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SUSTAINABILITY OF WATER AND SANITATION SYSTEMS

An approach for community based sustainability

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DEVELOPMENT OF PROTECTED water sources in Uganda has traditionally been undertaken by Government through the Directorate of Water Development (DWD) [formerly Water Development Department]. Development of water sources was generally treated as technical, with little community involvement in decision making or actual construction. In addition some religious and charity organisations have provided some point water sources. Maintenance of rural water sources (especially handpumps) was exclusively by the Borehole Maintenance Units (BMU) of DWD. These were regionally based and centrally funded, and covered about four districts each. They were equipped with service rigs and the necessary consumables. They received reports of breakdowns and travelled to carry out the necessary repairs. However the breakdown in government systems during the 1970s and early 1980s and the subsequent reduction in funding greatly affected the operations of the BMUs. Currently most BMUs are almost non-functional.

The water decade drew a lot of attention and resources into the rural water supply sector in many third world countries. Uganda is one of the countries that has received a lot of attention. On realization of the serious problems faced with breakdowns in water supply systems government and the various donor funded projects focussed a lot of attention on developing communities to take up the ownership and maintenance of their water sources, hence the development of the Community Based Maintenance System (CBMS). This forms the basic guiding framework, but is implemented slightly differently by different donors/Projects operating in the country.

Background

The DANIDA assisted Rural Water and Sanitation Project (RUWASA) covers eight districts in eastern Uganda, serving about 4 million people. RUWASA is due to complete 1,049 springs, 184 dug wells, 343 augered wells and 1,417 boreholes (294 rehabilitated) by the end of 1995. It has worked closely with DWD in developing and promoting CBMS for rural water supplies. The second phase of the Project will run from 1996 to 2000.

In Luwero district 90 boreholes are being constructed with assistance from Plan International. Implementation of the programme largely follows procedures similar to those of RUWASA.

Both programmes in addition to CBMS promote hygienic practices, with emphasis on proper water handling, safe excreta disposal and general hygiene.

Community based maintenance system

The main philosophy behind this strategy is community self reliance, which ensures ownership, responsible use and sustainability. The approach is geared towards an effective community capability to independently and willingly manage facilities provided to them, so as to enhance long term utilisation for their good health and well being. Preventive maintenance is emphasized as contrasted to repair after break down.

Some experiences from RUWASA, current approaches and planned future approaches for the two programmes are discussed below.

Community participation and ownership

Beneficiary communities have been involved in the siting and construction of water sources from the start of the RUWASA Project. However the procedures were unclear, with communities being asked to initially suggest sites, resulting in unfavourable locations (elevated or pollution prone areas). This resulted in community dissatisfaction with final source locations and types after hydrogeological considerations, and unsatisfactory success rates.

Presently beneficiaries are actively involved from the inventory and baseline survey stages of implementation. The current siting procedures link sociological and technical aspects, with a view to clarity and coherence, minimal time wastage by following primary hydrogeological investigation recommendations, and more demand driven approaches. Participatory methodologies are used to ensure that the beneficiaries are (and actually feel) fully involved in the whole process, and any disagreements are solved at site.

Beneficiary communities contribute locally available materials and labour towards their water source. Hence construction work is done jointly by the beneficiaries and Project technicians. This strengthens their sense of ownership and responsibility. Subcounty Water and Sanitation Committees (SWSC) and Village Water and Sanitation Committees (VWSC) were introduced by RUWASA to organise communities for latrine construction and hygiene promotion as well as water source allocation, construction and management. RC3 Councils and SWSCs participate in water source allocation, and VWSCs organise the communities during the siting and construction stages. The Luwero Programme currently utilises existing RC3, 2 and 1 Development and Health Committees in implementation.

Water User Committees (WUC) were later adopted from 1994 to manage water sources after construction instead of the original VWSCs. While the latter are based on administrative village boundaries, WUCs are drawn from actual beneficiaries. The confusion in villages with more than one source has also been cleared. This, coupled with the participatory methods of training, has significantly improved the management of water sources through more decision making and confidence building at community level.

Role of women

At an early stage the important position of women in water and sanitation related issues was realised. Emphasis is therefore laid on their involvement at all levels. Presently it is required that at least 50% of members on all committees are women, with some holding key management positions. While initially this was followed just because of the Project guidelines, the participatory methods have helped involve women more into participation, hence giving them more confidence. Currently women constitute about 5% and 10% of chairmen and treasurers of WUCs, respectively, in the RUWASA Project area.

Various training and communication materials (charts, booklets, plays, etc) have been modified or developed to reverse the stereotype roles of men and women.

In order to involve women in the technical aspects of O&M, in mid 1994 RUWASA devised a system whereby training of female HPMs is fully funded, whereas subcounties that select male candidates meet 25% of the cost at present. However this has not yielded much success, and so far only one female HPM has been trained out of 33 trained since then. But with continued support, promotion and positive discrimination more success is achievable.

Technologies used

Technologies used for both water supply and excreta disposal are simple and relatively cheap ones, based on both the capital and maintenance costs. However emphasis has been laid on use of proven technologies in order to ensure quality is not compromised resulting in high O&M costs to the beneficiaries. Generally the order of preference of water source technologies is spring protection, borehole rehabilitation, augered wells, boreholes and gravity schemes. Problems initially arose with communities preferring boreholes to other technologies. However the approaches used during siting help explain the reasons for variations. Work and material quality is now being stressed more at all stages of construction to avoid problems of leakage and diversion of springs.

The Uganda government has standardised on the use of the U3 (India Mark III) handpump for deep well settings, and with the Uganda National Bureau of Standards (UNBS) developed standards. Presently most rural water projects use it. This has helped to harmonise training approaches and skill development, and will assist in

ensuring ready availability of necessary spare parts and other inputs. Studies are still underway on the performance of shallow well handpumps, with a view to standardization.

Initially RUWASA installed U3 with GI riser pipes and rods. However corrosion was identified as a major problem in the Project area. As a result all old handpumps are now being reinstalled with stainless steel components. Presently all new installations have stainless steel components. This will help significantly reduce O&M costs related to replacement of pipes and rods.

Hygiene and sanitation

In order to ensure sustainability of facilities developed, much attention has been paid to hygienic practices. Emphasis is laid on water hygiene, to ensure the water does not get contaminated from source to use. Hygiene education helps communities appreciate the importance of facilities developed.

While latrine construction has been encouraged as a precondition for water provision, hygiene education is also provided to ensure use, cleanliness, handwashing after use and replicability. Experience has shown that with intensive hygiene education, latrine construction and sanplat purchases increased significantly in areas where the 'latrines before water' precondition was not applied.

Monitoring and evaluation

Information on water source performance and maintenance is currently gathered by Government extension workers. Some information is directly obtained from HPMs and spare part dealers for a small fee. This information is then analysed at district and central level to track progress and identify areas that need improvement or additional support.

Currently attention is being paid to developing a community self monitoring system. This would reduce the reliance on information from extension staff and HPMs, which in some cases is corrupted or inaccurate. The districts' capacity to collect, analyse and use data is also being strengthened.

Private sector involvement

RUWASA initially adopted a partially community-based operation and maintenance (O&M) system. The Project trained water source caretakers and handpump mechanics (HPM), and provided tool kits and starter sets of spare parts free of charge. Each district and subcounty were required to open bank accounts and stores for handpump spare parts distribution. The funds were then to be used on a revolving basis to replenish stocks as communities purchased spare parts. Implementation of the system started; however problems arose with the management of the stores and funds.

In early 1993 RUWASA developed a system of distribution of spare parts through existing private dealers right

from the manufacturer/suppliers to beneficiaries. This, however, has been effective where the number of handpumps is large enough for profitable operations. To date (June 1995) US\$ 1,750 worth of spare parts have been reported sold, mainly comprising fast wearing rubber parts. This is about 70% of the total sales. With the progress in construction and formation and training of WUCs, establishment of the network is improving. In addition, trained HPMs are provided with tools on loan. They pay for these from their earnings.

Construction work in RUWASA is at present largely done by Project internal staff. However privatisation has gradually started with spring protection. The aim is to gradually privatise all construction work. In Luwero currently all construction is carried out by the private sector.

In order to bring privatisation benefits closer to the beneficiaries, teams of local HPMs were organised to carry out reinstallation of handpumps with stainless steel equipment. The exercise started in April 1994, and will help demystify construction tasks, provide experience and allow the teams acquire the necessary tools. So far it has been very successful and cheaper, and is likely to be adopted for new constructions in future.

Training of HPMs is also being privatised, with local technical schools being brought up to fully take over.

Preventive maintenance

The original maintenance system has been repaired after maintenance. However currently regular preventive maintenance of handpumps is being promoted as a more viable approach. WUCs are encouraged to buy the requirements for source caretakers to open the pump head and carry out simple maintenance. HPMs then carry out the other tasks.

As an initial step WUCs are required to enter into a two year agreement with their local HPMs to carry out quarterly preventive maintenance (one major and three minor

services). During maintenance the caretakers informally learn to undertake the simpler tasks. Eventually from experience it can then be agreed how often a HPM should visit. To date 203 preventive maintenance contracts have been reported signed however preventive maintenance has been carried out on 1,108 handpumps, catering for 74% of the handpump equipped sources at about US\$3,350.

Communication

Various media have been used to disseminate information and educate beneficiaries. Print media like booklets, flyers, calendars and posters, as well as caps, T-shirts, drama and radio have been used to depict themes promoting sustainability.

Conclusion

The CBMS has registered some success in establishing a sustainable system. Already the private sector has taken interest and got involved in the various activities. Local government structures are also more integrated now than at the start.

However a lot of emphasis should still be laid on hygiene education and the private spare parts distribution and handpump maintenance systems to ensure their continuity. The latter will be better achieved with higher coverage of water sources. Backup support and continued follow-up through extension staff will be needed for some years to ensure complete sustainability.

References

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