simultaneously, the program has introduced briquetting techniques which provided an alternative source of energy for cooking and heating, reducing a households’ dependency on firewood by 22 percent, and reducing the time spent on fuel wood collection.

**Effective project monitoring and accountability contributes to the sustainability of outcomes from IEM implementation**

**Employing best practices and tools, including a well-established baseline facilitates effective project monitoring**

As part of the overall monitoring framework, the project placed special emphasis on “social auditing,” which ensured transparency, accountability, and openness with full involvement of the communities. In keeping with these principles, there was widespread disclosure of information through wall writings, awareness generation campaigns, radio programs, and publications. **The use of Information Technology was an integral part of the project** from project formulation, planning, and database management to monitoring of the project's physical and financial progress and impact assessments. Management Information System software was developed as an endeavor to use IT for management of information.

**Knowledge sharing, documentation, and communication increases awareness and potential for scaling-up IEM**

Knowledge activities were implemented at different levels and reflect the importance of linking scientific and traditional sources. Traditional knowledge was taken into account during the planning phase and fully harnessed by the implementation team through surveys consultations with communities. Knowledge sharing also flowed from the implementing team and NGOs involved in the project to the beneficiaries, with 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. A Farmer Field School was also established with the cooperation of one of the farmers as a hub for training and knowledge sharing.

Lessons learned and best practices applied within the project were shared with other government agencies, partners and donors as a means of facilitating scale-up beyond the project areas. **The project generated a wide range of knowledge products** including “how-to-do” manuals, descriptions of methodologies, community resource maps, watershed work plans, and synthesis of best practices. These and the documentation of lessons learned from the project will be invaluable for informing



the design of other IEM projects and for informing policy transformations to support the integrated approach at the state and national levels. Video documentaries of the project approach and specific interventions are also being developed for dissemination as training tools.

### **Innovative technologies promote learning, knowledge exchange and informed decision making for management of natural resources**

The World Bank/GEF Sustainable Rural Livelihoods Security through Innovations in Land and Ecosystem Management was linked to the National Agricultural Innovations Program, a nation-wide initiative designed to pilot and demonstrate natural resource management innovations for increasing sustainability and resilience of production systems. The project embodies the integrated approach to ecosystem management with emphasis on development and deployment of innovative technologies to inform and enable decision-making by poor farmers and fisher-folks. The catalytic effect of GEF financing was to mainstream sustainable land and ecosystems management into development and implementation of innovations through collaboration among farmers, private sector, civil society, and public sector organizations.

### **The consortium approach to developing and piloting mobile technology platforms represents an effective model of public-private partnership for IEM.**

Through a consortium approach involving national institutions and Tata Consultancy Services (TCS), a mobile-platform known as “mKRISHI” was piloted with farmers and fisher-folks as a tool for natural resource management.

In the agriculture sector, the mKRISHI technology is helping farmers to integrate climatic information and weather forecasting into their decision making on crop production practices. Using the mobile platform, participating farmers can submit queries on a wide range of concerns, from sowing dates to fertilizer application, weeding, and pest or disease incidence. Farmers are therefore able to plan appropriately and avoid or minimize risks of failure during the farming season, which enables them to manage land, soil, water and biomass more sustainably.

For fisheries management, mKRISHI was used by fisher-folks to access information on potential fishing zones

based on sea surface temperature and chlorophyll concentration (as monitored by satellites). In addition, they also receive near real-time advisory on wind speed and direction in the fishing areas, which enables them to plan their expeditions accordingly as well as decide on which type of nets to use. As a result, they are able to save time, reduce fuel wastage, avoid risks, and increase reliability of catches.





## CONCLUSIONS

“Through the SLEM-CPP, the GEF and India have established an important platform for future opportunities to increase sustainability and resilience of dryland production systems, with potential for transformational change at scale.”

The learning mission generated considerable knowledge of integrated ecosystem management principles and practices within the SLEM-CPP. The overall program embodies a diversity of approaches to address drivers of land and ecosystem degradation that is consistent with the overall GEF mandate for environmental sustainability. In this regard, the GEF and the Government of India through the SLEM-CPP have established an important platform for future opportunities to increase sustainability and resilience of dryland production systems, with potential for transformational change at scale. Plans for a new project in the Uttarakhand watersheds and the need to expand the application of mobile technology through public-private partnership are evidence of the important role of the GEF in catalyzing investments for the global environment.

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