

3 Development of community-based sanitation infrastructure in Hasanpura, Faisalabad

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Abstract

Sanitation facilities in impoverished communities in developing countries are often very inadequate and contribute to the poor health of the community. Most households living in such communities lack the financial means to improve their own sanitation facilities. At the same time, municipal authorities are often reluctant to improve sanitation facilities in impoverished communities. This results in the decay of urban environments and deteriorates the health of individuals. As urbanisation continues unabated in developing countries such as Pakistan, the pressure falls on authorities to provide sanitation facilities commensurate with the increase in population.

The success of community-based sanitation development in the Orangi Pilot Project, Karachi, motivated the sanitation development in Hasanpura, Faisalabad. Following the lead of a local NGO, residents of Hasanpura developed their own water supply and sanitation schemes by adopting a component sharing approach. The community paid for the infrastructure development within the community boundaries and the local authorities paid to link the community's infrastructure with the municipal infrastructure.

The process was a great success and its impact extremely positive. The experience allows for replication elsewhere, so long as the identified constraints (especially that of overcoming distrust in local government) are overcome.

Introduction

Inadequate water supply and sanitation infrastructure continue to pose a challenge for the government and people of Pakistan. Poor quality drinking water and sanitation conditions contribute to the poor health of communities. The result is a very high burden of disease and a significantly large number of deaths every year. Thousands of other people suffer short-term or prolonged illness, which prevents them from being productive members of society, in general, and for their households, in particular.

The last census of Pakistan in 1998 reported that only 79% of households received water from municipal sources or by drawing it from the ground. Low-income communities in Pakistan fared worse than the national average when it came to water quality and sanitation facilities. The 1998 census reported that 51% of individuals in Pakistan did not have access to a proper toilet. Lack of adequate supply of potable water and poor sanitation facilities often cause poor health among communities across Pakistan, where a significantly large number of deaths and illnesses result from inadequate sanitation and waterborne diseases.

Given the inadequate resource allocation frameworks in Pakistan, municipal governments have lacked financial resources and the capacity to offer adequate municipal services to their communities. In the absence of buoyant sources of taxes, the municipalities rely on property taxes and the transfer of funds from the higher tiers of government to provide municipal services. Lack of technical capacity, poor governance, and inadequate leadership at the municipal level has left most urban communities in Pakistan with poor water supply, sanitation, and other municipal services.

Realising that governments were either unwilling or simply did not have the capacity to provide relief, some communities in Pakistan pooled their own resources to educate the masses about the consequences of poor water supply and sanitation. They also organised the community to plan, finance and develop their own water supply and sanitation schemes.

This report chronicles the struggles and triumphs of a small community on the urban fringe of a large industrial city in Pakistan. The community relied on itself to improve its sanitation infrastructure and in so doing improved the health, social standing, financial status and morale of the community.

This report is organised as follows: first, it outlines the poor sanitation conditions in the low-income community of Hasanpura, located in the third largest city of Faisalabad in Pakistan. A discussion on the social and health-related impacts of poor sanitation follows. It then introduces Anjuman Samaji Behbood (ASB) a not-for-profit organisation that galvanised the community to strive for better sanitation on a self-help basis. What follows is a detailed discussion on ASB's philosophy of community-based infrastructure development and the implementation details from ASB's first sanitation development project in Hasanpura. The paper also describes community outreach initiatives through gender-sensitive campaigns that focused equally on male and female members of the community. A discussion of outcomes of ASB schemes follows to explain their impact on the community and the factors responsible for success. Finally, the report details the unique challenges faced by ASB and the communities it helped over the years to spread clean water supply and sanitation facilities to low-income communities in Pakistan.

Background

Faisalabad is the third largest city in Pakistan. A rapidly growing town of two million (MoEAS), Faisalabad faces challenges brought about by rapid urbanisation. As the urban areas continue to increase in population and density and the urban fringe incorporates, albeit haphazardly, rural areas into the urban fold, rapidly urbanising communities face a myriad of challenges in infrastructure provision and municipal service delivery.

Low-income communities in Faisalabad lack an adequate supply of water and sanitation services. The following table presents a breakdown of water supply and sanitation conditions recorded in the 1998 census for Faisalabad. Handpump provides the primary source of water supply in both urban and rural areas of Faisalabad. Whereas 46% of urban households reported using tap water, only 15% of rural households reported access to tap water. As for sanitation, only half of urban households reported access to private toilet facilities. Some 41% of urban households had access to shared toilet facilities, whereas only 9% of urban households do not have access to any proper toilet facilities. More than 66% of households in rural Faisalabad do not have access to adequate toilet facilities. Only one in five households in rural Faisalabad reported access to private toilet facilities. It should be noted that because of the stigma associated with the lack of access to adequate sanitation facilities, households might have overstated their access to sanitation facilities.

Problems with sanitation

Hasanpura is a community of 2,500 households in Faisalabad. In 1994, when ASB started working with the community, Hasanpura was home to 1,000

TABLE 1 Water supply and sanitation conditions in Faisalabad

Faisalabad district		Total	Rural	Urban	
Source of drinking water	Outside house	Tap water (%)	2.4	1.1	4.1
		Handpump (%)	3.5	5.1	1.3
		Well (%)	0.1	0.2	0.0
		Pond (%)	0.2	0.4	0.0
		Other (%)	1.8	2.3	1.2
	Inside house	Tap water (%)	28.1	15.3	45.9
		Handpump (%)	63.6	75.7	46.9
		Well (%)	0.3	0.2	0.5
	Toilet facilities	Private (%)	33.5	21.6	50.0
		Shared (%)	24.4	12.3	41.3
None (%)		42.1	66.2	8.7	

households. Given the sanitation and water supply conditions prevailing in 1994, Hasanpura could be categorised as a peri-urban slum settlement. Before 1994, the community and its leadership had lobbied various tiers of government for improved water supply and sanitation facilities. Despite their continued requests over the years, Hasanpura was not connected to the municipal water supply and sanitation infrastructure in Faisalabad.

The results of this neglect were appalling. Lack of municipal water supply forced the community to purchase water from private suppliers who brought water in on donkey carts. The private suppliers provided poor quality water at premium prices, charging Rs 5 for 35 litres¹. The residents of Hasanpura were therefore forced to spend Rs 1.8 million per year to acquire water. Despite being a low-income community, Hasanpura residents were paying a higher rate for water than the wealthier communities receiving municipal water and sanitation services. The municipal authority was charging Rs 40 per month for water and Rs 20 per

¹ US \$1 = Rs 60 Pakistani (2007)

month for sanitation for the restricted supply it maintained in Hasanpura, which fell significantly short of universal coverage.

In the absence of proper sanitation facilities, solid and liquid household waste was released into the streets, which became breeding grounds for disease. As household waste ran in open drains in the streets, it accumulated into ponds whenever the flow could not continue under gravity. This caused human and animal waste to pile up in the streets, creating a stench and attracting a host of diseases including typhoid, cholera, gastroenteritis, and diarrhoea. Children were the most vulnerable of all. While children played in streets littered with filth, they became victims of a host of diseases and illnesses. As the children became sick, they passed on the illness to their mothers who inadvertently passed the disease on to other children in the household. Thus, whenever a child became ill, the entire household went down with the disease. Independent estimates of the financial costs for treating illness resulting from poor sanitation in Hasanpura put the burden of disease at Rs 9 million for the 1,000 households in 1994.

As the sewage flowed into streets, it seeped into the ground water and contaminated underground sources of drinking water, compounding the problems. Furthermore, wastewater damaged the foundations of the housing stock in the community: causing severe damage to the community's homes. The damage to the housing substructures and the waste littered streets in Hasanpura were partly responsible for a decline in property values in the community. Since most households in the community held legal titles to their property, the declining property values eroded the equity they had been building in their homes.

The problems associated with inadequate sanitation extend beyond the burden of disease and resulted in a myriad of social problems. Residents of Hasanpura reported being shunned by relatives who were reluctant to visit them because of the filthy streets, which were an eyesore and a risk of disease. Furthermore, in Pakistan where most marriages are arranged by parents, households with unmarried girls complained of facing hardship in finding suitors for their daughters because of the poor state of local sanitation. Prospective suitors were deterred by the appalling state of sanitation in the streets, which made even walking a challenge for most.

Anjuman Samaji Behbood (ASB) is a Hasanpura based community organisation that was founded in 1964 to improve services within the community. Up until 1987, ASB had limited success in improving water supplies and sanitation services. So ASB started to act as a lobby group and tried to convince political leaders to improve the quality of water supply and sanitation in Hasanpura and the neighbouring community of Dhuddiwala. However, years of lobbying failed to improve the state of the infrastructure.

Realising that lobbying politicians was not a successful strategy, Mr Nazeer Ahmad Wattoo, founder of ASB, searched for alternative approaches. In 1987, he met Dr Akhtar Hameed Khan who had pioneered self-help infrastructure development schemes in Orangi, a large slum in Karachi. Dr Khan was successful in developing sanitation, water supply, and micro credit facilities in Karachi and the Orangi Pilot Project (OPP) – a low-cost community driven sanitation scheme – had brought him worldwide fame in relevant circles. Over the next few years, Mr Wattoo visited Karachi

to learn from the Orangi experience and by 1994 ASB and Mr Wattoo were ready to implement OPP-inspired water supply and sanitation schemes in Faisalabad.

Development approach and philosophy

ASB's development philosophy was inspired by the development paradigms proposed by Dr Khan, in light of his work in Orangi. His philosophy included mobilising the community to pool its resources to develop basic infrastructure with community participation. OPP divided infrastructure development into two distinct phases: internal development and external development. Internal development referred to the placing of basic infrastructure within the house and the streets. Households would self-finance internal development. External development referred to laying down trunk and collector sewers, which would receive sewerage from lane sewers. The municipal authorities would finance construction and operation of trunk and collector sewers. This component sharing approach reduces the total cost of the project and makes it possible for low-income communities to enjoy water supply and sanitation services.

While ASB learned from the OPP experience, it also modified the OPP methodology to meet the local needs in Faisalabad. For instance, unlike the OPP method, ASB offered loans to households who could not finance the construction of internal development. Unlike the residents in Karachi's OPP, some residents in Hasanpura did not have the means to finance internal development. ASB used previous grants received from WaterAid for water supply projects to extend revolving loans to the community. Over the years, the community has already returned a large portion of the borrowed

money. Had ASB not arranged for the revolving loans for the poor households in Hasanpura, such households would have been left out of the project. Their integration at a later stage would have proven more expensive because the streets would have had to be dug again to link the household's discharge with the lane sewer.

ASB also collaborated with key community leaders who were encouraged to be early adopters of the programme. These community leaders later worked on convincing the community at large to buy into the infrastructure development programme. Thus, the community leaders themselves took initiatives for community mobilisation.

The following section presents in detail the implementation of the sanitation scheme in Hasanpura.

Implementation

The sanitation scheme in Hasanpura succeeded because it was an integrated effort where ASB mobilized the community to provide labour and finances, WaterAid provided a loan as a revolving fund, and the local municipal authorities provided access to the trunk sewer. The integrated approach that brought actors together from different spheres was ultimately successful in providing quality sanitation to the peri-urban community of Hasanpura.

Development approach

To develop a better comprehension of the ASB model, one needs to understand the concept of the internal and external development in a little more detail. As the name suggests, the internal development refers to all construction activities that take place inside the house (including a

sanitary latrine) and in the lane (street) including an underground sewerage line connecting houses with the primary lane sewer or the secondary or collector sewer. Whereas the external development comprises the trunk sewer or natural or main drain development, and pumping station, sewage treatment plant and its operation and maintenance, etc.

The following section details the step-by-step breakdown of the ASB's development methodology.

Selection of project area and baseline data gathering

The initial project work was undertaken by ASB. It began with the primary visual survey of the area for need assessment and identification of existing infrastructure. This was followed by Geographic Information Systems' (GIS) mapping of the area. ASB has been a leader among the NGOs in deploying GIS for urban infrastructure development and planning. The survey effort resulted in the documentation of existing infrastructure. This helped infrastructure planners to determine access points to connect the primary sewers (internal development) with the trunk or connector sewers.

ASB assessed the socio-economic conditions of the community to determine its willingness to accept intervention and also the community's willingness to pay for the improved sanitation facilities. Finally, ASB reached out to local planning authorities, such as Water and Sanitation Authority (WASA) and other development authorities (district government of Faisalabad) to develop a rapport with municipal planners, so that necessary support could be obtained from the local bureaucracies in future.

Community mobilisation

ASB relies on community mobilisation to achieve its objectives of improving infrastructure services in the community. ASB seeks out respectable community leaders and works with them by identifying sanitation-related shortcomings in the community. The community leaders first learn and adopt the development model and later work with the community at large to develop a consensus for infrastructure development. While the early adopters and community leaders are at the forefront, ASB works behind the scenes. The community leaders organise the community into lane committees headed by a lane (street) manager. Finally, ASB signs a Memorandum of Understanding (MoU) with the lane committee that binds the committee to provide labour and financial resources, and commits ASB to offer guidance and technical support to execute the sanitation scheme.

In Hasanpura, ASB conducted a series of motivational meetings and slide shows to educate the masses about the steps needed for the implementation of the sanitation programme.

Actual project implementation

The first stage of community mobilisation included the signing of an MoU between ASB and the community, followed by the actual project implementation. The first task in the implementation phase included a level survey of the community to determine the technical specifications of the sanitation scheme. The level survey also helped to develop preliminary cost estimates for the internal and external parts of the project.

The level survey led to the development of cost estimates, ASB mobilized the lane committees to

collect money from the community to finance the internal development of the project. The community was always aware of the actors involved in the development process and hence community members did not hesitate in handing over the funds to the lane committees.

The construction phase began after funds had been collected from the community. Lane committees undertook construction of the internal development and ASB provided technical guidance. After internal development works were completed, the community connected its sanitation infrastructure with trunk sewers in collaboration with the local planning authorities.

Documentation of the project

After the completion of internal and external development, ASB proceeded with documentation of the completed tasks. Furthermore, ASB liaised between the community and the local authorities to ensure that the community paid operational and maintenance fees to the local authority for accessing their trunk sewers. ASB also registered the community members with the local planning authorities to ensure proper and timely monthly billing for the use of trunk sewers.

Promoting sanitation awareness

ASB undertook a systematic awareness campaign about the sanitation related problems before the implementation of sanitation projects in Hasanpura. ASB mobilize women in the community because of the pivotal role they play in maintaining good health and hygiene within the household. While collecting key facts and figures during the situational analysis survey of Hasanpura, ASB wanted to make the community realise that the cause of poor health

and the problems resulting from disease had their roots in the poor water supply and sanitation services within the community.

In Hasanpura, ASB first identified approximately 50 influential people in the neighbourhood who were likely to agree with ASB's assertions for improved water supply and sanitation. From this list, ASB further identified four individuals who would play the role of community motivators. ASB enacted these four individuals in their own homes, before the community motivators took ASB's message to the community. Finally, a community meeting was held at the local mosque, which was attended by 48 of the original 50 individuals identified for the project.

While ASB worked with the male members of the community, its social mobilizers also contacted women by going door to door to spread awareness of the benefits of better sanitation and water supply. Once convinced, the women played a significant role in convincing other members of the household, especially men who were more likely to make decisions about household investments. The following section explains the details.

Gender-based awareness campaigns

ASB's gender-sensitive approach for its awareness campaign was integrated into the situation analysis phase. During the door to door survey for situation analysis of the area, the female staff of ASB, comprising a Lady Health Visitor (LHV), a trained midwife and two female field workers, spoke with women about health and sanitation practices within their household and at the community level. ASB organised further community meetings for women where it showed slideshows about health, hygiene and sanitation.

ASB organised women at street level and held weekly meetings of street-level committees on public health related issues. ASB also provided paramedical health services such as weight checks for babies and basic medicine for minor ailments. ASB also delivered promotional material on improving mother and child's health to women who were about to or had recently given birth. ASB also organised hygiene and cleanliness competitions in each street, presenting prizes to households with a clean kitchen or well-groomed children.

ASB ran special programmes for mothers and childcare within the community, offering treatments for minor ailments and, more importantly, serving as an information clearing house by offering women information about family planning, neonatal care, breastfeeding, necessary vaccination, and referral to better healthcare facilities in cases of serious illness.

By promoting health and hygiene within the community and empowering women through training, ASB was successful in generating goodwill for its services. It was also able to garner support among women who, in turn, helped to convince the men in the community to invest in improving sanitation services.

Technological choices

Before the ASB-led sanitation scheme in Hasanpura, the 35-street (or lane) community's open street drains discharged their sewage into a canal, originally used for irrigation purposes. The canal was often choked because neighbouring communities disposed of garbage there. In 1989, Faisalabad Municipal Corporation (now defunct and replaced by a new district government) constructed an open drain parallel to the canal and connected

it to a trunk sewer, maintained by the Water and Sanitation Authority (WASA). However, this open drain also choked regularly, causing lanes to become inundated with sewage. In addition to the 35 lanes, many shops in the neighbourhood's Jalvi market also dumped their waste and sewage into the open drain.

ASB was acutely aware of the fact that the technological choices had to be affordable to most of the community in Hasanpura. The community's income and financial resources had a direct bearing on the technology of adopted sewers. Local experience suggested that open drains, despite being cheap, did not offer a sustainable solution. ASB realised it was working on improving sanitation facilities in a low-income community, so the technological choices about the sanitation infrastructure had to be contextualised within the community's willingness and capacity to pay for the proposed intervention.

While open drains are much cheaper to install, such drains continue to pose health-related problems as the sewage flows expose the population to germs and bacteria. Although having sewage flowing in open drains may still be better than sewage suspended as ponds in the lanes, open drains do not meet the objective of creating a disease-free community.

So, in consultation with the community, ASB opted for underground sewers where collector sewers would connect the community's infrastructure (lane sewers) with trunk sewers, maintained by the local planning authorities. Once the decision was made about the type of sewers, the next big step was to determine the community's willingness and its ability to pay for the proposed infrastructure. ASB

was aware of the fact that the community was not capable of paying for the government-specified standard sewers, which were more expensive and prohibitively so for most members of the community of Hasanpura. ASB searched for cheaper alternatives and adopted the model developed by the research team in Orangi, Karachi. The chosen technology comprised shallow sewers of nine inches in diameter that linked the single chamber septic tank within each home with a cast-in-situ manhole in the lane. The chosen technology has been successful because after more than 12 years in operation in Hasanpura, the sanitation infrastructure has been working without major problems.

While ASB modelled itself on the Orangi's experience in Karachi, it has gone beyond the mere adoption of the techniques developed there. It has innovated to address local needs. Unlike Orangi, where sewage flowed under gravity to nearby open drains, ASB devised solutions to facilitate sewage flow in Hasanpura where flat grades prevented sewage flow under gravity. This required ASB to construct collector sewers to collect the sewage from lane sewers and transport it to municipal trunk sewers.

While construction of the collector sewer made perfect sense from a technological point of view, it posed significant challenges from the affordability point of view. The community was willing to finance the construction of lane sewers within their own streets; but it was not willing to sponsor the construction of a collector sewer before the construction of its own lane sewers. ASB realised that the community would be willing to pay for the construction of a collector sewer only when individual lane sewers were being connected to the collector.

In January 1996, Noor Muhammad Saifi, an experienced technician in community-based sanitation infrastructure development in Orangi, arrived in Hasanpura to train ASB in documentation, cost estimation, levelling, use of shuttering for manholes and the laying of sewers. Construction work began soon afterwards in Hasanpura.

Five lanes were completed in the following five months. The initial work on the first five lanes was undertaken without a collector sewer because of affordability issues. Sewage collected from the five lane sewers was disposed into the open drain running parallel to the community. However, this was not a sustainable solution and the community and ASB were aware of its limitations. ASB therefore decided to clean the open drain and replace it with a collector sewer, which would connect to the trunk sewer. A revolving fund of Rs 500,000 from WaterAid was used to construct the collector sewer. When the lane committees connected their lane sewer to the collector sewer, the lane members paid their share of the cost of constructing the collector sewer.

ASB requested help from the OPP in designing and laying the Jalvi market collector drain. The OPP again dispatched Noor Muhammad Saifi to Hasanpura. He spent two weeks training the ASB team and supervising construction. Construction of the Jalvi market collector drain began on 4 November 1996 and was completed in four months, resulting in 1,700 running feet of collector sewer.

Pro-poor provisions

The revolving fund played a critical role in alleviating the affordability constraints faced by the very low-income households within Hasanpura.

While most members of the community were able to finance their own internal development, some could not. The revolving fund provided interest free loans to such households to finance internal developments so they were not left out of the project. The loans were managed by the lane committees, which were responsible for repayment. ASB's experience shows that the loan strategy was a great success because a vast majority of the households who borrowed money to finance internal developments have since repaid them in full.

Project costs

The average cost per household for constructing the collector sewer was around Rs 600. Households also paid for the construction of lane sewers at an average cost per household of between Rs 700-900. Lastly, households on average paid an additional Rs 750 for installations within the house. Therefore, the total cash outlay per household averaged around Rs 2,200 (approx \$40). The average household income in Hasanpura, according to ASB, was between Rs 2,000-4,000. Furthermore, during 1994, Faisalabad Development Authority and the Water and Sanitation Authority implemented similar water supply and sanitation schemes near Hasanpura at costs that averaged 60% more than the ones incurred in Hasanpura². Compared with the cost structures of government-developed sanitation schemes, ASB was successful in installing sanitation infrastructure in Hasanpura at nearly half the cost charged by the government.

ASB operational costs

ASB's major achievement is its low overhead and small staff. The easily managed, three members of ASB staff are drawn from the community, fostering understanding, links and collaboration. ASB's annual budget for the year 1999-2000 was Rs

379,000, covering staff salaries, operational costs, and other equipment-related expenses.

Innovation in methods and approach

ASB used technological and procedural innovations to implement its sanitation schemes. On the technological front, ASB relied from the very beginning on GIS as a tool to develop inventories of existing infrastructure, and to determine the spatial dimensions of the demand for infrastructure provisions within the community. The use of GIS also made ASB credible in the eyes of the municipal planning authorities, which were impressed by ASB's ability to work with GIS while they could not.

Unlike many other NGOs, ASB has actively pursued collaborative links with government agencies. While many other NGOs have confronted the government and its institutions, ASB has strived to work in collaboration with the municipal and provincial planning authorities. ASB realises that, despite its technical knowledge and the community's willingness to help itself, large-scale municipal infrastructure, including trunk sewers, sewage and water treatment plants, cannot be financed or built by local communities. Given the nature of municipal services, government authorities – working as monopolies – are the only entities capable of providing citywide solutions. Therefore, ASB's willingness and ability to work with municipal authorities has helped it to achieve its goals in Hasanpura and enabled it to later spread its projects to other jurisdictions within Punjab.

ASB has also forged links with international donor agencies and institutions involved in infrastructure development and urban planning research. Its collaboration with WaterAid UK is one such

² Cost estimates provided by ASB

example. At the same time, ASB has forged links with research institutions at foreign universities that focus on urban planning and infrastructure development. For instance, ASB collaborates with the Institute of Housing and Mobility at the Ted Rogers School of Management at Ryerson University in Toronto, Canada. ASB called on such links to enable it to showcase its projects at a seminar on urban infrastructure development in South Asia at the University of British Columbia in 2006.

As ASB operates in very poor communities, it has been able to help the community to offer finances and labour for the construction and maintenance of internal development. The component-sharing model not only includes financing the internal development by the community, but it also includes labour offered by the residents as an in-kind contribution, which helps reduce the costs. Furthermore, the revolving fund ensured that those households who could not pay for the internal development costs would still have a chance to benefit from the project. Their integration into the project later would have been proven more expensive for the household and disruptive for the community.

Outcomes

This section describes the economic, health and social changes that were realised as a direct or indirect consequence of improved sanitation in Hasanpura.

Access and use of toilets by households

Since the implementation of the sanitation project, use of proper toilets in Hasanpura has doubled from almost 50% to 100%. There are no more cases of open defecation by either children or adults

within the community. The streets are clean and free of any signs of human or animal waste.

Evidence of impact on the community

Since 1996, the community led sanitation project has led to the dramatic transformation of Hasanpura. That the streets, once filled with sewage and refuse, have been transformed into clean, safe environments where healthy children play and seniors relax is testimony to the success of improved sanitation in Hasanpura. The burden of disease has been reduced considerably; children are clean, healthy and happy. Parents are delighted that they do not have to pay huge medical bills or see their children suffer in pain.

The author of this report visited Hasanpura and interviewed households about their experience with the sanitation scheme. The physical survey of the neighbourhood revealed clean, paved lanes filled with people and life. Residents are planting trees in streets, which is a telltale sign of gentrification. Before the sanitation project was implemented, residents planted trees only within their own houses. The community is also working with the municipal representatives to install streetlights.

The local doctor informed the author that water and sanitation related diseases have declined by more than 60% in Hasanpura. He jested that doctors were now losing money in Hasanpura. ASB estimates that between 1996 and 2007, the community has saved millions of rupees in healthcare expenses and other costs associated with damage to property and livestock. Residents of Hasanpura spent around \$100,000 (\$40 per household for 2,500 households) for the internal development of their infrastructure. To understand

the benefits of improved water supply and sanitation in the community, let us assume that the average household in Hasanpura saved Rs 100 (US\$2) per month in health-related expenses. The breakdown of health costs under this assumption is presented in the following table:

TABLE 2 Out-of-pocket savings due to illness prevention

Year	Households	Monthly	Yearly	Total	Total US\$=50
1996	1000	100	1200	1,200,000	24,000
1997	1090	100	1200	1,308,000	26,160
1998	1188	100	1200	1,425,720	28,514
1999	1295	100	1200	1,554,035	31,081
2000	1412	100	1200	1,693,898	33,878
2001	1539	100	1200	1,846,349	36,927
2002	1677	100	1200	2,012,520	40,250
2003	1828	100	1200	2,193,647	43,873
2004	1993	100	1200	2,391,075	47,822
2005	2172	100	1200	2,606,272	52,125
2006	2367	100	1200	2,840,836	56,817
2007	2500	100	1200	3,000,000	60,000
Total				24,072,352	481,447

The above table suggests out-of-pocket savings of \$481,000, which is above and beyond the benefits of access to improved sanitation and water supply services, and return a benefit cost ratio of 4.8³. Even with the assumption of merely \$2 per month savings in health costs per household, results suggest that investment in basic municipal services carry huge returns for the community and for the government, which would have otherwise had to finance subsidised healthcare facilities for those who become ill because of poor sanitation and water supply services.

The end result of improved sanitation and better health is that households have more discretionary

funds available to them as their health-related expenses have declined considerably in recent years. The residents informed the author that quarrels between residents over water and sanitation problems have been eliminated. Furthermore, residents were confident that because of the improved sanitation and quality of the streetscape, property values have increased noticeably in the neighbourhood, which has added to the equity held by the households in their homes.

One value-added consequence of the improved sanitation and clean streets has been that cottage industry and small businesses have relocated to Hasanpura, bringing new jobs to the community, which was an indirect objective of the ASB's development philosophy. Soon after the sanitation project was implemented, 30% of households reported an offer from industry to open small industrial units, such as garment factories, thread fibre making, and small printing presses in their homes.

This report's author has conducted a small, unscientific survey of the community. The survey collected information from 11 households in 11 distinct lanes, which were part of the 35 original lanes that comprised the Hasanpura project in 1996. The results of the survey are presented in Table 3. The average household sample size was eight with 3.5 males, 2.5 females and two children per household. The 11 households observed that the lane sewer was installed by the lane committees organised by ASB. Respondents from five of the 11 households in our survey stated they had participated in implementing the sanitation project as lane managers. Survey respondents reported that installation of lane sewers cost around Rs 1,000 for each household in 1996. These costs were

³ All figures are nominal and a fixed conversion rate of US\$1 = Rs 50 has been used in the calculations.

TABLE 3 Results of a survey of households in Hasanpura conducted in October 2007

No.	Household members			Lane sewer		Status Prior to Sanitation			Server O&M Costs	Health Costs	Toilet Type	Water Supply			Solid waste		
	Total	Male	FEM	Children	Type	Cost	Health	Income				Hygiene	Source	Service Quality	Private cost (Rs.)	Cost Rs/ month	Quantity (kg)
1	9	2	2	5	LC	1300	bad	low	poor	33	350	FTL	WASA	contaminated	12/351	25	Inc.
2	5	2	2	1	LC	1300	bad	low	poor	10	250	FTL	WASA	potable		20	Inc.
3	6	3	3	0	Manager	1200	worst	low	worst	10	1000	FTL	Nbrs	contaminated	15/201	40	Inc.
4	7	4	3	0	Manager	1200	worst	low	worst	50	1000	FTL	WASA	GW		40	Inc.
5	3	1	1	1	Manager	1200	worst	low	worst	0	400	FTL	WASA	GW		30	Inc.
6	9	5	4	0	LC	650	bad	low	poor	0	1000	FTL	WASA	GW		30	Inc.
7	9	4	3	2	LC	850	bad	low	poor	20	250	FTL	WASA	brackish GW		20	Inc.
8	11	5	4	2	Manager	650	worst	low	poor	50	400	FTL	WASA	brackish GW		50	Inc.
9	12	5	4	3	Asst. Man	650	worst	low	poor	40	550	FTL	Nbrs	brackish GW		0	Inc.
10	5	4	1	0	LC	1300	bad	low	poor	25	300	FTL	WASA	contaminated		40	Inc.
11	10	2	1	7	LC	700	worst	low	poor	30	300	FTL	WASA	contaminated		30	Inc.

Note: LC - Lane Committee; FTL - Flush Tank Latrine; Inc - Incineration; Nbrs - WASA supply from neighbours; GW - Groundwater

in addition to the cost of in-house installations at household level.

The respondents rated health and hygiene as bad or poor before the sanitation scheme was implemented. All households reported income levels to be low before the sanitation scheme. The households reported that on average they spent Rs 24 per household for the operation and maintenance of lane sewers, which on average are clogged every six months. The survey revealed that almost all households in the community have an in-house flush latrine connected via a single chamber septic tank to the lane sewer.

The interviews revealed that owing partly to the clean environment in the streets and partly to the awareness campaigns ran by ASB, the general sanitation practices have considerably improved within the community. Elders and children report washing hands before and after their meals and after visiting the toilet. Furthermore, there has been a greater awareness about hygiene, health care and waterborne diseases among nursing mothers and mothers of infants and toddlers.

Since the implementation of the sanitation scheme, income levels within the community have increased considerably owing to of the small business opportunities that have been created in Hasanpura. By either working from home or renting out space to small factories or industrial units, residents of Hasanpura have seen their real incomes increase as a direct benefit of the better sanitation environment.

A large number of residents reported ease of mobility as a direct benefit of clean streets. They informed the authors that before the sanitation project, seniors' mobility was considerably

compromised. Furthermore, transporting patients from homes to hospitals was becoming increasingly difficult owing to the sewage and clutter that made mobility impossible. Residents have reported that streets are clean, wider and free of odour and filth. Residents also mentioned that their properties are no longer threatened by sewage seeping into the foundations and damaging the structural integrity of their homes.

Developments beyond sanitation

Apart from the employment opportunities and income-generating schemes that moved to Hasanpura after sanitation was improved, other complimentary infrastructure development also took place. Similar to the sanitation project, a Hasanpura water supply scheme was also developed and managed by the community, which connected the community to the municipal water supply infrastructure. The water supply scheme was developed along similar principles as the sanitation scheme. The community developed and paid for the internal development, paid the cost for linking to the water supply main, while the municipal government operated and maintained the water supply mains.

Solid waste management was also dealt with as part of the sanitation campaign. Households were discouraged to discard their solid waste in the streets. Instead, metal containers were placed in the streets for primary disposal and collection by sanitation staff, which removed waste from the containers and incinerated it in a nearby open space.

Evidence of sustainability

ASB-led water supply and sanitation schemes in Hasanpura and Dhuddiwala in Faisalabad have

continued to operate successfully since the mid-1990s. Respondents to our survey expressed their satisfaction with the infrastructure and services made possible by the ASB's community-based schemes.

Since the success of its schemes in Faisalabad, ASB is acting as a franchising agency and has expanded its operations in various districts of the province of Punjab in collaboration with local industry and governments. For instance, ASB is assisting the town of Jaranwala, Union Council 60 in Lahore, and other places in developing community-based water supply and sanitation schemes on a component-sharing basis. ASB has gained credence among policymakers at local, provincial, national and international levels because of the success of the component-sharing paradigm in infrastructure development in Faisalabad. That ASB has been retained by the Urban Unit of the Planning and Development Board of the Government of Punjab as advisers for a number of water supply and sanitation schemes planned in its low-income communities is proof of their success and acceptance.

Factors of success

A number of factors contributed to the success of this project. Firstly, the leadership demonstrated by ASB as an institution and Malik Nazeer Ahmad Wattoo as an individual was instrumental in planting the idea of improved sanitation, hygiene and health.

Secondly, ASB benefited a great deal from having direct access to the expertise and experience of the Orangi Pilot Project in Karachi, which had already implemented a community-based

sanitation scheme using a component sharing approach. By learning from the Orangi experience and adapting it to meet the particular needs of the community in Faisalabad, ASB had successfully offered a context-relevant solution to the residents of Hasanpura.

Thirdly, ASB's decision to work with, rather than antagonise, the planning authorities created synergies that brought together the community, social mobilizers, and municipal planners to improve sanitation facilities. While building on the OPP's model of community led infrastructure development, ASB promoted close cooperation and collaboration with the municipal planning authorities, which helped to integrate the community's infrastructure with municipal infrastructure. ASB's model of infrastructure development was based on the premise that the community and social mobilizers would work with the municipal authorities rather than replace them.

Fourthly, the revolving fund provided by WaterAid played a pivotal role in ensuring that all members of the community, including those who did not have the necessary funds to participate in the component sharing scheme, were able to participate in the sanitation scheme and benefit from the services. Leaving poor households out of the project would not have solved sanitation problems in the community. The revolving fund extended interest-free loans to poor households. Members of the community administered and oversaw the repayment of loans over time. The equity plug not only resulted in a more inclusive development scheme, but it also helped to reinforce ASB's standing as a community leader that was able to bring resources to the community.

Finally, the health and hygiene awareness campaigns, which were run before the implementation of the project by ASB, were instrumental in convincing households that improved sanitation would improve their health and reduce medical bills. Furthermore, creating health and hygiene awareness among women in the community ensured that the demand for better sanitation arose from within each household, rather than being seen as an idea suggested by an NGO.

Main constraints faced

The primary constraint faced by ASB in promoting better sanitation within the community was the belief held by the community that it was the state's responsibility to provide and pay for water supply and sanitation services to Hasanpura. ASB faced a formidable challenge in convincing Hasanpura residents of the benefits of a component sharing approach, where the community would pay for the internal development and the government would finance external development. The community waited for years in the hope that the local political leadership would deliver on its promises. ASB spent years in mobilising the masses to convince them of the alternative approach.

While ASB was pushing for self-help schemes on a component-sharing basis, the local political leadership continued to offer empty promises to the community. Furthermore, local political leaders tried to dissuade residents from ASB's self-help approach. The local politicians were afraid that once sanitation was improved without any input from them, it would erode their credibility and support. Hence, local politicians tried to resist rather than join ASB's effort to provide sanitation to Hasanpura on the self-help basis.

Challenges that could not be addressed

Despite the improved sanitation and water supply in Hasanpura, some challenges still remain. For one, there is an immediate need to improve the quality of water being supplied to Hasanpura. While the communities receive water from the municipal water supply, the quality of tap water is not consistent and continues to be the source of waterborne diseases. Municipal water often gets contaminated either at the source or suffers cross-contamination when water supply and sanitation pipes run close to the lane level. Even in our small sample of 11 households, most households complained of contaminated water. Furthermore, the local groundwater is also of inferior quality and unsuitable for drinking and washing purposes.

Hasanpura lacks a proper solid waste management disposal system. The current practice in the community is that solid waste is recovered from households by sanitation staff for around Rs 25 per month. The final disposal takes place nearby in an open field where the waste is incinerated. This is damaging to the health of the community, a low-cost solid waste disposal system is a pressing need.

The lane sewers are often blocked, on average every six months, requiring sanitation workers to be called in. ASB and the community need to monitor the situation closely to see if solutions could be developed that would reduce the frequency of such interruptions.

Current scale and possibilities of increasing scale

ASB has spread its efforts beyond Faisalabad and is now involved in sanitation and water supply schemes across Punjab. ASB has forged links with local governments and the provincial and federal

TABLE 4 ASB's development portfolio

Sanitation update	
No of locations	82
No of lanes	647
No of houses	10,227
Sewer pipe laid (RFT)	208,065
Cost of lane sewer (Rs)	1,584,5392
Cost of internal fittings (Rs)	15,828,490
Cost of main external sewer (Rs)	1,652,890
Total contribution in sewer (Rs)	33,326,772
Cost per household (Rs)	3,259
Water supply update	
No of locations	13
No of lanes	85
No of connections	878
Water pipe laid (RFT)	20,442
Total line cost (Rs)	1,447,572
Internal fitting cost (Rs)	517,200
WASA fee (Rs)	1,064,135
ASB service charges (Rs)	42,715
Total contribution in water (Rs)	3,071,622
Cost per household (Rs)	3,498
Total water supply and sanitation	
Total locations	95
Total lanes	732
Total houses	11,099
Total pipe laid (RFT)	228,507
Total contribution by communities	36,398,394
WaterAid's revolving fund	500,000

As of November 22, 2007

level planning authorities to promote community-based water supply and sanitation schemes on a component-sharing basis. ASB is currently collaborating with the government of Punjab on a large-scale implementation of its approach in Union Council 60 in Lahore. ASB is providing services for social mobilisation in Union Council 60. The

community is contributing 39% towards the total project cost, WASA is providing design and engineering services, while the local government is providing funding for the external development. The integrated approach for water supply and sanitation builds upon ASB's experience in Faisalabad.

Over the past decade, ASB has been successful in assisting more than 11,000 households to obtain adequate water supply and sanitation services. In the process, it has helped the communities raise Rs 36.5 million towards the costs of developing infrastructure (Table 4). A total of 230,000 feet of running pipes have been laid by the communities for water supply and sanitation schemes. These figures suggest that ASB has been very successful in working with the communities to develop their infrastructure and improve their livelihoods.

Challenges for scaling up this approach

While ASB has been able to convince the higher tiers of planning authorities of the utility of its approach, the distrust of community-based initiatives still persists at the lower level. ASB faces resistance by local planning authorities whom often treat ASB's intervention as an attempt to undermine their authority. There is a need to reach out to local planners and explain that ASB and the community would like to work alongside planning authorities and not against them.

Outdated government regulations and procedures can prohibit community-based interventions. While the government regulations have been revised recently, there is room for much improvement to enable the community's participation in developing local infrastructure.

Large-scale infrastructure development requires capital. While governments often finance capital costs for the large-scale infrastructure projects, there is still a need for greater funding. It is felt that unless local banks enter the infrastructure development market, sufficient funds will not be available for large-scale development of water supply and sanitation infrastructure. The experience with WaterAid's revolving fund suggests that the low-income communities possess the capacity to repay loans over time. The scale of municipal service delivery will expand considerably once commercial banks start financing community-based infrastructure development schemes.

The political leadership in Pakistan continues to be wary of community-based initiatives in Pakistan, believing that if communities realise they can help themselves, they would no longer rely on politicians, leading to an erosion of politicians' authority. Furthermore, political leaders fear that as NGOs such as ASB offer support and services to the communities, these organisations may compete in popularity with local politicians. Therefore, the elected members of the local, provincial and federal assemblies try to use government funds to arbitrarily initiate parallel water supply and sanitation schemes. This results in duplication of efforts and waste of scarce resources. A wide-scale implementation of community-based infrastructure development requires that the community, social mobilizers, planning authorities and politicians work in an integrated manner, rather than competing against each other.

Finally, there is a need to document the development projects assisted by ASB to create a knowledge bank, which could be made available to other communities and community leaders

interested in promoting and implementing community-based initiatives.

The future efforts in promoting communities wellbeing through better water supply and sanitation requires focused efforts to promote trust and respect between the community and social mobilizers, and between government authorities and NGOs. The lack of trust has been one of the primary reasons for delays in implementing these projects. International donor agencies may want to focus their efforts in determining ways to promote trust between the various stakeholders, the community, social mobilizers, and municipal authorities, to eliminate barriers that cause unnecessary delays in the implementation of such projects. NGOs, such as WaterAid, can promote workshops that could bring together the above-mentioned stakeholders under one roof to share their aspirations and apprehensions. Such events may help resolve conflicts and promote awareness, respect and an appreciation of the capabilities and strengths of those involved in improving water

supply and sanitation in impoverished communities.

Conclusions

ASB and Hasanpura have collectively demonstrated that communities, rich or poor, have strength and resources, which could be used to find solutions for their problems. These are the same communities that have waited for years hoping that government would provide them with basic water supply and sanitation services. At the same time, governments and the planning authorities considered these communities poor and not worth their financial support.

Over the years, ASB has mobilized communities to simultaneously build their own infrastructure and raise millions of rupees. These communities, which were considered poor when mobilized, raised over Rs 37 million to build their own infrastructure. ASB's experience in Faisalabad has shown that once communities are empowered, they are quite capable of finding solutions for their own problems.

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