

GEFM&E Terminal Evaluation Review Form

1. PROJECT DATA				
		Review date:		October 2005
GEF ID:	PMIS 386		at endorsement (Million US\$)	at completion (Million US\$)
Project Name:	Optimizing Development of Small Hydel Resources in the Hilly Regions of India	GEF financing:	\$7.5	Not mentioned in TE
Country:	India	Co-financing:	7.14 (in kind)	Not mentioned in TE
Operational Program:	OP6	Total Project Cost:	\$14.64 (from database)	Not mentioned in TE
IA	UNDP	<u>Dates</u>		
Partners involved:	Ministry of Non-conventional Energy Sources Department of Economic Affairs Ministry of Finance	Work Program date		Dec 1991 (database) Jan 1991 (PIR)
		CEO Endorsement		Not in database?
		Effectiveness/ Prodoc Signature (i.e. date project began)		January 1995 (TE) March 1994 (PIR)
		Closing Date	Proposed: May 1999 (database) June 1999 (PIR)	Actual: December 2003 (TE)
Prepared by: Anna Viggh	Reviewed by: Siv Tokle	Duration between effectiveness date and original closing: 5 years and 4 months	Duration between effectiveness date and actual closing: 9 years and 10 months	Difference between original and actual closing: 4 years and 6 months
Author of TE: Indian Institute of Public Administration Prof. Anil Chandy Ittyerah (Project Director) Rajni Choudhary (Research Associate) Sangeeta Narang (Research Assistant) Shikha Datta Choudhary (Research Assistant) Prof. Subhash Chandra (Project Consultant)		TE completion date: January 2005 (no date on the report)	TE submission date to GEFEO: 02/10/2005	Difference between TE completion and submission date: 1 month

2. SUMMARY OF PROJECT RATINGS

GEFME Ratings for project impacts (if applicable), outcomes, project monitoring and evaluation, and quality of the terminal evaluation: Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU), not applicable (N/A) and unable to assess (U/A). GEFME Ratings for the project sustainability: Highly likely (HL), likely (L), moderately likely (ML), moderately unlikely (MU), unlikely (U), highly unlikely (HU), not applicable (N/A), and unable to assess (U/A). Please refer to document "Ratings for the achievement of objectives, sustainability of outcomes and impacts, quality of terminal evaluation reports and project M&E systems" for further definitions of the ratings.

	Last PIR	IA Terminal Evaluation	Other IA evaluations if applicable (e.g. OED)	GEFME
2.1 Project impacts	N/A	MS	N/A	MS
2.2 Project outcomes	S	S	N/A	MS
2.3 Project sustainability	N/A	L	N/A	ML
2.4 Monitoring and evaluation	N/A	MS	N/A	MU
2.5 Quality of the evaluation report	N/A	N/A	N/A	S

Should this terminal evaluation report be considered a good practice? Why? No. This report is a TE and Impact Assessment in one. The project completed its major activities by September 2002 except a few demonstration projects which were in their final stages of completion. A detailed impact assessment study was conducted in conjunction with the TE. This goes beyond the mandate of a TE.

The report contains useful and interesting information, but has shortcomings. It is much too long at almost 200 pages and is repetitive in some sections. The TE does not include the actual project costs and actual co-financing used. Lessons are mixed with conclusions, findings, and recommendations.

3. PROJECT OBJECTIVES, EXPECTED AND ACTUAL OUTCOMES

3.1 Project Objectives

- **What are the Global Environmental Objectives? Any changes during implementation?**

The development Objective is not mentioned in the TE. It differs in the project document and the PIR 2003, and therefore, seems to have been a change during implementation.

Project document - To protect biodiversity and reduce global warming. These objectives contribute directly to protection of the environment, which is given high priority in the national development plan.

PIR 2003 -The project will provide renewable, perennial, and non-fossil fuel-based energy to the region, thereby reducing carbon emissions and helping to prevent deforestation in such ecologically-fragile areas. Energy produced through the project can meet lighting, cooking, heating, agricultural and commercial needs. The project will contribute to reduction of population migration to cities and mega-cities by creating local opportunities for employment.

• **What are the Development Objectives? Any changes during implementation? No.**

1. To develop a national strategy and a master plan with detailed investment proposals for the optimum utilization of small hydel resources of the Himalayan and sub-Himalayan regions.
2. To develop a package of commercially viable and environmentally sound technologies, on the basis of installation and commissioning of twenty demonstration units at various selected places, for generation and use of small hydel power and to develop appropriate models for ownership, management and maintenance of the small hydel projects through people centered and participatory approach.
3. To develop the institutional and human resources capabilities, from the local to national levels, needed for the execution/ implementation of the project and for sustainable development of the mini-micro hydel sector in hilly regions.

3.2 Outcomes and Impacts

• **What were the major project outcomes and impacts as described in the TE?**

Impact

The project document envisioned that 50 percent of the energy produced by the demonstration projects would be used for cooking and heating in the project area, thereby replacing fuel wood. Only around 25 percent of the power available is at present used for such applications, and that too mainly during the winter months. The fuel wood saving and corresponding reduction in emission is therefore likely to be much lower than what has been envisaged in the project document. With the total capacity of 4700 KW currently installed under the hilly hydro project the actual fuel wood savings per year as a consequence of the power generated works out to be only 1111 tons/year as compared to the 7100 tons/year anticipated in the project document. The corresponding GHG emission reduction is also much lower at 535 tons/ year as compared to what was envisaged in the project document.

However, the project has certainly served as the major catalyst for the creation of an additional installed capacity to the tune of 1530 MW in the small hydro sector up to July, 2003. Of this capacity as much as 543.30 MW has been installed in the hilly regions and would under the most conservative assumptions lead to a fuel saving of 1.28 lakh tons/year. With the corresponding GHG reduction of nearly 57,825 tons/year. It may thus be concluded that even assuming a lower plant load factor and very moderate use of electricity in cooking and heating, the fuel wood saving as well as emission reduction is likely to be fairly impressive.

In the case of the remaining small hydro capacity of 987.10 MW installed in the non hilly areas till July, 2003 and which is likely to replace the use of diesel apart from other fossil fuel saving applications the annual saving of diesel is expected to be as high as 864.69 million liters/year and the corresponding GHG reduction through diesel saving is expected to be as high as 2.3 million tons/year.

Note: For impact reported by the Local Benefits Study, please see section 4.5.1 below.

Outcomes

The project succeeded in developing a national strategy and master plan with detailed investment proposals for small hydel resources. These formed the basis of the national strategy to achieve the target for capacity addition of 130 MW during the Ninth Plan. Actually an aggregate capacity of 269 MW was achieved during the period 1997-2001.

The Ministry of Non-conventional Energy Sources (MNES) took a conscious decision to undertake small hydro projects as a commercial activity with private sector participation. In order to achieve this objective the Ministry announced fresh incentives to provide financial support for

conducting feasibility studies, interest subsidy for commercial projects, and distributed capital grants to Government sector project. The scheme was extended to projects up to 25 MW in November 1999. The strategies used to involve private sector and financial institutional participation has been very successful considering the response of the private sector for allotment of the developed sites in various States.

Of the 20 demonstration projects only 17 are functional. Only a few of them have been generating power for the last two years. It is too early to judge whether commercially viable and environmentally sound technologies in these projects are going to be replicated. These projects have been used as a bench mark by the new entrants in this sector and experience gained in these projects has been used to improve the new projects. However, about half of the sub-projects are connected to the state grid.

The project has built capacity in selected institutions concerned with the Small Hydro Sector and created an experienced and trained pool of personnel for planning and implementation of SHPs. Out of three selected technology institutions only the Alternative Hydro Energy Center has been developed for training consultancy and information services. Testing and applied research still needs consolidation.

4. GEF OFFICE OF M&E ASSESSMENT

4.1 Outcomes and impacts

Rating: **MS**

A Relevance

- **In retrospect, were the project's outcomes consistent with the focal areas/operational program strategies? Explain**

Yes, the projects outcomes are consistent with OP6 strategies. In particular, the national strategy and master plan developed under the project formed the basis of the national strategy to achieve the target for capacity addition of 130 MW during the Ninth Plan. The commendable work done has been widely appreciated and its overall impact on enabling and catalyzing small hydro power development has been significant and substantial.

B Effectiveness

- **Are the project outcomes as described in the TE commensurable with the expected outcomes (as described in the project document) and the problems the project was intended to address (i.e. original or modified project objectives)?**

While small hydro systems have been installed and are operating, most of these sub-projects are connected to the State grid. The objective of the project was to deliver electricity to communities around each sub-project on a stand alone basis. Furthermore, it was intended that the sub-projects would produce energy for cooking and heating replacing the use of fuel wood.

C Efficiency (cost-effectiveness)

- **Include an assessment of outcomes and impacts in relation to inputs, costs, and implementation times based on the following questions: Was the project cost – effective? How does the cost-time Vs. outcomes compare to other similar projects? Was the project implementation delayed due to any bureaucratic, administrative or political problems?**

Implementation was very slow. By September 2002 the project had completed its major activities, except a few demonstration projects which were in their final stages of completion. According to the TE major factors that affected the implementation process are:

- Inadequate coordination between the state and field level functionaries and agencies.
- The very partial or inadequate development of Technical Institutions.
- The complete lack of mobilization of local communities and their lack of involvement in the project.
- Substantial delays in the completion of certain critical actively blocks.
- Inefficient and ineffective monitoring of the project due to substantial delays in the receipt of information from the field.

The project actually took an additional 5 and 1/2 years to be completed which perhaps reflects that the time horizon was not realistic. The task of effective and timely implementation within this short time horizon was particularly challenging considering that the project was not only addressing a very large and complex development issue but also hoping to make a very wide spread impact in as many as 13 Himalayan and Sub-himalayan States, spread over a vast geographical area.

The TE agrees with the mid term evaluation that the project could have been taken up in two distinct phases; namely a preparatory phase of about 3 years, and an implementation phase of about 3 1/2 years, with the former preparing the basic ground work for the timely and effective execution of the implementation phase.

4.2 Likelihood of sustainability. Using the following sustainability criteria, include an assessment of project sustainability based on the information presented in the TE.

A Financial resources	Rating: ML
<p>As far as financial effectiveness of the project is concerned the entire project was partially subsidized. The project has not reached the self financing stage however with improved management and maturity of the projects they are likely to generate their own resources and in all likelihood become viable self financing entities. A lot depends on the enabling conditions provided for financial viability by the State Governments and even more significantly on the pace at which load development takes place in the target areas.</p>	
B Socio political	Rating: MU
<p>The weakest area of project implementation has been the participation of local people, particularly women. The project laid a great deal of emphasis on people's participation and the evolution of ownership models in the small hydro sector. Unfortunately, this did not materialize to the expected extent. The stress on people's participation was primarily due to the fact that these demonstration projects were targeted to be set up in very remote and isolated locations and were visualized as "stand alone" SHPs requiring not only the generation of micro hydel power but also the distribution of this power through a local isolated grid. While the project made explicit provisions for the setting up of power generation facilities there was no such clear and explicitly articulated activity block designed to put the distributional facilities and related infrastructure in place.</p>	
C Institutional framework and governance	Rating: ML
<p>The project intended to develop institutional and human resources capabilities, from the local to national levels, needed for the implementation of the project and for sustainable development of the mini-micro hydel sector in hilly regions. This was partially achieved at the national and State level although there is no scope to train local people in maintenance and management aspects of the project due to change in strategy to commercialize small hydro program. The project has failed to achieve this criteria due to its deviation from being based on stand alone sub-project to that based on commercial grid connected sub-projects or captive industry related sub-projects such as plantation based SHPs.</p> <p>The overall impact of training and institution building has been significant with the setting up of the Alternative Hydro Energy Center on a stronger foundation and developing the leading apex institution as a National Resource Centre for Small Hydel Development. However, the continual support of the MNES and other international donors is required in strengthening testing facilities and in developing applied research.</p>	
D Ecological (for example, for coffee production projects, reforestation for carbon sequestration under OP12, etc.)	Rating: ML
<p>The over all profile of energy use still remains unaltered with wood and other fossil fuels being predominantly used for cooking and space heating purposes. Moreover, the expected use of electricity in various agricultural and local village livelihood applications has not yet come about. However, over time and with the stable generation and availability of power in the target areas these applications are expected to be gradually adopted by the local population in these target</p>	

areas.
E Examples of replication and catalytic outcomes suggesting increased likelihood of sustainability Rating: L
The project set-up 17 (out of 20) demonstration projects of varying design and specification incorporating the latest technologies available and which suit a wide range of topographical and terrain conditions. These provide the basis for replication and further development of SHPs in the Himalayan and Sub-himalayan region. The mechanically upgraded water mills and some upgraded for localized generation of power are also capable of being improved and replicated on a wider basis.

4.3 Assessment of the project's monitoring and evaluation system based on the information in the TE

A. Effective M&E systems in place: What were the accomplishments and shortcomings of the project's M&E system in terms of the tools used such as: indicators, baselines, benchmarks, data collection and analysis systems, special studies and reports, etc.? Rating: MU
The TE rated project monitoring and evaluation marginally satisfactory. The project document describes project review and evaluation in very broad terms with no well-defined indicators of M&E. The TE notes that implementation was negatively affected by inefficient and ineffective monitoring of some project activities due to substantial delays in the receipt of information from the field. The project did establish mechanisms for monitoring and reporting with the various field level agencies engaged in implementation, but faced difficulties in obtaining feed back from these sources. State level project coordinators could have been helpful.
B. Information used for adaptive management: What is the experience of the project with adaptive management? Rating: U
None reported in the TE. However, according to the TE there was inefficient and ineffective monitoring of the project due to substantial delays in the receipt of information from the field.
Can the project M&E system be considered a good practice? No.

4.4 Quality of lessons

Weaknesses and strengths of the project lessons as described in the TE (i.e. lessons follow from the evidence presented, or lessons are general in nature and of limited applicability, lessons are comprehensive, etc.)

What lessons mentioned in the TE that can be considered a good practice or approaches to avoid and could have application for other GEF projects?
<ul style="list-style-type: none"> • Projects in the Small Hydel sector must specifically stress the importance of the strengthening of transmission and distribution infrastructure in the target areas. Clear and adequate financial provisions must be made and earmarked for this purpose so that the State Electricity utilities are not further burdened but are enabled to actively participate willingly in the Small Hydel initiatives in the future. • A project of this nature, which involves a multiplicity of inputs from and the concurrence and coordination of several agencies, should be attempted in two distinct phases namely a preparatory phase and implementation phase. Moreover there is the need for a realistic time horizon for both phases. • The project, which involves the active participation and involvement of the local population both in the implementation and for deriving tangible benefits, needs concerted efforts in mobilization of the local population right from the start. Such an effort, which should form a part of the preparatory phase will enhance the speed of implementation and increase the impact of the project by ensuring that the local population evolve as active stakeholders and also develop a real sense of ownership in the project. • The TE points to the importance of constant monitoring and timely follow up action by the

project-monitoring cell (PMC). The PMC should be enabled to collect timely and accurate information from distant and isolated project locations. Future projects should thus pay greater attention in creating the necessary communication and manpower systems for effective monitoring.

- Training consultants should be deployed until the full completion of the project to enable the fine-tuning and improved effectiveness of the training context as the project progresses. Much greater interaction of these consultants with the Technical Institutions needs to be ensured for better results in this regard. Greater emphasis of hands on or shop floor training and apprenticeships at the sub project level is vital for building capacities at the operational level and this should be ensured in future projects.
- Future projects should ensure strong Centre-State supportive linkages by enlisting and ensuring the formal commitment of the Power Secretaries in all participating States, insist on the appointment of a Senior Officer from the concerned States as the State Level Project Coordinator, and also enter into an unambiguous and clearly articulated MOU with the concerned State Government appending therein the Implementation Agreement and Power Purchase Agreements.
- Since the project lays particular emphasis on women in Development and as women constitute a substantial part of the local population sought to be benefited by the project, the active participation and involvement of women should be ensured by the Project Authorities. Future projects of this kind must involve a significant number of women consultants, women's NGOs and Self Help Groups, particularly during the preparatory phase of the project.

4.5 Quality of the evaluation report Provide a number rating 1-6 to each criteria based on: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, and Highly Unsatisfactory = 1. Please refer to the "Criteria for the assessment of the quality of terminal evaluation reports" in the document "Ratings for the achievement of objectives, sustainability of outcomes and impacts, quality of terminal evaluation reports and project M&E systems" for further definitions of the ratings.

4.5.1 Comments on the summary of project ratings and terminal evaluation findings

In some cases the GEF Office of M&E may have independent information collected for example, through a field visit or independent evaluators working for the Office of M&E. If substantial independent information has been collected, then complete this section with any comments about the project.

Local Benefits Case Study Report, July 2004

On impact:

The conclusions drawn by the Local Benefits Study is at variance with the TE's views particularly regarding fuel wood savings and related GHG emissions. These conclusions are mainly based on their brief visit and interaction with the local population in a few sub project target areas, while the TE's larger survey of target areas reveal that the use of electricity for cooking and heating purposes though limited at present is progressively increasing and more widespread, than that perceived by the Local Benefits Study Team. Moreover the TE's more optimistic outlook is based on the projections made on the basis of overall SHP capacity additions up to July, 2003.

4.5.2 Quality of terminal evaluation report

	Ratings
A. Does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives? Yes.	6
B. Is the report internally consistent, is the evidence complete/convincing and are the IA ratings substantiated? Yes.	6
C. Does the report properly assess project sustainability and /or a project exit strategy? Yes.	5

D. Are the lessons learned supported by the evidence presented and are they comprehensive? The presentation of lessons is mixed with conclusions, findings, and recommendations. Lessons are supported by the evidence presented in the TE.	4
E. Does the report include the actual project costs (total and per activity) and actual co-financing used? The TE does not provide information on the actual project costs.	1
F. Does the report present an assessment of project M&E systems? The M&E system is rated and briefly mentioned, but not really assessed.	4

4.6 Is a technical assessment of the project impacts described in the TE recommended? Please place an "X" in the appropriate box and explain below.

Yes:

No: **X**

Explain: As mentioned above, the project completed its major activities by September 2002 except a few demonstration projects which were in their final stages of completion. A detailed impact assessment study was conducted in conjunction with the TE.

Is there a follow up issue mentioned in the TE such as corruption, reallocation of GEF funds, etc.? No.

4.7 Sources of information for the preparation of the TE review in addition to the TE (if any)

TE, Local Benefits Case Study Report, Project document, PIR03, GEF database