



Urban sanitation issues in Sri Lanka

H. Pinidiya and K.M. Minnatullah, Colombo, Sri Lanka.

SRI LANKA HAS committed to the target of total coverage by Water Supply and Sanitation by the year 2010 through its National Programs. Although the target seems ambitious, programs on water supply development progressed well (70% coverage as of 1994), sanitation however lagged behind (50% coverage as of 1994). In the rural areas a number of sanitation projects are implemented by different agencies with donor assistance, however, the densely populated urban areas of the country continues to be neglected. Some attempts have been made in the recent past to improve urban sanitation, these projects primarily supply driven in nature proved to be deficient in delivering the service to target beneficiaries. Project planning in isolation from the beneficiaries caused serious consequences during implementation and in effective use and maintenance, due to a lack of **ownership** of the facilities. Experience gained by documenting such examples could be utilized in future for better designing urban low cost sanitation projects. This study has been conducted to document lessons learnt from urban sanitation projects in Sri Lanka, the study reveals that, during the planning and implementation of urban sanitation projects factors such as demand for improved sanitation, socio-economic aspects, appropriateness of the technology, viable operation and maintenance mechanism, participatory approach in developing ownership, and a viable cost sharing/recovery mechanism were either lacking or inappropriately designed. As a result although targets in physical terms were fairly reached, the system did not sustain for long. Results of the study further indicates that, for those sanitation improvements where the community took a leading role and participated in addressing the above factors, the service sustained.

Background

Nearly 3.7 million people (21%) lives in the urban areas in Sri Lanka, of which an estimated half resides in the low income settlements. The infant mortality rate in the low income settlements is between 32 to 54 per 1,000 live births, compared to the national average of 19.4%. Prevalence of diarrhea, worm and parasitic infections, malnutrition, over-crowding, inadequate infrastructure services and higher incidence of non-schooling and drop-outs are some of the critical characteristics of these low income urban settlements.

From planning to implementation and subsequently during operation and maintenance of the urban sanitation projects, various constraints hampered the progress and functioning of the system. With a view to ascertain

factors which impede the progress of urban sanitation projects and to identify issues that contributes to the non-sustainability of the facility, the UNDP/World Bank Regional Water and Sanitation Group for South Asia (RWSG-SA) and the Government of Sri Lanka (GOSL) agreed to conduct a study, this paper discusses the findings of the study.

For the purpose of the study an urban sanitation project implemented with the assistance of an external support agency in four densely populated urban areas in the Colombo City was selected. A government institution was responsible for the implementation of the project. The characteristics of the study areas are similar to the urban areas in Colombo City and the four selected settlements represent the cross-section of the densely populated low income settlements.

The project

The project had three different types of sanitation systems- double-pit water seal latrines, common latrines connected to septic tanks, and individual water seal latrines connected to shallow sewers with common septic tank. The location of the settlements with number of households, type of sanitation system and the construction costs per household are provided in Table 1.

Table 1

Site No.	Location	Sanitation system	No. of families	Cost per family US\$	Year of construction
1.	Fg. Road	Individual water seal double pit latrine	375	89	1988
2.	N-Pura-1	Common latrine systems connected to septic tanks	450	14	1987
3.	N-Pura-2	Individual water seal latrines connected to shallow sewer with common septic tanks	110	310	1991
4.	K-tissa	As above	110	237	1987

The study

The study focused on the following factors to determine the relationship between these factors and the outcome of the project on effective utilization, ownership, maintenance, and long term sustainability :

- (a) Demand responsiveness;
- (b) Implementation strategy;
- (c) Appropriateness of the technology options;
- (d) Extent of community involvement;
- (e) Functional aspects;
- (f) Maintenance status;
- (g) Cost recovery arrangements; and
- (h) Sustainability of facilities;

A number of different techniques, including household survey were adopted to conduct the study. Most of the design and implementation details were collected by a study team from the key sector institutions and directly at sites. The survey was limited to 10% random sample families from each of the four locations and the information gathered was cross-checked with interviews as far as possible to avoid recording errors. The survey questionnaires included data on technology options, implementation techniques, operation & maintenance practice, social concerns, functioning and acceptance of the facilities, willingness to contribute and participate, and other practical problems.

The limited time and resources available for the study did not permit an extensive in-depth study on factors identified above. Due to scientific limitations of the sample size, it was not possible to draw interference to the case load. Certain constraints restricted the scope of the study in the areas of (a) changes that have affected the day to day sanitary practice of the people (b) local variations according to socio-economic and cultural factors. However, the above limitations did not have any major impact on the overall study and the objective of the study have been well covered. To record the functional aspects of sanitation technologies and the sociological aspects, the investigators had to establish close rapport for inter-personal dialogues with the study beneficiaries. To fulfil this requirement a number of prior visits were made by the investigation team to the selected project sites to develop better relationship and to be well acquainted with the community prior to collection of field data.

The most important results revealed by the survey have been summarized under the following groups in order to clearly present the outcome of the study :

(a) Socio-Economic Status and Willingness to Participate

The residents in these four communities have slightly different socio economic status (Table 2) These low income settlements represent various ethnic groups mainly Sinhalese, Tamils and Muslims with different religions. The table shows the types of employment in the four areas.

Table 2

Category of Earning	Fg. Road	N-Pura 1	N-Pura 2	K-tissa
Small commercial earnings			15%	10%
Labour and minor employees		20%	35%	60%
Informal sector activities	70%	75%	50%	05%
No definite earning	30%	05%		25%

Income per household varies from zero to Rs. 3000 per month, and the uncertainty in monthly income has crucial impact on their social status. Demand/Interest for improved sanitation varies with the socio-economic condition of each community. The study revealed different views in the four locations.

Greater interest was expressed by the people who had knowledge of sanitation facilities, gained through their exposure to the middle income class at their work places. The project provided latrine substructure without any cost recovery mechanism, the households were to construct the superstructure. Families with a permanent monthly income are prepared to pay for the construction of latrines, however, a general lack of hygiene awareness and insufficient income is a vital factor for their passive attitude to sanitation improvements. It was apparent that a cost recovery system could be easily adopted in most of the areas and this would be an issue only for a very small percentage of households with a very low income. This is also evident with housing loans that the residents (most houses constructed by the residents are through loans provided by the government along with their own savings) have already committed to pay back to the government, and these loans are recovered without much difficulties. Most of the premises have sufficient space to construct latrine. The residents without latrines in the study area uses common latrines provided by the government agencies.

(b) Acceptability and Adaptability of the Technology

The study confirmed that the residents were not consulted at the planning and design stages and also during implementation. The effect of non-involvement of the users are multifarious, which has affected the functioning, maintenance and adaption of the technology. The beneficiaries were dissatisfied with the common latrines which were not maintained, and because of their perception that the system will be well maintained by the provider (government). While all those who cannot af-

ford house hold latrines were happy to use the common latrines, the study indicated that by merely providing such facility did not solve the problem, instead it has created another set of problems. Improper construction also created a negative impact in the community - the most common double pit latrine system introduced in one of the study areas had all four walls of the rectangular pits plastered and the bottom completely sealed leaving no room for soakage. As a result the pits have over-flown within a short period after the construction and the system were abandoned by the residents, although design detail indicates that one pit is capable of handling the volume of human excreta of a family with 4 - 6 members for a period of one year. In certain places, it was found that the pits were used as water storage tanks for their daily domestic consumption.

In two of the study areas shallow sewers are connected to a common septic tank and the effluent from the septic tank is discharged to a nearby waterway through a tightly closed gravel filter. Functional details of the filter and the quality of the effluent discharged to the water way are not monitored. Therefore the effluent quality and the performances of the filters are unknown. The system is practically designed to discharge the effluent into the already polluted waterways in the vicinity. The study revealed that the filters were not properly functioning as the filter media was clogged. The users had no problem with this failure as it did not impede the function of the system.

The cost for each of the options adopted in the study areas noted in Table 1. shows that the cost of individual water seal latrines connected to shallow sewer system is extremely high. The system may not be appropriate for these urban low income settlements unless further cost reduction is attempted.

(c) Implementation and Community Involvement

The sanitation systems under the study areas were implemented by the government authorities through its contractors, except the superstructure which was constructed by the community after completion of the substructure. The authority supervised the construction of the substructure without any community involvement. The study indicates that the beneficiaries were not approached to participate during implementation as a result they expressed unfamiliarity with the system. The study further revealed that, the willingness for participation by the community in implementation was very high. An important feature revealed by the study is that during the construction stage no one had observed and corrected some of the gross deficiencies such as plastering the walls of the pits.

(d) Operation and Maintenance

At locations where the community was provided with double pit latrines, the operation and maintenance problem did not arise since the system was completely aban-

doned due to failure of the technology. Beneficiaries expressed their dissatisfaction with the system and had developed a negative perception of the technology. In general the implementing authority had no prior inter-agency planning for the operation and maintenance of the system. The implementing authority expected the local authority to maintain the common latrines and septic tanks with shallow sewer systems. The local authorities did not consider maintenance as their responsibility since the provision of sanitation facilities for the low income settlements is not under their purview, as a result the maintenance of the systems were neglected. In absence of their involvement and ownership, the community expected the assistance of government authorities or any Non Governmental Organization (NGO) to maintain the sanitation system. They also indicated that they do not have any organized capacity for this type of work.

Satisfactory maintenance practice was observed in only one area where the local authority carried out maintenance with the assistance of a community based organization. This process has shown the affectivity of community involvement in maintenance. In another location the community maintained manholes and sewers of the shallow sewer system. Septic tanks and filters which were beyond their capacity to maintain the community requested the assistance of the local authority, with no positive response.

With little or no interest of the local authority for the maintenance of sanitation facilities, the system has deteriorated beyond operation and the septic tanks were over-flown with clogged filters. Users strongly complained against this unsatisfactory condition. The sanitation projects in these settlements therefore aggravated the environmental hazards instead of mitigating it and has earned public displeasure. There is no monitoring system to check the quality of the effluent discharged from septic tank through filters to the near by channel. At places where the unfiltered effluent was directly discharged into the channel, the sewer system functioned without any apparent problem with the clogged filters. Community had no response on the adverse process because of there ignorance of the system and un-awareness of the health aspects.

Conclusion

None of the low cost sanitation systems reviewed under this study have succeeded in demonstrating sustainable improvements in the sanitation status of the urban low income communities. On the contrary statistical figures will support a full coverage in these areas and thereby portray an erroneous picture of the real situation. The study identified various reasons which have attributed to the failures at different stages, from the planning and implementation to end-use and maintenance of facilities. Key factors that have contributed to the failure are listed below:

- Lack of a demand responsive approach in problem identification and planning is the overall factor which have negatively influenced the performance of the project including choice of technology, implementation, usage, ownership, maintenance and ultimately the sustainability of the system. The project had no provisions for proper dialogue or direct links with the community.
- Cost recovery mechanism was not planned and introduced for the service. Socio-economic aspects identified during the study indicated the willingness of community to pay for the sanitation service provided. The findings confirmed that a reasonable cost recovery system could be introduced for the settlements under consideration. Such a mechanism if well conceived and implemented, would have created greater beneficiary responsiveness for the facility.
- An important factor governing the community acceptance of the facility is appropriateness of the technology. The failures of the technology due to erroneous modifications and poor construction have bewildered the beneficiaries.
- Poor planning for operation and maintenance and absence of clear agreement or consensus between the government institutions and the community have created a serious void in management of the system. There is no clear delineation of responsibility for the operation and maintain of the sanitation system. As a result the system rapidly became non-functional, contributing to further degradation of the immediate environment.
- In those areas, where, the community by own initiatives have collaborated with the local government authority for maintenance, the system functioned properly. Lack of confidence of the government on the capacity of the community has created a cul-de-sac in exploring the feasibility and extent of their involvement.
- Greater disputes have been observed at locations where the common latrines were installed. As the system failed and dampened the community expectation from public sector for maintenance of the common latrines.
- Implementation and maintenance responsibilities of the low cost urban sanitation system are with several agencies without any well defined jurisdictions. Agency and government level co-ordination is essential to resolve this confusion in order to define clear roles and responsibilities at various levels.
- Public awareness campaign and hygiene education programs should be linked-up at the outset of the implementation of urban sanitation projects for demand generation and also for proper use and maintenance of the facilities.

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