

# Technology and Water Resources Development

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**W**ater resources development is becoming an increasingly important discipline in view of the growing water crisis all over the country. Many development organisations undertake programmes and activities with honest intentions of increasing water availability and access. However, we find very few of them become and remain effective in the long run. The main reason is the mismatch between the problem and technological options (solutions) selected to address the problem. This happens largely due to the inability of the technologist at the grassroots to correctly identify the problem and analyse its causes, and based thereon, identify an appropriate option to address the basic causes. This inability may be a result of several factors, which are the common pitfalls found in many development projects.

## Common Pitfalls

- A close-ended project design, which limits the choices (predetermined activities)
- A desire to "hard sell" (tendency to pounce on an opportunity to implement a preconceived activity, more akin to identifying a patient whom my medicine would apply rather than identifying a medicine to treat the illness diagnosed)
- An urgency to quickly initiate an activity (without getting into problem analysis, often arising out of the tendency to treat a symptom rather than the cause of the disease)
- Perspective – lack of clarity on the objective or mistaking the means for the end

These pitfalls are commonly seen in many projects, but are often realised when it is a bit too late. They could be overcome, and future repetitions could be avoided with simple precautions and patience. We would like to share some of our experiences as examples to illustrate the pitfalls, and how they could be (or could have been) avoided.

### 1. Close ended projects

One of our watershed projects had a component of farm bunding for soil and water conservation. It was implemented quite effectively in a part of the project area. In some plots with clayey soils and flat topography, the farmers were reluctant to take up farm bunding, as their farms used to suffer water logging during monsoon. Although we understood the need, we were still trying to push the farm bund agenda, as our project did not have the farm drainage component. After a while, the farmers suggested to do bunds-cum-trench, which solved the problem of "classifying an appropriate activity in the predetermined list of account heads". It is a different story that it took long and persistent dialogue with the funding agency to incorporate this new component in the project.

### 2. Hard sell

In an environmental regeneration project, which was planned after situational assessment and scanning of few sample villages, a component of masonry dams was incorporated on a certain scale. The mid-term review indicated that our quantitative performance of project was satisfactory on most components except masonry dams. Somehow we got a message from the mid-term review that we have to improve our achievements on this activity. The next work season saw many of us asking the farmers about the water situation in their village, and the moment they mentioned the word of scarcity, pouncing on them to suggest taking up a masonry dam to solve the crisis. The villagers had also seen such structures elsewhere and the impact, and felt it would help them as well. This resulted in the construction of many irrelevant and inefficient structures. After an internal review, an elaborate operational policy had to be prescribed on selection of sites and activities.

### 3. Perceived urgency

In another process oriented project aimed at long term drought action, the poor families in many villages were contemplating migration due to prevailing drought conditions. Similarly, the district administration had initiated relief work in the nearby locality. Feeling all these pressures, we decided to take up deepening of a village pond, without getting into systematic analysis of the place of that pond in the villagers' life or of the resource situation around the pond. And, why not? (Our operations manual had listed pond deepening as a legitimate activity for providing drinking water security!). It resulted in a puny little water body encircled by huge earthen embankment reaching for skies. It also achieved two things – firstly, the village had ample supply of domestic water for years to come, and secondly, we got compliments for providing wage employment to scores of families during the scarcity. Saving grace! It is another story that the same level of water security could have been achieved at about one-fifth of the cost (and the remaining budget utilised for more drought proofing activities), had we not bypassed the process.

### 4. Perspective

Most families in a remote tribal village located up on a hill used to migrate to the nearby irrigated area to work in vegetable gardens. We thought that we could help them with their livelihoods within the village itself. We planned a lift irrigation scheme from a perennial river (a little away) and all of us thought it as the best option. It had some spokes though. The pipeline had to pass through the forest area; the pump house had to be guarded all the time; a pump operator had to be placed near the river ; an errand boy had to run from the pump house to the village and back to inform the switching on and off of the pump; the power supply was erratic ; and such a large irrigation scheme had its own engineering complications, cost apart.

We were almost ready to start the implementation after discussing the operational modalities with the villagers. And, we suddenly realised that all we needed was water in the farms and not a lift irrigation scheme. Over the next few months, we explored the various options for making water available in the village and came up with a comprehensive watershed development plan. It took nearly two years to do trenching, plantations, farm bunds, small dams, and a couple of open wells in this small village. It was not any cheaper than the lift irrigation scheme. But since last two decades, this village of about forty tribal families has been among the top vegetable producers in the area. Their experience also motivated the nearby tribal villages to take up watershed activities.

Last word...

The moot question is whether it is possible to avoid the pitfalls and identify the appropriate technological options in every project. The answer lies in another question that how much of it we really want to do. Could we try the following simple four-question test for any such activity that comes to our mind?

- Which problem (of poverty, drought, and livelihood) does the activity address?
- Would it solve the problem permanently?
- Is it the best activity to address the problem? Which other options were explored?
- Is the planning and implementation of the activity in consonance with the core values of our project or organisation?

You might like to add another question:

- Who contributes for the activity and whom does it benefit?

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## Water Facts

- 1.1 billion people in the world do not have access to safe water - around 1/6th of the world's population.
- 2.4 billion people in the world do not have access to adequate sanitation - around 2/5ths of the world's population.
- 2.2 million people in developing countries, mostly children, die every year from diseases associated with lack of access to safe water, and adequate sanitation.
- Around 6,000 children die every day from diseases associated with lack of access to safe drinking water, inadequate sanitation and poor hygiene.
- At any one time approximately half of the world's hospital beds are occupied by patients suffering from water-borne diseases.
- The average distance that women in Africa and Asia walk to collect water is 6 km.
- The weight of water that women in Africa and Asia carry on their heads can be anything up to 20kg - the equivalent of your airport luggage allowance.
- 200 million people in the world are infected with schistosomiasis, of whom 20 million suffer severe consequences. The disease is still found in 74 countries of the world.
- In the past 10 years diarrhoea has killed more children than all the people lost to armed conflict since World War II.
- In 1998, 308,000 people died from war in Africa, but more than two million (six times as many) died of diarrhoeal disease.
- Hygiene education can save lives. Simply washing hands with soap and water can reduce diarrhoeal disease by one-third.
- At any time, 1.5 billion people suffer from parasitic worm infections resulting from human waste in the environment. Intestinal worms can cause malnutrition, anaemia and retarded growth.

*Source: Water Supply and Sanitation Collaborative Council - <http://www.wsscc.org/>*

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