



Water and sanitation issues of Bangladesh

Md. Mujibur Rahman and Hasin Jahan, Bangladesh



BANGLADESH, WITH AN estimated population of about 111 million, is one of the most densely populated countries in the world. In a predominantly rural economy, with a per capita income of US\$ 220 about 48 per cent of rural and 44 per cent of the urban population live below the poverty line defined as 2122 calorie intake per person. Average households spend 59 per cent of their income on food, yet 60 per cent of children below 5 years of age are malnourished. Resources required to bring about improvement in standards of living are limited.

More than 90 per cent of the rural people have access to safe drinking water and only 18 per cent use proper sanitation facilities. 47 per cent of the total urban population have access to public water supplies and 42 per cent to hygienic sanitation (Rashid, et al 1994). UNICEF (1996) however, claims that 96 per cent of the rural and 99 per cent of the urban population have access to safe drinking water while 44 per cent rural and 79 per cent urban people use hygienic latrines of one kind or another.

Yet the health status of this poverty stricken country is appalling poor. Infant mortality rate and under five mortality rate persists at a high 77 and 134 deaths per 1000 live births in 1995 (MoH&FW, 1996). Water related diseases still remain a common occurrence in Bangladesh despite significant improvement in drinking water supply and sanitation over the past decade. Number of deaths due to diarrhoeal diseases alone stands at 230,000 annually and in 1992 some 6.9 million cases of diarrhoeal diseases have been reported (MoH&FW, 1996).

Experiences of the past years have indicated that physical provisions of services alone are not a sufficient precondition for improvement of health. Building alliance with people, changing their hygiene habits and more importantly the ability of the institutions to adapt to ever changing priorities are, among others, some major challenges to be taken on. These are discussed in this paper with particular emphasis on institutional, social issues and technological issues.

Sectoral issues

In the backdrop of the commendable achievements there are issues that have to be addressed to improve the health impact of the WSS program, its ability to reach the poor and sustainability of service provisions.

Institutional

The statutory responsibility for the water supply and sanitation (WSS) sector is vested in the Ministry of Local

Government, which shares with the Ministry of Planning and the Ministry of Finance, the tasks of policy decisions, sectoral allocation and funding, as well as project appraisals, approval, evaluation and monitoring.

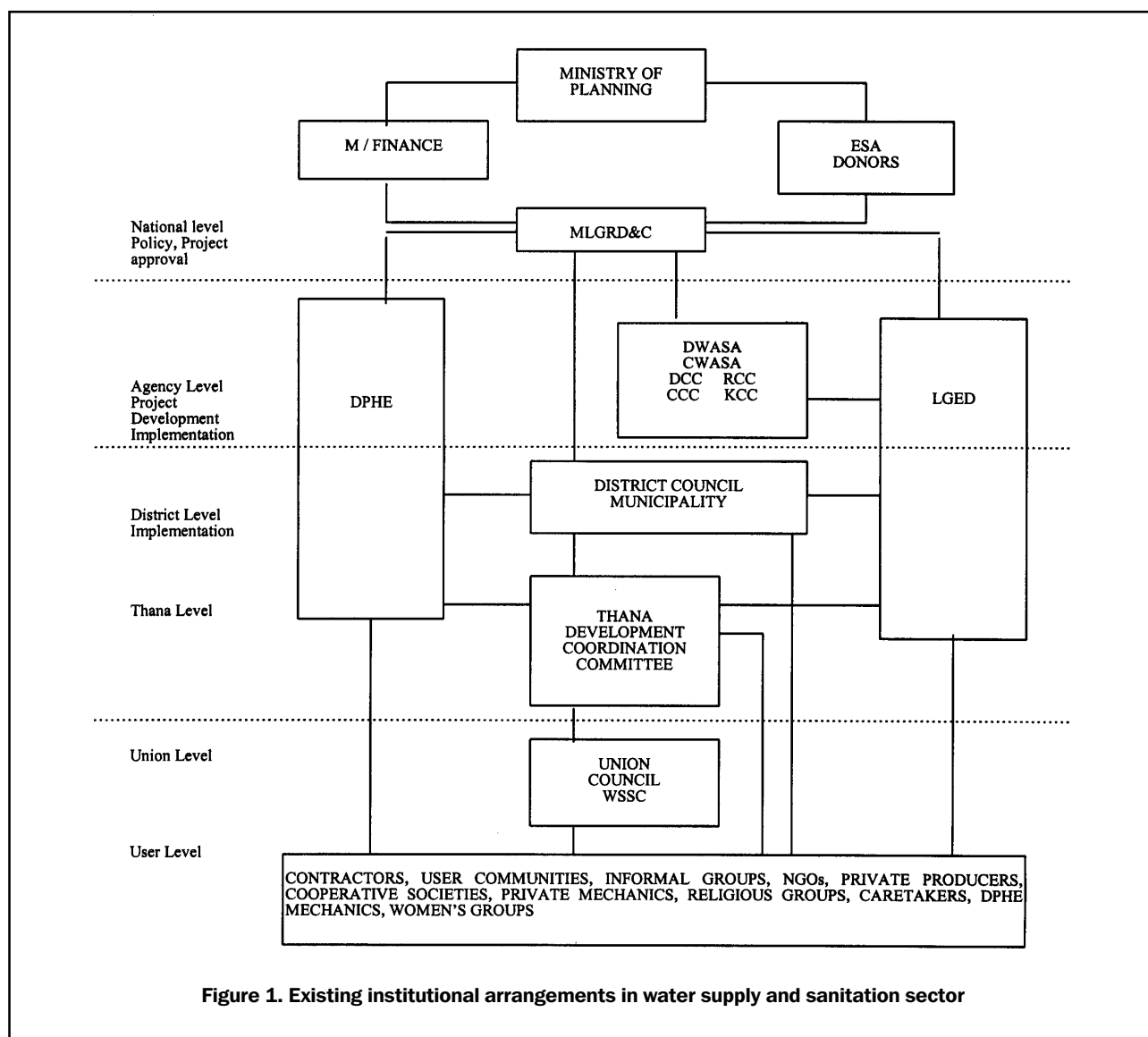
The functional responsibility is delegated to the Department of Public Health Engineering (DPHE) in all rural and urban areas except Dhaka and Chittagong where separate Water Supply and Sewerage Authorities (WASAs) are responsible for installation and maintenance of services facilities. Local Govt. Engineering Department (LGED) shares responsibilities in some urban centres with DPHE for WSS services.

The City Corporations (CCs) in Dhaka, Chittagong, Khulna and Rajshahi have responsibilities in waste management. The municipalities in other urban centres have responsibilities for waste management, operations and maintenance of water supply systems and maintaining a sanitary environment within their boundaries.

There are NGOs who are active in water and sanitation programs financing and implementation in both urban and rural areas. They provide hardware support, advocacy, networking, institution building, training, information, research, evaluation and monitoring. Private sector response in WSS service provisions is encouraging. Private hand pumps comprise 71 per cent of all rural hand pumps and 88 per cent of all urban hand pumps (Mitra, 1992). Yet the private sector faces the challenges of limited credit facilities, subsidies offered by DPHE and cost sharing by some NGOs. Both rural and urban water supply and sanitation programmes have been heavily supported by the external support agencies (ESA) including UNICEF, UNDP, World Bank and ADB. Figure 1 illustrates the existing institutional arrangement in the sector.

Experience of the IDWSS decade has shown the need to expand the scope of WSS beyond provision of hardware to include more emphasis on health and hygiene education and the use of facilities. Factors of emerging importance include community participation, involvement of women, social mobilisation and health education, all of which require skills and institutional support.

The DPHE and the WASAs have developed as a strong technical agencies and do not have the orientation and skills required to address these soft issues. DPHE, the major sector agency, has made plausible success in achieving its hardware installation targets, but achievement in bringing about behavioural change in people, have been dismal. It remains to be seen however, whether a technology oriented agency like DPHE can make a shift from being



institution of hardware installation to an institution of facilitation. DPHE's past orientation towards installation targets must give way to a more result oriented approach focusing on behavioural change.

Reorientation towards new goals may not be possible without substantial institutional changes, amounting essentially to institutional reform. While training issues are important in developing institutional capacity, certain strategic organisational changes are also required which include restructuring employee incentives for performance; developing new goals focused on facilitation rather than implementation and on promoting behavioural changes rather than reaching installation quotas.

The DPHE and the WASAs have a centralised structure with little delegation of decision making power to the local level. Such an institutional set-up leaves little room for participatory planning and implementation of service provisions. Municipalities also lack autonomy in decision making. These are elected bodies, yet all important municipal decisions on staffing and tariff have to be approved by

relevant ministries. Local authorities play a passive role in an essentially client-patron relationship with DPHE. They do not have a sense of ownership of the systems installed and are either unwilling and/or incapable of running the systems efficiently.

The main sector institutions have developed as strong engineering organisations. The engineers educated in technical universities and institutes find it difficult to match with field situations. These technical educational institutes have course curricula traditionally based on western technologies with little emphasis on low cost technologies and courses addressing social aspects are virtually absent.

Human resources development (HRD) at the central, local and community levels forms an integral part of building institutional capacity to cope with the new sectoral challenges. HRD initiative in the sector however is still insignificant. Training is either project based or donor sponsored fellowships rather than desired from an assessment of long term manpower needs in the sector, and therefore does not systematically upgrade skills, develop

careers and improve the organisation. In the absence of a systematic training programme, the staff lack proper orientation, motivation and communication skills, and are not sensitised to social and gender issues.

The recently established International Training Network (ITN) centre for water and waste management has the important objectives of reorienting the traditional course curricula in all the technical educational institutions as well as updating knowledge of field staff with greater emphasis on low cost technologies and social issues.

Social

The water supply programme in Bangladesh has been very successful in the past years in making safe water widely accessible. Health impacts however, have not been very encouraging for reasons identified as non-use of safe water for all purposes, low coverage in sanitation and poor recognition of the linkages between hygiene practice, clean water, sanitation and health.

Despite adequate quantity of water within 150 metres of most homes, only 16 per cent use tubewell water for all domestic purposes. The benefits of tubewell water for all purposes are not well perceived by women and their hard work to fetch tubewell water for all purposes undermines the goal of encouraging full use of tubewell water. Similarly, their reasons for using latrines do not prioritise health but rather focus on convenience and privacy.

Social mobilisation at the community level has recently been adopted as a major strategy to promote water and sanitation services and to achieve greater health benefits. Such strategy, for instance, may usefully build on existing reasons for latrine utilisation - convenience and privacy - as well as introduce health reasons.

Women's participation in water and sanitation program is indispensable to promote use of safe water and safe latrines. Their involvement has increased, but the social status of women and the current domination of the WSS program by men is not conducive to gender issues and inhibit their broader participation.

Technological

Water supply technology options used in Bangladesh are generally applicable in most parts of the country, but there are a few areas of concern.

In rural areas, suction hand pump technology is widely accepted due to its simplicity and low cost. This technology has a major contribution in the success of rural water supply. The cost of providing water supply in the saline coastal belts and low water table areas however, is relatively high. Technologies such as shallow shrouded tubewells (SSTs) and pond sand filters (PSFs) are increasingly used in the coastal areas but face difficulty in locating and mapping lenses of sweet water thereby limiting their use (Rahman and Bux, 1995). In areas of declining water tables beyond the suction limit, the TARA technology is

being promoted. The complete acceptance of these technologies by the people would depend on their costs and simplicity of operation and maintenance.

In urban areas, the water supply projects are biased towards expansion of the physical facilities with very little attention paid to O&M. This is reflected in the poor level of services to the consumers, low standards of O&M and extremely high losses of water through leakage, wastage and illegal connections.

Rural sanitation suffers from poor understanding of the health benefits of sanitary latrines. Latrines are used for reasons of convenience and privacy rather than health reasons. Pour-flush pit latrines appears to be the only low-cost sanitary option available to the rural population. Home made pit latrines are the cheapest option but may not be appropriate for all soil types and many believe that this method is not fully sanitary.

Urban sanitation programmes are limited to on-site options (e.g. septic tanks, pour-flush pits) or conventional waterborne sewerage (only in parts of Dhaka city) and excludes a range of intermediate technology options which could be cost effectively used based on user preferences and willingness to pay.

While average water supply coverage both in rural and urban areas of the country is satisfactory, the figures however, do not reveal the disparities in service coverage among regions and within regions. In rural areas, there are 'paras' (clusters of households) having more than one hand pump, with adjacent 'paras' having none at all. The coverage in the saline zones and low water table areas is much lower than the national average.

Despite urban bias in sector investments, water supply coverage in the urban areas is lower than in the rural and glaring inequities in service coverage exist both among and within urban centres. The WSS service provisions are biased towards high capital investment for the rich while service coverage of the urban poor in slums and squatters are appallingly low.

R&D activity has a low priority with emphasis on technical aspects and a bias to water supply. Research on applied sanitation and social issues is insignificant. Applied research is needed to improve traditional WSS options and to investigate user attitudes towards technology options and their use.

Modification of iron removal plants, improvements in pond sand filters, and greater accuracy in identifying depths with lower iron content are some areas needing research.

Arsenic contamination is becoming a potential threat for many parts of the country which also needs immediate attention. Besides, ground water pollution from flooded latrine pits, appropriateness of home-made latrines have not yet been ascertained.

Most R&D activities are donor driven and funded by external assistance. Universities and technical institutes do undertake research but are very often not oriented to field problems.

Financial

Public outlays for the WSS sector has been very low. External funding comprise the major share of the sector investments. Mobilisation of local resources has not been geared up. Subsidy for services still remains and cost recovery for services both in the urban and rural areas is low. Beneficiaries contribute only a small fraction of the total cost of services in rural areas while revenue collected for most urban water utilities is seldom enough to cover even the O&M expenses and never includes cost recovery of capital expenditure.

Services are underpriced and even the low water rates imposed (except Dhaka) are not properly collected. A major portion of the high unaccounted for water loss is due to administrative reasons e.g. underbilling, non-billing, and theft. The shortfall in O&M expenditure is met from regular Govt. grants. Continual dependence of local bodies on central govt. grants, discourages cost recovery and deepens the cycle of dependency.

Concluding remarks

Sector institutions have developed as strong engineering organisations and find it difficult in adapting to the new challenge of providing 'software' support concomitant with 'hardware' delivery. 'Software' requires orientation and skills different from those needed for 'hardware'.

Government recognises the need for institutional readjustment, orientation and strategies to foster participatory

development, involve women, promote the private sector, and build partnership with community based organisations. Gradual changes are discernible, but they fall short of an active strategy to bring about the requisite changes.

References

- RAHMAN, M.M., and BUX, K.M., 1995, Post Disaster Situation of Water Supply and Sanitation, Journal of the Civil Engineering Division, Institution of Engineers, Bangladesh, Vol. CE23, No.1.
- MITRA and ASSOCIATES, 1992, The 1991 National Survey on Status of Rural Water Supply and Sanitation for DPHE/UNICEF, Final Report, Dhaka, Bangladesh.
- MOH&FW, 1996, Situation Paper on Health and Environment in Bangladesh, Ministry of Health and Family Welfare (MoH&FW), Govt. of Bangladesh, Dhaka.
- RASHID, H., RAHMAN, M.M., and TURNQUIST, S., 1994, Bangladesh Situation Analysis - Water Supply and Sanitation, UNDP - World Bank, Dhaka, Bangladesh.
- UNICEF, 1996, Progotir Pathay - Achieving the Mid Decade Goals for Children in Bangladesh, BBS, Dhaka, Bangladesh.

MD. MUJIBUR RAHMAN, Professor of Civil Engineering, Bangladesh University of Engineering and Technology.
HASIN JAHAN, Consultant, ITN Bangladesh.
