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## *Rural water supply experience in Bhutan*

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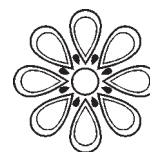
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## Rural water supply experience in Bhutan

*Dorji Choden, Bhutan*

RURAL DRINKING WATER supply programme in Bhutan started in 1974 under the Royal Government and UNICEF Cooperation. In a period of little over two decades, notable progress was seen in terms of physical construction. In 1994 it is estimated that 54 per cent of rural population is provided with safe water supply through construction of about 1700 schemes.

Rural water supply is based on fairly small and simple gravity fed piped system. Each scheme serves a population of 150-200 and costs US\$7000 on an average. Water is mainly tapped from springs or streams sources. Springs are the best sources and if tapped, conveyed and distributed safely, water needs no treatment. The approach, therefore, adopted in providing safe water to the rural community is through simple protection of source and then safe conveyance and distribution.

The implementation of rural water supply scheme is shared between the Public Health Engineering (PHE) Section of Public Works division (PWD) and the District Engineering Units under the District Administration (there are a total of 20 districts). PHE is responsible for designing, estimating, extending technical and training support

- Broken tap, no water flowing
- Woman carrying water collected from the old polluted source



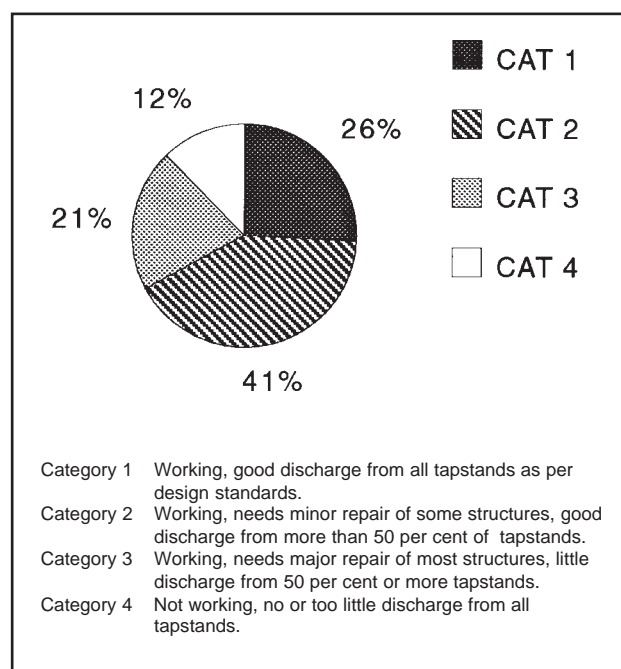
to the District Staff, coordinating with sector donors/national bodies and monitoring the programme implementation. The District Administrations together with the rural communities select, survey and construct water supply scheme. The operation and maintenance thereafter is the responsibility of the user community.

### Past experiences (1974 - 1989)

Beginning from 1974 till the end of 1980s, about 1500 rural water supply schemes were built all over the country. But can we measure the success of the programme just from the physical quantity of construction? We could not. The picture above tells the whole story.

The picture depicts a typical situation of the water supply system built in the very early days. As the programme moved on, situation improved. Hence, this should not be understood as a failure story but as a step forward in the learning process in implementing a rural water supply programme.

Further in 1990 on-site inspection of 1119 water supply schemes constructed over the past one and half decades, were carried out. The purpose of this study was to assess the physical condition and the operational status of the schemes. The status of the schemes, grouped into four categories; \*category 1, 2, 3 and 4 is graphically represented below.



The percentage of water supply scheme working and giving full benefit was only 26 per cent. The rest of the schemes required minor/major repair or were not working at all. However, the scheme status is not critical, and this is because rehabilitation of old defunct schemes started since late 1980s onwards. In the course of programme implementation, many lessons were learnt. It was realised that there were many defects in the programme design as stated below that contributed to the unsuccessful programme implementation.

- The provision of drinking water supply was taken to be purely a technical programme. A team of technical staff visited a village, surveyed and then executed without much involvement of the community concerned or any other agencies. The success was measured by the achievement in terms of physical construction only.
- It was centrally planned programme with very little participation from the beneficiaries. The involvement of community was limited to physical labour contribution only during construction. The community did not fully understand the “Whys” and “Hows” of the programme and therefore there was very little appreciation, and no sense of ownership.
- The targets were not realistic. Rural water supply was a donor driven project and therefore targets were overambitious.
- There was no system of operation and maintenance after completion. The community did not bother even if there was no water coming out from the tap. They referred it as “PWD’s tap”, “PWD’s water supply” and expected PWD to do everything.
- Sanitation component which is very essential to fulfil the objective of safe water was missing.
- There was lack of knowledge and awareness among the users on the relation between water, sanitation and health and therefore people did not understand the benefit of safe water.
- Trained technical manpower in the implementing agencies was limited. This seriously affected the quality construction.

All these led to a number of defunct schemes giving no/little benefit to the community. The huge investment put into the programme was almost going to total waste. Thus, from 1990 onwards, a major change in the approach in planning and implementing rural water supply took place.

### **Present strategy (1990 - 2000)**

The implementation of rural water supply programme in the past one and half decade was a learning process in itself. Good experiences were gained from the mistakes. Beginning 1990 a commendable improvement took place, both in technical and institutional aspect. As water supply alone cannot achieve the goal of improving health, promotion of sanitation, health and hygiene education,

community participation and women’s involvement are all being integrated with water supply. These software aspects are now among the priority activities in water supply programme implementation. The present strategy can be briefly summarized as follows

- The present programme, to bring about improvement in quality construction has provided:
  - Improved technical designs;
  - A standardisation manual and computerised system design;
  - A computerised inventory of projects;
  - Operation and maintenance manual;
  - Training courses and training materials for staff of the implementing agencies.
- Government and UNICEF has invested over US\$15 million for rural water supply and sanitation. To protect and safeguard these costly infrastructures, rehabilitation programme is given high priority over new construction.
- Protection of traditional spring sources to serve the scattered households (otherwise not reached by the normal gravity system) with safe water has been initiated since 1994 and will continue.
- Further to complement, support and sustain the technical infrastructure emphasis is placed on sanitation, hygiene education, community participation and training.
  - Sanitation (latrine and smokeless stove) is being promoted together with water supply construction. Efforts are being made to bring health and hygiene education to the people reached with improved water schemes through awareness campaigns, training etc. Sanitation promotion primarily towards increasing sanitary latrine use, improving hand washing, bathing and laundering practices are given more and more emphasis.
  - Community participation is not only limited to physical labour contribution during construction. They participate right at planning stage. The request for a water supply scheme comes from a community through Block Level Committee meeting. The community also participate during survey in selection of water sources and location of public tapstands and after completion in operation and maintenance.
  - Two village water caretakers are appointed for every water supply scheme. To encourage women’s participation, one out of the two caretakers has to be a woman.
  - Village Maintenance Committees (VMC) are established wherever possible. The main function of this committee is to facilitate the caretakers in operating and maintaining the water supply scheme through mobilisation of maintenance fund and labour.

- A practical training is provided to the caretaker on operation & maintenance. VMC members are given training on overall objective and their role in the sustenance of the water supply schemes. From 1990-1995, we have trained a total of about 1800 caretakers out of which 450 are female. There are a few numbers of VMC formed and functioning. Establishment of maintenance funds has also started in some districts.

Thus there is a gradual shift in programme priority from technical oriented service delivery towards the promotion of sanitation and community capacity building to attain a more realistic approach aimed at improving health, sustainability and to reach the unreached by safe water through introduction of spring source protection programme to the remote scattered households.

### Future challenges in the 21st century

While much has been achieved in the field of drinking water supply and sanitation, yet much more will remain as future challenges.

- The population covered by safe water is estimated to be only 54 per cent. There is another nearly half the population to be reached by safe water. Considerable investment is still required to achieve the goal of safe water for all. As funds become limited, there is more and more pressure on the user contribution. The users have their limitation due to low income status.
- By the turn of the century it is estimated that almost all the clustered village will have been provided by piped gravity fed water supply system. The unreached population will be those living in hamlets and scattered in houses of ranging from two to five in the middle of the forest. A start has already been made since 1994 to serve such population through protection of their traditional source and providing them with limited piping networks. While houses with spring source nearby can easily be reached, the houses with sources far away will be difficult to reach as it will be costly.
- The achievement of the programme in terms of building capacity at the local level for operation and maintenance of water supplies among the user communities have been commendable, and the concept of user ownership is improved. In the light of shortage of technical manpower at the national level, further extension of community participation by introducing training of village technicians in the construction of simple water supply improvements will have to be explored.
- Water supply is just one route of transmission of diseases. The diseases can spread with equal ease through contaminated hands or food. While dissemination of information continues, the focus of the sector will have to be more on hygienic practices such as hygienic latrine use, timely washing of hands with soap, proper storage of food/water, good personal/

home hygiene, etc. Such behavioural changes need continuous effort and takes a long time.

- In view of achieving self-reliance and sustainability, there will be less subsidy from the government on water supply and sanitation. Private sector support will be sought for the marketing of materials for water supply, smokeless stove and household latrines at all blocks to facilitate community based operation, maintenance and repairs. This will also ensure reaching the services to the unreached people in remote areas.
- The involvement of women in the implementation of rural water supply and sanitation sector has received some attention during recent years. Potential for involving women in water supply and sanitation needs to be further explored and encouraged.
- Piped water supplies have achieved a good degree of technical refinement. To progress further, it may be useful to consider improved stream intake designs, open flow schemes especially for areas where freezing in winter poses a problem. Further, to ensure water quality, simple treatment system will have to be introduced.
- Provision of appropriate institutional latrines (schools, monasteries and health units) and management thereafter is a serious concern and requires special effort in a long term basis.

### Conclusion

Rural water supply programme in Bhutan started with physical installation of structures, the intake, tanks, pipes, tapstands, etc. These soon became unoperational as intake/tanks got blocked, pipes cut, tapstands broken and people quietly reverted back to their old traditional polluted sources. These were "PWD's" water supply schemes. This has come a long way and now the schemes once built are being taken care of by the user community. There are two caretakers for every scheme trained and equipped to operate and carry out minor repairs. These schemes belong to the community themselves and they have sense of ownership. Together with good water supply the people also have a latrine and a smokeless stove installed in their homes.

Thus, it has been a learning experience in itself all along the programme implementation. Every problem encountered was a stepping stone to success. Many problem, apparent in the early days have been solved; some are persistent present problem and yet more fundamental problems will be the challenges in the 21st century.

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