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## A study of community drinking water systems

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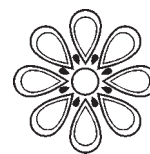
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## A study of community drinking water systems

Indra Rai<sup>1</sup>, Nepal

THE COMMUNITIES IN the hilly rural areas of Nepal where ActionAid has been working since 1982 are severally affected by the problem of water scarcity as well as acute poverty. In order to derive the most out of the available arable land people have inhabited length and breadth of the countryside. In most of the hilly slopes people have to collect water from long distances for daily use. Even that too, is not safe and clean and this is a major cause of ill health. ActionAid Nepal has identified the provision of safe drinking water as one of its priority areas in its integrated community development programme.

### The objective

The general objective of this study is to analyse the effectiveness of Drinking Water Systems (DWS) in the hilly rural areas and their long term sustainability.

### Methodology

This study was carried out in 9 Village Development Committees (VDCs- the lowest administrative unit of government) of Sindhupalchok and Nawalparasi district. The elevation of these VDCs where the studies are carried ranges between 1000m to 2100m. Gravity flow DWS with an average of 6 to 7 tap stands are the most commonly used system here. Spot observation, Group discussions (with users and ActionAid Nepal staff), study of official records (Survey, estimate and utilization survey) are the main source of information of this study.

### The findings

A total of 235 DWS have been constructed in 9 VDCs of the 2 districts with a total coverage of 4545 households (hhs). The technology used in all water projects is gravity flow and in this system, intake, reservoir and tap stands are constructed and are connected with pipes. The length of pipes, number of taps, cost of the project varies depending on the distance of source, geographical condition, population and quantity flow of water at source. In the study area, the beneficiaries of a tap ranges from 3 to 17 hhs. The length of the connecting pipe used ranges between 800m to 10,600m and the cost varies from Rs.25,000.00 to Rs.1,000,000.00 per project depending on the project size (£1 = Rs86).

### Drinking water systems and participation

All the DWS projects have been constructed with AAN's assistance and involving community participation. AAN

has provided technical support, skilled labour, construction materials not available locally and transportation cost of materials up to the nearest road head. The communities supplied labour, local materials like stone, sand, gravel etc.

Most of the projects were planned by the local community themselves as per their need and priority. Survey, design estimate and budget management was done by AAN. After the project approval, a construction committee of users was formed. Responsibility for implementing the project was given to the community from the very beginning to develop ownership feeling in the community. The responsibility of the community included community mobilisation, materials and store management, fund collection, sanitation awareness and on. Training in project construction and maintenance was provided by AAN to one person from each project before the construction of the project.

### Management and sustainability issues

After the completion of the project, the construction committees are transformed into repair and maintenance committees. These committees formulate working rules for the projects and are responsible for repair and maintenance. If the construction committee is defunct a new maintenance committee is selected.

A total amount of Rs.1,86,088 has been accumulated in the maintenance fund (of all the projects combined together) a part of which has been deposited in banks. Each projects has a trained maintenance worker and in total 85 workers are found actively involved in project construction and maintenance work. 89 project management committees are functioning actively — organising meeting regularly and collecting maintenance fund. Plantation was done in 9 projects and conservation of existing forests in other projects for source protection. Ten projects have watchmen managed by user's committees themselves, who operate and look after the projects as per committees rules. Users pay the watchman in cash or kind on an annual basis.

With the propose of enabling them the management committees market exposure and necessary training to key members has been provided.

The maintenance and repair of these projects is being done by the maintenance committee and since the community is involved right from the beginning in the planning, implementation and maintenance the sense of community ownership of projects is found.

## Outcomes and impact

A number of outcomes have been noted. They can be listed down as under:

### Drinking water systems and women

The DWS in the hilly areas of the two districts have significantly reduced the work load of women. In places where they had to walk long distances to fetch water DWS have brought water in the immediate locality. It is mainly the women who fetch water in rural Nepalese communities and the time saved from fetching water is being used in attending farms, looking after children, collecting firewood, growing nutritious vegetables in the garden to mention a few. The availability of water at close proximity and the time saved in the process have resulted in better personal hygiene and children are kept neat and tidy. Nineteen per cent HHS, out of 4545 HHS, have been regularly using latrines, which has resulted in improved health and sanitation. The availability of water is a factor which has facilitated this.

### Utilization of surplus water

The waste water from the taps is used in the garden and for animals 80 per cent hhs of the total have established kitchen garden. Likewise waste water from reservoir (overflow) is used in farm irrigation by collecting in ponds. It is believed that the availability of water has also increased living standard of the people as their farm products have increased. One marked effect of the DWS is the kitchen garden. Consumption of vegetables as a part of regular diet has been found in areas where vegetables were previously consumed occasionally.

### Drinking water systems and institutional development

Institutional development has also resulted as an outcome of the DWS. The various committees formed as a part of the DWS have helped in promoting the advantages of group effort. Mostly it has supported the empowerment of women and in a lot the projects women have been involved in project construction, maintenance and management. The idea of savings and credit has also been fostered and in some users group have mobilised the maintenance fund for rural credit in income generation activities and emergency relief.

### Drinking water systems and conflicts

In some cases DWS have been a major cause of conflict in the community. The main areas of conflict are in source selection and site selection for tap stands. These conflicts are in most cases solved by the community through discussions themselves and AAN normally facilitates the discussions in the process of problem solving.

### Problems and difficulties

DWS in the hills have many problems and risks as well. Due to geographical difficulties, there is problem of trans-

portation of materials for the project construction and the cost of the project is high. Likewise sometimes conflicts occur among the communities due to the lack of understanding regarding participation and the use of water source. Even when these initial problems are successfully overcome and the project is completed, the system may soon be broken down due to misuse or unforeseen circumstances, like landslides or erosions, which threaten to sweep away tanks or water sources pipe. Tanks and taps may be broken due to poor work, which threaten the durability of the project.

### AAN's experience

AAN has been implementing water projects in hilly rural areas of Nepal since 1984. Over the period AAN has been learning from its experience and also from those of similar organisation involved in community development. Different approaches and policies have been adopted and the present approach has actually evolved from experience.

In the beginning AAN had implemented projects directly at the request of the users. There was no assessment and prioritisation system which involved the community. Even there was no thinking about the project sustainability. Therefore, the feeling of ownership among the user's was lacking. As a result in the initial days AAN had to undertake the task of maintenance and repair itself.

From the 1989 AAN changed its working procedures. Some responsibility of project implementation was given to the users. Project planning and prioritisation were done by the AAN themselves. Community mobilisation, site and store management mason and worker management, project implementation, and decision making once the project was started were taken up by the community. Maintenance fund collection was made compulsory. Priority was given to training, meeting, workshop with users with the purpose of enabling them for long term sustainability. Likewise strong technical support was maintained for qualitative outcomes from the implementation of the project. This helped slightly in improving ownership feeling among users, but was not satisfactory.

After 1993 onwards, main responsibility for project selection and implementation has given to users. AAN has been providing budget and technical support only. Materials management (external and local) decision making, community mobilisation etc. responsibilities have been taken up by the community. Users are exposed and oriented to the market for the material purchase. Local trained human resource is mobilised from the very beginning of the project implementation which has supported in confidence building in them. Priority has been given to users awareness on health and sanitation, importance of DWS its sustainability, problems, source and environment protection, use of maintenance funds and so on. This has shown good signs on users ownership.

## **Conclusion**

Water projects in hilly rural area are very expensive and difficult to establish. Although it is important to implement DWS to provide basic utilities and eradicate poverty in rural communities it is not possible for AAN alone to reach everyone in rural Nepal. Other organisations can establish DWS in hilly areas but one thing they must remember is that sustainability is an issue that has to be addressed right from the start. Therefore, before the implementation, a serious thought should be made about the sustainability as well as management by the local community. Concentration should be on users empowerment prior to the establishment of DWS.

AAN has learnt that it is relatively easy to organise the local community when it comes to the implementation of DWS. This is mainly because clean drinking water is a major problem in the hilly areas. This organization of the communities for DWS can be mobilised for other development activities, to be initiated in communities.

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