A Two-month Study for Drinking Water in Karjat Taluka, Maharashtra

Center for Technology Alternatives for Rural Areas (CTARA)
I.I.T. Bombay

Project Proposal

Abstract

Karjat Taluka of Raigad district, Maharashtra, is a taluka which frequently faces severe water scarcity. The project proposes to study two sub-problems of the larger issue of drinking water.

A To study the techno-economic feasibility of a piped water supply scheme based on the perenial tail-waters of the Bhivpuri hydro-electric scheme.

B To undertake a few geological experiments to extend our understanding of the geological issues in the use and availability of groundwater.

1 Project A

The Bhivpuri tail-waters is a perennial source of water which flows through Paes river, roughly in the central part of the taluka. Much of south Karjat benefits from this water through diversion canals, irrigation and recharge of groundwater. Thus, in about 20 (of 58) gram-panchayats of Karjat, the Paes discharge accounts for their water security.

This project is about the northern half of Karjat taluka which reels under severe water scarcity. The project aims to examine the possibility of developing a rural drinking/domestic water grid to achieve drinking water supply in the northern gram-panchayats. The system should consist of the following sub-systems:

- The basic grid which will reach water to various gram-panchayats.
- The tertiary network of wadi-level supply.
- Insitutional mechanisms for adoption of the scheme.

The project aims to develop a preliminary technical, economic and social analysis of the project. It will adopt the following methodology:

- A survey of similar rural water schemes and their designs, costs and recovery.
- Basic wadi-level data of location and demands.
- The design of the basic primary grid.
- A template for the design of the tertiary grid.
- A costing for different norms (40 LPD or 200 LPD).
- A study of institutional mechanisms.

Three students have been identified to work on the project. These are **Abhishek Sinha** and **Vikram Vijay**, both 4th-year Dual Degree students from Civil Engg. department. In addition to this, **Ms. Janhavi Doshi**, an exchange student from Rice University will also work on this. I propose to pay the three students Rs. 4500 p.m. for two months. In addition, I expect travel, documentation and testing expenses of about Rs. 15,000. Thus the net amount for this project is **Rs. 42,000**.

2 Project B

Mr. Sanjiv Kumar Srivastav graduated from the Earth Science Dept. with an M.Tech. Part of his work involved geological survey and testing of the Gudwanwadi area involving electrical resistivity measurements and modelling. The study resulted in validating certain features of the topography and groundwater availability with the the models built using resistivity measurements. One part of the project is to extend this analysis and validation to another survey site (we suggest Tadwadi in Khandas gram-panchayat) in the area, again with a known grounwater source. Abstract of Mr. Sanjiv's M.Tech project report is attached.

Secondly, many hamlets of Karjat taluka have to rely on shallow dug-outs in river-beds, ravines and valley bottoms. These dug-outs supply about 200-400 liters per day (i.e., about 20 handas) and sometimes, are the only source of water. It is always a question whether such sources can be augmented by any interventions to recharge the groundwater, such as upstream of downstream bandharas. This may be of use if it is established that these dug-outs

do tap an aquifer large enough for the desired supply. The project aims to carry out certain tests for this purpose. This will involve doing a mini-yield test and an estimate of the conductivity of the soil around the dug-out.

Mr. Sanjiv wishes to work on this for two months. At the rate of Rs. 10,000 p.m., and a testing, travel and documentation expense of Rs. 20,000, we expect to spend about **Rs. 40,000.**

3 Remarks

Here is a summary of the net expenses which we forsee:

Expenses		
Project A-Stipends	27,000	
Project A-Travel, Testing and other exp.	15,000	
Project A		42,000
Project B-Stipends	20,000	
Project A-Travel, Testing and other exp.	20,000	
Project B		40,000
Miscellaneous		8000
Total		90,000

Projects A and B are sub-tasks of a larger project to make Karjat taluka secure as far as drinking water is concerned. This will be achieved through a collaboration between the district/taluka administration, local NGOs and various departments of IIT Bombay. Our main collaborators will be **Shri. R. M. Ade, Deputy Engineer, Minor Irrigation (Karjat), Raigad District** and **Disha Kendra**, an NGO with a presence in many of the villages of Karjat taluka.