



## Impact of SWSS project, Nepal

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NEPAL COVERS A land area of 147,181 square kilometres in the central part of the Himalaya. It is among the least developed countries with GDP per capita at \$195 US. More than 90 per cent of its 21.5 million people live in the rural area. The data for population with safe drinking water in home and reasonable access is 61 per cent and for those with adequate excreta disposal facilities is 23 per cent. Mortality from diarrhoeal disease in children under 5 is 0.29 per cent. (WHO, 1997).

An impact study (Chettry, 1997) was carried out in 1997 on the Second Water Supply Sector Project (SWSSP) that was implemented by the Department of Water Supply and Sewerage (DWSS) in three out of the five development regions of Nepal through the loan of the Asian Development Bank (ADB) during the period 1990-1995. The study sample comprised of 13 schemes with an average population of 700 per scheme. This covers 22 per cent of the rural gravity systems implemented in the hills of one development region, the eastern region, under the project. SWSSP was implemented during the period when, the DWSS was in transition from its past role where all the responsibilities in implementation as well as operation and maintenance were retained with it to a new role of facilitator of sustainable systems by involving the beneficiaries as equal partners at all the stages of project cycle. Systems that were started according to the old philosophy in the earlier part were also modified according to the new approach later.

The study focuses on: functional status; causes of breakdown; quality and quantity of water used after and before

the project; reduction in physical hardships; system of operation and maintenance; users committee; the socio-economic characteristics of the area; and impact of the project on the health, economy and society.

### Methodology

The study framework is based primarily on *Minimum Evaluation Procedure (MEP) for water supply and sanitation projects* (WHO, 1983). MEP requirements state that for the materialization of impacts the constructed facilities must be functioning at first, and where facilities are functioning they must in turn be utilized properly. Indicators proposed by MEP are on the functioning and utilization of water supply, sanitation and hygiene education. These are presented here in Table 1.

Indicators on sustainability (table-2) have been taken from Narayan (1993), a recent publication in line with the MEP. Along with sustainability, Narayan has included indicators on replicability also and has adopted a participatory approach.

Tools used for collection of information were:

- community mapping;
- focus group discussion;
- economic status ranking;
- observation;
- mini case studies; and
- interview and discussion with the users, maintenance worker and the members of users committee.

Table 1. MEP indicators

<p style="text-align: center;">Table 1. MEP indicators</p>
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Table 2. Sustainability indicators

### Findings on status

Functional status of the schemes have been presented in figures. The figures represent percent of time the systems are delivering service out of their total expected delivery time. The total expected delivery time is the supply hours of all the 365 days of the year. The figure for each scheme is the average of similar figures of status for each of its tap stand. The average figure of the functional status for the schemes is 47 per cent in the range 0-90 per cent.

Major causes of breakdown in these schemes have been observed to be: intakes not protected and outlet pipes without strainers thus leading to pipe blockage; uncovered or damaged BPTs; cut in pipe; improper protection of pipe lines against land slides; disturbance of valves by people; wastage of water through open taps; air lock; reservoirs not used; GI pipes which are laid in difficult places not held in position properly; lack of globe valves and thus the inability to maintain pressure and equal distribution of flow; and dispute at source for water use.

Functioning of schemes, as has been observed, depend upon the simplicity of system, placement of maintenance worker and proper selection and implementation. Where systems are simple, they are functioning with little efforts for their operation and maintenance. Some of the systems besides being in poor state due to their design, construction, or any other reason, have also been found to be functioning due to placement and efforts of maintenance worker. In some cases selection, design, construction or other factors have taken the systems beyond the ability of the maintenance worker.

Out of 21 schemes<sup>1</sup> maintenance workers were placed in 12 of them. Four of them have attained a fully fledged status. In such schemes there is harmony between the salary received by the worker, service received by the users and the ability of the system to sustain this. The salary received by such worker is about RS 1000 per month which is about one third of the monthly expenditure of a family of five members. Average tariff in these schemes is about RS 10 per household per month. Some of the schemes are in the process of development, they could either develop towards

a fully fledged status or deteriorate. In other schemes maintenance workers have either dropped out or the situation deteriorating.

All the schemes have users committee. Most of them have become inactive after completion of the scheme construction. Where there are maintenance workers they are sustaining mostly due to their own efforts.

### Quantity aspect of water

In the schemes visited water abstracted is more than demand which is calculated at 45 liters per capita per day (lpcd), and more than double in most of them. The supply and habits of people on the use of water at the tap stand, however, lead to significant wastage. There has not been any increase in the quantity of water carried home which is about 12 lpcd. Frequency of clothes washing and bathing that are carried out at water points has, however, increased.

### Quality aspects

All the spring sources are of very good quality at the origin. Some of them have not, however, been protected properly against animal, people and surface run off. The stream besides being located remotely have some possibilities of contamination, but this is lower than in the streams that flow near the village. Sources used by the people earlier include springs and ponds mostly, followed by streams and rivers. The ponds and streams are of inferior quality.

### Impact of the project

Besides the above observation on the status of the project the following have been noticed as impact of the project.

- The tap stands are located at an average distance of 67 meters from the households. Average distance of earlier sources from households is 250 meters.
- People in the project area do not see any reduction in disease due to the project. This can be attributed to the low functional status and poor state of sanitation. The percentage of households with toilet in these schemes is 22 per cent. The toilets are ordinary pits and most of them are in poor state.

- There have been increase in the production of vegetables in most of the functioning schemes. The increase in animal number and products is limited to only a few households.
- There has not been any noticeable negative impact on the bio-physical environment. There are, however, some negative social consequences due to the non-functioning of the systems and unequal distribution of facilities and services.

### Conclusion and recommendations

The SWSS project seems to have little impact on the health and well being of its beneficiaries in the rural piped systems of the eastern development region. This can be assessed on the basis of low functional status which is at 47 per cent and a poor state of sanitation.

Recommendations that follow from the study include:

- need to enhance the capabilities of the users in the mobilization of local human and capital resources for operation and maintenance;
- need to improve the performance in the social aspects so as to better encompass the spirits of community based principles;
- need to give extra attention during construction to areas that lead to contamination and breakdown;
- training and support to the technicians, maintenance workers and the users according to the design of the system which may be continuous, intermittent or open; and
- the need to reconsider and strengthen the sanitation program including study on the feasibility of ventilation improved pit latrines and pour flush toilets as these have not been introduced so far.

In comparison to the epidemiological studies that attempt to assess the impact on health, particularly on diarrhoeal disease in young children, study of this type can be done more quickly and cheaply and will produce much more useful information for the program planners (Cairncross, *et. al.*, 1993).

### Reference

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<sup>1</sup>This includes 9 additional schemes from the ADB funded Third Water Supply and Sanitation Sector Project (1993-1997) that are located close to the sample schemes of the study project. This was done to increase the number schemes to enable a better study of certain trends such as in the placement of maintenance workers in this case.

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