

PROPOSAL FOR FUNDING UNDER POVERTY AND ENVIRONMENT PROGRAM (PEP)

A. Basic data:
1. Activity Title: Development of Model Water Mills for Sustainable Micro-Enterprise Development
2. ADB Project Officer: D. Millison, SAEN
3. Request Date: 28 February 2005 (Re-revised 2nd April 2005)
4. Implementing Organisation: Uttaranchal Renewable Energy Development Agency (UREDA)
5. Types of Interventions: Pilot interventions
6. Amount of Request: \$250,000
7. Period this funding request will cover: 2005-2006 (1 year)
8. Region/Country: Uttaranchal, India
B. Description of Implementing Organisation
<p>The Uttaranchal Renewable Energy Development Agency (UREDA) was set up under the administrative control of the Department of Energy, Government of Uttaranchal (UEID) in July, 2001 as a registered society under Society Registration Act 1860. UREDA implements the full spectrum of renewable energy programs at local community (<i>panchayat</i>), district, and state government levels; involving NGOs and other stakeholders.</p> <p>An Executive Body headed by the Secretary Energy (seated in UEID), administers the activities of UREDA. Other members of the Executive body include Administrators, Scientists and Technologists. The Head Quarter of this society is at Dehradun, the state capitol. The thirteen district project offices are staffed by 96 personnel including 19 officers working. All the district level offices and head quarter of UREDA are fully equipped with Computers, Printer, Fax and Photocopier Machines. The accounting software of TCS has been installed in each office for computation of monthly accounts.</p> <p>UREDA has a separate budget provision under the State Plan budget ("on-budget") and receives additional funds ("off-budget") to implement the program of Ministry of Non-conventional Energy Sources and the Integrated Rural Energy Program.</p> <p>UREDA has sufficient experience in planning, implementation, operation & maintenance of various community based renewable energy programmes. The major activities undertaken by UREDA are:</p> <ul style="list-style-type: none">• Electrification of villages/habitations using Solar Energy, Small Hydro power and Biomass.• Up-gradation of old existing Water Mills.• Construction of small hydro projects up to 3 MW capacity for decentralized electrification of remotely located villages as well as for grid feeding.• Installation of solar water heaters, solar dryers, solar water distillation plants and solar timber seasoning kilns.• Provide technical trainings for operation and maintenance of various schemes to villagers, users, NGO's personals and entrepreneurs.
C. Proposed Subproject
1. Background and Rationale
<p>In Uttaranchal, water mills (locally known as <i>gharat</i>) have traditionally been used to generate mechanical power, principally used for the purpose of grinding food grains. Traditional gharats (numbering over 12,000 in Uttaranchal) were constructed with wooden runners and chutes, since wood as readily available for construction purposes. Available data shows that the every year the Gharat owner harvest trees for repairing wooden runners and chutes.</p> <p>Beginning in 2002, a program to retrofit and upgrade over 12,000 gharats with metal runners and chutes was initiated under UREDA leadership. The upgraded gharats generate both mechanical and electrical power. The energy generated can be used to improve living standard, livelihood options of the beneficiary communities as</p>

well as reducing the need for deforestation.

During 2002-04, a total of 235 water mills have been upgraded with financial assistance from Ministry of Non-Conventional Energy Sources (MNES). The MNES funding support is limited to upgrading only the principal equipment (improved runner and addition of a turbine). The efficiency has been increased as much as 30-40%, to about 5 KW of mechanical and electrical power. These improved gharats are recognized as a small-scale industry with great potential for improving livelihoods and reducing pressure on forests. At the current rate, upgrading all of the gharats will require about 100 years.

Uttaranchal consists of scattered habitations dotting inhospitable topographical features. It is thus, not economically viable for the state to provide benefits to all these far-flung habitations from a central scheme - be it electricity, water etc. giving rise to a new approach of demand-driven, decentralized local self governance in all development sectors. This approach demands involvement of the beneficiary community in all stages of the project to empower them adequately to solve their own problems on a sustainable basis.

The draft Project Framework is attached in Appendix 1.

2. Objectives

The main objective of the project is to demonstrate innovative approaches to enhance livelihood opportunities of poor through sustainable management of water mills in selected project areas.

The specific objective of this project would be to:

- Protect, conserve and ensure sustainable use of natural resources and ecosystem services to maintain the livelihoods of the poor;
- Mobilise and involve local communities to use mechanical and electrical power generated from these watermills for various small-scale enterprise at the village level
- Revive and upgrade traditional water mill technology into community managed multi-purpose micro-enterprise.
- Develop replicable models for up-scaling in other parts of the state and region.

3. Scope of Work/Description of Proposed Approaches

Scope of work would include:

- Development of 10 Model Water Mills as Multi--purpose resource centres to enhance the living standards of rural communities as well as to decrease forest degradation.
- Formation of district level water mill associations and State Water Mill Federation for synergy and advocacy
- Enlist and register all water mill owners at the district and block levels as also to prepare a directory of water mill-owners of Uttaranchal.
- Demonstrate all mechanical and electrical uses highlighting scope of establishment of small-scale enterprises.
- Training of 100 Para Water Mill technicians to take care of installation, repair and maintenance of these mills at the village level
- Empowerment and capacity building of water mill associations/federation to function as resource centre to aid micro-enterprises at the village level
- Imparting various income generating trainings as per demand of the user communities.
- Mobilizing resources for environment friendly economic activities including micro electricity generation and its varied uses at local level, run and supported by local communities themselves.

Proposed Approaches would include:

- User participation in planning and management of improved water mills.

- Capital cost sharing by users for construction and up-gradation of water mills
- Operation and maintenance of water mills by users
- Institutional strengthening and capacity building of various stakeholders across all levels.
- Involve NGOs and CBOs for facilitating user participation in sustainable management of water mills.

4. Work Plan and Reporting

The proposed work plan is given in the table below:

Activity	Duration		Responsibility
	From	To	
Identification & selection of NGOs	Month 1	Month 1	UREDA
Survey to enlist all water mill owners & preparation of directory	Month 2	Month 4	NGOs/Consultants
Development of 10 model water mills-Civil, E&M & transmission work related equipments)	Month 2	Month 10	Users and NGOs
Formation of district water mill owners association and state water mill owners federation	Month 5	Month 10	Users & NGOs/Consultants
Training to WMA and WMF for IG activities	Month 7	Month 11	NGOs/Consultants & UREDA
Training to 100 para watermill technicians for O&M	Month 8	Month 11	NGOs/Consultants & UREDA
Preparation of an operational manual for replication	Month 10	Month 12	NGOs/Consultants & UREDA
Supervision, monitoring and evaluation	Month 1	Month 12	NGOs/Consultants & UREDA

Reporting mechanisms would be as follows:

- UREDA headquarter will be responsible for reporting to the funding agency. UREDA officers will establish linkages with irrigation, energy, rural development, forest, tourism, Khadi Village Industry Commission and other related departments to ensure synergy of efforts for micro enterprise development.
- A district level committee under the chairmanship of district collectors is to be constituted for monitoring of the proposed programme. The convenor of this committee will be project officer of UREDA.
- Quarterly progress report would be submitted by UREDA headquarter on the format as prescribed by the funding agency.

5. Expected Outputs and Outcomes

The project is expected to reduce poverty via economic growth. People, particularly the women are resource poor and heavily depend on the environment for meeting basic needs related to livelihood. Women usually work for 16-18 hours a day out of which around 8-10 hours are spent in collecting fuel wood, fodder and drinking water. Drudgery in terms of carrying water, fuel wood and fodder as head load is enormous, both in terms of time spent in these activities and resultant fatigue which has a bearing on poor utilisation of the remaining time. As a result, children in the household are severely neglected and health of women and children also becomes vulnerable due to insufficient time available to women for rearing of siblings and personal care.

The rural households are dependent on forest for fuel wood and fodder for domestic purposes and according to one estimate 60% dependence is for fuel wood. The proposed intervention would help the rural households to have access to electricity for indoor lighting, cooking purposes and economic enterprise. This would reduce pressure on forests significantly, if all the 12000 *gharats* are up-graded to generate mechanical and electrical power. Moreover, up-gradation of *gharats* with metal runners and chutes would also contribute in reducing deforestation to some extent as the yearly repairs of wooden runners and chutes would no more be

required. As the head load cartage of fuel wood would get eliminated due to availability of electricity from up-graded *gharats*, skull drudgery of women would further get reduced.

In short, upgrading water mills to provide mechanical power and electricity supports improved livelihoods via reduced labor for fuel wood and biomass collection, improved indoor lighting for night-time activities (e.g, studying), and additional power for daytime activities (e.g., micro-enterprise operations). The proposed subproject is designed to leverage the grant-supported inputs into self-sustaining, community-owned activities.

The following outputs are expected:

- 10 multi-purpose watermills established
- 10 Watermills associations established at district level
- 1 watermill federation established at the state level
- 100 para technicians trained for operation and maintenance of watermills
- More than 200 users trained on income generating activities
- A directory of existing watermills in Uttaranchal prepared
- An operational manual developed

The project is expected to lead to the following outcomes:

- In comparison of old one the new improved Water Mills will produce two times more grains.
- Replacement of wooden chutes/runners in old mills will increase forest cover.
- Generation of electricity through Water Mill will ensure higher income levels, time saving for villagers with all the added Social and Economic benefits
- Development of Model Water Mills as a Multipurpose Service Centres will have a ripple effect resulting in an increase in establishment of micro enterprises at the local level.
- Skull drudgery of women will be reduced, as the task of manual de-husking, grinding of food grains etc will be rendered redundant.
- Improved income generating opportunities for the community

6. Subproject evaluation and Information Dissemination:

The NGO/Consultants and the community would carry out a baseline survey to depict all related data to depict the socio-economic conditions and assess demand of the community. This will act as a benchmark for future studies and evaluation. The Community, NGO/Consultants and UREDA officials would carry out the evaluation on a regular basis. NGOs/Consultants would submit progress reports on quarterly basis to the UREDA. Monthly/Quarterly review meetings would be organised at the UREDA headquarter as per the requirement.

Review missions from ADB would evaluate the project as and when deemed proper.

Learning lessons and best practices would be documented and shared with all stakeholders for cross learning and action. The following learning mechanisms would be put in place for information dissemination:

- Learning workshops would be organised for sharing and documenting knowledge-base.
- NGOs and other field agencies would conduct cross visit to successful projects
- UREDA would publish quarterly journal to share best practices as observed from the field. The bullet would be shared with all stakeholders on a regular basis.
- Annual report would be published and shared across all partners
- Block Development Committee meeting would be used as a platform for sharing and disseminating information
- UREDA would develop a documentary film on the piloting experiment to be used as a training tool for scaling up of the approach in the state

7. Scope of Replication/Use in other DMCs

After completion of the project, based on the learning and experience, UREDA would replicate this model in other parts of the state in a phased manner, beginning from 2006 onwards.

The topographical features of the Himalayan and other hilly regions do not exactly match but similarity may be drawn in gross general terms. Thus, in the mountainous tracts of India, Pakistan, Nepal, Bhutan, part of China, Myanmar etc wherever there is running water flowing from sufficient height this technique will be applicable. The Socio-economic condition of the rural areas of all these Asian mountainous regions is similar thereby indicating high potency for this project to be replicated in this region.

D. Cost Estimate and Disbursement Schedule (US\$ '000):

Item/Details of Activities	Partner Contribution	Requested	Total	Disbursement
1. Cost of development of 10 Model Watermills - civil, E&M and Transmission works.	25	100	125	50% mobilization at project initiation. Further payments on submittal of invoice
2. Formation of District Watermill Owners Associations and State Watermill Federation	3	10	13	50% mobilization at project initiation. Further payments on submittal of invoice
3. Survey to enlist all watermill owners and preparation of directory.	15	10	25	50% mobilization at project initiation. Mid-term progress payment and project close-out progress payment.
4. Training to WMA and WMF for IG activities	9	30	39	50% mobilization at project initiation. Mid-term progress payment and project close-out progress payment.
5. Training to 100 Para Watermill Technicians for O&M	9	30	39	50% mobilization at project initiation. Mid-term progress payment and project close-out progress payment.
6. Preparation of an operational manual for replication	10	5	15	50% mobilization at project initiation. Further payments on submittal of invoice
7. Expenses on information dissemination Activities	9	10	19	Mid-term progress payment and project close-out progress payment.
8. Travel and Support Service expenses	5	30	35	Payment on submittal of invoices
9. Supervision, monitoring and evaluation expenses	0	25	25	50% mobilization at project initiation. Further payments on submittal of invoice
Total Expenses	85	250	335	

E. Proposed Subproject Management system

The project would employ an organisational structure in keeping with the spirit of decentralised, sustainable, local self governance where by the community is at the top-who will be at the vanguard of all the project activities, followed by the NGOs/Consultants - who catalyse the community into a mobilised group united for the common cause of the project. The state government comes at the bottom of the heap in the role of a facilitator instead of that of a provider. Furthermore there will be District water Mill Associations - who will co-ordinate project activities within the district and also provide assistance and the umbrella organisation at the state level the Federation of Water Mill Owners Association - as a pressure group to do advocacy in this sector and also to lend its weight to solve any problem at the state level.

UREDA, NGO/Consultant along with the community will monitor the project activities as a matter of routine whereas the District Watermill Owners Association and the Federation of Watermill Owners Association will also participate in the process as and when necessary.

Appendix 1 Project Framework

Inputs	Activity	Outputs	Outcome (Indicators)
1. Creation of new water mill user associations 2. Labor inputs 3. Equipment 4. Civil work	1. Upgrade of 10 gharats 2. Survey and creation of 10 user associations 3. Training of Construction of transmission and distribution lines 4. Skill transfer to local stakeholders – Technical skills – Managerial skills 5. Initiation of benefits sharing plan	1. 10 multi-purpose watermills established 2. 10 Watermills associations established at district level 3. 1 watermill federation established at the state level 4. 100 para technicians trained for operation and maintenance of watermills 5. More than 200 users trained on income generating activities 6. A directory of existing watermills in Uttaranchal prepared 7. An operational manual developed	1. Increase in production of grains by two times 2. Replacement of wooden chutes/ runners in old mills will increase forest cover 3. Generation of electricity through Water Mill will ensure higher income levels, time saving for villagers with all the added Social and Economic benefits 4. Development of Model Water Mills as a Multipurpose Service Centres will have a ripple effect resulting in an increase in establishment of micro enterprises at the local level. 5. Skull drudgery of women will be reduced, as the task of manual de-husking, grinding of food grains etc will be rendered redundant. 6. Improved income generating opportunities for the community

Appendix 2 TOR for Consultants

Background of the project

The Uttaranchal Renewable Energy Development Agency (UREDA) was set up under the administrative control of the Department of Energy, Government of Uttaranchal (UEID) in July, 2001 as a registered society under Society Registration Act 1860. UREDA implements the full spectrum of renewable energy programs at local community (*panchayat*), district, and state government levels; involving NGOs and other stakeholders. The major activities undertaken by UREDA are:

- Electrification of villages/habitations using Solar Energy, Small Hydro power and Biomass.
- Up-gradation of old existing Water Mills.
- Construction of small hydro projects up to 3 MW capacity for decentralized electrification of remotely located villages as well as for grid feeding.
- Installation of solar water heaters, solar dryers, solar water distillation plants and solar timber seasoning kilns.
- Provide technical trainings for operation and maintenance of various schemes to villagers, users, NGO's personals and entrepreneurs.

UREDA, with financial support from ADB, is planning to implement 'Development of Model Water Mills for Sustainable Micro-enterprise Development in the State of Uttaranchal. The main objective of the project is to demonstrate innovative approaches to enhance livelihood opportunities of poor through sustainable management of water mills in selected project areas.

The specific objective of this project would be to:

- Protect, conserve and ensure sustainable use of natural resources and ecosystem services to maintain the livelihoods of the poor;
- Mobilise and involve local communities to use mechanical and electrical power generated from these watermills for various small-scale enterprise at the village level
- Revive and upgrade traditional water mill technology into community managed multi-purpose micro-enterprise.
- Develop replicable models for up-scaling in other parts of the state and region.

UREDA wishes to hire consultants/NGOs for providing training and technical assistance to help implement the project in specified areas of Uttaranchal.

Objective of the assignment

The primary objective of the assignment is to provide training and technical assistance to users in management of water mills and related income generation activities. The related secondary objective is to provide support to UREDA in supervision and monitoring of these projects.

Scope of work/Tasks to be carried out

- Carry out a baseline survey of gharats in the state of Uttaranchal. The format for survey would be finalised in consultation with the UREDA.
- Based on the survey, facilitate formation of district water mill owners association (WMA) and state water mill owners federation (WMF)
- Provide training to WMAs and WMFs in income generation activities as per identified needs.

- Facilitate development of water mills by users as per target agreed with UREDA
- Provide training to para water mill technicians for operation and maintenance of gharats
- Organise workshops for documenting and disseminating best practices
- Participate in BDC meetings for sharing of information and best practices
- Support UREDA in monitoring and evaluation of the project
- Preparation of an operation manual for scaling-up

Area of work

To be decided by UREDA, keeping in view competencies and experience of identified Consultants/NGOs and their willingness to work in a particular area.

Expected outputs

As per mutually agreed targets with UREDA, the expected outputs from the Consultants/NGOs are:

- Watermills established
- A directory of existing watermills in Uttaranchal prepared
- WMAs and WMF established
- Income generation trainings organised
- Para technicians trained for operation and maintenance of watermills
- Best practice documents prepared and disseminated
- Monitoring and evaluation visits conducted
- An operational manual developed

Team Composition

The consultant would be required to place a multi-disciplinary team having relevant experience in non-conventional energy/community based projects in Uttaranchal/similar regions. The core team would include the following:

- Mechanical Engineer
- Community Development Specialist
- Micro-enterprise specialist

Besides the core team, required number of investigators would be deployed by the consultant for survey work.

Duration of the assignment

11 months

Work plan and payment schedule

Work plan and time schedule would be decided based on the area of operations as agreed with UREDA. Tentatively, the following payment schedule is being proposed:

- 20% on submission of directory of water mill owners
- 20% on formation of WMAs and WMF

- 10% on completion of income generation trainings for WMAs and WMF and trainings of para technicians on operation and maintenance of watermills
- 40% on completion of water mills
- 10% on development of an operational manual.