Background

India is the world’s fourth largest energy consumer with a total primary energy demand of 621 million toe as of 2008. India’s economic growth adds a vast demand on its energy resources. It is expected that the country will become the second largest contributor to the increase in the global energy demand by 2035, accounting for 16% of the rise in the global energy consumption.

A large proportion of the Indian population continues to live without or with unreliable access to electricity and other forms of commercial energy. More than 50% of the population has little or no commercial energy access for their livelihood. Even those who have access, have to cope with poor and erratic availability of electricity. This project will increase the access of rural communities to renewable electricity in the State of Uttarakhand, India and it will demonstrate, deploy, and transfer an Ultra-Low Head (ULH) Micro Hydro Power (MHP) technology from Japan to the State of Uttarakhand.
India has enormous untapped potential for micro hydropower (MHP) in India. This ultra-low head (ULH) based technology is an inclusive project intervention that brings state-of-the-art technology and energy production connected to the rural industry sector such as agro-industry and energy supply services, while ensuring the national capacity for local manufacturing and investment opportunities as well as replication in a business model framework.

This project aims to increase the number of people with access to sustainable renewable energy and to promote innovative technologies with the prospect of delivering long-term green growth and jobs for the benefit of the local communities. This intervention promotes and demonstrates easy and innovative renewable energy technologies and it is in line with the Indian national strategy for developing the local institutional capacities. This initiative has been developed with the commitment of the Government of India and the support of the Government of Japan.

The project will demonstrate an innovative ULH-MHP system for the first time in the Indian state of Uttarakhand. This technology can be used to generate power in natural falls and on man-made canals with minimal construction work required. Due to its compact structure and easy usage and installation, the system is especially well suited for decentralized power generation, which is easy in routine maintenance and operation. It is therefore an attractive solution for rural electrification, where access to the main grid is not readily available. It is estimated that Uttarakhand has about 8,200 km of manmade water canals and 400 small falls that are ideal for the demonstration of this turbine system.

Key Areas of UNIDO Interventions

This project will lead to an increase in the access to renewable energy for productive uses for the rural communities in the State of Uttarakhand, India.

The key areas of intervention in the first phase of the project are:

- Installation of the ULH technology to demonstrate mini-grid systems for productive uses;
- Capacity building and institutionalization in the ULH-MHP sector to develop a knowledge hub;
- Awareness raising and working on market/investment opportunities to mainstream this new technology as a new sector.

The pilot installation will result in developing replicable business models of ULH-MHP mini-grid systems in the state of Uttarakhand. Being an innovative solution to generate electricity of around 10kW at ultra-low head (below 3.0m) with a discharge of only 0.8-3.0 m3/s, the establishment of a favourable environment for the local technology deployment is envisaged.

Collaborative Initiative

UNIDO is collaborating with the Ministry of New & Renewable Energy of the Government of India (MNRE) and the State Government of Uttarakhand (UREDA) to identify potential pilot project sites with strong interest and commitment to join this collaborative initiative. The financial support for this project is provided by the Government of Japan and UNIDO, with in-kind contributions from the Government of India.

Community Based Approach

Through a community based project approach, the project invites proposals from the local communities and entrepreneurs in Uttarakhand through the state government agency, UREDA, to own ULH-MHP technology for various productive purposes. When a request is received from the local communities, a review, analysis and survey are done by the project team. The potential proposal is then reviewed and, if found suitable, it is then approved by the Project Steering Committee represented by the national government, the state government, a competent technical institution in India and the Government of Japan.