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INTERVENTIONS IN WATER SUPPLY FOR THE URBAN POOR-SUSTAINABILITY OF THE NGO-APPROACH

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ABSTRACT

Kofee Annan described the inability of a huge number of urban poor in the third world to access proper water and sewerage facilities, leading to many socio-economic and physical difficulties, as an affront to human dignity. Water should be managed as a financially sound commodity subject to legal and regulatory controls to ensure its conservation, protection and well-balanced use. Despite efforts by the governments, the magnitude of the problem remains unassailable. In this backdrop, the non-government organisations in some countries have come forward with innovative ideas to fill the gaps created by the failure of the public sector service providers. However, the question remains of ensuring the institutional and financial sustainability of any such approach, as it should primarily be upon the governments to satisfy the basic needs of the poor, if necessary with the participation of the private sector through a legislative and functional framework. This paper deals with the sustainability of the water and sewerage services in the third world urban areas with particular reference to a model developed by a Bangladeshi NGO where the public sector is the only service provider. It will briefly present the scale of the problem and identify the parties involved before presenting the case study on the Bangladeshi NGO and its program, and discussing on the various aspects of the sustainability issue.

Key words: Water supply, urban poor, NGO-approach.

I. INTRODUCTION

The human rights to water entitled everyone to its personal and domestic uses. It is also required to realise many covenants like food production, environmental hygiene, livelihood and certain cultural practices. In the Millennium Declaration 2000 at the closing of the UN Summit, 150 world leaders pledged to reduce by half the proportion of people with sustainable access to safe drinking water. The Johannesburg Declaration adopted at the World Summit of Sustainable Development in September 2002 extended this goal to include sanitation as well. Whereas this right applies to everyone, states should give special attention to those who have traditionally faced difficulties in exercising it- the women and children, minority groups and migrants etc.

The need for an easily accessible and safe water supply, the first priority for communities, is self-evident. There is no lack of demand for water supply among the urban poor or any other groups of people, considering the time and often hardships it takes to fetch water and their willingness to pay the vendors for inferior services far more than the others paying the public agencies. The current challenges in water supply involve the development of appropriate institutional and financial arrangements to attract initial investment and ensure continued sustainability, usually met collectively by the governments, business enterprises, community, or the civil society. They mostly involve resource sharing irrespective of the technology or scale.

However, the situation is different in different countries, and solutions have to be devised according to the context. It is mostly the poor and powerless who are not served by improved water supply. Public health statistics for water-related diseases also vary with income, leading to the conclusion that the poor die young [1]. The relationships between health and water supply

involve many other factors besides simple access to the service. Poor water supply contributes to the cycle of disease, poverty and powerlessness. Hence interventions in water supply are no less influential tools to alleviate the poverty.

The Bangladeshi *bastees*[1] lack basic utilities, reflected in the high level of deprivation of the fundamental needs in there,[2] typical of most third world countries. The access to water supply and sanitation services (WS) is restricted not by the poor's inability to pay, but often by lack in land tenure and the rules and capacity of the public agencies providing these services. This made the poor vulnerable both physically and socially, who resorted to alternatives like subscribing to the expensive and illegal parallel market [2]. Despite the grim statistics, some of the NGOs introduced affordable WS services of acceptable standard, improving the environment and health situations of the poor *basteebashis* (dwellers).

The paper reflects the capacity of the society, enabled by the nongovernmental organisations (NGO), to solve these problems when the public sector failed. These emphasised on the capacity building by the intervening organisations and active participation of the beneficiaries in the decision-making, planning and implementation of the development programs. It will examine the sustainability of the approaches with particular reference to a model innovated by one NGO- the DSK (*Dustha Sasthya Kendra*), and then replicated all over the country.

1. The Bangla term for the slums and squatter settlements.
2. These feature high-density living, unsanitary situation, unhygienic environment lacking basic services and amenities, high rate of illiteracy, unemployment and crime, environmental and psychological degradation etc. (BCL, CUS, IDSS, and Prashika 1996: Urban Poverty Reduction Program- draft final report; ADB-MLGRD&C, GoB, Dhaka). The *basteebashis* (dwellers) get employed mainly in the informal sector typified by low wages, long working hours and insecurity (Paul-Majumder, P., and Choudhury-Zahir, S. 1994: Socio-Economic Condition of the Female Workers Employed in the Garments Industry of Bangladesh. Dhaka: Ekata Publications.). In Dhaka's bastees, less than a third of the people have access to public water supply and less than a fifth to proper sanitation (Black, M. 1997: River of Change, UNICEF-DPHE, Dhaka).

II. MAGNITUDE OF THE PROBLEM

The percentage of people served with improved water supply rose from 79% (4.1 billion) in 1990 to 82% (4.9 billion) in 2000, leaving about a sixth (1.1 billion people) of the world's population majority of them in Asia and Africa not served [3]. They suffer the consequent health problems, economic and social difficulties and inequities. In many cities the poor live in the bastees generally lying outside formal service networks. They are mostly not recognised by the authorities who have many excuses for not serving them- the poor cannot pay, and they do not have the documentation to prove that they are entitled to the service, or they are at risk of eviction. These reflect the results of at least two decades of concerted effort to improve coverage. This will face enormous challenges over the coming decades as the developing world's urban population is expected to leap high, for example doubling in Asia and Africa.

The poor receive the lowest levels and least reliability of service and water of inferior quality despite paying the highly [4].[3] They become poorer as a result of ill-health.[4] Even among the relatively powerless, those with the least power, such as the children and women, suffer the most. The children under five years of age are more vulnerable to death and disease; they often share the responsibility of water collection which affects their health, in addition to vulnerability to diseases due to lack of clean water. Women in many cultures often suffer the most from a lack of WS access; 70% of the 1.3 billion extreme poor are women [5].[5] This has affected their health, and prevented them from getting involved in more productive work.

3. Piped water in Tanzania costs US$ 0.1/litre compared to US$ 0.6/litre from a street vendor serving the poor (IIED. 2001: Drawers of Water II. London: International Institute for Environment and Development); the difference is up to 16 times in Dhaka.
4. People in areas without adequate sanitation or hygiene education in Karachi spent 6 times more on medicare than people with such services (UNICEF. 2000: Sanitation for All- promoting dignity and human rights. NY: United Nations Children Fund).
5. Generally the women assigned an inferior social, economic and political status, spend 26% of their time fetching water (DFID. 2001: Achieving Sustainability- poverty elimination and the environment, Strategies for achieving the International Development Targets. London: UK Dept. of International Development).

Poor WS has a high health toll, whereas improved services bring valuable social and economic benefits. Lack of domestic water supply leads to diseases through two principal routes [6]- 1. waterborne disease transmission through contaminated water,[6] and 2. water-washed disease due to inadequate hygiene. Diarrhoea is the most important public health problem which is both waterborne and water-washed.[7] Adequate quantities of safe water for consumption and promoting hygiene are complementary measures for protecting health, depending upon accessibility. Consumption drops significantly when water has to be collected from a distance [7].

If global WS expenditure and approaches remain the same as during the past decade, 739 million more urban dwellers will be provided with water supply by 2015.[8] The progress cannot cope with the projected population growth, as only 816 million people gained access to water during the 1990s. To halve the developing worlds population without services in next one decade, the annual investment should be increased by 39% and the number of people served by 1.6 billion (32%). More than half of these should be in the urban areas, and in Asia where the absolute needs outstrip those of rest of the developing world combined.

However, it should not be beyond human capacity to achieve a safe and reliable water supply for all. About US$ 16 billion have been spent annually in constructing new WS facilities in the 1990s {8}. Yet a huge number of people were still without services at the end of the last century. The VISION 21 report stresses the indicative nature of the target, and urges to consider them in local context. The major challenges to be faced are keeping pace with a net population growth of more than a billion people over the next 15 years [9], closing the coverage and service gap, ensuring sustainability of the existing and new services, and improving the quality of services. A wide range of institutional and social, rather than technical, issues would need to be resolved if these are to be met.

Despite increasing the WS coverage greatly since the 1980s, particularly in the rural areas, the distribution of services has not been equitable in Bangladesh.[9] The improvement has eluded the urban poor and the absolute number of urban population not served has continued to increase.[10] The major reasons behind

6. This has taken place in many dramatic outbreaks of faecal–oral diseases such as cholera and typhoid across the world. Evidence suggests that waterborne disease contributes to background rates of disease not detected as outbreaks. The waterborne diseases include those transmitted by the faecal–oral route, e.g. diarrhoea, typhoid, viral hepatitis A, cholera, dysentery and dracunculiasis (guinea worm disease), dengue fever, fluorosis, encephalitis, leptospirosis, malaria, river blindness, ringworm, scabies, trachoma, etc.
7. About 4 billion cases of diarrhoea each year (Murray, C. and Lopez, A. eds. 1996: Global Health Statistics. Cambridge: Harvard School of Public Health) cause 2.2 million deaths, mostly among children under the age of five (WHO, 2000a), representing nearly 15% of all child deaths in developing countries. Water, sanitation, and hygiene interventions reduce diarrhoeal disease on average by between one-quarter and one-third (Esrey, S.A. 1991: Effects of Improved Water Supply and Sanitation on Ascari-Asis, Diarrhoea, Dracunculiasis, Hookworm Infection, Schistosomiasis and Trachoma. WHO Bulletin, 69(5): 609-621).
8. Currently 173 million urban people have no improved water supply, and by 2015 the urban population will grow by 972 million.
9. In 1990, the water production capacity of Dhaka Water & Sewerage Authority (DWASA) was increased to 125 MGD serving 65% of the people. The capacity of Chittagong (Port and the 2nd largest city) WASA was increased to 40 MGD raising the coverage to 33%. The piped supply in all of the 64 District HQs was increased to 54.5 MGD (41% coverage). About 46.5% of all urban households have access to public water supply.
   In the rural areas, 122,082 shallow tubewells, 5665 deep tubewells and 18,340 deep set Tara pumps were installed. This raised the water supply coverage to 1 well/118 persons- 95% of the rural people use hand tubewells for drinking water while 16% use it for domestic purposes.
   Urban sanitation coverage is 42%; 70% of this by sewerage or septic tanks, the rest by pit latrines. However, only 15% houses are connected to public sewer line in Dhaka. Fourteen water sealed latrines were provided on average in each village. About 35% of rural population use latrines, 40% of those are water sealed and the rest are home made pit latrines (Rashid, H. 1995: Collated Report on Innovative Sanitation and Water Supply Means for the Low-Income Communities in Bangladesh. Dhaka: the World Bank.).
10. For example, the demand for potable water in Dhaka, a city of more than 10 million people, is around 1800 million litres per day (MLD) (1 gallon = 4.546 litre) or 396 MGD; the DWASA meets about 83% of it from its 400 deep tube wells (DTW) and four surface water treatment plants. Often various bodies and high-rise apartments dig their own DTWs with or without DWASA permission.

the lack of WS facilities can be attributed to aging water supply network, inadequate diameter of water mains, over-dependence on extraction of ground water forcing the water table to subside, pollution of surface water sources, management, hindrance by the trade unions, inadequate earning to pay for improving the network and treatment infrastructure, etc.

III. RESPONSIBILITY FOR THE WATER SUPPLY SERVICES

The governments must take the steps necessary to ensure that everyone can enjoy sufficient, safe, acceptable, accessible and affordable water, without discrimination. While some discrimination is acceptable in the choice and mix of the measures to be taken, they must be aimed at achieving the right. A government's duty is then to ensure the activities of its agencies meet the people's right to water. Where the governments have directly established the means to obtain water, the mechanisms can only be removed in very restricted circumstances. It should also take all necessary steps to prevent others from interfering with the right to water. The UN Committee on Economic, Social and Cultural Rights has stated that this should include independent monitoring, genuine public participation and imposition of penalties for non-compliance with standards [10].

Much of the debate during the 1990s focused upon the limits of governmental capacity to provide WS services water. As significant number of households did not have direct access to network WS, a large number of other stakeholders such as informal and small-scale providers, and civil society organisations, filled gaps in the service delivery process. Some saw the private sector or civil society as the preferred provider of the services that government failed to provide in a more efficient and accountable way. There is increasing consensus that solutions should only be achieved in a local context with locally appropriate mix of government, private sector, civil society and individual contributions.

The evidence is only now beginning to trickle in and the results are mixed. In some instances, private sector involvement has brought noticeable benefits to traditional WS functions. Increased investment, managements and technical skills and new technologies have brought improved services and resulted in more efficient delivery. Although considerable resources are being provided by external agencies to the WS sector, these are still insufficient. This implies that governments and external support agencies, including the NGOs, community based organisations (CBO) and the private sector, need to understand how water supply improvements actually come about; how their activities can help or hinder the process; and need to learn how to work with that. Despite the controversies with privatisation of WS services, the involvement of the private companies has increased in the 1990s. In many countries, this went beyond selling water from trucks to a full system operation and management.

Multinational companies too on the other hand are playing an increasing role in WS in the developing countries. However, they are not necessarily bringing much new investment [11]. Much of the rhetoric on both sides of the public-private debate has been confused because it does not always consider the full diversity of the private sector. While large multinational water companies are significant players, many other players are much smaller in size, e.g. the local water vendors, contractors and masons. They may not invest large capitals, but nevertheless have a direct impact upon the quantity and quality of services provided.

Even after permitting private operators, the governments' responsibilities are not reduced. Common to all is the obligation to comply with governments' plans, policies and laws intended to respect, protect and fulfil the above right. In any discharge of responsibility from the public to the private sector, care must always be taken to ensure that enforceable regulatory, contractual mechanisms are in place to meet public objectives, and to provide the private sector with sufficient stability to attract continuing investment in extending and upgrading services. Without such mechanisms, it is unrealistic to expect the private sector to invest in services and not maximise their profit. Similarly, field studies have suggested that community-managed systems are not necessarily more effective or fairer than systems run by traditional government agencies.

In Bangladesh, the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C) is responsible for the WS sector. The Department of Public Health Engineering (DPHE) under it plans, designs and implements WS services in rural areas,

upazila (sub-district) towns, *pourashavas* (municipalities), and Khulna and Rajshahi city corporations (CC). The DPHE has supervisory staff at *zila* (district) and *upazila* levels and is represented at union *parishads* (council) by technicians; each *zila* office has one engineer. The Local Government Engineering Department (LGED) is in-charge of infrastructure development outside Dhaka, which often builds WS networks as components of larger projects. Its offices in every *zila* provide technical guidance to the local governments.

The Water Supply and Sewerage Authorities (WASAs) provide services in metropolitan Dhaka and Chittagong. The Dhaka WASA plans, implements and operates water supply, subsurface drainage and water borne sewerage services; the other one deals with piped water supply only. These are semi-autonomous bodies with management entrusted to boards and report directly to the MLGRD&C. Yet in matters of policy, staffing, or fixing of water tariff, they lack authority.

The city corporations have different functions providing and maintaining on-site sanitation and handpump water supply. At the local level the 217 *pourashavas* operate and maintain piped water systems that DPHE or LGED may install, despite the fact that *pourashava* involvement in planning and implementation of the systems is minimal. These have limited capacities in management, technical competence and finance to operate water systems efficiently or to undertake community development and social mobilisation.

IV. INTERVENTIONS BY THE NGOs

It is noticeable that the public agencies pursuing public-private association in WS services have kept the approaches separate from any NGO/community initiatives. The introduction of the private sector may bring new methods and skills, but these are neither the skills nor the experience necessary to work with the poor communities [12]. The public-private partnerships rarely acknowledge the diversity and variability of the poor people's needs and that water is just one aspect of the livelihood. It paved the way for the NGOs to perform better in WS services who have a rapport of most often working with and for the poor [13].

The inherent advantages and experiences of the NGOs and the CBOs in organisational and motivational work, innovative and participatory approach, working with the people at the grassroots and capacity building made it possible for them to successfully undertake community-based water and sanitation (CWS) projects. The record of providing cost-effective services more efficiently and remaining accountable to the stakeholders made them suitable for that and enabled the beneficiaries to play an active role in managing it [14]. They have considerable potential for managing and financing local services, and becoming valuable partners of the government in training, exchanging information and expertise and developing manuals.

The NGOs concerned with specific WS and environmental issues can contribute in providing water especially to the people living in the bastees. They can inform their constituencies on aspects of the water right, how that can be claimed or assist others in fulfilling it, build capacities of the constituents including local organisations, and uphold rights, monitor the work and promote accountability, ensure implementation of government policy, support local service provision, and inform and train residents on proper use and maintenance of the facilities [15]. The research and advocacy NGOs can contribute towards identifying and developing new research areas varying from new technologies to assisting in service expansion, ensure that people's rights are accepted and achieved, document and highlights violation of rights, and provide a forum for participation by the marginalised communities.

As the public sector in Bangladesh failed to provide adequate WS services to the urban poor, the other actors came forward with innovative ideas.[11] Where feasible, they sunk tubewells or other means to produce and distribute water, and recover the cost from the beneficiaries. The NGO Forum, the apex organisation of the NGOs in WS, has been involved with the rural poor for more than a decade. There are some government and donor supported programs that target services to the basteebashis. In recent years a few NGOs have introduced CWS programs for the urban poor though these could not improve coverage

11. 71% of all rural and 88% of all urban handpumps are private. Sanitary latrines are mostly private. Components and spares for these are widely available in the private sector. Some reports put the private capacity for latrine production at 30 times that of the government (Azad, A.K. 1998: Evaluation of the DPHE/UNICEF/DANIDA Water and Sanitation Program, internal documents (mimeo). Dhaka: the World Bank Mission).

substantially. Where piped water was not extended to the settlements because the settlements were not legal and it was thought that the poor were not able and willing to pay, the NGOs mediated the services by standing as a guarantor that the capital cost would be recovered within a reasonable period and the beneficiaries would be regularly paying the recurring expenses (bills).

The existing relationship between the local and the central governments, the scope, form and extent of the citizen's participation in the policy making and plan preparation, and the role of the party politics in the local government administration, all affected the character of management, governance and the type, standard and level of services which were possible to provide and appropriate. The following is a case study on a Bangladeshi NGO which gives an example of a pioneering approach in WS in providing the urban poor legal, safe, and adequate water.

A. Dustha Shasthya Kendra (DSK)

The Dustha Shasthya Kendra (Destitute Health Centre), primarily a health-NGO, got involved in WS after realising that the lack of clean water was affecting its health programs in the bastees. The innovative model provided the 'informal' communities legal access to 'formal utility services'. The DSK convinced the DWASA to extend water connections to the bastees, and the Dhaka City Corporation to allow necessary use of its land. It lent financial and technical resources and prepared the communities to manage the facilities, repay the capital cost, and regularly pay the bills. The features of the CWS project were capacity building of the community through its active participation in decision making, planning, implementation, operation and maintenance including active women participation, full recovery of the capital cost based on affordable paybacks, institutional changes for legal, safe and cheap water supply to the basteebashis, decrease in the prevalent water borne disease, and the acceptance of its intermediary role.

Starting on its own, the DSK has mediated WS services to an estimated 10,000 poor households so far. The model was recognised by the IFAs and the government who now seek its assistance in replicating the project in other urban areas of the country, exchange information and to train people. In May 1996 the DSK received supports from the UNDP-World Bank-DANIDA Water and Sanitation Program, UNICEF, the Swiss Agency for Cooperation, WaterAid, and Plan International, to install 32 water points and 5 latrines in two years. It facilitated training on design, management and maintenance of water points, hygiene habits and community participation. It also selected sites, formulated rules on water access and cost sharing, and helped to form committees.

The DSK considered other operators in the locality to avoid overlap of efforts, existing infrastructure linkage, sanitation and hygiene situation (baseline study), area and population (size), socio-economic status of the population (demand and recovery prospect), eviction risk, technical feasibilities, monthly expenses on related items (affordability) etc. It avoided bastees where the *mastaans*[12] had strong holds, or the basteebashis were provided with acceptable alternative services. To assess these contexts, the DSK organised participatory rapid appraisal meetings with the community proposing that it could intervene only if the community would pay for the better services (the women had to endure hardship in time and labour to collect water often at odd hours and from illegal sources, at rates much higher than the official rate). The DSK explained roles and responsibilities of the stakeholders, formed the community-based committees, established trainings on hygiene promotion, community management, operation and maintenance, book keeping etc., and introduced a monitoring system to allow corrective measures.

The first project was initiated in two bastees situated on the Bangladesh Railway owned land. The DSK's attempt to sink handpumps failed due to the low groundwater level. Then it persuaded the DWASA, which was first reluctant to meet the needs as the bastee was illegally built, that the service to the bastee would be economically viable as the beneficiaries would bear all expenses besides regularly paying the bills, guaranteed by the DSK.

12. Scarce resources and recurring conflict in slums often provide a power base for a leadership that dictates terms under which the residents of a particular area have to live. This group, known as the *mastaans*, performs key functions which link the socially excluded urban poor to a series of basic needs such as employment, shelter, services etc. through a process of 'adverse incorporation' wherein the excluded and marginal groups are integrated into the pervasive system of clienteles and dependents (Matin, 1998, op.cit)

Tk. 70,000 (US$ 1200) was spent to build the first water point in October 1992. The DSK signed an agreement with a group of bastee-youths to take up the responsibility of financial transactions through a joint bank account with the DSK and liaising with it. Anybody could use the legal, cleaner and closer to home facilities on payments much below of what they had been paying before.

The second water point was installed in April 1994. The DSK lent Tk. 20,000 for constructing a shade and storage tank. The community, upon discussions on the operation modalities facilitated by the DSK, formed two committees- one with men and the other with women only, and defined the respective responsibilities. In fact an all-male and then a mixed committee was formed in its first scheme. Both failed as the men usually remained out of bastees for jobs and yet were not ready to accept the women's leadership. These led to a water committee with women- the major water users, and an advisory committee with male members, and had no problem with defining and having responsibilities carrying out. The committee was responsible for management, maintenance and regular payments; while the advisers would step in only in case of disputes and external threats. Now nearly a decade on, the community is fully satisfied with the services, the DWASA bills are paid regularly, and the DSK has fully recovered its investment.

The DSK now offers loans of Tk 50,000 (US$ 860) on average for each scheme, to be repaid in two years after the 6-months grace period; it is planning to charge 10% interest in future. Presently the DSK asks for 10% down payment as a sign of the users' commitment. A contract between the NGO and the committee formalises the terms and conditions and costs of the operation. Water is charged on a flat monthly basis or an on-use basis. A bucket of water (20 litre) costs Tk 0.50 and Tk 1 for bathing/washing. Once the expenses were completely recovered, the ownership of the facilities would be handed over to the community committee.[13] So far eleven points were transferred.

13. The preconditions for handing over the facilities were the presence of the two-tier committees, regular meetings, women's participation, regular collection of users fees and payment of capital cost, bills and caretakers salary, a transparent tally book, and a general knowledge on and practice of hygiene at all levels.

The community participation and capacity building particularly of the women and cost recovery of an affordable service brought some measures of sustainability in the DSK-CWS model. Its extent depended on the intervention and mediation which was possible due to the DSK's perseverance and understanding by a sympathetic DWASA-management in place at that time. But the 'informal' inter-mediation was susceptible to management and hence policy changes. There were other technical (unavailability of land for the facilities, inadequate pressure, irregular water flow, illegal provisions), social (bastee leadership, power structure, eviction, dishonest government staff, corrupt caretaker), financial (insufficient client, irregular monthly payment) and managerial (inactivity of committees, poor management, lack of participation of the community and capacity building of the CBOs) constraints too; the success rested on overcoming these.[14] Another major weakness was that the CWS schemes were not linked or supported by other programs such as literacy, income generation which could improve the sustainability. Many of the especially social problems peculiar to the bastees were faced with community pressure and policing, and legal measures.

B. Sustaining the Solutions

One of the hardest WS lessons was that finding the impetus (money, labour, materials and organisation) to build something was easier than maintaining a truly sustainable system if the cost was not recovered, capacity was not developed and participation was not ensured. A series of meetings across Africa led to the conclusion that important factors determining the sustainability of WS projects were community participation in all stages of project (planning, design, implementation, management and operation), gender-sensitivity, political commitment (adequate institutional frameworks), inter-sector coordination (collaboration-cooperation), resource development (in all forms at all levels, information management, appropriate technology), community self-improvement (better hygiene-sanitation), involvement of the private sector through sound regulatory and controlling mechanisms, etc. [16].

14. Three bastees with CWS projects were evicted so far, costing Tk. 402,000 (US $ 7000); four others were closed due to low water pressure.

The WHO established crucial principles to improve the sustainability of the WS systems. It advocated a service-orientated attitude of the agencies managing water as a financially sound commodity subject to legal and regulatory controls to ensure its conservation, protection and well-balanced use; affordability; and managing and operating according to the principles of good business practice- a fully accountable form varying with the context. It also considered that governments should be concerned with satisfying the basic needs of the poor, and may require agencies to provide services through special financial arrangements to promote public health and economic development [17]. Institutional sustainability and the mobilisation of individual resources depend upon the existence of a reliable and fair legal framework. The enormous energy that individuals and families can mobilise depends greatly upon the security of their future. No poor family will invest if they will not benefit from it- viz. if they fear eviction.

It was recognised since the Dublin Conference that water would be treated as vulnerable and scarce resource [18]. There was an increasing consensus that much of the health benefit of WS comes from the hygiene changes it promotes. However, its effects were not collective, but rather individual [19]. Therefore, the implementation should be household-centred to build on its capacity and initiative. The behavioural changes were not brought automatically through the physical provisions. Promoting and motivating people to practice hygiene required skills different than those required to develop and manage an effective delivery system. Nevertheless, the importance of hygiene improvement for health protection is now increasingly understood and being documented [20].

This section considers how the CWSs could be sustained in institutional and financial resource terms, and often refers to the DSK-model which showed that the right of the poor to urban services could be recognised independent of the landownership without risk through a shift in the institutional arrangement.[15] This will focus on participation, capacity building, knowledge dissemination, representation, support, income generation, socio-economic context and standards.

15. Proofs of land ownership, tax payment and planning approval were required to seek public services in Bangladesh.

C. Participation

The way water problems are framed at the state or municipal level contrasts with the perception of the communities. These are reflected in the range of solutions through which the government through regulations and plans, and communities through collective actions try to cope. The reasons for ineffective WS solutions lie not only in the overlapping responsibilities, but also in the way local communities use resources and adapt with the behavioural requirements of the government solution [21]. In spite of the general call for a participatory and integrated water management approach as the solution to the WS problems in the third world [22], it is difficult where conflicting and overlapping institutions exist and where the way demand is expressed is different from the way it is managed. Similarly participation was often misconceived and reduced to the use of community support for the implementation of the externally planned projects or to the inclusion of few stakeholders in decision making.

An effective community participation in the CWS projects depended upon the functional link between the community groups, service agencies and the private sector enterprises. The involvement of the NGOs will not guarantee sustainability unless there was a scope for participation by the beneficiaries and other stakeholders in the decision and management process. In order to establish a tool to allow that, it is not enough to involve only the stakeholders without the individual households as gaps exist between the perception of the households and the community leaders who are likely to focus on own benefits and are susceptible to corruption [23]. The CWSs recognised the need for a participatory development process and the importance of enabling the poor to acquire and maintain projects. Their effectiveness depended on the extent to which the beneficiaries identified themselves with the system and the facilities by getting involved in the planning and implementation of the facilities. These aroused a sense of community ownership and belonging into them; proper management and cost-recovery for the services were contingent upon a community acquiring this sense.

Characteristics of the poor and their settlements often call for adapted, sector-wise integrated development approaches, which depended to a considerable degree on their cooperation and

participation. It was important that the people were involved from the outset in the planning of the local segment of the services, in locating the facilities, determining orientation and alignment of the supply network. Participants given opportunities to air out their views in a relaxed situation encouraged wider participation. Cooperation and participation of the concerned communities ensured effectiveness of the service delivery and cost efficiency. Public understanding achieved through effective communication with and participation of the concerned community overcame many obstacles.

Many advocated the CWS options as development is most sustainable when driven by the beneficiaries. There were a number of factors common to these projects, including cohesive community structures; trust, respect and open communication between role players; support from traditional leadership; stable committees; strong sense of ownership; strict enforcement of payment; accountability to the communities and vice versa, and adequate support structure to the community [24]. All these conditions were relevant in the Bangladeshi experience. However it should be noted that these could not be influenced by the external agencies; the communities needed to build up its capacity to realise these. For any local government, service agency or the intervening NGO or CBO to ensure these, the precondition is to involve the communities in all stages. The authorities could establish partnership with the residential communities and user groups through the NGOs and the CBOs where their own abilities were inadequate and low-cost solutions were essential.

D. Capacity Building

In the WS projects, generally little consideration and resources were allocated for building the existing local capacities. These should have allowed the communities to realise their potential, participate in all phases and assume full ownership of the established facilities. Greater levels of commitment and time had to be given to this fundamental project development tool to ensure the inclusion of opinions and ideas of the local community as well as assessing the appropriateness of potential interventions.

Satisfactory technical management and autonomy to run the CWSs and financial and organisational management were required to reach sustainability. Technical sustainability depended on clear and sound reporting and data analysis, good state of the equipment, awareness of the responsibilities, knowledge of different contractors and autonomy in case of breakdown. Financial sustainability depended on sound financial reporting, clear understanding of duties and rights, provident savings, etc. In Ghana, the CBOs partnering the providers were asked to strengthen community's organisational capacities to lead participatory planning process, implement hygiene education and in the long run establish community ownership capacity. The facility management plan provided the community's proposal for the operation, maintenance and management of the facilities. It clearly set out the management arrangement for the completed system, and indicated the community's commitment to bear the expenses of meetings, fund raising, hygiene education etc.

The NGOs were monitoring the operation and maintenance of the CWS projects, through regular visits and meetings reviewing the progress and helping to resolve problems. The community committees, formed and trained by the NGOs, undertook the operation, maintenance and revenue collection. The communities, assisted by the intervening NGOs, decided on the revenue collection process, amount and frequency, appointment of caretaker or any other staff, and payment of charges to the rightful authority. Thus they could ensure timely collection and payment of all bills and fees, and repayment of the capital expenses. The cost recovery prospect, accountability and sustainability of the projects increased due to the capacities they build among the beneficiaries.

E. Knowledge Dissemination

The CWS projects showed that the user groups had to be organised, trained and oriented to assume responsibilities. The capacity building of the committees determined their aptitude to run the CWSs properly and autonomously. People's literacy level was an important aspect to involve them in the process [25]. Formal education courses, school programs, distribution and dissemination of teaching and learning materials and directed training and motivational programs for the CBOs and the local leaders were effective means for improving the awareness and user participation. While public information and educational measures could positively influence the people’s attitudes,

improved practices could be hardly maintained in the absence of options which were known and understood and demonstration of the way to do something through model projects. It depended upon the availability of practical options and consensus among all that improved and affordable WS services were important and possible.

These community groups were trained to design projects with feasibility and cost studies. The training focussed on the operation and the management aspects ignoring the longer-term approach, e.g. income generation or community development. In several examples in the African countries, the groups implemented projects like school building and rehabilitation, seedling nursery, loans to starting activities, funding of health education program. However, clear milestones and indicators of progress, especially in the early project stages needed to be prepared and shared among all stakeholders.

Participation of the individuals and the communities in the WS schemes was facilitated by the NGOs through broadly conceived motivation and awareness building programs dealing with the general public health and environmental issues, as well as focussed information campaigns on specific issues to inform people of their rights. The technical knowledge and social rapport of the NGOs and the CBOs were used in selecting location of equipment, water points, service network alignment and orientation, installations, optimisation and conservation of resources etc. As an outcome, the legitimate demand for improved services and awareness regarding the environmental and health impacts mounted gradually, and created the scope for further participation by the beneficiaries towards a sustainable solution.

Extension of large-scale citywide utilities to the bastees involved understanding, cooperation and coordination between the various actors and partners. The pertinent knowledge of the technically competent and experienced NGOs was shared in improving the urban services. They were disseminating their knowledge and experience to the agencies, the donors, and the other NGOs and the CBOs through consultancy and advisory services, workshops and newsletters. They could further help in the institutional development and training of the municipality staff, the community workers and the organisers. However the class room training activities conducted so far proved not too effective, unless on the job training was integrated to follow up on the confidence building of local staff and their partners.

Each contribution to the knowledge needed to build upon the existing activities and programs, avoid duplication and promote linkages and synergy affects between the ongoing efforts. Thus an information exchange network of the NGOs rendering urban services could strengthen and make greater achievements of all ongoing efforts by facilitating an access to the relevant knowledge. Examples of good practices, along with practical guidance, manuals and tools, could help to establish active partnership. In Bangladesh NGOs like DSK and WasteConcern are sharing its expertise with other concerned groups and organisations through both the donor agencies and informally.

F. Community Representation

Involvement of all stakeholders was crucial in the CWS programs in identifying the proper entity to work with. In Uthukela (Zulu), it was essential to work through the political structure too. It was found in Dhaka that the community representatives needed to be acceptable in the greater political context. Taking into confidence the vested interest groups, elders, males, youth, as seen in the DSK-model, most often worked well, repelled vandalism and corruption to the extent that they themselves were not corrupt. Ideally, the CBOs could represent the communities where they were based; there is a sliding scale in practice with fair representation at one end and community acceptance to the other [26]. However at the end it was the community who decided the composition (of representation). In Nzo, RSA, management was tendered to the best offer out of the different community groups. Though this was not the best representation yet the group members lived within the community. Most importantly they acted on community's interest.

Contribution of the community, a strong factor leading to ownership, responsibility and commitment are widely seen as a crucial part of the CWS. However where water is free as a policy, for example in RSA, there could be other ways to ensure this. The establishment of an official, government endorsed body in the form of a committee will lay responsibility clearly at the community level. However this body will contribute to only the sense of ownership, the responsibility would be taken by the community

only when there is a clear, open and participatory process.

It was necessary that the committees in turn be accountable to the community. Mismanagement and misappropriation of funds by the committee members, who often were socially influential and forced their ways into the committees and the management, was a problem observed in the ongoing projects. The eradication of this problem required, on one hand, improved efficiency on part of the management by the agencies, and on the other hand, more commitment from the NGOs and the CBOs to capacity building, developing accountability and a sense of owning the project by the beneficiaries. In Bangladesh, this problem was tackled with community resistance.

Systems and procedures should be set in place to ensure that the community was fully informed what the committee was doing, and could make it accountable (regular meeting, reporting back). The committees should not have only been held responsible for regular payment and maintaining a steady and quality service, issues like vandalism, unauthorised connection, and pollution control should also have been its responsibility. Rules and procedures have to be established to deal with the community members involved in such unwanted activities. Accountability from the NGO/CBO to the service providing agency and vice versa may also be established through the contracts they enter into. Methods of ensuring CBO accountability include budget control, justified spending and regular progress meetings.

The services in the bastees were affected by the local power structure, competition for scarce resources, and increasing demand. Therefore, the CWS projects needed to allow sufficient staff and time for the development of a sustainable program. The presence of the powerbrokers was a strong source of opposition as they protected the illegal utility connections in and around the bastees and profiteered out of the poor's peril. Collective resistance through the awareness and capacity building of the community proved to be one way of resolving the problem. The NGOs played an important role in preparing the community to protect their own interests in such confrontations.

On the other hand, backing by the traditional leadership-power structure increased the prospect of success and sustainability of a WS project. The leaders could enforce the regular payment and often penalties for default more effectively. Their cooperation was also essential in resolving conflicts, sensible issues and crises. This role could be formally recognised in the system by including the representatives of the leadership in the hierarchy. The advisory committee formed in the DSK-projects was a good example. In another example, in Nzo, meetings used to be held in the chiefs house. That way he was given the due honour and remained informed, though not involved directly.

G. Support Structure

One critical aspect in establishing a successful CWS project was the continued external support. Although in the early stages of a project, the system could be properly run by the well-trained and committed members, without continued support many committees ran into troubles due to loss of personnel (in Sudan and Laos technicians lured away), technical problems that were not fixed, unsatisfied users refusing to pay, leadership crisis and aspirations, etc. So it required to build-in a continued support structure. In many instances, the NGOs developed the CBOs to run the system while they would be fed with constant supports and advices. Under such situations, respective roles and procedures should be clearly defined to avoid duplication or conflict. These should be as broad based as possible though it might be possible to anticipate most common sources of troubles and hence ways to tackle those.

The involvement of the Bangladeshi NGOs in mediating and managing WS services in the bastees, and the positive effects thereof on the basteebashis including capacity building, brought a change of attitude not only of the public officials and agency staff, but of the local power holders and illegal service providers as well. These generated interest and motivation among other communities who have been encouraged and convinced by default to adopt similar methods in meeting their own needs. Real gains of community management could be found in the prolonged sustainability of the schemes, the empowerment and increased self-respect of the people, and the fact that in many cases the communities took the skills and knowledge gained through the projects further into other development initiatives. Thus the provision of safe water could truly become the gateway towards improving the quality of the basteebashis' lives.

There were donor agencies providing supports to the provisions of utility services in the third world urban areas. Such provisions were often components within a broader development program aimed at improving urban management capacities and environmental protection. There was also a pressing need to improve cooperation among the external support agencies active in this field. Due to a lack of coherence in the technical and developmental concepts of direct and indirect contributions by successive agencies, many such cities were encumbered with incompatible and ineffective facilities and equipment. Coordination of approaches and activities could also enhance the effectiveness of these agencies contribution at the national and regional levels. Besides the donors, coordination could encompass the external NGOs involved in these areas too.

H. Income Improvement

For long-term sustainability, the setting up of a legal community-based structure that would use or invest the benefits for small scale community projects or business was imperative, though most often not fulfilled. Commitment grown through participation, decision making and ownership, experience in project conception and implementation, and aptitude to analyse the impact as facilitated by the NGOs could provide enough impetus to use savings for community development projects. Income could also be generated through providing additional services (soap, washing, seedlings) at a cheaper price. A better preliminary assessment of the local capacities as well as a longer experience in dealing with private companies would have saved time and money and would have also allowed the community capacities building on longer term activities such as the implementation of the IGAs and community development.

Some of the NGOs possessed the capability to supervise small-scale construction in the CWS projects and thus generate income, increase community belongings and reduce cost. They procured locally available cheap but durable and often unconventional materials, and hired unskilled labourers from within the community. This was not possible for the GOs because of set standards, regulations and procedures. Due to the profit of the members and financial success, the water committees were often able to handle most of the community problems. Difficulties were found in convincing them that the money generated should be used for the benefits of the majority rather than individual cases. As this often provided the only revenue source, the motivation of each member was important. Combined with close monitoring, checking this required time but gave an efficient tool to the community for further development.

The projects could extend service coverage in the poor settlements by involving the small enterprises or informal workers groups. The non-profit NGOs and the CBOs may achieve significant reduction in cost by competing with the public and for-profit private management systems. They lowered the costs by introducing innovative and efficient means; the outcome set a standard and example of practice, equally applicable to the public system.

Privatisation of the services could generate new sources of income for the poor communities. Many of the agencies could become more flexible, efficient and responsive to the local requirements and potentials by decentralising delivery, operation and maintenance of the services [27]. The NGOs, many of which were aware of the local conditions, people and activities, could be engaged to organise and motivate the people to adopt cost-effective ways of services [28]. The privatisation of infrastructure maintenance and repair services was a means of lowering the maintenance cost and optimising the utilisation of equipment. However, Problems surfaced when devolution was poorly conceived and regulated, and in particular when competition was lacking and no accountability was established.

The long-term economic impacts of a CWS system would multiply if the indirect benefits were counted. These included the reduction of illness and healthcare costs due to improved hygiene, enhancement of environmental quality and property values, reduction of disturbances and increase of business volumes, etc. However to sustain the benefits it was essential for other programs like income generation and literacy to run side by side, if not by the same NGO/CBO, than by others. This was one weakness of the DSK-model which because it was the initiative of a single NGO, it didn't attempt to integrate other programs except the ongoing health program. However, it could not be difficult to introduce such other programs to support the effects of the CWS programs by the Bangladeshi NGOs.

I. Socio-Economic Context

Cultural aspects that needed to be tackled as foundations for sound sustainability were often not addressed. The varied behavioural pattern and inter-personal relationships of the considerably diverse socio-ethnic groups strongly influenced their ability to participate in the CWSs. The use of water, sanitary practices, and the underlying attitudes of the population towards cleanliness and general hygiene conditioned by this context influenced the function and acceptability of the CWS. Awareness-building campaigns and education on the impacts of poor WS were essential to reform the attitudes. The programs to disseminate relevant knowledge and skill, or to improve or change the behaviour, practices and attitudes, had to be based on an understanding of the target groups' social and cultural characteristics.

It was possible for the NGOs with particular expertise in the community motivation programs to overcome the cultural inhibitions. In a cohesive community when trust was placed on the facilitator (NGO, CBO, local government or service provider), cost recovery and accountability were more easily achieved. It was however hard to instil from outside. Where a community showed no sign of cohesiveness, this did not mean it's inability to manage a CWS project, but that the extra effort the facilitators had to put in ensuring the participation of all. Further lessons of the NGO-initiated CWS projects were linked with the constraints faced during implementation- change of attitude towards safe hygiene practices, formulating a system of disbursing funds to the communities, utilisation of the funds, construction quality, financial accountability, setting standards, etc.

The character of service needs, and the technical and organisational nature of appropriate solutions, depended a lot on the economic context of the country and the city and the particular area, and the socio-ethnographic characters of the target group population. The size and structure of a settlement has an important influence on the character and urgency of the service needs. The climatic conditions and characteristics of the local nature and ecology influenced the interactions between the delivery systems and public health. All these extraneous factors affecting service provisions and people's behaviour used to be taken into consideration to ensure sustainability.

Most third world cities are either sprawled or are in the form of huge shanty towns in the fringe areas. Large areas of the city inhabited by the poor were often difficult and expensive to serve due to physical and topographical constraints. Most of the poor households were accessing formal systems for the first time with the CWS projects, some of whom currently were not paying, or could not afford to pay (not true in Dhaka). In many countries legislative and regulatory framework was week creating ambiguity and unpredictability. Working with the poor involved a new set of tasks like providing them appropriate level of affordable services, understanding the specific needs, establishing a viable cost recovery method, etc. In most of these countries the public sector was not sufficiently developed. Thus low capacity of the service agencies had also acted as a disincentive for the clients.

Affordable standards: Inappropriate space, service and materials standards increased the costs in many housing projects, and left the needs unmet. Affordable services of minimum acceptable standards could be developed in CWS [29]. These projects had higher prospect of full cost recovery because of the affordability of the target population based realistic standards, community ownership, management and maintenance, regular repayment of capital cost, close monitoring and wide participation. The average cost was comparatively reduced by shared services, which allowed increase in the coverage and gradual upgrading of the standards cost effectively. The service standards could initially be set low, and upgraded gradually subject to resources and need, to minimise the start-up cost.[16] Also the users were generally willing to spend extra for a system requiring less recurring expenses [30].

To integrate the willingness of the poor households to share services in the initial project years as a strategy, the conventional standard and planning

16. Most of the amenity and utility services can be introduced incrementally and upgraded in phases with an increase in the users' affordability and by their own decision. This will reduce the initial project expenditure and increase users' equity and a sense of ownership. In many mass housing schemes, actual construction and living started late due to a lack in adequate service provision at the onset. Strategy of incremental service provision would make it possible to introduce services adequate to encourage immediate occupation.

methods that adopt exclusive and expensive standards needed to be changed and set according to the target groups' ability and willingness to pay. These could be determined by gathering extensive and relevant information on the target groups. In most circumstances, the NGOs either had basic data or were suitable for both eliciting vital information and convincing the users. In the DSK-model, initial projection meetings helped to determine realistic standards and targets and define the modalities, and contributed in increasing the sustainability.

V. CONCLUSION

The establishment of effective institutional arrangements to install sustainable CWS services depends largely on the existing systems of urban planning and administration, and a comprehensive strategic plan. Such a plan as a regulatory framework should provide relevant information, specify target and standard, outline the major system components and the role of different stakeholders and form the basis, type and extent of people's participation. Objectives concerning cost-effective and locally sustainable services should have to be specified, along with the associated financial policies. The relationship and linkage between various services need to be clarified, recognised and established within the overall urban development perspective.

The policy barriers to provide legal, safe and cheap WS services to the urban poor in Bangladesh were overcome by the mediating NGOs standing as guarantors to the public utility agencies. This saw a new institutional arrangement made for delivering services to the bastees that allows cost-recovery, reduction of pilferage and system losses, and improvement in the service coverage and quality for the urban poor. The about 16000 NGOs were working on basic education, healthcare, micro-finance and nutrition, only a few were involved in urban WS programs [31] (ADAB, 19920). They were more effective than the formal agencies at identifying the very poor and delivering services to them. The NGOs integrated community participation with hygiene promotion, water supply and sanitation targeting the poor who were not adequately served by other channels.

The innovation of the CWS projects in Dhaka hinged on the role of the NGOs as mediators, helping the poor to access the benefits of the services provided by the government agencies, and motivating them and facilitating to build capacity. The NGOs acted as the guarantors to the public agencies to overcome the official barriers that inhibit the provisions of services to the bastees. The experience and involvement of the NGOs and the CBOs also encompassed such areas as management and maintenance of facilities, repayment etc. with innovative means. They could motivate, educate and prepare the communities to accept their role, participate, and thus ensure better performance.

Under the circumstance, devolution of the functions like grassroots decision-making, financial management, procurement, and implementation could reduce the load on the agencies. These could then focus on employing legislation and regulations, and enforcing standards, environmental monitoring and supporting the local bodies. To effectively regulate and control the activities and performance of the CWSs, an appropriate system of monitoring and control needed to be devised and established, and corresponding skills and capacities be developed among the agencies, which were lacking in most of the projects.

Generally the community members expressed satisfaction in the level, cost and quality of the services, endorsed the idea of extending mediation by the NGOs, and wanted to be involved in the decision-making, planning and implementation of the projects [32]. Though the CWS projects inter-mediated an access to the basic services by the poor, yet such arrangement should remain as an interim solution only. Eventually the poor have to be recognised in their own right. Because the success of these projects accrued to the intervention by the external organisation(s), to what far the community could have built its own capacity and democratic participation without being facilitated remains to be seen. Current performances in the projects that have been completely handed over to the community would provide the required evidences.

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