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From Sanitation to Development

The case of the Baldia soakpit pilot project

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The case of the Baldia soakpit pilot project

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Abstract
The book describes a community based sanitation project which was carried out in a low-income urban area in Karachi, Pakistan between 1979 and 1986. The emphasis in the book is on the process through which the local communities, and especially women, became involved and motivated for sanitation and how this involvement led to the initiation of wider development efforts supported by the project. A detailed analysis is given of the three main project components: on-site sanitation, home schools and primary health care and covers such aspects as social organization and management, technical designs, physical output, costs, training and sustainability of the activities. The same community-based model was used for all components: demand-oriented and maximising inputs of the community, not only in financial terms but also in planning and implementation. An overview is included on the impact of the project at national, municipal and community level and examples are given of other projects which incorporated components of the Baldia project. The final chapter summarizes the key issues and discusses the lessons which can be learnt from the experience.

Keywords: demonstration projects / evaluation / drainage / sanitation / appropriate technology / pour-flush latrines / peri-urban communities /women / use of facilities / health education / community participation / impact / primary health care / education / Pakistan / Karachi.

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Preface

The Baldia Soakpit Pilot Project was carried out in Baldia, a low-income area in Karachi, Pakistan, between 1979 and 1986. It is an example of a process through which local communities were able to improve their environmental sanitation conditions and make this a starting point for a much broader development. Although the project has been mentioned in a number of books and articles, it has never been fully documented. The initiative to write this book came from the community organizer who had been involved in the project from beginning to end, because she realized that the experiences of the project would be applicable in other cities with similar conditions. Documentation was realized through financial support from the Dutch Government and with technical assistance from IRC.

To prepare the publication, a team was formed consisting of the community organizer and a staff member of IRC who had worked in the area previous to the project. This team decided that the document should not only cover the approach and activities of the project from 1979 to 1986, but also include an assessment of the situation in 1990, so that the sustainability and impact of the project could be analyzed. For this purpose the team visited the project area in December 1990 carrying out observations and holding discussions with men and women at all levels, including beneficiaries, masons, community leaders and staff of local government organizations and NGOs who had been involved in the project or worked in a similar environment.

The emphasis in the book is on the process through which the project evolved from an initially narrow aim of supplying domestic soakpits to the development of local capacity and self-reliance in a number of subject areas: environmental sanitation, health, education, community development. The book covers such aspects as social organization, technical designs and guidance and the flexibility to incorporate other components which were initiated by the community itself. It also contains data on the physical output of the project and the various types of costs and describes how the established services have been sustained and replicated throughout the area and how, with some modifications, the project's approach has been expanded to other communities and projects.

Chapter 1 gives the background of the development which led to the adoption of a plan for regularization of low-income urban settlement. Baldia was the first area where the plan was implemented and the chapter contains an overview of its physical and socio-economic conditions in 1979.

In Chapters 2 to 5 the process of community involvement and the evolution from sanitation to other development activities are discussed. A detailed analysis is presented of the three main project components: on-site sanitation, home schools and primary health care centres. The same community-based model was used for all

three components. It was demand-oriented and maximized inputs from the community, not only in financial terms, but also in terms of planning and responsibility for implementation and also paid a great deal of attention to involving the women. This approach ensured that project activities were based on the needs and resources of either gender and got adapted to local standards. The approach also enhanced the confidence of individuals and organizations in their ability to improve the living conditions in their areas, even after the project was finished.

In Chapter 6 an overview is given of the impact of the project at national, municipal and community level. Data are given on the use and maintenance of the latrines and on the effect the project has had on environmental conditions and the coverage and utilization of home schools and health centres. Examples are given of a number of projects which incorporated components from the Baldia project and adapted them to suit local conditions. The final chapter summarizes the key issues of the project and discusses the lessons which can be learnt from the experience.

Many people contributed to the preparation of this book. We would like to thank all those who found time to discuss the project with us in December 1990 in Karachi and the support given by the local UNICEF office is gratefully acknowledged. Peter Wurzel, the then chief of the Water and Environmental Sanitation Department of UNICEF, was very stimulating in his advice on the focus of the book. Valuable contributions were made to the book by a number of people in their review of the manuscript. In particular Prof. John Pickford from the Water, Engineering and Development Centre (WEDC) of the Loughborough University of Technology; Albert M. Wright, World Bank; Bernt Aasen, UNICEF Honduras; UNICEF, Islamabad and Phil Evans, Jo Smet, Dick de Jong of IRC, should be mentioned. Other support from IRC was given by Teun Bastemeijer in the organization of the work and Christine van Wijk in the editing of the draft manuscript; Lauren Wolvers did the desk-top publishing and Nicolette Wildeboer the final editing.

Introduction

The Baldia Soakpit Pilot Project was a community-based urban development project with social and technical dimensions. It started in 1979 with the objective to introduce improved on-site sanitation in Baldia, a low-income area in Karachi, Pakistan. Through a process of 'learning by doing', the project evolved from the provision of latrines to community-based development in which the project became a means for building local capacity and self-reliance. The community efforts continued in Baldia into the 1990s and the experiences were used in other projects in Pakistan.

Overview of achievements of the project

The project is important because a number of innovative approaches were applied successfully, and can be replicated in similar projects elsewhere. First of all, the project was able to motivate people to improve their sanitation facilities which was not considered a priority at the start of the project. This was done by identifying the problems people experienced with the existing sanitation systems. These problems related to dependency on sweepers for the emptying of bucket latrines, the presence of faeces in alleys which were used for outside defecation, and the technological problems with the traditional soakpits. Although the improvement of health was the overall objective of the project, this factor was not used for motivation because the people did not consider it a reason to construct latrines.

The technology of the latrines was adapted to local conditions. Although there was a recommended design for a single pit pour-flush latrine at the start of the project, the latrines were constructed following a design which was jointly developed by the sanitation committees, the local masons and the technical advisor. At a later stage, experiments were carried out with other designs, not only to adapt to different soil conditions, but also to reduce the cost of the latrines. In all, six types of latrines were constructed during the project and the cost per latrine was reduced from Rs 2000 per unit to Rs 800.

Because of the involvement of the community and the masons in the construction of the first latrines, they became interested in constructing them on a larger scale. Only the very poor received a full subsidy; other households had to contribute, depending on their financial ability. The acceptance in the first area was such that it could serve as a demonstration model, and the members of the sanitation committee subsequently became active motivators in other areas of Baldia.

A system was developed for selecting new neighbourhoods to be included in the project. To qualify for the project, the neighbourhood had to contribute to the cost of the latrines in such a way that the per capita subsidy for the neighbourhood as a whole would be less than Rs 500. Moreover, prioritization of areas was based on

the beneficiaries' demand for latrines: the lower the level of per capita subsidy, the higher the priority accorded to the area. A sanitation committee had to be established, which was usually done through the existing community organization. This sanitation committee had to assess which households qualified for a subsidy. Four different categories of assistance were distinguished, varying from full subsidy to only technical assistance in the construction. At the end of the project a total of 1146 latrines were constructed with subsidy and 3721 latrines with only technical assistance. For every dollar spent by the project, the community spent almost three dollars.

Another achievement of the project, was the high level of women's participation. This was remarkable considering the fact that in a traditional Muslim society like Pakistan, women are usually not involved in development activities at community level. Because the community organizer of the project was a woman, she was able to involve the women from the start. They supervised construction of latrines in their houses and became motivators in their areas. During the discussions on sanitation and hygiene education between the community organizer and the women, the lack of education opportunities, especially for girls, were identified as an issue. A system of home schools was developed based on an already existing system of religious instruction. Schools were established in the houses of young girls who had an education of at least five years. These girls were trained to become home school teachers. At the end of the project, 64 schools were functioning with an estimated number of 1700 pupils. The home school teachers established an organization which at a later stage initiated other activities for the development of women in the area.

A third focus of the project was the establishment of primary health care centres, as a response to the expressed need of the community. A number of home school teachers were trained in preventive health care, such as vaccination, oral rehydration, nutrition and growth monitoring. Although interest was large in the beginning, this activity was not as successful as the other components. This was largely due to the fact that it was initiated only a year before the project ended and that effective support was lacking after the project.

The basis of all activities developed during the project was the community-based approach. Community organizations existed in almost all areas and were involved in planning and implementation of the different activities, while they also largely had the responsibility for the motivation of their communities and for the organization of the work. This not only enhanced participation, but also ensured that whatever activity was initiated, it was adapted to the needs and priorities in the area and suited to local conditions. As a result of the project, the organizations became confident in their ability to organize the community for development-oriented activities. They also became aware that if they could organize their community to contribute and participate in a new initiative, it would be possible to approach outside organizations, government or non-government, for funding or other assistance. These efforts of the organizations are still on-going.

Phases of the project

Three phases can be distinguished in the project, which was carried out from 1979 to 1986. During the experimental phase different approaches were tried by two organizations to test the applicability and acceptability of the recommended design of the soakpit. In the expansion phase, a strategy was developed based on the experiences in the first phase. Characteristic of this strategy was a combination of social organization and technical guidance, a demand-oriented approach for selection of project neighbourhoods and beneficiaries, and motivation through local sanitation committees. The involvement of women led to the establishment of home schools. In the consolidation phase, activities were strengthened and primary health care initiated. Attention was given to the development of an institutional setting which would enable the activities to continue after the completion of the pilot project.

1. Origin of the Baldia Soakpit Pilot Project

A number of interrelated developments led to the adoption by the Government of Pakistan of a national plan in 1978 to regularize and improve existing squatter settlements in urban areas. Baldia, a squatter settlement on the fringe of the city of Karachi, was selected as the first area to be improved. An overview is given of socio-economic and physical living conditions in Baldia in 1979. As part of the improvement plans, a proposal was made for the improvement of sanitation conditions. This proposal formed the basis of the Baldia Soakpit Pilot Project.

1.1 Low-income settlements in Karachi

Karachi is the largest city of Pakistan, the only seaport, and the capital of Sind Province. Since the Partition and independence in 1947 the population of the city has grown from 0.4 million in 1947 to an estimated 5 million in 1979, and between 7 and 8 million in 1986. Current growth is around 5% per year, to which immigration and natural growth contribute more or less equally. This growth has caused a rapid expansion of the city, facilitated by the fact that Karachi is surrounded by desert, where space was available (Figure 1.1).

The majority of the population belongs to the lower income categories, which are unable to afford official housing, and are therefore forced to seek alternative solutions. This has resulted in the development of squatter settlements, which in Pakistan are called "katchi abadies". The word "abadi" means settlement; the word "katchi" means imperfect, unfinished or below a certain standard; it also refers to the illegal nature of the settlement. At present close to 40% of the population of Karachi lives in katchi abadies and the annual growth rate is about 8% (Kool et al, 1989). Katchi abadies are located all over the city, usually in places unfit for legal housing such as riverbeds, along railway lines or at the periphery of the city. Because of the expansion, some of these places have now become incorporated in the city.

There are two types of katchi abadies, which differ in the way they originated. First there are the settlements that started as a result of unorganized invasion. These were the most common type when large scale squatting was a new phenomenon. During and immediately after the Partition in 1947, when hundreds of thousands of refugees arrived from India, people responded to the primary need for shelter by simply finding a vacant piece of land and building on it whatever kind of makeshift shelter they could. A very low degree of security of tenure is usually associated with this method of settlement and since the mid-seventies such invasions have rarely occurred.

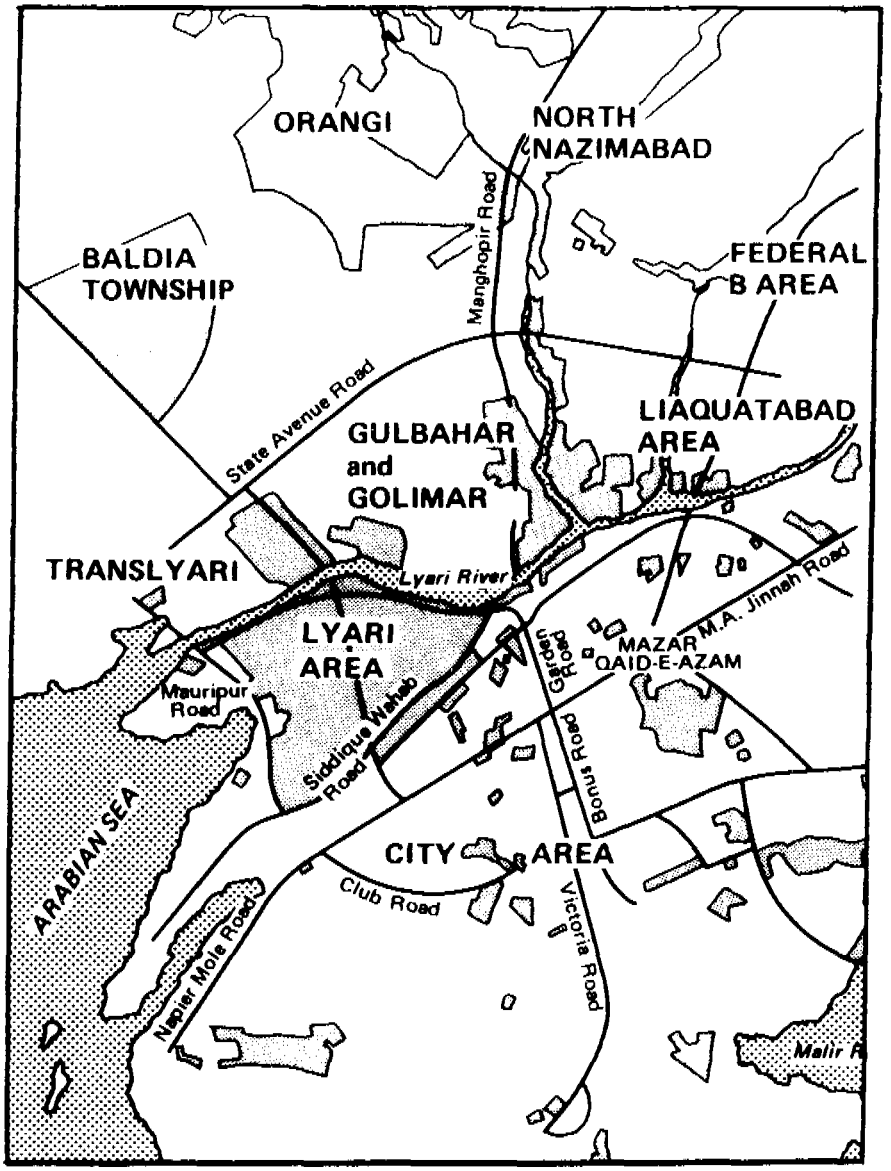

Figure 1.1: Location of Karachi city and Baldia township

The other form of settlement is illegal subdivision of public land by private persons. This method was already being practised at the time of the Partition, but has increased considerably over the years. Characteristic of this system is firstly that protection against eviction is guaranteed by brokers, who in turn obtain protection from politicians and/or key members of the establishment. This gives a

high de facto security of tenure, although no documentary proof of right of tenure is given. Secondly, the settlers have to buy their plots. The first settlers often pay only a nominal fee, depending on the location, but when the subdivision is well inhabited, prices of plots tend to rise. Thirdly, the settlements are always located on vacant land on the periphery of the city and are planned by the brokers, resulting in a regular lay-out, with provision for lanes, mosques and other basic infrastructure.

Government policy towards katchi abadies

Government policy towards katchi abadies used to be limited to eviction or neglect. When evicted residents were not offered an alternative location, they often simply moved back, or settled in other illegal settlements. Resettlement of squatters in two satellite towns was attempted, but their development was discontinued in 1964 before half of the dwellings had been constructed, due to lack of funds. Both sites were far from the city centre, but depended heavily on it. High transport costs contributed to the enormous problem of mortgage repayment, even though the projects were heavily subsidized. Many of the resettled people moved back to the squatter settlements in the city.

After this, the government started laying out 'plot townships', which were basically site-and-service areas, although infrastructure remained absent for a long time. This programme also failed, particularly because of its slow implementation. Many of the people who were meant to be resettled there never occupied their plots, and their rights were bought by speculators.

In the early seventies, the Karachi Development Authority started planning site-and-service projects called Metrovilles. Again slow implementation was a problem and the high service level and corresponding high prices excluded the real low-income groups.

At the same time, the government started changing its policy towards katchi abadies as a result of a number of interrelated developments. The most important of these were a changing political climate and the realization that the provision of housing for low-income residents was not likely to ever succeed on a large scale. In 1978 a Martial Law Order announced the legalization of all katchi abadies existing before January of that year. The new policy was based on four principles:

- The residents get security of tenure through the issue of 99-year leases, which they have to pay in a lump sum.
- The Karachi Metropolitain Corporation (KMC) will carry out a programme of environmental upgrading, in which standards are flexible to fit local circumstances.
- The whole programme will be self-financing: improvements will be financed out of revenues from lease and improvement charges.
- People's participation is crucial and on-plot developments will be carried out by the people themselves (Kool et al, 1989).

Baldia township was selected as the first katchi abadi to be regularized and improved under the new policy. Planning and implementation were delayed and it was only in 1981 that KMC started working on the infrastructure and the issuing of leases.

1.2 Baldia, first site for planned improvements

The township of Baldia is located on arid land on the north-western fringe of Karachi, behind the Sind Industrial Trading Estate (SITE), about 12 kilometres from the Karachi city centre.

The Hub River Road, which connects Karachi to Baluchistan forms the western boundary, the Orangi Hills rise up on the eastern boundary and to the north the desert stretches out, allowing further expansion (Figure 1.2).

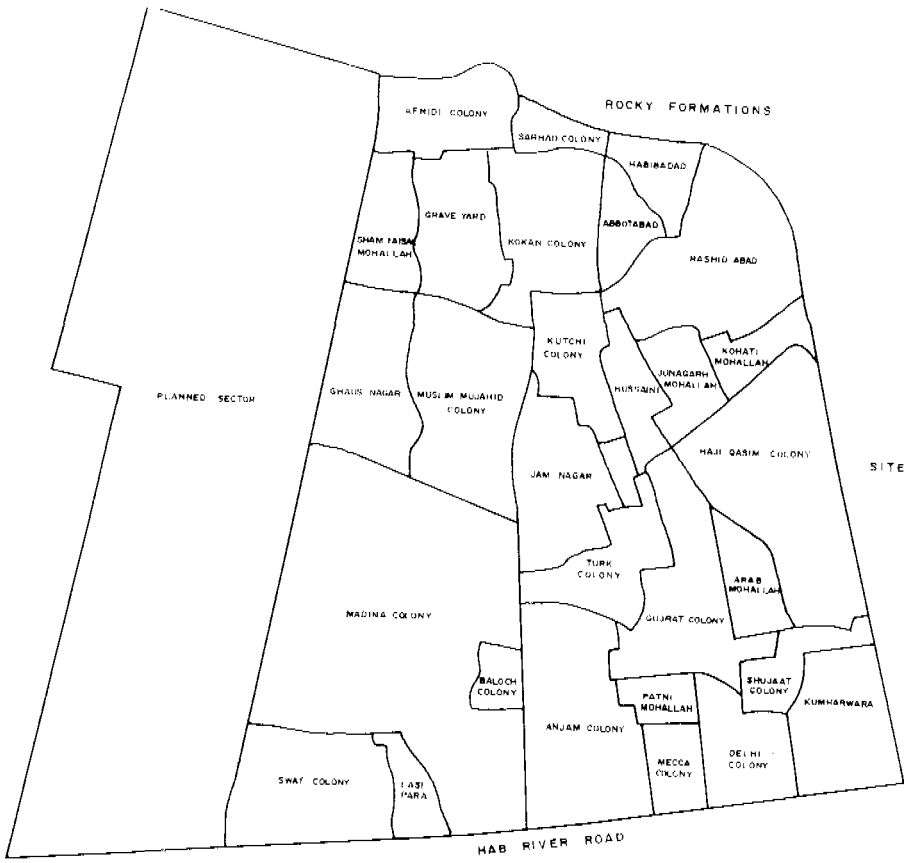

Figure 1.2: Lay-out of Baldia township

People have been living in several small clusters in the area of Baldia since before the Partition. The first organized settlement took place in 1953, when clay potters who had originally come from India and settled in the centre of the city, were evicted to make way for a new police station. In 1957 about 10,000 fire victims from a katchi abadi in the city were also resettled in Baldia, followed by many more during the execution of the slum clearance plans for the city centre. In 1965 a part of Baldia was designated as plot township and plots were demarcated and allocated to low-income groups, but no plot planning was made for the remaining newly defined sectors. In addition to the organized settlements, many people settled on unoccupied land.

Socio-economic conditions in 1979

When Baldia was selected as the first katchi abadi to be regularized and improved under the new policy of 1978, plans had to be made for improvement by KMC. They were assisted in this task by the Dutch Advisory Mission in the Karachi Slum Improvement Unit of the KMC. In preparation for the planning, socio-economic and physical surveys were carried out in 1979.

Population

The total population was estimated at 150,000 and the area covered about 430 hectares, divided into 32 small settlements known as colonies or mohallas. The population was rather heterogenous: 42 % came originally from India, from the states of Gujarat, Uttar Pradesh and Bihar; 25% came from the North West Frontier Province (Pathans); 17% came from Baluchistan (Baluchis), and the rest from other provinces and from Karachi itself.

Despite this overall diversity, individual mohallas were generally homogeneous, with people living in their own ethnic, social and economic clusters. Each community had its distinct cultural characteristics, but the relationship between mohallas was generally characterized by mutual respect.

Education

Almost 60% of the men and 78% of the women were illiterate. Among the age group of five to nine years, only 32% attended government schools and 10% went to private tuition centres. The reasons for these low figures were a combination of factors. There were not enough schools, and many low-income families could not even afford to send their children to school. In addition, there was a lack of incentive to educate children, as its impact, achieving upward social mobility, appeared far removed and unrealistic. Moreover, the additional income a child could earn by working was of more value to the family than having an education.

For women and girls, the barriers to education were even higher, as education was not deemed necessary for the traditional role of a woman as childbearer and housekeeper. Education could even challenge this traditional role and with it the existing social structure. Education would also require women to go out of the

house, which according to custom should be avoided as much as possible after the marriageable age was reached (Bakhteari, 1987).

Employment

The proximity of the industrial area, SITE, provided most residents with employment opportunities. Only about 14% of the households in Baldia belonged to the bottom income group, earning less than Rs 300 per month. The majority of the men worked as semi-skilled and unskilled labourers, vendors, drivers or servants. Forty-three percent had a monthly household income of Rs 300-600, 27% earned Rs 600-1000 while the remaining 16 percent earned over Rs 1000 per month (Schuringa et al, 1979).

The percentage of working women was rather low and difficult to estimate as they were often employed as piece-workers at home or selling food from the house. Women working outside their homes were usually employed as servants within or outside Baldia.

Social organization

The boundaries of most mohallas were not only physical, such as a road or riverbeds, but also social. People coming from the same ethnic background tended to live together in clusters. Some mohallas even had names which referred to the place of origin, the village or tribe of most of their inhabitants. As most people came from the rural areas, the mohallas often functioned as an intermediate stage between village and city. Here people lived among themselves, spoke their own language and retained at least some of their traditional customs. The traditional social organization was transferred from the rural areas, such as the jamat (community organization), the jirgha system (community court) or anjumans (associations). The jamats consisted of elderly men of the mohalla and were important for the stability of the communities (Box 1). Their first task in the new settlement was usually the organization of the building of a mosque and the distribution of water, as an organized water delivery system was usually lacking.

Box 1 Role of the traditional community organization in the mohalla

The main task of the councils was to maintain unity by social policing and arbitration. They resolved conflicts of individual vs individual, individual vs family and family vs family, and ensuring that the conflicts did not involve the police or the courts. The council's decision was final and in the case of disobedience the person or family was completely ostracized. Further, the councils usually provided assistance in the arrangement of marriages, the organization of funerals and the distribution of charity to widows and orphans.

Apart from the traditional organizations, a more modern type of leadership also emerged as a result of the subdivision of land by brokers or middlemen, who had become leaders due to their contacts in higher socio-economic groups outside Baldia. In the 32 mohallas of Baldia, about 43 community organizations existed, largely of the traditional kind.

Environmental conditions

Soil conditions

The land of Baldia township slopes towards the southwest and a number of nallahs (monsoon stream beds) run across the area. The topsoil is a clayey matrix with sand, silt and gravel, with no distinct stratification. The permeability of the soil is generally low, with isolated pockets where the soil is more absorbent. Excavation presents little difficulty as the alluvium is firm, dry and self-supporting. Rocks are encountered within four meters of the surface towards the east. They are hard and highly fissured and can be removed using chisel and hammer. The porosity of the rocks is negligible, but many of the fissures are sizeable and some contain water.

Generally, the groundwater is below five meters except for small quantities in some of the rock strata. There was a slow accumulation of water in some excavations which appeared to be dry when first dug. All groundwater is saline and not fit for consumption (Pickford and Reed, 1979).

Water supply

A network of existing mains fed standpipes from a KMC pumping station, which delivered water for about five hours a day. Most standpipes were open-ended 12 mm diameter pipes. The area was zoned and each zone received water for about two hours every two days. The pressure was low and water was only available in the lower west and southwest of Baldia. By cooperative effort some people in higher areas built tanks, which were filled with water by tankers and donkey carts. Estimated average consumption was 19 liter per person per day (Pickford and Reed, 1979).

Sanitation

Seventy to eighty percent of the houses were served by the conservancy system. The most common latrine had a plinth to stand on and the faeces dropped into a rectangular channel about 300 mm wide. This sloped towards a hole in the outside wall through which the faeces were removed, and urine and cleaning water ran off to the road or open ground outside the plot. In some channels a battery case or a one-gallon oil drum was placed to collect the faeces. About forty self-employed sweepers collected the excreta, usually between 6 a.m. and 2 p.m., charging the householders Rs 7-20 per month (Box 2).

Most of the remaining houses had pit latrines with the latrine against the boundary wall and the pit on the roadway side. The pits varied in depth from two to eight meters with a width of about 1.2 m. They were filled with stones to

prevent collapse. Sometimes a concrete slab was fitted and a vent pipe installed. Squatting slabs were made of concrete. The cost of the latrines was between Rs 800 and Rs 2000 and they lasted for about six years, depending on the number of users and volume of the pit (Pickford and Reed, 1979).

Box 2 Excreta collection and disposal by sweepers

The sweepers emptied the channel or container at each house into 4-gallon tins and then asked the householder to throw water into the channel so it could be cleaned. The water usually ran down the outside face of the boundary wall. When the collection tin was filled, the contents were thrown into one or two larger containers attached to a bicycle. When these were full, they were taken to one of three main disposal points or dumped into a near drain, nallah or vacant land. Two disposal areas were in the hills, where the excreta was dumped to dry in the sun, without being covered by soil. The third tip was on the bank of a flowing nallah in the SITE area.

Drains and refuse disposal

In large plots, sullage was left to soak into the open ground around the house. Sullage from other plots was discharged into the roads, resulting in open drains being formed with gradients towards nallahs. Some of these drains were lined and sweepers were supposed to keep them clean, but usually either the householders cleaned the part in front of their house or they were unattended and blocked with refuse. In most nallahs there was no flow because they were choked with refuse, which dammed the flow and absorbed the liquid, providing a breeding place for flies. Water which did not soak into refuse or into the ground formed highly septic and malodorous pools (Figure 1.3).

Although there was one KMC truck contracted to collect refuse, it was hardly ever seen in the area. Generally, refuse was thrown on vacant land, drains and nallahs, where it attracted vermin, stray animals, birds and flies (Pickford and Reed, 1979).

Roads

A few roads were wide enough for vehicular traffic, but the gullies, lanes and narrow alleys that branched off these roads were often not wide enough for two people to walk abreast. None of the roads were metalled, few properly planned and most formed through constant use. They were full of stones, glass, refuse and spilled excreta and were never cleaned.

Housing

Four main categories of houses existed. The lowest category consisted of temporary huts, made of straw mats, planks or mud. Next came the "katchi" (impermanent) houses made of mud walls with tin sheets or planks for roofing. "Katcha-pukka" (semi-permanent) houses had walls made of cement blocks, with asbestos or corrugated iron sheets for roofing. The highest category were "pukka" (permanent) houses with cement walls and reinforced concrete cement roofing.

Figure 1.3: Initial sanitary conditions

Most houses belonged to the second and third category, but this was constantly changing because people improved their houses whenever financially possible. All houses had a small compound or yard where most domestic activities took place. On average each house had 1.8 rooms per household and the average number of persons per room was 3.3. Many families were living in an extended family situation, where parents live with their married sons and their families together in one compound.

The majority of the houses were privately owned and most of the people had constructed their houses by themselves on vacant land which they obtained from a broker or which was allotted by the government for resettlement (Schuringa et al, 1979).

1.3 The Baldia sanitation improvement proposal

In order to improve living conditions in Baldia as part of the regularization and improvement, a solution had to be found for the disposal of human waste. The KMC only had experience with conventional sewerage, which was deemed unfeasible in view of the water shortage and the costs. Therefore, the Dutch Advisory Mission contracted two consultants from the WEDC group of the Loughborough University of Technology, UK, to prepare a plan, which had to meet the following conditions:

- inexpensive and easy to construct facilities;
- little and easy maintenance;
- designs adapted to local physical and socio-cultural conditions;
- incremental improvements possible.

The design also had to take into account that:

- The paying capacity of the residents of katchi abadies was too low for a closed, waterborne sewerage system.
- Karachi and especially the katchi abadies faced a permanent water shortage.
- Purity was highly valued amongst the population and cleaning of latrines and drains was usually left to a specialized group of persons.
- The residents of the katchi abadies were not very concerned about the hygienic conditions as they had other priorities.

An extensive survey was carried out by the consultants in the area which included defecation habits of the population, an assessment of existing latrines and other methods of human waste disposal, as well as a soil survey and the construction of trial pits. On the basis of this survey, WEDC recommended direct pour-flush latrines as the most appropriate method of sanitation for Baldia. If space would permit, the pit could be offset and connected with a pipe to the latrine. But the pit should on no condition be outside the plot boundary. For sullage disposal and drainage, the existing nallahs would have to be cleaned, straightened and to a large extent lined. Open concrete drains would have to be provided along both sides of the street, and if the streets were less than ten feet wide, one drain should be located in the centre. This plan was subsequently implemented in the Baldia Soakpit Pilot Project.

2. *The Evolution of the Project*

The Baldia Soakpit Pilot Project developed through a process in which the focus of the project evolved from the provision of sanitary latrines to community-based development. The project grew through a process of 'learning by doing', in which activities were constantly adapted to changing conditions. Three phases can be distinguished. During the experimental phase different approaches were tried by two organizations to test the applicability and acceptability of the recommended design of the soakpit. In the expansion phase, a strategy was developed based on the experiences in the first phase. Characteristic of this strategy is a combination of social organization and technical guidance, a demand-oriented approach for selection of project mohallas and beneficiaries, and motivation through local sanitation committees. As a result of discussions in the project mohallas, the initiative developed to establish home schools to enhance education possibilities, especially for girls. In the consolidation phase, activities were strengthened and primary health care initiated. Attention was given to the development of an institutional setting which would enable the activities to continue after the completion of the pilot project.

2.1 Preparations for project implementation

The plan proposed by WEDC was discussed between the Dutch Advisory Mission and KMC. Although KMC preferred the construction of a piped sewerage system, it was obvious that this was impossible, because of economic and environmental (water) constraints. However, KMC could not implement the proposed plan, as the soakpits had to be built within plot boundaries and this fell outside the KMC mandate. But they agreed to support initiatives from other organizations. The Dutch Advisory Mission was under pressure to find suitable organizations as they themselves were leaving the country at the end of their project.

They therefore approached the Pakistan Jaycees, a business association like Rotary and Lions, who support activities to improve the living conditions of the poor. They became interested in the promotion of latrines with soakpits according to the WEDC design, and agreed to fund an initial number of the soakpits themselves and provide technical expertise from among their members. It was expected that they would receive support from a Dutch NGO to build more soakpits at a later stage.

UNICEF was also approached by the Dutch Advisory Mission and they agreed to provide funding for an initial 30 soakpits. As UNICEF itself would not carry out the work, they involved the Department of Social Work of the Karachi University

to organize the construction. UNICEF also agreed to take the role of coordinator between the two implementing agencies (Jaycees and Karachi University) and the KMC.

2.2 The experimental phase (1979-1980)

The first phase of the pilot project was an experimental one in which the new design was field tested. Experience was gained with different forms of introduction of the new soakpit design in two (later three) mohallas.

The objective during this phase was to see if the sanitary conditions in Baldia could be improved by implementing the recommended design. It was left to the two implementing organizations to develop a methodology for the introduction and adoption of the technology in their respective mohallas.

The Jaycees worked in one mohalla, Muslim Mujaheed Colony, where they hired a contractor to do the construction of the soakpits. He was supervised by an engineer from the Jaycees. The Karachi University assigned ten postgraduate students (three male, seven female) to introduce the soakpits in another mohalla as part of their fieldwork. They were supervised by a professor. The two organizations worked completely independently from each other and each reported about the progress to UNICEF.

The pilot approach of the Jaycees

The Jaycees started constructing pits in Muslim Mujaheed Colony in mid-1979. Their approach was mainly charitable and goal oriented: provision of a specified number of free (demonstration) soakpits for residents of the area. They worked through a local contractor, who was an experienced mason and also had a block-making yard. After explanation of the new design, he was contracted to build 30 soakpits in the area. The selection of houses and the entire construction was left to him. Technical supervision was carried out by one of the engineer members of the Jaycees, who would visit the site weekly. Because the contractor was good at his job, little supervision was required and within a period of six months 30 good-quality pits were constructed (Figure 2.1). All these pits were provided free of charge to the residents. Each soakpit, with pour-flush and superstructure, cost Rs 1700-1800. The beneficiaries were not involved in the location and construction of the pits and there was no community involvement in the selection of the households that received a demonstration soakpit.

Figure 2.1: Soakpit under construction in Muslim Mujaheed Colony

The pilot approach of the Karachi University

Because of their social rather than technical background, the Karachi University students approached the community differently. They talked to the people to discover how they saw their sanitary conditions and discovered that the population generally felt that it was the task of KMC to do something about the conditions and that underground sewerage was the preferred option.

Where people had been building soakpits themselves, these were rather expensive, of an inferior quality and located outside the plot walls. There were frequent problems such as blockage and overflowing, and a very limited capacity due to the stones inside the pit (Figure 3.1). As these soakpits were the only ones people knew, they could not believe that any kind of soakpit could be a good solution to their sanitation problems. The failure of the traditional pits created the biggest obstacle in persuading people to construct soakpits according to the new design. Moreover, the whole issue of sanitation was not the highest priority in the community as there were more pressing needs such as water supply, health care, schools and electricity.

The project team of the University students itself was distrusted because the people could not understand why they came in to promote soakpits. In view of this situation, the objective of the team became to demonstrate the improved soakpit design and to learn more about the technical and social aspects of sanitation. As a

first step, they offered to build ten demonstration pits for residents belonging to the poorest group and living in the most unhygienic circumstances. The beneficiaries had to be selected by the community (Box 3).

Box 3 Community decision for soakpit construction

The offer was made in a community meeting, so that as many people as possible were aware of the situation. The selection of the ten families had to be made by the community, a homogeneous group of 300 families coming from the same district in Punjab. When the list of beneficiaries was drawn up, the project team went to visit the selected families. The need for action was obvious as the condition of the bucket latrines was extremely filthy and night soil was flowing in the lanes. There was hardly enough space to walk without stepping on excreta. During the visits many other people were crowding around to see what was happening. The families were very reluctant to even talk to the community organizer and the community members who had drawn up the list were acting as mediators.

It took a month of discussions and explanations before the selected families agreed to have a soakpit, and because of this long period most of the residents were aware of what was going on. A local mason was identified to do the construction and a place was found where blocks, cement and WC pans could be purchased. When the digging started there was a continuous flow of people who came to see the construction and with a lot of voluntary labour and management from the families themselves, and especially the women, all the pits had been built in less than fifteen days (Box 4).

Box 4 Obtaining active support from the women

Because the community organizer was a woman, she had the opportunity to talk to women in the neighbourhood and to involve them in the whole process. She was present daily, gave information to anybody interested, and educated the women on use and maintenance of the pit and on related hygiene behaviour. The fact that women were involved in all discussions and stimulated to give their own opinion had never happened before. The result was that many women took active part in promotion of the new design and in supervision of construction when the men of the households were absent.

The earth which came out of the pits was used to fill up the lanes and cover up the filth which was there. The change in environment was very clear and the team gained acceptance, respect and credibility. Because so many of the residents had seen the construction, they also became interested in having soakpits. As they were not so poor, they were told to dig their own pit, while the project would provide the material and pay the masonry charges. Everybody agreed to that and at the end of 1979, 30 soakpits had been constructed and the team was requested to expand the project to a neighbouring community, Turk Colony (Box 5).

Box 5 Expansion to a second mohalla on request

The mason who constructed the soakpits came from an adjacent neighbourhood. Being convinced of the superior technology of the new design, he requested the team to start a similar soakpit construction programme in his mohalla. This community, consisting of 600 families, was again very homogeneous. All had migrated from the same area in India after the Partition and had been resettled by the government after a fire in the city in 1960 devastated their huts. Illiteracy was high, over 80% for women. Most men worked as labourers - skilled and unskilled, peddlers or shopkeepers, earning an income between Rs 400 to Rs 1000 per month. Out of the 600 houses, 575 had bucket latrines. Water was supplied for two hours on alternating days through six community taps. The few soakpits in existence did not function well due to technical inferiority, and sanitary awareness was low.

The project team approached the jamat (Figure 2.2) to see if they were interested in managing the soakpit construction, but received a negative response from the president. He had neither the time nor the constitutional mandate to get involved in soakpits and moreover was of the opinion that this was the task of the KMC. On hearing this, the young mason was very disappointed and introduced the community organizer to his friends in the neighbourhood who apart from playing cricket together, also took interest in local development. They felt let down by the jamat and asked the mason to show them a new soakpit in the neighbouring mohalla and explain the technicalities to them. Because they liked what they saw, they decided to start constructing their own soakpits. Because there was a demand for more soakpits in the community, UNICEF decided to continue supporting the soakpit construction and provided financial assistance for the materials and the University team. The cricket club was to undertake all motivation, management and organizational work relating to construction.

Figure 2.2: Meeting with a local organization

As was the case in the first mohalla, many residents from the community came to look at the construction and were able to observe the new design, construction and technicalities of the soakpits. Within a month ten pits were completed. Thereafter, more people became interested in having a soakpit and 20 more pits were constructed with the help of the club and material assistance from the project. The club gained confidence and publicity. UNICEF and government officials visited the community and gave them recognition. The club organized itself into the Turk Welfare Society and started successfully lobbying for other services such as more water taps and street lights with the government departments concerned. Meanwhile, more masons and other workers were trained in soakpit construction.

At the same time, the Jaycees were continuing to construct their free soakpits in nearby Muslim Mujaheed Colony. When this became known to the residents of Turk Colony, it created confusion. They believed that the money for digging the pit was withheld by either the project team or the Turk Welfare Society. Construction came to a halt, anti project demonstrations started and the community organizer was confronted by the community of Turk Colony. Many meetings were held and intensive discussion took place, involving all parties concerned and KMC present. It was explained that the Jaycees used their own resources but that even they could not go on without the people's contribution. This direct dialogue pacified the community and indicated that a uniform approach by Jaycees and University was essential. In order to develop an approach which was based on the

experiences gained in the experimental phase, the organizations involved decided to have an evaluation, which was carried out through UNICEF.

Evaluation of the two approaches

The evaluation was carried out in August 1980 after the completion of 120 soakpits in the three mohallas. The main conclusions concerning project organization were:

- The Jaycees constructed good quality soakpits, but had not been able to bring about social awareness on sanitation nor a social development attitude.
- The University team had used sanitation as an entrance for a development process, but its pits were of a lower quality, due to the fact that none of the team members was an engineer and construction had gone along a process of trial and error, following the WEDC design and the mason's experience.
- The project needed clear organization and objectives.
- The competence of Jaycees and University should be integrated.
- WEDC should carry out a technical evaluation.
- Loans should be made available for soakpit construction.

Apart from the organizational issues which became clear during the evaluation, the experimental phase showed a number of other findings:

- Sanitation was successfully used as an entrance in the community, although sanitation was not a high priority among the people.
- People were interested in improving their living conditions, but lack of confidence in their own technical skills and limited know-how prevented them from doing so.
- Distrust of outsiders was high; out of experience they were believed to get involved mainly for personal gain.
- The poor were extremely conscious of the attitudes and approaches of outsiders in the context of a development project. They would only get involved when approached directly and if their views and problems were taken seriously, otherwise they would not bother, as was the case in the area where the Jaycees worked.
- Local leaders, who could do a lot for their community, in fact could very well obstruct initiatives taken by the community at large. They could not always be trusted to relay correctly the information about the project.
- The approach taken by the University team in learning by doing together with the community minimized social distance and built up trust.
- The demonstration latrines were a good way to show the community how the design of traditional soakpits could be improved.

- Technical and social issues cannot be dealt with separately; they formed an integrated part of development.
- Although the government felt it could not undertake projects of this nature, it was necessary for them to agree and be informed about the progress, so that they could give support in times of crisis.
- Financial matters should be dealt with as openly as possible.

The outcome of the evaluation shaped a second phase of the pilot project, in which the strengths of the two initial approaches were combined.

2.3 The expansion phase (1981-1984)

For the next phase more specific objectives were set, a project strategy formulated and an integrated project organization created in which technical and social capacities were combined.

Specific objectives and a common strategy

Consistent with UNICEF policy, the overall objective for the continuation of the Baldia Soakpit Pilot Project was to reduce infant mortality and morbidity due to sanitation-related diseases. Short term objectives for the second phase were:
- introduction of soakpit latrines in houses without any sanitary facilities;
- replacement of bucket latrines with soakpits;
- upgrading of traditional soakpits;
- construction of soakpit latrines in new houses under construction.

With approximately 25,000 houses in Baldia and a soakpit cost of Rs 1500 - Rs 2000, around Rs 40-50 million would be required to achieve these objectives without any cost to the residents. This was not only beyond the capacity of government and donor agencies, but was also unnecessary since there were many people in Baldia who could afford all or part of the cost of a soakpit. Thus, emphasis would be on motivating people to construct a soakpit according to the WEDC design, using their own resources, with the project providing the necessary information, motivation and technical assistance. A special budget was made to provide maximally 200 poor families in each of about 20 project mohallas with free facilities.

Creating a combined socio-technical organization

For the second phase, the project employed one full-time community organizer and a part-time engineer. The community organizer was seconded by the Social Work Department of the Karachi University, the engineer came through the Pakistan Jaycees. Supervision of this team was done by a committee, consisting of representatives from the Department of Social Work, the Pakistan Jaycees,

UNICEF and the KMC. The community organizer was to be responsible for social organization, while the engineer would supervise the construction activities, orient the masons in the new technology and provide technical guidance.

The masons were self-employed local craftsmen, who were trained and supervised by the project and were paid by the project for the construction of soakpits and latrines for the poor, and by the (wealthier) beneficiaries for the other latrines. In February 1982, the project team was enlarged with two social workers, one for sanitation and one for other development activities. At the same time, the project team was provided with a jeep to enable its members to go around the different mohallas more frequently. Because the project had no office, the team going around for motivation and supervision became a familiar sight in Baldia. This had a very strong effect on the ease of communication, especially with the women. At a later stage, a room was offered to the project team by a community to serve as project office. In 1987, when more room was needed, an office space was rented in Baldia.

Criteria for selection of mohallas and households

The project team, in coordination with UNICEF, decided that clear selection criteria had to be established for inclusion of mohallas in the project. The criteria were the following:

- mohallas with a large number of poor families;
- mohallas with large numbers of children;
- mohallas with the least adequate sanitation facilities;
- mohallas expressing interest in the project and willingness to provide their own resources.

The selection of households receiving free facilities had to be jointly carried out by the community organizer, the residents and the local leaders based on the following criteria:

- households without a male head of household/wage earner;
- households with a large number of children;
- households unable to pay for a soakpit;
- households with the most inadequate sanitation situation.

A maximum of 200 households in any one mohalla would be allowed free pits. They constituted the so-called Category I households. The households which did not qualify for free soakpits had to dig their own pits and were assisted with the cost of materials and technical advice. They were divided into the following categories:

- all materials for construction provided by the project (Category II households);
- half of the materials provided by the project (Category III households);
- only technical assistance from the project (not listed as project soakpits in the project sheets).

A mohalla-wide plan was made for each mohalla on the basis of a survey carried out by people from the community under supervision of the project team. The plan had to be approved by the committee, in the understanding that mohallas were included only if the required total subsidy from the project per latrine (including those which were fully funded by the project and those which were fully or partly paid for by the residents) was less than Rs 500. The lower the average, the higher the priority for the mohalla concerned. This is in a way a demand-driven approach which uses transparent self-selection criteria for mohalla selection. Based on this plan and after initial project allocation, the technical officer prepared a detailed plan and cost estimates.

The loan scheme for soakpit construction proposed in the evaluation was not adopted. It was felt that the poorest people would not take a loan because they had other priorities and often were already in debt. Moreover, too much pressure for loan recovery would damage the relationship between the project team and the community. The experimental phase had shown that with the right motivation, people were willing to construct soakpits at their own expense. Thus, in order to enable the poorer people to construct soakpits, efforts should be directed at reducing the cost of soakpit construction rather than the provision of loans.

Demonstration project for reduction of latrine costs

The construction of soakpits continued in Turk Colony, and because of the enthusiasm of the sanitation committee (the Turk Welfare Society) and interest of the community at large, the project team and the committee decided that this mohalla should function as a pilot and demonstration area for lower-cost soakpit latrines. Thus, it was absolutely necessary that the technical construction of the pits was of high quality. Problems were encountered with the permeability of the pits, the fixing of the U-trap and sometimes the high water table. In January 1981, the consultant who had come in 1979 came again to analyze the problems and to advise on methods to bring down the cost of construction (see Chapter 3 for details). Main elements of his proposal were:

- the use of local stone rather than bricks;
- having the pit off-set from the latrine where possible;
- construction of double shallow pits where rocks or groundwater were encountered;
- more gaps in the lining to facilitate the leaching.

To reduce the cost, the project team and the sanitation committee decided to organize the digging and masonry work collectively. The community organizer held meetings and organized families to help one another dig their pits, and to contribute in the masonry work through unskilled labour and payment of some material costs. The members of the Turk Welfare Society were the main motivators and, acting as a local sanitation committee, took it upon themselves to

supervise the construction of the pits and the supply of the materials in bulk to further bring down the construction costs (Box 6).

Box 6 Local management of latrine construction

When the Turk Welfare Society had become firmly established and its members were trusted by the community at large, it was decided that, in order to reduce the costs, the Society would manage and supervise the construction process and purchase the construction material in bulk to save transport costs and get bulk discounts. The Society appointed a secretary in a community meeting to handle the funds given by the project and keep an account of the soakpit construction. The mason would accompany the secretary to purchase the material. This would be stored in the house of one of the members of the Society to save on a night watch. Another member offered his donkey cart to transport the material from the market.

To reduce the costs still more, the suggestion of the consultant to use local stone instead of bricks was explored and experimented with. These stones were not only cheaper, but also allowed more seepage. However, it took a long time to motivate the families to agree to this design, as they were suspicious of having an inferior pit and of paying too much for the pits as nobody could later see what stones had been used in the construction. Finally, pressure was bought on the people by the sanitation committee, threatening that they would stop construction work if the people did not agree to the new design. This social pressure worked and cost were brought down from Rs 1700 to Rs 1200.

Trust and confidence in the community were further strengthened when the sanitation committee received new funds in public meetings and presented its accounts and so that everybody knew what was going on.

By March 1981, another 24 soakpits were constructed in the most unhygienic lanes of the mohalla. Only material assistance was provided by the project, while all the labour was done by the families. This process went on for a year. The sanitation committee made their own bricks. They bought four sets of digging and masonry tools, which were given on loan to people in the community who wanted to dig their own pits. The environment in the mohalla improved dramatically, resulting in the project becoming known in other parts of Baldia.

Expansion of the project to other communities

Identification of other communities which might qualify for the project took place in two ways. The first one was through requests from other mohallas. Usually this happened because somebody from another community visited Turk Colony and contacted the community organizer with the request that the project would start with them as well. But areas were also identified by the community organizer when she visited other mohallas. She had discussions in the lanes, teahouses or in the houses themself, with the result that an impression was obtained of the socio-economic conditions of the area and of the interest in the construction of soakpits.

Through this process, twenty more communities were identified for project implementation. A survey was carried out in these communities to serve as a baseline study. Thirty field workers who belonged to the communities were trained by the project team to hold interviews and fill in the questionnaires, which gave insight in the number of existing latrines, illnesses, health practices, child delivery methods, education and household profiles. Transfer of the project to a new mohalla after the approbation of the selection went through a process of 4 stages with a total of 14 steps (Table 2.1).

The first step in a new mohalla which qualified for the project was to identify the local traditional organizations and see if they would like to cooperate in the project. It was felt that working through an already existing and accepted organization was in line with a community-based approach. Moreover, it enhanced the chances of the community taking over management and construction of soakpits and laid the basis for a sustainable effort. Only when there was no jamat or the jamat was not interested, were other people or organizations identified. In one such case, for instance, the community organizer saw a water tank built by community effort. Those who had organized it were approached and were found to be interested to also take up a local soakpit project. In another case, the local mosque committee took up sanitation responsibilities.

After contacting the community organization, a meeting was organized at which the members of the Turk Welfare Society presented their experiences and approaches in soakpit construction. They also explained how they motivated and organized their community, brought down costs and collaborated with the project staff. A slide presentation was given, followed by a long question-and-answer session. The communication was very effective, not only because the members of the Turk Welfare Society believed in what they were promoting, but also because they came from the same socio-economic background and the same area. This made them more convincing than any outsider would be. The leaders of the new mohalla and all others interested then paid a field visit to Turk Colony.

Table 2.1: Process of preparation and construction at mohalla level

Stage	*Activities*
Community organization and motivation	Identification of existing organizations and leaders
	Demonstration visit
	Formation of sanitation committee
Selection of beneficiaries	Choice of and classification of eligible households
	Home visits
	Preparation of sanitation plan
Training of local masons	Selection of candidates Selection of mason trainer
Implementation of sanitation plan	Demarcation of soakpits
	Bulk procurement and storage of materials and supply of tool sets to lend
	Construction of each batch of five pits
	Training of masons on-the-job
	Instruction on operation, use and hygiene
	Accounting and checking of technical quality of each batch of completed pits

The next step was that the community set-up a sanitation committee within the existing community organization, or formed a new committee for soakpit construction.

The community organizer and the committee then jointly identified and selected the households that were to receive free facilities and those who would receive material assistance. The selected households were always in the poorest sections, which were most in need of environmental improvement.

The community organizer visited the selected households for motivation and to explain the technical aspects of construction. Discussions were held on what was

expected from the households, like labour contributions and financial contributions for materials or masonry work. After the home visits a final list of households was drawn up and a mohalla-wide plan made for approval by the committee.

The next steps were the hiring of a mason with experience in one of the earlier project mohallas, who would serve as a trainer, and the identification of local masons interested to participate in the project. No formal training was given until 1985, but all masons were trained on-the-job by the project engineer or by masons with experience in the new soakpit technology.

The project engineer was to demarcate the site of the pit in consultation with the household and supervise the digging. Because he was only on the job part-time, this activity was also done by the community organizer.

The material was bought in bulk for a number of pits. The sanitation committee got funds for building five pits at a time and presented the bills to the project engineer, who was to check the accounts and the constructed pits.

During and after construction, the project team instructed the household on operation of the soakpits and on maintenance requirements and use. In addition, hygiene education was given, such as the need to wash hands after using the latrine.

When difficulties were encountered during the construction of soakpits, for instance with regard to location, size, and groundwater level, the masons would seek help either from the project staff or from masons in Turk Colony. The design of the soakpits was then modified to suit the local circumstances. In all, six different types of soakpits were built during the project. These are described in Chapter 3.

Initiation of other development activities

During the construction of the soakpits, the community organizer always spent time with the families and especially the women. Not only soakpits and their use and maintenance were discussed, but also other issues that were part of community life. Out of these discussions grew the realization that the level of education, especially of women, was extremely low and that this was due not only to the fact that government schools were out of reach, but also to cultural constraints. It was also found that the existing system of religious instruction in private houses was culturally acceptable, even for girls. Thus, the idea came up to create home schools, in which educated girls and young women from the mohalla would teach children in their own homes. The process and results of this home school project and the related mother group activities are described in Chapter 4.

The opening of the home schools and the creation of the mother groups led to the start of yet another activity: primary health care centres in the houses of some of the home school teachers. The experiences with this people-initiated health care system are described in Chapter 5.

2.4 The consolidation phase (1985-1986)

During this phase of the Baldia Soakpit Pilot Project, all activities of the preceding phase were consolidated and more attention given to human resource development. Efforts were geared to develop a more permanent institutional setting, to enhance continuation of the activities after the completion of the pilot project. The objectives from the previous phase were kept.

Adaptation of project organization and orientation

The organizational structure of the project changed somewhat because the community organizer became an UNICEF officer at the end of 1984. This meant that UNICEF was more directly involved, which was beneficial to the integrated approach of the project, especially concerning the home schools and primary health care centres. From late 1985 the Jaycees project engineer was also directly paid by UNICEF. The project team thus consisted of a UNICEF supervisor (the community organizer), a part-time engineer and two full-time field staff, one for the home schools and primary health care centres and one for the soakpits, plus a doctor to supervise the health care workers.

The project team spent much time supporting the community organizations, the jamats, in initiating other community development activities after they had been successful in introducing soakpits in their mohallas. The team helped the jamats in finding methods to carry out these improvements and assisted them in contacting national or international agencies for funding.

The Jaycees did not agree with the shift of focus of the project from sanitation to an integrated development project. They also had problems with the new integrated approach, in which technical tasks would sometimes be carried out by social team members and vice versa (Box 7). In 1985, when the officer-in-charge for the Jaycees was replaced by another person, the cooperation was discontinued.

Creation of an autonomous NGO

At the end of 1985, it was decided by UNICEF that the project had to stand on its own and that the pilot phase would have to finish in December 1986. A new management structure had to be found because the direct role of the University was diminishing since the community organizer had become an UNICEF officer, while the Jaycees had discontinued their association with the project. Because UNICEF is a funding agency and not an implementing agency, a local organization had to be found to carry out the project. In her capacity as UNICEF officer, the community organizer spent her time discussing integration of the project in an existing government department.

Box 7 Conflict on competence in the integrated approach

Already during the second phase, problems had come up between the community organizer and the Jaycees. These problems were concentrated at first on the fact that the community organizer was also involved in the technical aspects of soakpit construction, which the Jaycees felt was their concern. When the engineer was away for a month and a replacement for him had been organized by the Jaycees, the problems came out in the open. At that moment the project was working in a very poor neighbourhood, where almost all households were dependent on UNICEF support. Because of the criterion of not spending more than Rs 500 per pit on average, the cost of the material had to be brought down even more. This meant a lot of experimenting within the mohalla, which was done by the community organizer, who was by then very much aware of the technical issues involved, and the masons. The sanitation committee was meanwhile involved in setting up a blockmaking yard to reduce the cost of the blocks. The Jaycees refused to disburse more money under these conditions and warned the sanitation committee to stop construction activities because they were not waiting for the project engineer. UNICEF had to come in to pacify the parties concerned.

There were several possibilities, such as the Department of Health, the Directorate of Katchi Abadies in KMC, and the Population Welfare Division of the Government of Pakistan. Although all of these departments were aware of the Baldia Soakpit Pilot Project and all had been involved at one stage or another, none of them was willing to take the project under its wings, mainly because it was feared that the success so far experienced could not be continued at the same level. Moreover, it was felt that the government was not well suited to guide community-based developments because their bureaucracies are not able to deal with the kind of approach needed to stimulate these developments.

It was therefore decided that the formation of a new NGO would be the best solution to ensure continuation of the development efforts within Baldia, and to initiate similar efforts in other katchi abadies in Karachi and elsewhere in Pakistan. Individuals and institutions that had been formally and informally supporting the project were approached to form an organization by the name of BUSTI (Basic Urban Services for Katchi Abadies). The organization was officially registered in June 1986.

2.5 Follow-up of the pilot project, BUSTI (1986 onwards)

The main purpose of the new organization was to use the lessons learned and experiences gained in the Baldia pilot project for similar projects in katchi abadies in other parts of Karachi and in other cities in Pakistan. After its objectives had been defined and its organizational structure set-up, it commended work in 1987.

Objectives, target groups and organizational structure

The primary objective of BUSTI was to create self-reliance among the people living in katchi abadies in all sectors of development, i.e. sanitation, health, education, income generation and other areas identified by the people. Its target group was all residents of katchi abadies, with special focus on women and children: they would have to be active participants rather than passive beneficiaries of development activities.

Among the founding institutions of BUSTI were the Social Work Department of the Karachi University, the Jaycees, the Habib Bank Trust. A number of committed professionals who had so far not been involved were also interested in joining the NGO. Representatives of the founding institutions and these individuals formed the (unpaid) executive committee of the organization, which would have to decide on the its policy and its programmes.

The operational part of BUSTI consisted of a paid staff of 19 people which included professional and administrative/support staff.

BUSTI was not limited to work in Baldia, but strived to replicate the 'Baldia' model in other areas. This meant that existing community organizations would be supported and strengthened and new ones established where necessary. BUSTI would also make its technical resources available to government and non-governmental organizations and would seek to establish links between community-based organizations active in katchi abadies, national NGOs at different levels and government agencies.

KMC was involved in BUSTI through the respective directors of the Health Department, the Education Department and the Department of Katchi Abadies, who were members of the executive committee. The BUSTI office was located on the premises of the Directorate of Katchi Abadies in KMC, an indication of the links between the NGO and the government structure.

Funding for the NGO was provided by UNICEF for an initial period of two years, after which the NGO had to seek funding from other sources.

First experiences

From the start, the NGO faced problems. The representatives of the Jaycees left the executive committee after a short period, because they felt that the executive committee did not have enough influence on the operations of BUSTI in the field.

Then, in April 1987, several key members of the executive committee left, leaving only six members on the committee.

Problems were also encountered with the field staff, specifically to find a director, as the first director resigned in November 1987. The BUSTI programmes did not proceed very well. According to the progress report of December 1987, this was due to staff turnover, lack of direction from a fragmented executive committee, non-availability of a permanent director and agitation and curfews in the city. While the development activities, such as home schools, primary health care and adult literacy (which had started during the pilot project) were ongoing and increasingly being managed by the Home School Teachers Welfare Organization (HSTWO) in Baldia, the transfer of these programmes to new areas was less successful. The same applied to soakpit construction in other areas, although a total of 147 soakpits had been constructed, masons trained and workshops held. The loan revolving fund which was set-up soon faced difficulties due to non-repayment of loans and lack of sustained follow-up from BUSTI. BUSTI also had not been able to raise new funds, although proposals for funding had been submitted the Women's Division of the Government of Pakistan, to the IDRC (Canada) and to the Businessmen Relief Fund, Karachi.

It should be stressed that although BUSTI had problems in management, staff and resources, it was the first NGO in Pakistan which was striving to work as a development-oriented NGO. Most NGOs in Pakistan were purely welfare oriented. There were few places were any training was given in the management of such an organization, and there were not that many people interested and capable to carry out this kind of work.

In June 1988, a study was carried out with UNICEF's support on the status and performance of BUSTI. Main conclusions were that proper management and direction was lacking at all levels. The philosophy of the organization was not clear to all concerned, which had led to different objectives and perceptions at different levels. The nature of the relationship between BUSTI, the community organizations and local NGOs did not seem to be clear, leading to expectations which could not be met. A large number of recommendations were given in order to enhance the performance of the BUSTI organization.

A major boost to the organization was the allocation of a grant from the Women's Division of the Government of Pakistan in 1988, while UNICEF also continued to support some of the activities outside Karachi, in particular in water and sanitation. The organization ceased to function temporarily at the end of 1990, but was able to find a solution for most of the internal problems and resumed functioning with the same objectives.

3. *Sanitation Development*

The soakpit technology used evolved and developed during the life of the project. The recommended design, with the pour-flush located directly over the pit, was adapted to an offset pit in order to make use of already existing superstructures. A double pit system was introduced as a solution to problems encountered with high groundwater tables or rocks at shallow depths. In addition, the use of undressed stones rather than blocks was promoted to reduce the cost of the latrines. Experiments with the designs were developed jointly by the sanitation committees, the masons and the technical advisor. In all, two types of single pits and four types of double pits were constructed during the project with a cost reduction from Rs 2000 per unit in 1979 to Rs 800 in 1986. During this time, 1146 pits were constructed with an average subsidy of Rs 641 per pit. An additional 3721 pits were constructed by residents themselves without any subsidy beyond technical assistance. For every dollar spent by UNICEF on soakpits, the community spent almost three dollars.

3.1 Traditional soakpit technology

The traditional soakpits which in Baldia were in use in about 20% of the houses, had an offset pit outside the plot in the street (Figure 3.1). The pits were commonly 1.2 m in diameter and had a depth varying from 2 to 8 meters, depending on ground conditions. In the area where Pathans lived, pits could be found with a depth of 10 to 15 meters, following the traditional life-long design in use in their home towns.

Stones were put in the pits to support the walls and prevent collapse when vehicles passed over the pit. These stones usually filled up the whole of the pit, but sometimes space was left open in the centre. Usually large stones were placed at the top of the pit, which were covered with a thin layer of cement mortar. A few pits had concrete slabs on top and in some cases the slabs were built up above road level to prevent people and vehicles to pass over the pits.

The pits usually had vent pipes fitted, made of sand and cement and hence very brittle. Normally they were 75 mm in diameter and about 2 meters high. Even when they did not break, the top of the vent pipe was usually below the roof level of the houses, which reduced the draft in the vent pipe. Therefore ventilation in the pit was poor, resulting in bad smell inside the latrine.

The latrines themselves were within the walls surrounding the house. The squatting slabs were made of concrete and most latrines were kept clean and tidy.

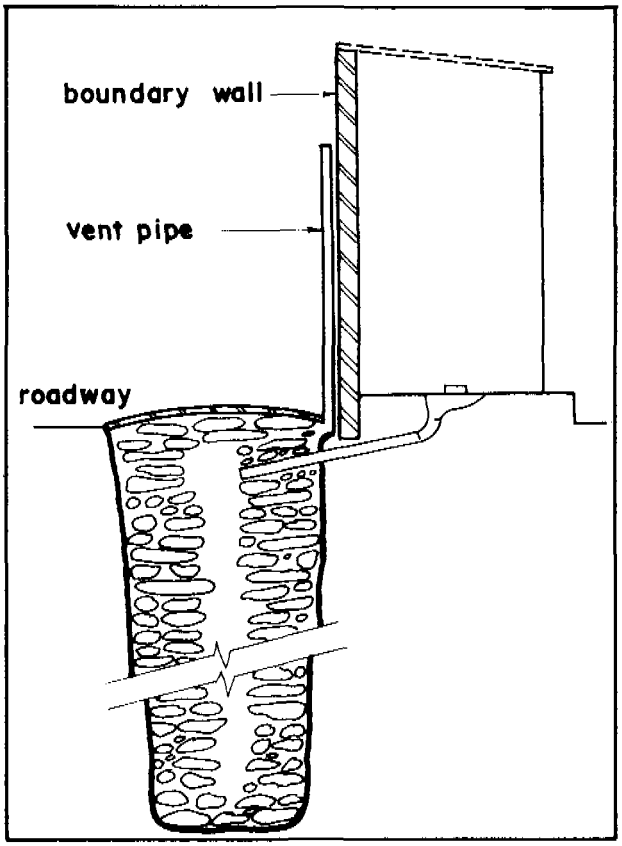

Figure 3.1: Design of a traditional soakpit

Normally only faeces, urine and water used for anal cleansing were discharged into the pits, but in a few areas the pits also received kitchen and bath water without any trouble. In general, the pits lasted about six years, but their life depended on their size, the number of users and other factors such as porosity of the soil and type of cleansing materials used. The construction cost of these soakpits varied from Rs 1000-Rs 2000. Apart from soakpit latrines, one community had also built a sewerage line (Box 8).

The individual efforts of the people in building soakpits and sewerage resulted in a very expensive and inefficient technology, which invariably led to dissatisfaction and failure. It was generally felt that soakpits overflow when full and are very difficult to empty, while sewers are too expensive and do not work when constructed by the people themselves. Thus, people were discouraged to attempt solving the sanitation problem by themselves and expected the KMC to deal with it.

Box 8 Community self-improvement: local sewer line

Besides individual soakpits, a Pathan community in one area had built an underground sewer. For this, 9-inch diameter concrete pipes were laid about three feet underground. At every ten feet a manhole was inserted. The household latrine waste and other wastewater was directly connected with this manhole by a 4-inch concrete pipe. The main line was taken to a nearby open nallah where the waste from the main pipe flows out. The system was built by people from the community assisted by local masons and plumbers who had been working with contractors on sewerage construction elsewhere in Karachi. The system did not work well, as the pipes got blocked very often. The lack of technical knowledge and scarcity of water limited the feasibility of the system. The community spent about Rs 20,000 on construction of the system.

3.2 Survey and design of an improved soakpit

In 1979, 83 pits located all over Baldia were surveyed by the WEDC team. The conclusions were that soakpits were feasible, because they could have a long life and the liquid did indeed leach from the pits into the surrounding soil. However, the existing type of pits were unsatisfactory on several counts:

- A greater part of the volume was occupied by large stones which effectively reduced the storage capacity by 50-75%.
- Because of the stones it was very difficult to re-excavate the pits when they were full and the solids were stabilized.
- Ventilation was poor, leading to fly nuisance.
- Their location on the roadways was often unsatisfactory in view of road improvements or construction of open drains.

Therefore another type of pit needed to be introduced. It was recommended that pour-flush latrines would become the usual method of sanitation for Baldia. The design of the recommended soakpit was based on the following criteria:

- Solids accumulation was 1.4 cubic feet per person per year (40 l/p/y).
- The pit had a design life of twenty years.
- The average household consisted of nine persons.
- Water was used for anal cleansing.
- Squatting slabs were preferred to seats.
- Sullage or refuse would not be placed in the pits.

The recommended design is given in Table 3.1 and Figure 3.2.

Table 3.1 Design characteristics of improved soakpits

pit depth	14 feet (4.3m)
diameter	5 feet (1.5m)
lining	concrete blocks with open vertical joints except where it passes through solid rock or other stable material
slab	reinforced concrete latrine slab with a separately-made water-seal unit located directly over the pit

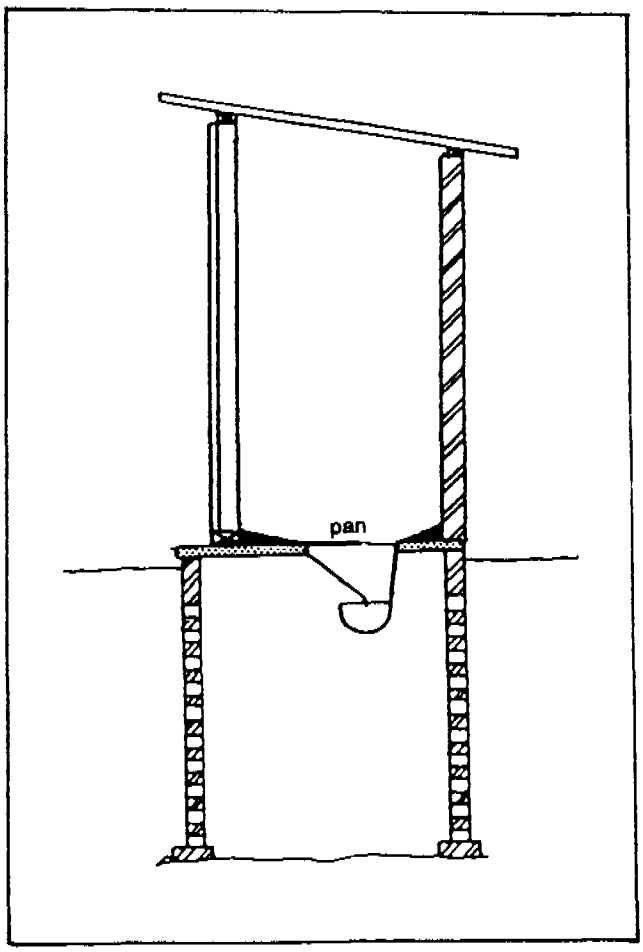

Figure 3.2: Recommended design for improved soakpit

The floor slab and superstructure were directly above the pit (i.e. within the plot boundary) so the slab did not have to withstand traffic loads. Variations to the standard design were permitted as follows:

- If solid rock was encountered at a depth less than 14 feet (4.3m) but greater than 10 feet (3m), the depth of the pit could be reduced.
- If the household did not use water for anal cleansing and was unwilling to change, a toilet without a water-seal could be provided. In this case a ventilation pipe of approved material (e.g. asbestos, cement or PVC) of a diameter not less than six inches (150mm) should be provided.

Where the plot was large enough and the location of the latrine made it appropriate, the pit could be offset from the latrine and connected to it by a short length of 4-inch (100mm) diameter pipe of approved material. However, under no circumstances should pits be approved outside the plot boundary (Pickford and Reed, 1979).

Construction guidelines for pits, slabs and water-seal pans were provided as a basis for further development. It was made clear that trials should be carried out to develop the most suitable design.

3.3 Proposed system for surface drainage

For sullage disposal, it was recommended to divide the whole township into as small drainage areas as possible and to construct a system of concrete drains which discharged into the nearest nallah. The drains had to be designed and built in accordance with usual KMC practice by KMC, with the following points to be considered:

- For pathways up to 10 ft (3m) wide a single drain should be provided centrally.
- For roads and pathways over 10 ft wide, drains were to be provided on both sides if plots faced the road or pathway.
- Drains normally were to be built along the front of a plot and only in exceptional circumstances at the rear; it had become clear during the survey that people were willing to clean drains along the front, but neglected drains along the back alleys.
- All standpipes were to have a concrete apron and drainage channel so that any spilled water was directly discharged into the drainage system.

The nallahs would have to be straightened and cleaned throughout their length and for the most part they would have to be provided with a concrete invert and with masonry walls. The invert would have to have a self-cleansing gradient throughout and would have to be as steep as the fall of the ground allowed (Pickford and Reed, 1979).

3.4 Evolution of soakpit technology

The Pakistan Jaycees had constructed the soakpits in the mohalla where they worked in 1979 according to the WEDC design, that is, with the water-seal directly over the pit, but with a modification in the pit design. The top of the pit was built in a conical shape, similar to the construction used for tandoori ovens and well known to the masons (Table 3.2). This reduced the width the slab had to span and provided greater strength.

In addition, experiments were carried out with the WC-pan, to reduce the amount of water needed for flushing and make it strong enough to function without additional support to the U-trap. Although these pits were technically superior to the pits constructed by the Karachi University team, the design used was not followed at later stages of the project, mainly because people preferred to have offset pits.

The pits constructed in the first phase by the Karachi University team did not follow the WEDC design and were adapted to suit local conditions. This resulted in soakpit latrines of type A (Figure 3.3). Table 3.2 gives their main design characteristics in comparison to the originally recommended model.

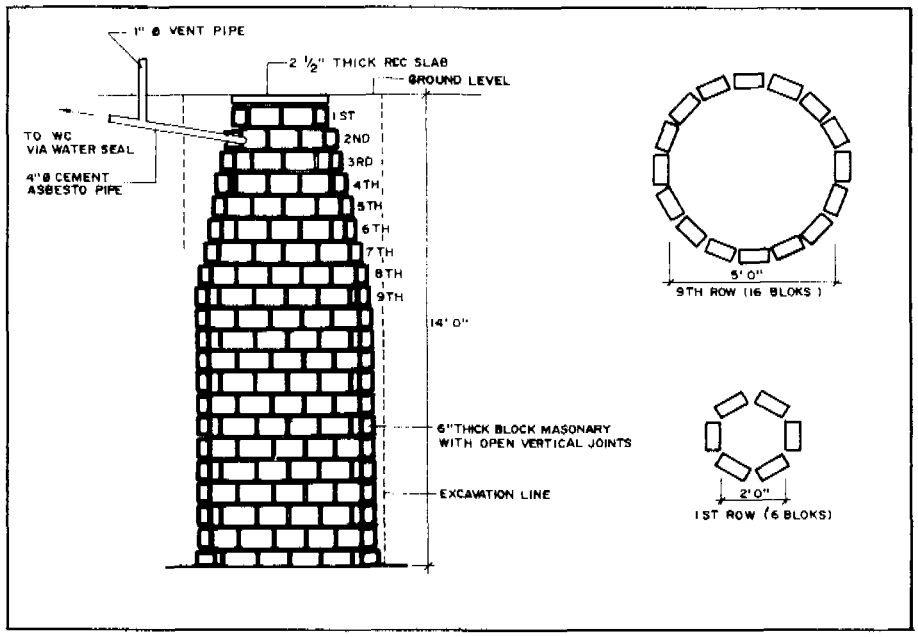

Figure 3.3: Modified design (type A)

Table 3.2 Design characteristics of single-vault pits installed under the Baldia Soakpit Pilot Project

SINGLE VAULT LATRINES			
Design	*Modified prototype*	*type A*	*type B*
pit depth diameter	14 ft 5 ft	10-14 ft 5 ft bottom 3 ft top	10 ft 5 ft bottom 3 ft top
lining	concrete blocks, open vertical joints	concrete blocks, open vertical joints	top 11 courses concrete blocks, open vertical joints bottom courses undressed stone
slab	reinforced concrete slab 5 ft wide	2.5-inch reinforced concrete 3 ft wide	2.5-inch reinforced concrete 3 ft wide
pan	ceramic water seal pan	ceramic water seal pan	ceramic water seal pan
connection pipe (from water-seal to pit)	not applicable	4-inch asbestos 4-6 ft	4-inch asbestos 4-6 ft
vent pipe (fitted on connection pipe if insisted upon)	not constructed	2-inch asbestos 8 ft long	2-inch asbestos 8 ft long
cost material labour	 Rs 1300 Rs 500	 Rs 1500 (1979) Rs 500 (1979)	 Rs 1200 (1981) Rs 500 (1981) later Rs 300
period of installation	1979-1980	1979-1981	1981-1985

There were a number of reasons for the adaptions to the recommended design. First of all, people were very reluctant to construct the latrine directly over the pit, because this meant that they had to demolish the superstructure many people had for their bucket latrine. People were also reluctant to have the pits inside the plots because they feared the pit would overflow and that their plot would be soiled by faeces. Obviously, this fear was founded on their experience with the traditional soakpits. By having an offset pit behind the existing latrine structure at least one of these problems was solved, but the people still had to be persuaded to have the pit inside their plot.

A second modification that was made concerned the construction of the pit. The conical shape was used for the top of the pit and usually the depth was reduced to 10 ft instead of 14 ft because of the difficulty of raising the excavated material from the pit. The external vent pipe was only added because people insisted on it, although there was no technical reason for it.

The slabs were cast in situ and on small household plots, and were covered to become part of the cemented floor of the plot so the space could be used easily. The excavated material was used in the pathways outside the houses to cover the filth and make it look clean.

During 1980, the Jaycees and the Karachi University team exchanged experiences on design and implementation which led to a better technical standard. Despite this, several technical difficulties were encountered, including:

- uncertainty about the need to locate the pan directly over the pit;
- variable quality of construction materials and the U-trap;
- possibility to use cheaper materials such as PVC pipes;
- difficulty in flushing due to water scarcity;
- groundwater or rock encountered at shallow depth;
- liquid retention in some of the pits.

In addition, it was felt that possibilities for cost reduction had to be explored. In view of this, the WEDC group was requested to give additional advice on sanitation technology (Figure 3.4). This resulted in the following recommendations:

- It was not necessary to have the latrine over the pit if there was enough space on the plot to dig an offset pit.
- The users were to be advised to use sullage water for flushing, as already done by the community organizer.
- The locally made U-traps had a bend which was difficult to clear. A trap with an easy sweep should be used. If such bends could not be purchased locally, efforts for local production were to be made. In the meantime toilets could be connected to soakpits by unsealed straight pipes, providing a ventilation pipe was fitted.
- Where rock or groundwater was encountered at shallow depths, a double pit latrine was recommended. However, the use of double pits departed from the

Figure 3.4: Evaluation of modified design

principle of long life as the chambers had to be emptied every two years or so. This was to be clearly understood by the householder before construction started.

- Where liquid did not soak away, one reason could have been that the soil was impermeable. This could have been due to high clay content of the soil. Standard percolation tests could have been carried out, but were of limited value as the nature of the soil varied greatly in the area and also with depth. Most probably however, the liquid was retained, because the lining of the pit did not have sufficient gaps. The standard design showed two out of three courses of blocks with open vertical joints to allow liquid to pass to the surrounding soil, but to provide strength these gaps were not left by some masons. The use of local stone instead of bricks would improve permeability further.
- To reduce costs, stone were to be used instead of bricks for the lower part of the pit. This would have the added advantages of being a local traditional form of construction, and leaving more space between the undressed stone to allow liquid to pass out. The use of semi-dressed stone for the upper part of the pit was to be investigated and adopted if this type of stone was cheaper than blocks.

- The most effective way to reduce the cost of the soakpits would be to reduce the volume and hence the quantity of lining material. There would be a corresponding reduction in the life of the pit. The community organizer was to discuss local perceptions of pit permanence with the community. The design life of a pit with a depth of 10 ft and a diameter of 7 ft (excavation size) lined with local stone would be about 12 years.
- The purchase of better quality materials was to be investigated by the local people themselves (Pickford, 1981).

Following these recommendations, the type B soakpit was introduced. Its pit was less deep than the type A pit and lined at the lower half by undressed stones for lower cost and improved leaching. Its costs were reduced by 25% or more, including inflation (Table 3.3).

At first people were reluctant to adopt this design, believing that stone was inferior to blocks, but extensive explanations, motivation and reduction in costs eventually outweighed their objections. In 1982 this design was modified further to reduce its cost, by using stones instead of blocks for all outside walls. The dividing wall of the double pit was constructed with solid block masonry.

After 1981, the construction of the type A soakpits was discontinued, as the adaptions to the design in type B proved to work well. After 1984, type B pits were no longer constructed because the double pits became accepted everywhere. What helped in the acceptance was the proof that the contents of the pit not in use could indeed be emptied manually.

At the same time when soakpits of type B were started, double pit latrines (type C1) were introduced in those areas where soil conditions made a deep pit unfeasible. The double pit was made by constructing a dividing wall of 4 ft by 7 ft in a single large pit (Figure 3.5). Table 3.3 gives the particulars of this and three other types of double pit latrines introduced in the project.

Cost reductions and the role of the community

The cost reductions which were attained after 1981 were mainly attributable to the fact that the communities had started to get organized to such an extent that collective buying of materials for wholesale prices had become possible (Box 9). This in itself showed the tremendous impact the sanitation project had on the developmental process in the communities, as usually distrust was high when money was involved.

Another reason for lower unit costs was the continued effort of the project staff, often in cooperation with local masons, to reduce the design costs. Thus, the project engineer adapted the design of the double pits of type C1 and C2 by making two separate circular shallow pits instead of one deep rectangular pit with 2 vaults created through a dividing wall (Figure 3.6 and Table 3.3).

Box 9 Cost reduction through user involvement

During 1983, the project team worked in a very poor community of 400 families, of which 329 had bucket latrines. The need for improvement was high, but while most of the families qualified for assistance, the criterion that the net cost per latrine to the project should not exceed Rs 500 prevented their selection. As a result, the cost of the latrines had to be brought down even more. Most of the people in the community were potters and the sanitation committee proposed that they would buy the material wholesale and prepare their own blocks and slabs. They also managed to motivate the stone seller to give them stones at cheaper rates, while the project engineer agreed to adapt the design.

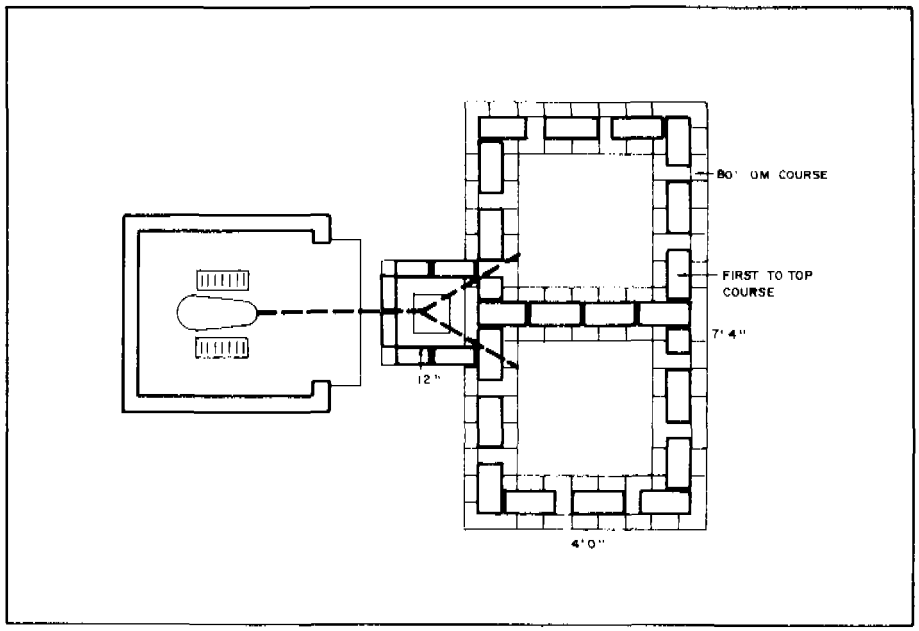

Figure 3.5: Initial design of double-vault soakpit (type C1)

The circular pits were an improvement over the previous design because there was no risk of seepage through the dividing wall. Moreover, the cost of the cement and concrete dividing wall between the joint square pits was eliminated. The circular cover slabs for the pits were cheaper and stronger than the square ones and easier to handle. Later this design was modified again to make it even cheaper (type C4, Table 3.3).

Table 3.3: Design characteristics of double vault pits installed under the Baldia Soakpit Pilot Project

	DOUBLE VAULT LATRINES			
Design characteristics	*Type C1*	*Type C2*	*Type C3*	*Type C4*
pit dimensions	depth 4 ft width 4 ft length 7 ft 4 inch	depth 4 ft width 4 ft length 7 ft 4 inch	depth 5 ft diameter 5 ft bottom to 3 ft top	depth 5 ft diameter 5 ft
lining	block masonry, open vertical joints; dividing wall rendered at both sides	dressed stones dividing wall rendered at both sides	undressed stones for bottom half, cement blocks for top half	undressed stones
slab	2.5 inch reinforced concrete, 2 slabs 4 x 4 ft each	2.5 inch reinforced concrete, 2 slabs 4 x 4 ft each	2.5 inch reinforced concrete, 2 slabs each 3 ft in diameter	2.5 inch reinforced concrete, 2 slabs each 5 ft in diameter
pan	ceramic water seal pan	ceramic water seal pan	ceramic water seal pan	ceramic water seal pan
connection pipe	4 inch asbestos pipe from waterseal to inspection chamber	4 inch asbestos pipe from waterseal to inspection chamber	4 inch asbestos pipe from waterseal to inspection chamber and from inspection chamber to pits	4 inch asbestos pipe from waterseal to inspection chamber and from inspection chamber to pits
inspection chamber	12 x 12 inch, with removable 2.5 inch(e 2.5 inch RCC slab	12 x 12 inch, with RCC slab	12 x 12 inch, with RCC slab	12 x 12 inch, with RCC slab
Y-piece	4 inch asbestos	4 inch asbestos	4 inch asbestos	4 inch asbestos
ventpipe	2 inch ventpipe fitted on the pipe from wate seal to inspection chamber			
costs: material labour	Rs 1400 (1981)-Rs 800 (1983) Rs 400 (1981)-Rs 300 (1981)	Rs 1000 (1982)-Rs 600 (1983) Rs 300 (1981)	Rs 550 Rs 300	Rs 500 Rs 300
years of installation	1981 - 1985	1981 - 1986	1983 - 1986	1983 - 1986

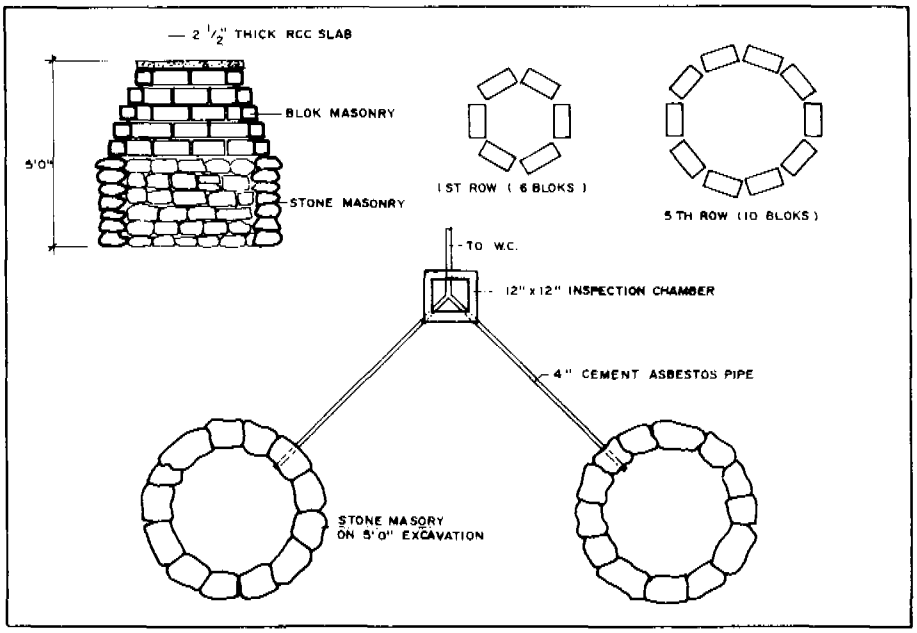

Figure 3.6: Double-vault soakpit with 2 separate circular pits (type C3)

Monitoring of pit construction and performance

The soakpit construction was supervised by members of the project team: the community organizer, the part-time engineer, and a social worker. At community level, the sanitation committees also had a role in overseeing the construction. They had to make sure that the supplies bought were indeed used for the pits. Once a pit was completed, it was impossible to check what materials had been used. Besides, the sanitation committee was responsible for the selection of beneficiaries for each category. These categories are described in Chapter 2, Section 3. The list of beneficiaries was given to the community organizer. She would visit each of these households to check whether they qualified, to motivate them and to explain the technical details of the soakpits. After this, a final list was prepared.

From 1979 to 1982 these lists contained information on plot number, number of family members, number of children, type of pit to be constructed, year and type of assistance to be given. However, no column was given for a signature of completed construction. How this was recorded cannot be traced anymore.

After 1982, the system of record keeping was changed. The new lists contained per mohalla columns on plot number, name of household, occupation, number of beneficiaries divided into adults and children, type of pit constructed, category of beneficiary, month of construction, signature of project engineer, signature of field

staff. A better overview of the construction process was obtained, while at the same time verification was noted on record.

The importance of a good monitoring system was emphasized when in 1988, Pakistan Environmental Planning and Architectural Consultants Ltd. (PEPAC) carried out an evaluation of the project. PEPAC did a survey among a sample of 108 direct beneficiaries (those who had UNICEF-assisted soakpits), 150 indirect beneficiaries (those residing in project mohallas, but not receiving monetary or material assistance) and 300 non-project households (from mohallas not covered by the project). Of the initial sample of 150 direct beneficiaries in the survey, 42 households (28%) said that they did not have a soakpit constructed by UNICEF. Of these 42, 25 said they had never even been approached by the project team. The rest said they had been visited by the community worker but had never heard from the project since. Because of this high percentage, the authors of this book extensively discussed the problem of the 42 non-constructed pits with former project staff, residents, masons, and members of various sanitation committees. It was generally felt that this percentage was far too high and could be explained by the fact that the early monitoring sheets did not contain a final signature for completion and were really initial worksheets for motivation and not for actual construction. For the pits in the sample constructed after 1982, the records were verified and signed by the field worker and the technical advisor. In practice, the verification was not always carried out, due to the heavy workload. Moreover, on his check-up visits the engineer did not check if the plot numbers were correct, and could therefore have been taken to other plots.

Suggestions on what could have happened were given by all those questioned. These are interesting to list as they show the loopholes of the system:

- The mason and the selected beneficiary agreed not to dig the pit and split the money between them (only possible if the mason was part of the sanitation committee);
- The beneficiary was changed at the last moment by the sanitation committee and the pit was dug in somebody else's house;
- The mason or member of the sanitation committee made a deal with the owner of the construction yard from where the materials were bought and the pits were simply never dug.

In the course of the years, a number of pits in different areas were chosen to be monitored at regular six-month intervals to see what happened. When the first double pit was to be emptied manually after having been left for over a year, excitement was high as none of the project team and none of the masons or community members had ever seen dried out pit contents and only had heard that it would become like earth. When the contents were dug up, they formed a sort of dry cake without any smell and not in the least offensive. Word about this spread through the communities and helped enormously in the acceptance of the double pit design. Unfortunately, no records have been kept of these monitoring exercises.

3.5 Project targets and physical achievements

It turned out to be very difficult to ascertain the actual number of soakpits constructed within the project from 1979 to 1986, as all sources gave different numbers counted over different time periods.

Number of soakpits constructed

According to the progress charts maintained by the project team, the number of soakpits constructed from 1979 to 1985 was 1048. No progress chart was available for 1986, but (incomplete) files gave a total of 1146 pits. The 1048 pits were spread over 32 mohallas and benefitted a total of 7844 people, consisting of 4349 adults and 3495 children (see appendix 1).

The number of soakpits constructed by the people without UNICEF subsidy in the mohallas where the project was carried out was said to be approximately 3721. On what basis this number is given is not clear (Bakhteari, 1987).

Table 3.4 shows that the above total of 1048 project-assisted soakpits was beyond the total target set for the project as mentioned in the UNICEF Project Plan of Action and project records.

Table 3.4: Number of soakpits planned and built, 1982-1985

Year	*Target*	*Construction*
1982	130	336
1983	300	179
1984	300	284
1985	300	249
Total	1030	1048

The numbers of soakpits constructed according to the different designs and in the different subsidy categories are shown in Table 3.5. From the table it can be seen that a marked shift away from the completely free demonstration pits took place. Whereas in the early years, 1979-1982, the need for demonstration pits was high to convince people of the feasibility of the improved technology, in later years residents of new mohallas were taken to see pits constructed in other mohallas. The fact that those who already had soakpits were pleased with them was enough to motivate new people for construction.

Rs 1,011,815, bringing the total cost of project-assisted pits at Rs 1524 or US$ 112 per pit. However, it should be taken into account that these costs included support activities to **all** the project programmes (soakpits, home schools, women's education, primary health care and NGO support) and that no separate records were kept on the support costs to each programme. Assuming that a quarter of the costs of project support went to the sanitation programme the total indirect costs for this programme were Rs 252,954. The indirect project costs also led to the construction of 3721 unassisted soakpits. The total number of pits constructed during the project was 4867, which brings the average indirect costs per pit to Rs 52 and the total (direct and indirect) cost to an average of Rs 693 or US$ 51 per pit.

The community spent approximately US$ 198,453 on soakpits constructed without UNICEF subsidy and in addition built all superstructures at their own costs. This means that for every dollar spent by UNICEF on soakpit construction, almost three dollars were spent by the community.

3.7 Soakpits in 1990

The authors of this book spent two weeks in Baldia in 1990 and held discussions in a number of areas with residents, sanitation committees and masons to assess use and performance of the soakpits. Differences in functioning were found depending on soil conditions, type of pits constructed and number of covered drains present. Generally, people found that the Baldia Soakpit Pilot Project had been very effective and had served the purpose of improving the environmental conditions at the time. In many mohallas, however, people felt that open drains and soakpits were too basic for present conditions (Box 10).

Box 10 Improvement of living conditions since 1979

In the ten years since the start of the project, Baldia township had improved greatly. Not only had all roads been surfaced, but the houses had been improved considerably. Most houses in 1990 were made of permanent material (pukka) with cement walls and reinforced cement roofing and there were many multiple-storied buildings. Water supply was improved, but still constituted a problem. Most areas had water supply in the public standpipes on alternating days for two to three hours. Each standpost served about eight houses. In places where pressure was not sufficient to raise water above the ground level, standposts were either sunk a few feet below ground level, or the water was pumped out by using a cast-iron handpump. Many people had built large water tanks in their yards for water storage.

In many areas the soakpits were still functioning well. Very often even double pits had not been emptied and the owners were satisfied with the system. Where pits had been emptied, this was mostly done by sweepers. Sometimes the pit contents were not dry. One mason said he believed that this was due to the side drains not being cemented properly at the bottom and therefore the water was leaching into the pit. This may have been possible where the side drain was very near the pit and always full of water. It may also have been caused by improper sealing of the dividing wall in double pits constructed with a dividing wall in the middle. Another mason suggested that the owners also used the pits for wastewater, for which they were not designed. It could also have been caused by the rise in the groundwater level as a result of a dam constructed in the vicinity of Baldia.

In case of single pits or where pits were not dry, people called the KMC desludging service. The problem was, that it was difficult to get them to come and not all houses could be reached by the truck. Moreover, it was said that the KMC service did not come to desludge only one pit in case of double pits, but only if both pits were full. Hence, people kept switching the Y-junction in the inspection chamber until both pits were full. This, of course, defeated the purpose of the double pits.

When people had problems with their soakpits for whatever reason, they usually called the mason who constructed the pit. If it was just a matter of the pit being full, the mason could switch the connection (for double pits) or tell the people to call the KMC vacuum truck for desludging (for single pits). Even when the pit was just full, some masons advised to change the construction and connect to the drain, because this enabled him to charge for reconstruction costs. In some areas this resulted in up to 50% of the pits being connected to sewers or side drains (Box 11).

Box 11 Reconstruction of soakpits into interceptor tanks

One of the masons explained how he 'upgraded' existing twin pits to a kind of septic tank, constructing three compartments by adding one more inside wall and making a hole in each of the two inside walls to make an overflow to the next compartment. The last compartment was then connected to drain or small-bore sewer. It shows the feasibility of upgrading the existing soakpits to serve as interceptor tanks in a small-bore sewer system. Connection to an open drain, however, should never be recommended because the overflow is not pathogen free and thus constitutes a health risk.

Mainly because of the dislike of the open drains, residents wanted to have (small-bore) sewers and connect their soakpits to these sewers. In some areas the yearly budget allocated to the area councillor by KMC for infrastructure

improvements at community level, was spent almost completely on the construction of these sewers. The sewers often had the same problems as the open drains. They had no proper slope and because the quantity of wastewater was limited, a self-cleaning velocity could not be maintained.

Maybe, as a result of the efforts at community level which show that the people really want a sewerage system, KMC will provide small-bore sewerage in Baldia with a loan from the Asian Development Bank. Details on this scheme are given in Chapter 6, section 3.

Figure 3.8 Mason installing a pan

4. *Home Schools*

During the discussions on sanitation and hygiene education between the community organizer and the women of the community, it became clear that most women were illiterate. Financial and cultural constraints were identified as factors preventing children, and especially girls, to attend school. Because a system existed in which religious classes were conducted in private homes, it was decided to attempt a similar approach for basic education. A number of young girls from the community with a certain level of education were trained in teaching. They each started their own school to see if there was sufficient interest for a larger programme. After initial problems, the system was accepted. A local organization was identified to support a larger programme in which a total of 60 girls were trained. This resulted in the establishment of 64 home schools in 1986 with an estimated number of 1600-1800 pupils. The same community-based model was used for the sanitation programme, in which UNICEF funded the training and the materials to start the home school. All other expenses were borne by the community. The teachers organized themselves and formed an NGO, which at a later stage initiated other activities for the development of women in the area.

4.1 Emerging need for education of women and children

As part of the sanitation construction activities, the community organizer oriented the families in proper maintenance of the latrines. The women were shown how to flush the latrine and were advised to flush it with water used for washing. At the same time hygiene education was given. For this purpose leaflets and handbooks were printed on better child care, hygiene and sanitation. But when these materials were given to the women, most of them could not read it. Confronted with this inability to read, the community organizer started discussions with the women on the reasons for the low level of education in the community. A number of factors played a role:

- The government schools in Baldia did not have enough space to accommodate all children.
- The expenses involved in schooling, such as books, uniforms, and shoes were not affordable for many people.
- Most of the children of poor families worked and could not keep the school hours.
- The schools were considered too far from the homes for the parents to allow small children and girls to go there.

- If parents could not afford to send all their children to school, they preferred to send the boys.
- Education for girls was considered useless as they would get married and have children and a home to look after.
- Many girls had to stay home to help their mothers with household tasks and looking after younger children.

It was obvious that for any educational system to succeed, it would have to overcome these barriers as much as possible. Traditional education systems did function in the community. Many children went to religious classes, held in the mosques or at the home of religious teachers. Moreover, some women with an education up to high school were teaching young children and girls in their homes for a fee of Rs 5 per child per month. Because there was a flexible timing for these classes, adapted to the needs of the pupils, the children were sent more readily to these schools.

Under the auspices of the Turk Welfare Society, a women's meeting was organized and the possibility of an educational programme for women and children, based on the traditional educational system, was discussed. It was decided that girls with at least high school education would be identified in the community to test the possibility of creating home schools on a larger scale.

Although the idea was enthusiastically accepted by a group of men and women in the community, it turned out to be rather difficult to find parents who consented to their daughters becoming teachers. Not only were women considered to have a domestic role in society, but girls belonging to the age group who had finished high school were all of marriageable age and therefore had to be guarded closely. Under no condition should they be in a position to threaten the family honour by becoming involved with men outside the family. Often people even refused to talk to the community organizer about their daughters. It took months of constant motivation, but by November 1981, ten girls were identified to follow a training by a graduate in educational studies. UNICEF paid for the training, but the equipment for the first home schools was a community contribution (Box 12).

Box 12 Equipment used by the first girls as pilot teachers

The training concentrated on basic reading, writing and arithmetic. Funds for the teaching materials were collected from the mothers and women of the group, again through the Turk Welfare Society. By the end of November, these ten teachers were teaching more than 300 children in their own homes for two hours a day, charging a tuition fee from Rs 0,50 to Rs 5 per month per child. The children were taught with charts and wrote on slates which their parents provided.

Besides the ten girls, a woman received a training in adult literacy to enable her to teach adult women to read and write. After her training, she taught more than one hundred women within one year. Most of these women were also involved in the sanitation programme and worked alongside the community organizer in motivating people for sanitation.

4.2 Objectives of the home school programme

The demonstration of the home schools attracted considerable interest and soon girls and women in other communities expressed a desire to set-up similar schools in their neighbourhoods. Therefore, a large programme for teacher education was planned. Objectives for the home school programme were the following:

- To facilitate education for those children who were not able to attend government schools for reasons such as poverty, distance and timing.
- To provide an acceptable schooling system for female children who were not allowed to follow classes in a regular school due to the constraints in their mobility in an orthodox Islamic society.
- To offer young girls the possibility of participating in the development of their community and to lift their confinement within the four walls of their homes.

4.3 Implementation through a local organization

Because the teachers were all women and young girls, it was deemed advisable not to organize the larger programme through the Turk Welfare Society, it being an organization of young men. Thus, efforts were made to identify an established, ethnically heterogeneous, service-oriented community organization within Baldia through which a programme could be introduced. Through a sanitation committee member in one of the mohallas, such an organization was found. The organization agreed to support the programme by making its premises available to train the girls and organize a motivation and recruitment campaign (Box 13).

Selection and training of home school teachers

Selection criteria were discussed between the community organizer and members of the jamat and priority was given to the following categories:

- Girls who were already teaching in their homes.
- Girls who belonged to poor families or had no male head of household.
- Educated elderly women who were widowed or had no other responsibilities within the household.
- Girls who were keen to carry on their own education, but faced financial constraints.
- Girls belonging to ethnic groups which discouraged female education, such as Pathans and Baluchis.

- Girls coming from areas where the project was carrying out soakpit construction.

Box 13 Organizing home schools through a local organization

The All Baldia Memon Jamat had just had new elections and the newly elected functionaries were interested to demonstrate their role in the community. The jamat had its own school building, in which classes were conducted and a sewing centre was located. They also had a dispensary and a maternity home. They offered the school building as a training centre and organized and launched a publicity campaign through posters and leaflets to attract large numbers of educated girls to the training programme. The leaflets were also given to the principal of the Government Girls Secondary School in Baldia and to other social organizations. Within five days, more than two hundred written applications were received by the President of the All Baldia Memon Jamat.

All applicants were interviewed and a selection of 50 girls was made on the basis of the criteria. A waiting list of more than 50 women was made for another training session to be carried out half a year later. Since the Memon Jamat's school building was too small to accommodate all 50 women at one time, they were divided into two groups. They were also joined by the ten girls who had been teaching since November 1981. The training was given in June and July 1982 by a woman from Baldia who had a Master's Degree in Political Science and a Bachelor's Degree in Education. In addition, a Lady Health Visitor (trained community health worker) was requested to give a health training course/session to the home school teachers.

The teachers were taught to follow the curriculum as given in the government schools, but in addition they were trained to give English lessons and to discuss health matters with the mothers of the pupils. The training sessions were formally closed at a function in which the Commissioner of Karachi, invited by the jamat, presented the candidates with certificates. The Commissioner was highly impressed by the people's participation and social organization and expressed his support to the initiative, thereby lending it a more formal character.

After the training, the home school teachers started their own schools by motivating people in their neighbourhoods to send their children. When they had enough pupils to begin, they were provided with a blackboard, a darri (a mat for the pupils to sit on), books, charts and slates by the project (Figure 4.1).

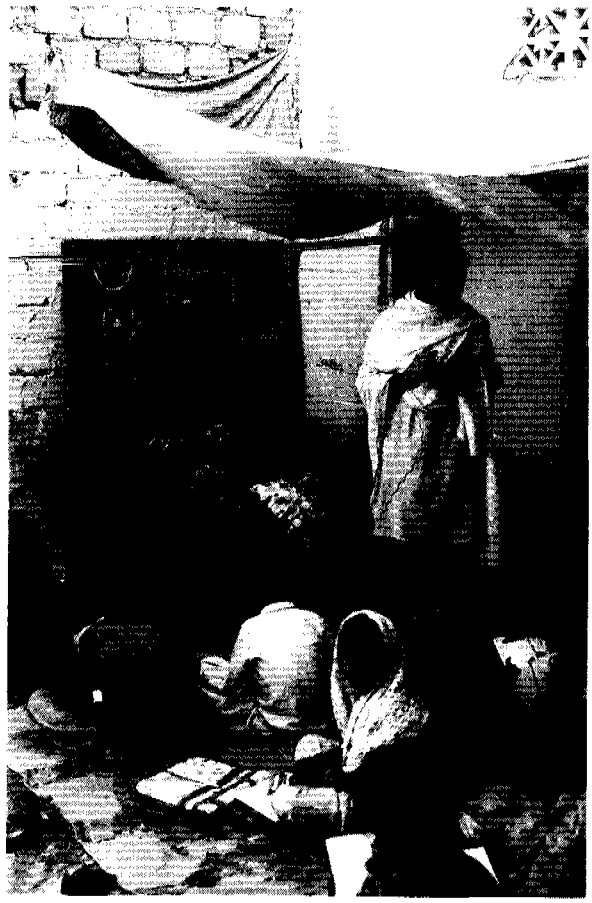

Figure 4.1: A home school in session

Overcoming cultural and economic opposition

Although there were sufficient girls interested in becoming home school teachers, the community at large did not view these developments very favourably. Many of the girls had faced stiff resistance at home, particularly from their fathers and brothers, as the home schools were seen to be threatening the existing social structure. It was felt that allowing the girls to go outside the confines of their home might make them unwilling to accept the traditional way of life. It was to a large extent due to the trust people had in the community organizer and the project team, built up during the preceding years of promoting improved sanitation, that they were inclined to let their daughters be teachers.

In some areas, it turned out to be difficult for the young teachers to get pupils in their new home schools. First of all, the teachers were regarded with suspicion by the men in the neighbourhood, because they had participated in a programme which required them to leave their homes for training and meetings. But secondly, many parents in the neighbourhood needed to be convinced about the importance of education, especially for girls (Box 14).

Box 14 Surmounting parents' resistance to education

"I told people of my area (Madina Colony) to send their children to school. I told them there was free education, no fee, free books and only two hours a day. They all said yes, but never came. I would go to their houses, and they would say I'll send my sons but not my daughters. Because if my girls can read and write they will write letters to boys and run off with them. So I would tell them, look at me - I am like your daughter - trust her. Now people believe me. They used to say: "if our ancestors were not educated, why should we be." (account of a home school teacher from Madina Colony).

In many mohallas the help of the project team was needed to take away the opposition. For the enrolment of girls, it helped that the schools were in the neighbourhood and the families of the teachers were known. The mothers of the teachers were always present at the home school sessions, because the schools were located in their houses. On average, the female pupils did much better than the male pupils, probably because they appreciated the opportunity more. One of the teachers felt it was caused by the fact that the girls feared to be taken out of school if they did not do well, whereas boys did not have to face the same consequences.

Opposition also was experienced from the private tuition centres which existed in Baldia. Here, men were teaching children for Rs 25-50 per month. As the home school teachers only charged Rs 5 per month, they were a threat to the existence of these centres. Therefore these men started to create social problems for the home school teachers by insulting them and their families, by harassing the girls in the streets and by trying to convince parents who were sending their children to the home schools that they were no good. This upset both the teachers and their parents, vulnerable as they were for a social backlash in this traditional society.

4.4 Institutional development for community-managed education

Although the home schools had started successfully, they still needed to be more firmly established and become part of the mohallas' own development activities. In order to boost the confidence of the teachers and to support them in facing the difficulties, monthly teachers' meetings were held in groups of twenty teachers. The main issues that came up in these meetings were:

- Parents not realizing the importance of education, especially for girls.
- Children not paying regular fees.
- Maintenance of books and educational materials.
- Harassment by men involved in private tuition.

These monthly meetings were always attended by somebody from the project, either the community organizer or the newly appointed social worker who had been attracted to support the home schools. In addition, each school was visited at least once a month for support.

Involvement of men

To involve other (male) organizations in the mohalla in the home schools and to institutionalize the schools in the community at large, discussions were held with the fathers of the home school children, the sanitation committee and the existing community organization. As a result, in most communities the men became more supportive towards the home school programme.

Involvement of women

In order to also involve the mothers of the home school children and support the teachers, monthly mothers' meetings were held in each home school. This served the combined purposes of meeting the women's needs for more education, involving them more actively in development activities, and obtaining more protection and support for the teachers (Box 15).

Slowly, the home schools became a centre for informal education. Children from government schools started coming for extra coaching and more mothers came for literacy classes. To be able to cope with this, a number of teachers felt the need to continue their own education. They also wanted to strengthen their teaching capacities, concerned about the future of their pupils and wanting to enable them an easy entrance in government schools. For individual teachers, the new developments were difficult to handle and they came to the conclusion that they needed to establish a formal organization to represent their interests.

Box 15 Meeting women's needs and gaining their support

The mothers gave a kind of social protection to the teachers, because married women with children have a higher social status than a young unmarried girl. The teacher, social worker and mothers discussed and tried to solve the issues raised in the home school teachers' meetings. But aside from that, other issues of communal importance were raised. The mothers were oriented in sanitation practices, health and hygiene, better child care and the importance of soakpit latrines, and a few started coming for literacy classes with the home school teachers as well. Through three home schools soakpit construction started in the mohalla, completely managed by the teacher and the mothers, with technical support from the project.

Establishment of a formal organization

For the purpose of registration as an NGO, funds were needed. These were raised by the teachers through a contribution of Rs 5 per month. One girl made a room available to be used as an office, a board was elected, and papers were prepared for registration. After two years, in 1985, the Home School Teachers Welfare Organization (HSTWO) was registered at the Directorate of Social Welfare.

The organization had a formal structure and was managed by representatives elected by the teachers. Continuous support was given by a social worker from the project, who advised on management, bookkeeping and educational issues. It was the first women's organization at katchi abadi level in the country. The NGO was essential for the teachers because it provided:

- Protection to the teachers.
- Formality to the home schools.
- A degree of control over the level of teaching.
- A forum to discuss problems and issues.
- Backing for teachers who wanted to continue their own education.
- An institution which prospective teachers could turn to.
- A local-level organization which could be supported by outside technical assistance.
- A means to spread the concept of home schools to other areas outside Baldia.

Expansion to other areas and other activities

In 1986, the HSTWO was requested to assist in establishing home schools in three areas nearby. Training of selected local girls was carried out by HSTWO teachers, after they themselves had been trained for this purpose by the project staff. As a

result, 47 home schools were started and support to these teachers was given in the regular HSTWO meetings in Baldia, which they attended.

The teachers gained experience and confidence through these activities. Because of their commitment to the development of their communities and their public recognition as teachers, they were able to motivate many other women to improve their lives and those of their families through education, sanitation, health care and moral support. In due course, a number of new activities were initiated by the HSTWO:

- A primary health care programme.
- An exhibition to display the drawings and other artwork of home school children which were sold to provide additional funds.
- A sewing and knitting centre, financed by the Habib Bank Trust (Box 16);
- Adult literacy classes for women.
- English and mathematics tuitions given by a tutor hired by the HSTWO.
- English conversation for the teachers given by a volunteer from the city.
- Scholarships for education given to a few girls from the community, financed through the HSTWO.
- The involvement of teachers in election campaigns.

Box 16 Establishment of a handicraft centre

The handicraft centre was established to facilitate income-generating activities for the women in Baldia. The centre was organized by a home school teacher and provided women with training in handicrafts, such as sewing, beadwork, henna painting etc., and adult literacy classes. Many of the women who were trained initiated similar classes in their own mohallas or worked for factories through the handicraft centre. In december 1990, six women were employed by the centre, while a total of 150 women had been trained during the past years. Although funds for the rent of the accommodation and the purchase of equipment were provided by the Habib Bank Trust, all other expenditures such as salaries and working materials were covered by the tuition fees paid by the women.

4.5 Achievements of the home school programme

Immediately after the first teacher's training in June/July 1982, 40 home schools were opened in 15 mohalla's, thereafter increasing steadily (Table 4.1).

Table 4.1: Growth of home schools between 1982 and 1985

PERIOD	*MOHALLAS*	*SCHOOLS*	*TOTAL PUPILS*	*BOYS*	*GIRLS*
August '82	45	40	696	315	381
August '83	17	48	1233	599	634
August '84	18	56	1382	638	744
August '85	18	64	1466	689	777

At the end of the project in 1986, some 64 home schools were functioning, with a total estimated number of 1600-1800 pupils (Box 17).

Educational performance

Although teaching was didactic and through rote learning which emphasizes learning things by heart, the standard of the home schools compared very well with that of government schools in the area. This not only became clear by the fact that children coming from a home school were quite easily admitted in the higher classes in government schools, but also through a test given during the evaluation carried out in 1988. The children from home schools were found to score much better than those from government schools.

The reasons for this better accomplishment was probably mainly due to the smaller number of pupils in the home schools compared with the government schools, which had an average of about 30 pupils per class. Moreover, the home school teachers were much more motivated to teach, as they wanted to serve their community. The fact that their classes lasted only two hours a day, instead of the four hours in government schools, apparently did not have an effect on the level of learning.

Box 17 Functioning of the home schools

Most home schools had between 10 and 20 pupils, ranging from the age of 5 to 12. These were divided into different classes, each following their own curriculum in accordance with the curriculum given in government schools. Some schools had more than one shift a day, and all shifts lasted for two hours. The times of the sessions were determined by the teachers, but in consultation with the parents of the children.

Registration and record keeping

Children could be admitted throughout the year, without an admission test. Although written tests were given periodically as well as an annual examination, there was no standard or specific timing for these tests. Promotion was based on the annual examination, but again there were no formal rules and the decision on promotion was left to the teacher. Although the HSTWO was expected to provide a more structured schedule for the home schools, there is no evidence that this was carried out.

The teachers had to maintain records of all their pupils and an attendance register. But not all schools seemed to have this; at the time of the evaluation 82% were able to show these books.

Position of the teachers

Of the 57 home school teachers interviewed in the evaluation survey, 88% were below 24 years of age and most were unmarried. Eighty-two percent had an education of matric and above, and 75% had received a training through the project.

The tuition fees ranged from Rs 5 to Rs 10, but almost 20% of the pupils did not pay a fee at all, because the parents could not afford it. This showed that the teachers did not conduct their classes for financial gains; the amount of effort taken to do the daily teaching was not in proportion to the financial benefits.

Most girls were taught because they liked to be active in their community and because it gave them a sense of self esteem. They wanted to stimulate education for girls and to avoid that younger girls had to face the same problems to get to school as they had experienced. Many teachers continued their own education, using the money earned in the home schools. Resistance against further education from the parents of the teachers, seemed to have vanished when they realized how the status of their daughters had improved.

Because of the visits to families within the mohalla, the mother's groups and the contacts with the sanitation committees, the home school teachers became very respected in the neighbourhood and gained an influence which had been unthinkable for young unmarried women before the home schools started. Some teachers were even approached to campaign for political parties during national elections.

4.6 External funding and community contributions

UNICEF funds were used for the following home schools activities during the project:

- training of the teachers;
- salary of a social worker;

- provision of teaching materials such as slates, blackboards, books and charts;
- provision of a darri (mat) to each school for the children to sit on.

It was not clear whether the project kept providing teaching materials to the home schools after the initial donation at the start of the home school. The teachers and parents probably had to replenish these themselves.

UNICEF spent a total of Rs 74,334 or US$ 5466 on home schools. For a total of 64 schools with 1600-1800 children, this implies a total average cost of Rs 1161 per school and Rs 41-46 per pupil.

The community contribution to the home schools has been estimated at an average of Rs 710 per school per month, including school fees, cost of materials, water and electricity charges, etc. Over the total project period, the parents contribution has an estimated value of Rs 675,760 or US$ 49,688, nine times the amount invested by UNICEF. The parents' contribution covered the following:
- salaries of the teachers;
- space for the home schools;
- utilities in the home schools;
- stationery;
- school maintenance and management.

4.7 Home schools in 1990

After the project ended in 1986, the home schools continued to function, organized through the HSTWO, while financial and technical support was mainly provided by BUSTI through UNICEF. Technical support was given through the social worker who had been working with the home schools in the project since 1982. However, due to difficulties with BUSTI, she left the HSTWO in 1988. Up to that time, the home schools were functioning well. There were 73 schools in operation, with an average of 38 children per school.

Although the HSTWO was run by the teachers themselves, they had difficulty in managing their organization, and BUSTI did not provide the necessary backing. On the contrary, the situation between the two NGOs deteriorated to such an extent that the HSTWO broke with BUSTI in 1989 and thereafter received direct financial support from UNICEF.

In April 1990, the social worker returned to work with the HSTWO, funded by UNICEF, to assist in the management. She made an analysis of the actual situation and found that only 14 home schools were functioning under the aegis of the HSTWO. Many schools were closed down for the following reasons:

- The monthly visits to support the individual schools had stopped.
- HSTWO concentrated on its own problems and did not coordinate with its members. Monthly meetings had stopped.

- The teachers did not receive technical or material support and were left to run their schools alone, and many were not able to face the difficulties by themselves.
- No basic training for new teachers or refresher courses were arranged.
- No steps were taken by the management of the HSTWO to deal with the complaints of the members.

Besides this, there was friction within the HSTWO, because two women from the board had gone unchaperoned to Quetta to advise in the setting up of home schools in that city. The fact that they as young unmarried women had gone by themselves was not acceptable in the community. Because they were officials in the HSTWO, their conduct reflected negatively on the other teachers. Therefore, the other teachers wanted to distantiate themselves from the organization, although they not necessarily also gave up their schools. The extent to which home schools were functioning outside the HSTWO could not be established, but a number of new schools had started to operate successfully.

By the end of 1990, the home school section of the HSTWO was beginning to shape up again, with 26 schools with 450 pupils in operation and 7 more expected to reopen soon. The teachers felt that their teaching practices had to be adapted more to modern developments, and a training course was organized with the help of an outside education advisor. Thirty women attended the course, most of whom were either already teaching or planning to start a home school. It was planned to have two learning coordinators attached to the HSTWO to supervise and improve the general operation of the schools and especially the level of instruction. This shows that the home schools are a very viable approach to primary education in low-income areas, but that professional support is needed for the teachers to enable them to function and to face the difficulties which they encounter not only in teaching but also in the management of their schools.

Latest developments

In 1991, 64 home schools were functioning again in Baldia under the aegis of HSTWO. Besides the efforts for the home schools in Baldia, the HSTWO assisted in the establishment of home schools in other katchi abadies. This resulted in 86 home schools in one area and 36 in another. In these areas, the teachers also formed NGOs along the model of the HSTWO. The individual NGOs formed a Council for Non Formal Education which is located in the HSTWO office in Baldia.

5. *Primary Health Care*

During the mothers' meetings in the home schools, the lack of health care facilities was brought up. To assess interest in primary health care, four home school teachers were given training in immunization. In one year about 1500 children were vaccinated and interest was growing. Thus, in 1985 a programme was started which included growth monitoring, immunization, preparation of weaning foods, nutrition and oral rehydration. About 60 home school teachers were trained in two batches in collaboration with the government immunization programme. At a later stage, thirteen traditional midwives were trained to provide a link for pre- and postnatal care. The primary health care centres operated from the home schools for two hours per week. A doctor attended the centres for minor illnesses and referral. UNICEF funded the training and the equipment for the centres; the government provided the vaccines and the Habib Bank Trust paid for the doctor. The community paid in the form of a registration fee and a subscription fee of Rs 5 per month per family.

5.1 Another development spin-off: PHC pilot project

During the mothers' meetings held in the home schools, the absence of children from the schools due to illness and the absence of mothers due to their children's illness was noted, and discussions followed on the need for a health care programme in the community.

As with the home schools, the health care programme was started on a trial basis in 1983. Because the Department of Social Welfare conducted immunization trainings for non-medical people, it was decided to start the programme with a vaccination campaign. Four home school teachers, selected by the community organizer, followed the training and were provided with vaccine by the same department. The vaccines supplied were against TBC, measles, D.P.T. and polio.

Each teacher started vaccinating children, not only from her own home school, but also from other home schools. In one year, about 1500 children were vaccinated and the numbers continued to grow. Two members of the project team monitored immunization progress and assessed the attitude of the community. The teachers were pleased, as this activity added a lot to their status and that of their organization. The mothers were pleased as they did not have to go a long way to get vaccinations in a government centre. In 1985 it was decided to develop the preventive health care into a proper programme as part of the Baldia Soakpit Pilot Project. There seemed to be enough interest in the community to support the services, both in attitude and financially.

5.2 Objectives of the primary health care programme

No explicit objectives were stated in a project document, but the programme had the following inherent objectives:

- To introduce growth charts as a way to monitor the health of children under five.
- To introduce oral rehydration solution (ORS) for mothers to use when children had diarrhoea.
- To promote breast feeding.
- To make people aware of the importance of nutrition for health, especially for children and pregnant or lactating mothers.
- To provide immunization services against illnesses such as tuberculosis, measles, tetanus and polio.

5.3 Training of home school teachers as PHC workers

The PHC programme was introduced by training thirteen home school teachers as primary health care workers. Teachers were selected for training for a number of reasons. Firstly, they were known and respected in the community. Secondly, they had a well-defined target group for their programme, consisting of their pupils and their mothers. Thirdly, the PHC centres could easily be established in the same houses where classes were conducted. Fourthly, the HSTWO as an organization was interested to include primary health care in their activities. In addition, the selection of home school teachers ensured a coherent set of interrelated components in the project in the community.

Training was based on key interests brought forward in the mothers' meetings and consisted of the following subjects:

- Maintaining of growth charts and interpreting of results.
- Preparation of the oral rehydration solution.
- Promotion of breast feeding.
- Preparation and use of weaning foods.
- Components of a balanced diet.
- Importance of proper nutrition for pregnant and lactating mothers.
- Vaccination techniques.
- Immunization schedule.

The training was given during a period of one month at the project office and was carried out in collaboration with the government immunization programme. In July 1986, a second training was given to most of the other home school teachers, which was also attended by the earlier trained teachers as a refresher course.

5.4 Creation of local support structures

To ensure proper support for the health care workers and to supervise their performance, a female doctor was needed. It took some effort to find a doctor who was willing to work with a focus on preventive health rather than curative care. The programme was started officially in April 1985. A description of the work of the 13 primary health centres established under the programme is given in Box 18.

Box 18 Primary health care activities at home schools

The health care centres attached to part of the home schools were open once a week for two hours. Each centre had a PHC worker, who was also the home school teacher. Patients were those women and children who were registered in the clinic and paid a fee of Rs 5 per month for the whole family, covering all expenses. Vaccination and growth monitoring was done by the PHC workers, who were also expected to ensure that the registered families visited the clinic regularly for proper monitoring. The vaccines were kept in the refrigerator of the project office and brought to the centres at their opening hours. The doctor visited two centres a day, covering all 13 centres each week. Her functions were limited to referral to hospitals or limited prescriptions for medicines for minor illnesses. Advice and counselling on family planning was given if a patient asked for information. In addition, the centres promoted the sanitation programme and emphasized the importance of personal hygiene and a clean environment.

Because many of the registered women were in their childbearing age, the need to include pre- and post-natal care soon became clear. Births were usually attended by traditional birth attendants (dais) and it seemed logical to establish links with these women. The PHC workers each identified a traditional birth attendant, working in their mohalla, who was interested in additional training. The dais followed a course in the Health and Social Welfare Department and afterwards a system of mutual referral was established between the PHC centres and these dais. This was especially important to facilitate growth monitoring and immunization for newborn babies. The support of the dais for the PHC programme was also essential because they had considerable influence within the community on beliefs and attitudes vis-a-vis health practices.

5.5 Attitudes to preventive health

One of the major problems faced in the acceptance of the PHC programme was the fact that the activities were preventive rather than curative. Most people wanted medicines when they were ill and if they were not ill, they saw no need to visit a health care centre. Weakness, malnourishment or diarrhoea were not considered an illness and therefore not a reason to go to a health centre. This applied specifically to women, who were very prone to neglect their own health. Because people were not used to preventive health care, they were suspicious of the effects. If a baby would get ill after having been immunized or weighed, this was easily contributed to the inaptitude of modern health care. Thus, careful explanation of the various activities was absolutely necessary (Box 19).

> ***Box 19 Adoption of preventive health care***
>
> *"It wasn't easy to get women to come to the centres. We spent hours explaining the benefits of immunization and its importance. Once a whole mohalla got measles, so we persuaded people to let us immunize them and prevent it from spreading. This helped us, as people then saw the value of our work" (account of a PHC worker).*

Another constraint was the fact that the young women who were PHC workers did not easily visit households in the community. Although they were required to do so, many parents did not agree to give their daughters this freedom of movement, thereby reducing the possible impact of the services.

5.6 Financing of PHC activities

UNICEF funded the training of the PHC workers and all other costs related to the programme, such as immunization booklets, charts, registration books, scales, needles and other equipment. The cost of this was Rs 8,195. In 1985 and 1986, when the PHC workers and the dais were trained, Rs 56,960 was spent on training. It is not clear exactly how many people were trained.

The Habib Bank Trust, a local welfare oriented NGO, paid the salary of the doctor and the vaccines were provided free of cost by the government. The HSTWO car, funded by UNICEF, was used by the doctor to visit the centres and to transport the vaccines.

The communities' inputs were given in the form of registration fees and a subscription of Rs 5 per family per month for each family registered at the centres. The community also provided the space for the clinics.

5.7 Results of the programme

In February 1986, 12 PHC centres were in operation, attended by 13 PHC workers. They had a registration of 990 mothers, while 2003 children were regularly coming for growth monitoring. At first registration, 63% of these children were malnourished. This percentage had been reduced by half after the first half year of operation. Immunization services were very much in demand: 1071 children completed their immunization in this period, while many more were in the process. In addition, 80 mothers were immunized for tetanus. Because the PHC had only be functioning for about a year at the end of the project, not much information was available on the development of this component. However, in 1988 the Aga Khan University was hired to carry out a survey on the functioning and use of the PHC centres for the evaluation of the Baldia project. The following information is based on the results of this survey, which was carried out in ten centres.

Growth of service outreach

In July 1988, 20 centres were in operation in Baldia with a total of 1120 mothers and 1180 children registered. These included the twelve which started in 1985. The rest were established at a later date after a second training held in July 1986. In the ten centres in the survey, registration numbers varied considerably from centre to centre, with a range from 16 to 173 mothers and 12 to 220 children (Table 5.1).

Table 5.1: Growth of PHC centres and their outreach, 1985-1988

	1985	*1988*
Number of PHC centres	12	20
Number of PHC workers	13	20
Number of registered mothers	990	1120
Number of registered children	2003	1180

The number of registered users per centre depended most probably on the level of motivation activities carried out by each PHC worker within the community. It is not clear how many of the families who were registered actually paid their monthly registration fees, as records were not kept very well.

Immunization

Immunization was considered the most important activity of the centres, both by the PHC workers and by the beneficiaries. Of the latter, a 30% sample of 108 out of 360 mothers was interviewed. Each mother had received a card to record immunizations, while the centres had to keep a record system as well in order to keep track of subsequent immunizations to be given. These records were not kept in all centres, but those who had done so, showed a decline of 50% from the first to the third dose of D.P.T and polio vaccine. However, 82% of the beneficiaries interviewed during the evaluation had a complete immunization status, both for the mother and the children, pointing at inadequate record keeping rather than lack of follow-up of initial immunization.

Child growth monitoring and nutrition

The growth monitoring of children under five was the second most used service, but also here, record keeping was not done well, making it difficult to assess the activity. When the children were weighed, the PHC worker discussed nutrition with the mothers (Figure 5.1).

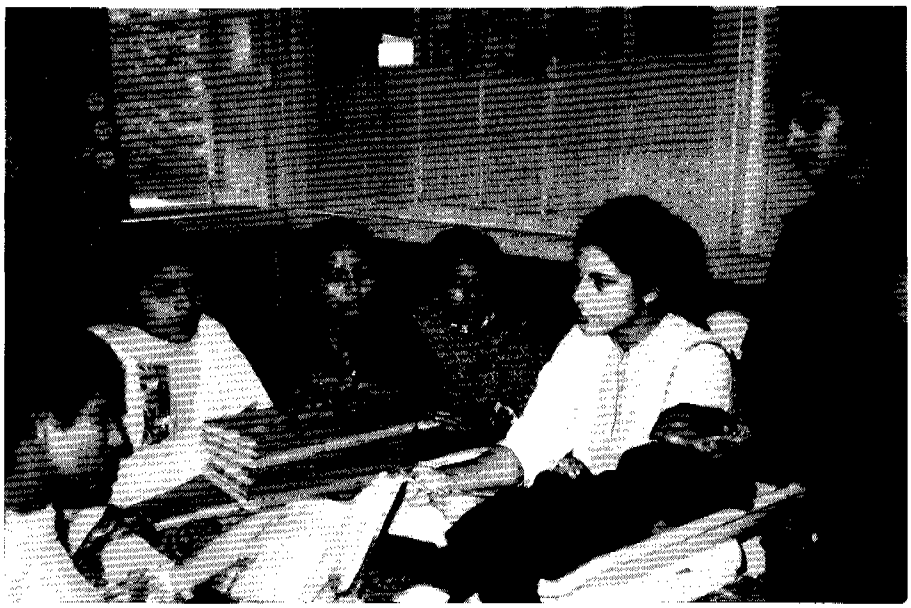

Figure 5.1: Health education at a primary health care centre

Although there was no indication of special activities to show mothers how to prepare nutritional and weaning food, recorded cases of malnutrition in children under five decreased from and original 63% in 1985 to 13% in 1988. This

6. *Technical and Institutional Impact*

The experiences gained in the Baldia project with the community-based approach and the various components which made up the project, were used by agencies at national and municipal level, by NGOs and community organizations and by international agencies. A number of projects incorporated these experiences and adapted them to suit local conditions, while some projects combined activities of the Baldia project with the small-bore sewerage technology which was developed in the Orangi Pilot Project (OPP). Within Baldia itself, local community organizations used the experience and confidence gained as a result of the project to initiate other development-oriented activities.

6.1 Introduction

One of the reasons for having a pilot project is to experiment with different technical systems and social approaches to come to a model which can be used on a wider scale in the same area or can be used as a model for similar developments in other places.

A pilot project should never be replicated without adaptations to the local circumstances. In the Baldia Soakpit Pilot Project, this was done within the project itself by using Turk Colony as a demonstration area. The flexibility was such that in all other mohallas, an approach adapted to suit the local social and environmental conditions was possible.

A way to measure the impact of the Baldia project on a wider scale is to see to what extent the approach is used in other projects in Pakistan, at national, municipal and community level.

6.2 Incorporation of experiences in the national policy

National strategy development

In 1988, a National Conference on Rural Water Supply and Sanitation was held in Islamabad with the aim to develop a national policy for the sector. Preceding this conference was a workshop for provincial and federal officers to review case studies of projects carried out in the sector. One of the projects under review was the Baldia Soakpit Pilot Project. Although Baldia is not a rural area, much of the experience is probably more applicable to rural areas than to inner city low-income areas, where densities are much higher and the population is less homogeneous.

The national policy incorporated key lessons from the case studies. At the end of the conference a proposal was made for government strategy in the water and

sanitation sector, called the Islamabad Declaration. This strategy was meant to ensure sustainability and assist resource mobilization through enhancing the role of the beneficiaries in planning, financing and managing their services, and also to ensure maximum benefits through the integration of water, sanitation and hygiene education. The strategy included the following points for incorporation into national sector investment guidelines:

- Community involvement, with a special focus on enhancing the role of women, is an essential component in the strategy. Beneficiaries through constituted associations should participate in planning, construction, management and maintenance of schemes, and should finance, in cash or in kind, a part of the capital cost and all of the O&M costs.
- The integration of water supply, sanitation and hygiene education is also an essential component of the strategy to ensure improved health of the rural population. This will require close collaboration between sector institutions.
- Institutions must be strengthened and coordinated at all levels to undertake the challenges of the future. Multi-disciplinary training programmes should be established. Public Health Engineering Departments (PHED) must be strengthened and their social mobilization skills reinforced. The technical skills of both PHED and the Local Government and Rural Development Departments (LGRDD) must be strengthened. Both institutions must ensure closely coordinated operations, together with the Departments of Health, Education and Social Welfare. Expanded participation of non-governmental organizations (NGOs) should be encouraged and supported.
- The private sector plays a key role in sector development, which must be further strengthened through technology upgrading, training, marketing support and credit assistance.
- Technology choice will reflect the different environmental conditions and water resources constraints across the country, but the principle that technologies should be affordable and sustained by the beneficiaries should be adopted.
- Service levels should reflect the expressed demand of the beneficiaries, who should receive the service level that they desire, can afford, and can sustain in the long term. In order to accelerate equitable coverage, the government should assist in the provision of a basic level of service (Pasha and McGarry, 1989).

The Draft Strategic Provincial Investment Plan which followed in 1989 had the outcome of the National Policy Conference as a basis. This was reflected in the objectives of the proposed investment strategy which were:

- Increased coverage of water supply, human waste disposal and drainage facilities.
- Improving the impact of investment by ensuring that the systems work longer and by giving the recipients the basic knowledge necessary to allow them to maximize the potential benefits of the new systems.

- Assisting in developing new methods for the existing departments by strengthening the institutional, technical and community development capacity so that durable, efficient and sustainable water supply and sanitation systems can be installed with the operation and maintenance responsibility delegated to the recipient communities.

Although it would be unrealistic to say that the experiences in Baldia were the sole determinant of the direction of the Islamabad Declaration and the Strategic Investment Plan, they certainly have contributed to the community-oriented focus of the new policy. This was also ensured because the community organizer of the Baldia Soakpit Pilot Project was chief sociologist at the national level during the preparation of the Strategic Investment Plan. Thus, the social field experiences were used in the subsequent policy development. The importance given to participation of women in all stages of new water and sanitation projects also reflect the experiences of the Baldia project.

6.3 Influence on KMC policy

Although KMC so far did not carry out any on-site developments and hence was not involved in construction of pour-flush latrines in low-income areas, the KMC certainly has drawn on the experience in Baldia. KMC is facing problems in the whole city of Karachi with regard to sanitation and it has realized that part of these problems are caused by lack of community involvement in improvements carried out by the agency, resulting in lack of interest in the maintenance of the infrastructure. Realizing the level of success of projects where the community was involved, KMC decided to develop a pilot project in Mustafabad in which the community was to be involved in construction and maintenance.

KMC pilot project in Mustafabad

BUSTI, as the NGO which developed out of the Baldia project, was requested to assist in setting up an approach for motivation, education and community participation and to function as a bridgehead between KMC and the community. BUSTI made a proposal, but due to their internal problems was never able to actually get involved in the pilot project. However, BUSTI stressed in the proposal that KMC had already completed drawings, details and tender documents and a contractor had already been given a work order without the community being involved at all.

The latter is characteristic for the general approach of most government officials, who have no experience in participatory projects. Although the realization was present that the community had to participate to make a project sustainable, to actually create conditions where this became possible was another matter and required the understanding that community participation is more than involving the formal leadership of a community (Box 20).

Box 20 Limitations of working through the official leaders

KMC officials felt that community involvement was guaranteed through the system of local councillors who have a yearly budget for carrying out improvements in infrastructure in their respective areas. The councillors yearly proposed what they wanted to do with their budget and it was assumed that this choice was based on priorities within the community. Although this could be true to a certain extent, it was often a political choice as well. The councillors were elected every 5 years and were bound to opt for improvements which benefitted their political allies in the community rather than those of the opposition.

For large-scale infrastructural improvements, KMC did not work through the councillors. It was generally felt that KMC was not equipped to deal directly with the community and that a local NGO should be hired to function as a intermediary between KMC and the people. This point of view seems appropriate as long as KMC is willing to involve the NGO and the community in project planning and to allow influence on decisions concerning technology and approach. The latter would require a change in attitude and working procedures for most of the engineers, who have been trained to design according to standards which are not always realistic in low-income community setting. Adapting standards to local conditions, both financial, technical and social, is an issue which has proved to be difficult in many developing countries, as opting for lower-cost solutions, such as the pour-flush latrines is often regarded to be inferior.

Upgrading of sanitation in Baldia

At the moment KMC is carrying out sanitation improvements in Baldia. With a loan from the Asian Development Bank, shallow sewerage is being constructed in the whole area. The people in Baldia were very happy about these developments because they felt that existing conditions had improved to such an extent that especially the open drains were no longer acceptable.

For the community organization for the shallow sewerage, the KMC has involved an NGO, called OPP, which has been working for the past ten years in Orangi, a low-income area similar to Baldia. Because water supply in that area was better than in Baldia in 1981, it was feasible to construct small-bore sewers. The approach of the OPP was very similar to that in Baldia, in that it was also demand-driven. The small-bore sewers were constructed by the community with technical advice from the project. The communities were organized by lanes and management of construction, financing and maintenance was carried out by the lane committees. Thus, in the improvements for shallow sewerage in Baldia, the community will be advised to also select lane organizations. The sanitation

committees who are interested will be involved as well. As far as possible, the existing soakpits will be used as interceptor tanks with an overflow into the sewerage system. In fact, the soakpits had been designed in such a way that they could be upgraded at a later stage. In this way, also the effort people already had made for better sanitation can be used. It will also enhance the sense of responsibility towards operation and maintenance of the new sewer system and build on the proven level of awareness and willingness to contribute towards the improvement of environmental conditions.

It was interesting to note that none of the people interviewed in December 1990 by the authors, felt that the soakpit project had been a waste of money because sewerage was going to be provided at present. This showed that the project team had been able to convey the message that the soakpits were an intermediate solution to the sanitation problems at that time.

6.4 Ongoing development at community level

Development in many mohallas in Baldia did not stop with the construction of soakpits. Many of the soakpit committees and jamats undertook further development activities in their mohallas after sanitation improvements had become accepted. These organizations not only gained confidence in their own ability to solve locally felt problems, but also became aware of the possibilities of obtaining outside support for new community initiatives. A few examples will be given here.

The Maternity Home and Dispensary

The Turk Welfare Society, which had become a separate registered NGO, gained recognition within their community with the promotion and construction of soakpits. By inviting the mayor of Karachi along with UNICEF officials and other prominent persons to inaugurate new soakpit latrines, they made links with 'officialdom' and gained influence in the process. Thereafter, they started to pressure the government for more water taps, which were provided. They also constructed a water reservoir for use in times of water shortage. In addition, they assisted the KMC and the local councillor in the preparation of development plans, such as entitlement for leases, road construction and street lighting. They started a local newsletter to keep the community informed of developments.

When the need for a maternity home and a dispensary was expressed within the community, the Turk Welfare Society decided that such an endeavour was only possible in cooperation with the jamat. The jamat bought land and the Baldia project engineer helped to design the building. Through project contacts, the Canadian Mission Administered Fund was approached for financial assistance. They funded Rs 78,000, while the community contributed Rs 200,000 in cash. Over a period of two years, a two-storey building was constructed, mainly with community labour. The Maternity Home and Dispensary is at present successfully

operated, managed and administered by the jamat. The Turk Welfare Society now has ceased to exist and has become a section of the jamat in charge of development issues.

The Bismillah Mosque School

In 1984 soakpits were being constructed in a Pathan-dominated community in Rasheedabad, Baldia. The Pathans were very strict Muslims coming from the North West Frontier Province, and women were kept in the confines of their homes. If they went outside at all, it was in a burqa (a traditional garment which covers women from head to feet). The mosque was the first social institution of the community and the centre of all community socio-political activities. The mosque committee functioned as a kind of jamat and was elected annually. The soakpit construction was coordinated through this committee and 60 soakpits were constructed in the area.

Later, the committee expressed the need for a primary school. Because of the fact that so far education for girls had been considered unnecessary, there were no girls available in the area to start a home school. Thus, after consultation with the community organizer, it was decided that a school would be started in the mosque.

The Habib Bank Trust, a national NGO, had a simple and effective programme of mosque schools, operated through their local Bank branches. This NGO was approached with the help of the community organizer to support the Bismillah Mosque School. The NGO agreed to provide the salaries for the teachers, an incentive of Rs 10 per pupil and the stationery for the classes. The mosque committee provided the space and motivated parents to send their children to the school. When the school started functioning, 180 children attended of which 84 were girls: a major breakthrough in female education.

The introduction of this school was later used to initiate primary health care to the area. Since women did not come to the mosque, the fathers of the children were recruited to support the primary health care component. Meetings were held after prayers, illustrating a different channel used for promotion of the project.

The Population Planning Centre

In Camblepur Colony, the people and community leaders, who had been organized for soakpit construction, identified the need for health services. With the help of the community organizer, they contacted the Population Welfare Division and organized meetings with its officers and the leaders of the jamat. After a number of meetings it was agreed that a Population Planning Centre for health and family planning services would be set-up in which:

- The government would provide the staff.
- The community could appoint the lower staff for whom the government would provide the salaries.

- The community would provide at least three rooms for which a rent of Rs 1000 would be paid by the government.
- In exchange the jamat would provide management and support and would be accountable for the material and the medicines.

Thus, the community constructed three rooms using their own funds. However, the officer in charge of the Population Welfare Division then informed them that a rent of Rs 400 had been approved instead of the Rs 1000 agreed upon. This upset the community and also made them apprehensive that once the government took the property on rent, it might never vacate it. The amount of paperwork and documentation required also made the community reluctant to collaborate with the government. Above all, the lack of information on government policies and programmes was a key hurdle, as the community was not sure of their responsibilities and duties towards the government programme.

It took one year before the centre could be opened. But once it was functioning, the community was very satisfied and the centre was well used. This was remarkable, because family planning was not an accepted service. Traditional beliefs made people reluctant to adopt family planning and women were afraid their health would be affected. But when the first adopters (who were mostly women who had also been involved in the sanitation project) were satisfied with the service and did not show any adverse effects, others followed as well.

6.5 Impact on UNICEF-supported country programme

UNICEF has been using the experiences from Baldia in other projects in Pakistan. The programme for Urban Basic Services incorporated different components of the Baldia project in different cities. In some cities the sanitation technology was adopted, in others home schools were introduced, and in yet others PHC centres were set-up or a combination of these activities was introduced.

Urban Basic Services in Sukkur

In Sukkur, in the province of Sind, UNICEF selected three katchi abadies for project development. Among the objectives for the first year was the development of a plan for a demonstration project which covered activities for education, health and sanitation by the Sukkur Municipal Corporation (SMC) together with the communities. Specific activities which were based on the experiences in Baldia included the establishment of home schools, adult literacy training for women and the training of home school teachers as primary health care workers. Staff from the Home School Teachers Welfare Organization (HSTWO) were asked to assist in motivation and identification of home school teachers.

For sanitation, the technology proposed was small-bore sewerage based on the experiences of the Orangi Pilot Project (OPP) because water supply was sufficient

for this system. Over 80% of the households in the project areas had an individual tap. The advantage of the OPP technology over soakpits being, that the system also receives household wastewater, thus eliminating the necessity for a separate construction of drains.

The approach used for community organization was based on the experiences of the Baldia Soakpit Pilot Project. Where local organizations existed, SMC and the Department of Social Work encouraged their strengthening and involved them in the project activities. The organizations were expected to assist social organizers of SMC with the review and priorization of needs, the formulation of plans and the mobilization of community support and participation. Where local organizations did not exist, the community organizers identified mohalla leaders, both male and female, to assist in plan development. With the support of an NGO (OPP) and local leaders, the communities are currently financing the community level construction, following the model developed in Orangi. UNICEF and the SMC co-financed the drainage of a large lake which had formed in a low lying area of the city, as well as some other infrastructural improvements needed to complement the small-bore sewerage at community level.

A noticeable characteristic of this project is that UNICEF has made sure that the project is institutionalized from the beginning within the existing government structure. SMC is carrying out the project and linkages are established with other provincial agencies, including the departments of Health, Education, Social Welfare and Public Health Engineering, and NGOs such as BUSTI, HSTWO and OPP, for overall coordination and support. Thus, efforts are made to avoid the problems which were faced with the institutionalization of the Baldia Soakpit Pilot Project in an existing government structure.

Transfer of soakpit technology to rural areas

The twin-pit, pour-flush latrine from the Baldia project is being promoted in UNICEF's rural projects. Although there are no specific sanitation projects, the latrines are introduced along with handpumps. For every 300 households which are provided with handpumps, 5 to 10 latrines are also constructed as a demonstration. Whether this is an effective way to introduce latrines remains to be seen.

6.6 The Quetta Sewerage and Sanitation Project

Another project which built on the experiences from the Baldia pilot project is the Quetta Sewerage and Sanitation Project. The project is implemented by the provincial water and sanitation authorities for Baluchistan with the assistance of a Dutch firm. It consists of two parts: a water-borne sewerage system is being installed in the city centre, complete with transport main and wastewater treatment plant; in the peri-urban low income areas pour-flush double pit latrines are constructed, which at a later stage can be upgraded to be connected to the

sewerage lines which are installed in the city centre. This part of the programme is called the Low-Cost Sanitation Programme (LCS).

On the basis of a feasibility study carried out in 1984, a five-year low-cost sanitation programme was formulated for the construction of 14,000 double pit pour-flush latrines. A pilot phase was carried out from 1987 to 1988 to test the approach.

Pilot-testing in a new peri-urban setting

The Baluchistan Water and Sanitation Authority (BWASA) was responsible for the LCS programme. The pilot phase of the project was implemented through contractors that were selected by BWASA. Although it was acknowledged that implementation by the combined efforts of local masons, community organizations and households would yield more community participation, the preparation time required for such an approach, the ethnic composition of the target communities, and the inexperience of BWASA officials in working through the communities determined the choice for the contractor approach for the pilot phase.

During this phase, 100 demonstration latrines were installed within the different ethnic groups distributed over the various project areas. The main objective was to test technical, financial, organizational and socio-cultural aspects of the low-cost sanitation approach. The project team consisted of engineers and social workers from BWASA, assisted by consultants. The engineers supervised the contractors, and the social workers made contacts with the community, promoted the concept of pour-flush latrines and developed the hygiene education component.

Initially, households receiving the demonstration latrines were selected through the local councillors and chairmen of the Zakat (religious tax) committees, who also introduced and promoted the programme in the communities. Later, local community-based organizations (CBOs) became involved, especially in the promotion of the programme.

When the pilot phase was evaluated, it was concluded that the technology was received well, the hygiene education component had been effective, but the involvement of regular contractors had not been a success. The fact that response had been relatively high was attributed to the involvement of the CBOs. Therefore, in the next phase they had to be involved to a larger extent. The community organizer of the Baldia project was involved in formulation and implementation of the second phase and continues to be the advisor for the community development component of the project.

Shift to community-managed sanitation improvements

The organization for the second phase of the project entailed a three-level management structure. At the lowest level this consisted of the CBO, an existing traditional community organization which was willing to carry out the organization of sanitation improvements. Apart from the elected representatives from the

community, two male sanitation promotors (sanpros) and one female sanitation educator (saned) from the community were employed directly by the CBO (funded by BWASA) and trained by the BWASA project team.

In addition, each CBO had a mystrie (craftsmen) team of five masons from the community. After their training, the teams were licensed by the BWASA to ensure that quality, productivity and honesty were maintained. The CBOs made initial contact with the households and introduced the project. The local sanpros and the saned together visited households for motivation and education. Applications from interested households were screened by the CBO on the basis of a household survey. A loan could be given for the toilet and substructure, not for the superstructure.

At the second level of the project, six local reference centres (LRC) were established to monitor the work done at CBO level, especially by the sanpros, saneds and mystrie teams. Each centre served a number of mohallas and CBOs. Staff of the centres consisted of two sociologists (one male, one female), one engineer and a chaperon. Applications made through the CBO were screened and site inspection and selection of location was carried out by the engineer together with the mystrie team. After construction, the work was certified by the householder, the CBO and the technical staff of the LCS, who also paid the mystrie team.

At the first level the BWASA was responsible for overall management. Their project team consisted of a technical sanitation coordinator, two senior sociologists (one male and one female) and two persons for monitoring. They were assisted by consultants. Apart from the overall management, the project team was responsible for training in community management, hygiene education, construction, monitoring at all other levels.

Progress and experiences

The second phase has been in operation for more than two years. Although no evaluation has taken place, monitoring was done on a regular basis and project implementation and organization were adapted regularly to improve performance. One of the major adaptations was the shift in the role of the CBOs when it was realized that all CBOs were composed of people from one tribal background each, while the composition of the community they had to cover was more heterogeneous. Because the tribal communities do not cooperate very well, it had the effect that the project was only being carried out in the houses of people from the same tribal background as the CBO. Thus, the role of the CBO was changed from management to promotion and support, while the saneds, sanpros and mystrie teams became attached to the who stood above the tribal differences.

Because contractors were no longer involved, the cost of the latrines came down. Working with local mystrie teams sometimes proved difficult, because not enough masons were available in the communities. The CBOs had difficulties in collecting loan repayments and therefore this task was carried over to BWASA. Household contributions were either collected by the local reference centres or deposited directly into the project account at a local bank. Cost recovery was about 80%.

In principle, the approach was made flexible, so that adaptations could be made in each mohalla, thus the role of the CBOs could be more or less active, depending on their ability and willingness to be involved. Experiences so far showed that local management could not be a ready-made blueprint, but had to evolve during the programme.

Evaluation will be required to determine whether the reduced involvement of local organizations and the increased role of the local reference centres is beneficial, both in view of the direct project objectives of large-scale installation, use and maintenance of pour-flush latrines and more long-term developmental goals of stimulating on-going improvement within the katchi abadis concerned (Table 6.1).

Table 6.1: Shift in degree of community involvement during the project

Phase I (pilot)	*Phase II (initial)*	*Phase II (revised)*
government social workers promote	local organizations promote	local organizations promote
	local organizations employ local promoters, educators and masons (with project funds) and collect and manage household contributions	government reference centres employ local promoters educators and masons and collect and manage household contributions
local councillors select beneficiaries	local organizations select beneficiaries, government reference centres screen applications	direct application by beneficiaries
contractors construct latrines	local masons construct latrines	local masons construct latrines
government social workers give education on maintenance and use	local promoters and educators give education on maintenance and use	local promoters and educators give education on maintenance and use
government engineers supervise technical aspects	government reference centres supervise and monitor technical and social activities through integrated teams	government reference centres supervise and monitor technical and social activities through integrated teams
	project management team manages, supervises and monitors overall project and gives training	project management team manages, supervises and monitors overall project and gives training

7. *Lessons Learned*

The Baldia project followed an approach which is now being advocated on a wider scale to promote sustainability of improvements. The key lesson was that the approach had to be flexible, both in technology and in organization, to be able to adapt to local conditions. Security of tenure, a certain level of community organization and a regular source of income were conditions which made the approach possible. The demonstration of the new technology proved essential in the acceptance and promotion of the system from one area to another. It also facilitated the selection of new mohallas based on demand. The participation of the communities in planning and implementation not only stimulated experiments to improve the design of the soakpits, but also gave them the confidence to initiate other activities. The institutionalization of the project as a whole was a problem because it was superimposed and not a gradual process. The local organizations which existed before the projects were able to continue the development efforts, while the new organizations needed a longer support from outside. The project was found to be replicable in the approach and in the home school system, while the sanitation technology was only applicable in areas where water supply was insufficient for the sewerage technology.

Preconditions for a community-based approach

A number of conditions existed in Baldia, which to a large extent determined the viability of the project approach. First of all, the residents had security of tenure, because Baldia was the first settlement to be improved under the new law for improvement and regularization of low-income settlements. Without security of tenure, people would probably not have been willing to invest in their property. In addition, the proportion of rented houses was very low and most residents owned the house in which they lived.

Secondly, the mohallas had a stable and homogeneous population. They had traditional community organizations which represented the whole community. Even when these organizations were not interested in becoming involved in the project, they supported other groups in the community to establish sanitation committees. The experience in the Quetta project showed that if the community organization does not represent all groups living in the area, community management may not be viable.

A third factor of influence were the socio-economic conditions. Although many people were poor, most had a regular source of income. Those who were not able to finance their own latrine were subsidized by the project, but the majority only received technical assistance. The home schools and primary health care services were also financed with community contributions.

A final important condition was the presence of a legal framework in which the project could operate, and the attitude of the municipal authorities. Although they were not directly involved in the project, they were represented in the supervisory committee and some municipal departments supported a number of activities in the project such as training of primary health care workers and provision of vaccines.

Identification of factors for motivation

Sanitation is rarely a priority for low-income communities, which makes it very difficult to introduce sanitation improvements. This was also the case in Baldia. Yet, at the end of the project, a latrine coverage of 80% had been reached. The project was successful because the community organizer was able to motivate the community on the basis of the problems they experienced with the existing sanitation systems. These problems related to the dependency on the sweepers for the emptying of the bucket latrines, the presence of faeces in all alleys and the cost and technological problems of the traditional pits. The demonstration latrines proved a solution to all of these problems and were therefore acceptable. Improvement of health was not used to motivate people for sanitation improvements, although this was the overall objective of the project. The health aspects were emphasized when the requirements for operation and maintenance of the latrines were discussed during construction and at a later stage also through the home school teachers and primary health care workers.

In the Quetta project, motivation for latrines was mainly based on status and therefore this aspect was used for promotion. However, after the pilot phase, it was realized that most latrines had been constructed in the guest area as a status symbol and convenience for visitors; the women of the household never entered that area and consequently did not use the latrine. But by then the technology had been demonstrated and accepted, while hygiene education messages were aimed at the necessity of latrine use by all household members. In the second phase of the project, latrines were only subsidized if they were located in the family area.

Allowance for sufficient lead time

In most water and sanitation projects yearly targets for implementation are set at the start of the project. Unless these targets are low in the beginning, it will be difficult to work with a community-based approach. The Baldia project showed that such an approach required a long lead time before implementation could take place. It took months of discussions and demonstration before the communities were ready to become involved to such an extent that they organized sanitation committees, which were to be responsible for motivation and implementation.

A long lead time also proved to be necessary in a pilot project for community-based rural sanitation in Lesotho, Southern Africa. Here, the construction target for the pilot phase of three years was a modest 400 latrines.

This target was surpassed by 50%, but almost two-thirds of the latrines were built in the final year, underscoring the need for sufficient time for the community to get interested and organized.

The testing and monitoring of different approaches

An important element in the first phase of the pilot project was the testing of different approaches in different, but comparable communities. One approach was purely technical without participation of the community or beneficiaries; the other was a process to identify interest in the community, to involve them in beneficiary selection and to construct the soakpits together. The first approach resulted in technically sound latrines, the second in community interest in sanitation. After the first phase, the positive aspects of each approach were kept, resulting in a combined socio-technical organization.

When the first phase was over and implementation started on a larger scale, a monitoring system was developed and adapted at a later stage. But the project lacked a proper monitoring and information management system to guide progress and performance and to provide information on the cost of the different components of the project. The field staff had no experience with this kind of system and the project team did not include a person who had the responsibility for this kind of management.

The viability of a community-based approach

One of the key lessons of the project was the viability and effectiveness of a community-based approach. Although involvement of community organizations required time, they were more effective promotors than outsiders could ever have been. Not only because they knew the people in the community, but also because the people believed that if their own organization supported a new technology, it would probably be suitable.

The approach necessitated identification of existing local community organizations at a very early stage. These organizations had to represent the community and not a political party seeking influence, because this would have meant party politics above community interests. The consent of the traditional organization was needed, even when it chose not to participate, to ensure support and avoid obstruction.

A key issue in the community-based approach was the need for good communication. It became, for instance, obvious that when money was involved the initial trust of the community turned into mistrust. Lack of information made people suspicious and this could only be solved by making the responsibilities of all parties involved very clear in a public meeting. Lack of communication between the two partners in the project, the Jaycees and the Karachi University, also led to problems several times. Here, responsibilities of each partner were not properly defined or unrealistic.

The need for demonstration of the new technology

Because the experience with the traditional soakpits was not very positive, people were not convinced of the appropriateness of the improved type of soakpits. It was therefore necessary to construct demonstration soakpits to show the new technology. The Karachi University team opted for demonstration soakpits in the poorest households in the mohalla, involving the community leaders in the selection of these households. In this case this approach was successful, but selection of the poorest in a community may not be desirable in all cases. Firstly, these households could be offended by the selection, and secondly, demonstration of a low-cost technology in such a household may have the effect that the system is considered suitable for the very poor only and below standard for other residents. Selection of an influential household in the community for demonstration would prevent this problem and therefore may be more effective. But this approach carries the risk that people who could afford to construct a soakpit by themselves, benefit from the subsidy, while the poor people in the community may not automatically be convinced of the suitability for them. Thus, the positive and negative aspects of each approach should be discussed and weighed with the community organization in each new area.

The project showed that demonstration latrines were needed most in the initial years. After the sanitation committee in the first area was fully convinced of the appropriateness of the design and the community at large had accepted the new technology, the need for demonstration gradually diminished. In later years, residents of new mohallas were taken to see the pits already constructed in other mohallas. The fact that those who already had soakpits were pleased with them, was enough to motivate new people for construction. This same phenomenon was experienced in the Wanging'ombe sanitation project in Tanzania in 1982.

Community and beneficiary selection based on demand

One of the interesting features of the project was the method for the selection of mohallas for inclusion in the project. The following two criteria were used for this selection:

- For a mohalla to qualify for inclusion in the project, it had to contribute to the cost of the project; in addition, its contribution had to be such that the per capita subsidy for that community or the net per capita cost to the project should not exceed Rs 500.
- Prioritization was based on community demand, reflected in per capita contributions to the project cost: the lower the level of per capita subsidy, the higher the priority accorded to the mohalla.

This was basically a demand-oriented approach to community selection for participation in the project. It was a transparent and efficient method of community selection which avoided political interference. Moreover, it stimulated community

organization because the sanitation committees had to decide which households would get what level of subsidy, keeping the interest of the whole community in mind. It also stimulated experiments to bring down the cost of the soakpits, because the lower the cost, the more people would be able to receive a subsidy. The result was that at the end of the project, the community had contributed about three times as much for the construction of soakpits as UNICEF.

Community participation in planning and implementation

The community participation in planning and implementation has led to a number of interesting results. From the start, the technology was adapted to local conditions. The masons introduced the 'tandoori-oven' shaped pits, which not only provided a better base for the slab than the original design, but the construction technology was already known and therefore easier to implement. It also reduced cost because the diameter of the slab, made of expensive reinforced concrete, was reduced. A second adaptation was the off-set pit, which enabled people to use the superstructure they already had for their bucket latrine. It also enhanced the confidence of the masons and the community in their own knowledge and instilled a sense of ownership and pride, providing a basis for proper maintenance.

The confidence gained also led to the initiative of further development activities such as the home schools, the primary health care, the maternity clinic and the provision of water taps. The community organizations became aware that if they had the capacity to organize the community to contribute and participate in certain activities, it was possible to approach government departments or NGOs for funding or other assistance. This is one of the major contributions of the project to ongoing development.

The impact of participation of women

In assessing the impact of the participation of women in the project, the context of the traditional Pakistani Muslim society has to be kept in mind. In this society, women are generally confined to their tasks at home and are not actively involved in development activities at community level. As a woman, the community organizer was able to break these barriers and involve the women in the sanitation project. Of course, this was a slow process, but the women became self-confident to the extent that they acted as technical supervisors and motivators for improved sanitation.

The activities of the female organizer also showed the men that a woman is capable of doing technical work and managing a project without losing respect for traditional cultural values and religion. This eventually led many of them to accept a situation where women were involved outside the domestic sphere in an effort to develop the community. Of course, there were degrees in this acceptance, depending on the social and cultural flexibility of the (ethnic) community.

The impact has been even more marked in the home school and primary health care components of the project, in which women were the target group both as implementors and recipients. Young girls who were not allowed to leave their houses, now have schools and PHC centres in their homes. They are accepted as resourceful, confident and responsible women who are vital for the development of the community. In the process they became more independent as the nominal income they earn gives them an element of freedom from economic dependence on their families and pride in being able to contribute to the family expenses. Many teachers related that decisions on their lives are no longer made for them but with them, which gives an indication of the status and position they have acquired within the family. Their functioning has had a direct effect on other women in the community. Small girls are able to get an education in the home schools and their mothers are reached through the mothers' meetings and the PHC centres. In this way a web of support from women to women has been created enhancing their influence on their own lives and on community development.

Functioning and sustainability of soakpits

Most soakpits are still in use and functioning well. The quality of construction was such that not many problems in operation and maintenance have been encountered. One of the reasons for the good quality was the involvement of local masons in the construction. Because these people were known in the community, they had to deliver good quality if they wanted to be assured of further work. Moreover, if the construction was deficient, the owners of the latrine would be able to find them and demand adjustment. The system of involving local masons has also proved to be effective in other projects, for instance in Quetta and Lesotho. Involvement of local masons also facilitated construction of soakpits without subsidy in the project areas, thus enhancing the impact of the project.

However, some local masons also played a negative role in the sustainability of the soakpits. Because they were always called when problems arose with the soakpits, even if they only needed to be switched or emptied, there was a tendency to advise the users to change the system of the soakpit by constructing an overflow into the drains. The concept was 'sold' by assuring the users that this eliminated the need to empty the pits and was therefore cheaper. But of course it earned the masons an additional income for the construction of the outlet.

The major obstacle in the sustainability of the soakpits has been the construction of open drains in most roads and alleys to provide a means for sullage disposal. The provision of drains has resulted in a deterioration of environmental conditions, not only because of the soakpits connected to them, but also because the drains became receptacles of solid waste, as collection services were not improved at the same time. This resulted in stagnant and overflowing drains, which soon became the focus of complaints from the residents. The problems with the drains, and not the malfunctioning of the soakpits, seem to be the major reason why the residents now want a sewer system.

It has been questioned whether the soakpits were indeed the best technical solution for the sanitation problems in Baldia. When the cost of the investments in the open drains is added to the cost of the soakpits, it would have been cheaper and more effective to provide shallow sewerage from the start. But the level of water supply in 1979 was such that any kind of sewerage would have been unfeasible. It is even questionable if the level of water supply is sufficient in all mohallas at this time to make a shallow sewerage possible.

Many of the soakpits constructed over five years ago still had not filled up, even though their capacity was deemed to last only about two to three years per pit. Similar experience was found in India where research has been carried out in operation and maintenance aspects of sanitation systems in low-income areas. Here, in 70% of the double pits surveyed (total 973 latrines), the first pit had not even filled after five years, indicating a lower pit filling rate than had been assumed by sanitation engineers.

For emptying of the single pits and double pits which were not dry, the KMC offered desludging services, but they could not reach all houses and refused to desludge only one pit at the time. Thus, people switched from one pit to the other until both were full and could be desludged. This indicated insufficient awareness of the functioning of the system both in KMC and among the users. During the project, not enough attention was given to future operation and maintenance aspects of the soakpits, reducing the sustainability of the soakpits.

Sustainability of the local NGO

The two major NGOs which originated as a result of the project and which were expected to continue and strengthen the activities started during the project have not been able to continue and expand their operations without outside assistance.

BUSTI had insufficient roots in the project to be able to continue and expand the development efforts in Baldia, nor dit it have sufficient experience to carry out similar activities in other areas. The organization also did not have a policy and philosophy which was adopted at all levels. This led to friction within the executive committee and between this committee and the operational staff. At the operational level, lack of management procedures and clear direction led to problems, eventually leading to a temporary stop in all activities. The organization would probably have performed better if it had had one to two years experience within the project before starting on its own, and a longer time to develop a basis for its activities.

HSTWO has mainly suffered from inexperience with management and bookkeeping as well as overburdening with too many activities. While BUSTI was meant to assist the HSTWO in this, the relationship between the two organizations led to friction rather than cooperation. Thus, the organization had to survive on its own. Although the members of the HSTWO were very enthusiastic and active, this was not enough to run an organization. None of the board members had any experience in working in an organization with so many members and so many

activities. There was no monitoring system for the activities, which led to inefficient use of funds. Professional support to the home schools and primary health care centres could not be provided by the members themselves and as a consequence these activities suffered. The fact that the situation lately started to improve with professional support funded by UNICEF, shows that the organization needed more time than the three years of existence and much more training in management to be able to function without external assistance.

If the situation of these two NGOs is compared with the NGO which started the Orangi Pilot Project (OPP) and which has been functioning successfully over the past ten years, some lessons can be learnt. An important factor relating to sustainability of an organization is the ongoing presence of at least one person who can propagate and continue the philosophy and approach of the activities. In OPP the director who started the project is still in function. Although many more people have joined the organization and some have already been there for a long time, this person still decides on the direction of the activities.

A second factor is the need to develop activities at a slow pace, more or less growing from the organization. This is what successfully happened during the project, and what still continues with the community organizations in the project area. The same applies to OPP where many activities were started to complement the sanitation development. BUSTI on the other hand, more or less received a project and was expected to continue on the same basis. Few of the people in the new organization had experience with community-based programmes and they were not familiar with the people in the community and the activities and the philosophy of the project, while there was no opportunity to develop their own basis from which to grow.

A third issue is the factor of institutionalization. OPP always has been an independent organization with private funding and therefore has always been able to decide the course to follow. The Baldia project was different. It was a project and not an organization. In 1986, efforts were undertaken to institutionalize the project within the government structure, because it was felt that specifically the primary health care centres, and to a lesser extent the home schools, needed to be embedded in the government structure to ensure proper support. Moreover, it was felt that the Baldia project would provide a good example of a participatory approach and that if the project would be incorporated within a government department, similar initiatives would be undertaken. The efforts failed, because no department wanted to take the burden of a project which had been established outside their structure. It was decided then to establish BUSTI, as an NGO, to serve as a link between government agencies and other NGOs. BUSTI had a number of representatives from government departments on its board of directors to strengthen the cooperation with the government, but this also had the effect that it lacked the independence which is characteristic of most NGOs. It seems that the 'half-way' solution was in practice not leading to replication of the project approach in other areas.

Both in the Quetta project and in the UNICEF project in Sukkur, the problem of institutionalization was taken into account. Both projects were incorporated from the start into the municipal departments concerned. But it also meant that, at least in Quetta, the project was less flexible and that continuous discussions were taking place between the project team and the engineers of the department concerned over the extent of community participation in the project.

Replicability of the project

The replicability of the sanitation component has been confined to Baldia and a few areas in Karachi, near Baldia. The technology also proved successful in Quetta. Other urban programmes preferred to replicate the small-bore sewers, following the OPP approach. Even within Baldia, people now prefer to have a small-bore sewerage because it eliminates the need for open drains. This shows that soakpits should be seen as an intermediate solution in urban areas where water supply is insufficient for sewerage. Thus, when soakpits are constructed, they should be located in such a way that they can easily be connected to an outside sewer at a later stage.

Replication of the soakpits within Baldia at the time of the project was very successful because the technology was suitable for the conditions at that time. It was also due to the ease with which people from other mohallas in Baldia became aware of the project. There were those who gained their awareness by visiting areas where project activities were under way. Impressed by what they saw, they asked for the extension of the project to their mohallas. The second way by which people became aware of the new technology was through direct promotion and social marketing by the community organizer who visited non-project mohallas and told residents about the project. These were then taken to the demonstration mohalla. In all cases, demonstration and motivation was carried out from resident to resident, and this was probably the key to the success. This system was not used for sanitation promotion by BUSTI, which may be one reason why this failed.

Another problem with the replicability of the soakpit technology has been the inadequate system of maintenance. This aspect has not been given sufficient attention during the project. The development model used in the project was a community-based one which involved the simultaneous application of social organization and technical guidance. In principle, such an approach should enhance the prospect of good maintenance. The fact that this did not really occur, may be because the technical guidance was limited to the construction phase of the project and that the sanitation committees were not sufficiently aware of the maintenance aspects of the soakpits, while BUSTI did not continue to monitor what was happening with the soakpits and to advise on proper maintenance.

The replication of the system of home schools has been successful both outside Baldia and outside Karachi, because the members of the HSTWO assisted other women organizations to set up a similar system. Here again, the promotion was done by people from the same background as the prospective new teachers.

Because of the links with the Department of Women Affairs and also UNICEF, the concept of home schools is advocated on a wider scale, and the HSTWO members were able to promote their experiences. This did not include the primary health care component because it was not considered to be replicable as yet.

The community-based approach, which was the basis for all developments during the project, has proven to be replicable in many areas. It was the experience in Baldia which formed the basis for the OPP approach, because the community organizer from Baldia was involved in starting the project in Orangi. In Quetta, the approach was adapted and further developed into the system of Community-Based Organizations and Local Reference Centres. The approach is also being adapted to suit local conditions in UNICEF projects. It is this adjustment to local conditions that has proved to be the main determinant of the feasibility of a community-based approach. Only if an approach is flexible, both in technical and in social sense, and involves all groups in the community, both men and women, it is possible to initiate a process of development which is both sustainable and on-going.

List of abbreviations

Baluchis	People originating from the province of Baluchistan
BUSTI	Basic Urban Services for Katchi Abadies
BWASA	Baluchistan Water and Sanitation Authority
CBO	Community-Based Organization
Habib Bank Trust	Trust for social welfare established by the Habib Bank
HSTWO	Home School Teachers Welfare Organization
Jaycees	Local business association
Jamat	Community organization
Katchi Abadies	(illegal) squatter settlement
KMC	Karachi Metropolitan Corporation
LRC	Local Reference Centre
LCS	Low-Cost Sanitation Project
LGRDD	Local Government and Rural Development Departments
LHV	Lady Health Visitor
Mohalla	Neighbourhood
Nalah	Monsoon river bed
NGO	Non-Governmental Organization
OPP	Orangi Pilot Project
ORS	Oral rehydration solution
Pathans	People originating from the North West Frontier Province
PEPAC	Pakistan Environmental Planning and Architectual Consultants Ltd.
PHC	Primary Health Care
PHED	Public Health Engineering Departments
Rs	Rupees, Pakistan currency value in 1979 US$ 1 = Rs 10
SITE	Sind Industrial Trading Estate
SMC	Sukkur Municipal Corporation
UNDP	United Nations Development Program
WEDC	Water, Engineering and Development Centre

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PROGRESS CHART — BALDIA SOAKPIT PROJECT — 1979 to 1982

No.	MOHALLAH	BENEFICARES			YEAR OF CONSTRUCTION				TYPE OF SOAKPIT			CATEGORIES		TOTAL
		Adults	Children	Total	1979	1980	1981	1982	A	B	C	I	II	
1.	BALUCH COLONY	33	11	44			9		1	5	3	9		9
2.	CAMBELLPUR	82	63	145				36		31	5	23	13	36
3.	DILAWER MOHALLAH	36	30	66			10			10		10		10
4.	GUJRAT COLONY	18	6	24				2		2		1	1	2
5.	HAJI QASIM COLONY	20	18	38			1	5	1		5	6		6
6.	JAMNAGGER	62	33	95		5	5	3	10		3	7	6	13
7.	JUNAGARH	2	5	7				1		1			1	1
8.	MADINA COLONY	24	11	35			5		5				5	5
9.	MUSLIM MUJAHID	332	254	586	30	40			70			70		70
10.	NEW ANJAAM COL	94	52	146				20		9	11	6	14	20
11.	NIAZI MOHALLAH	168	63	231	30				30			4	26	30
12.	PURBUNDER	25	12	37				4			4	4		4
13.	SH. KUTCHI COLONY	62	26	88			11		11				11	11
14.	TAI COLONY	128	111	239			8	21		17	12	8	21	29
15.	TURK COLONY	446	219	665		60	29	1	89	1		85	5	90
	TOTAL	1532	914	2446	60	105	78	93	217	76	43	233	103	336

PROGRESS CHART — BALDIA SOAKPIT PROJECT — 1983

No.	MOHALLAH	BENEFICARES			TYPE OF SOAKPIT				CATEGORIES			MONTH												TOTAL
		Adult	Children	Total	B	C	D	B/2	I	II	III	jan.	feb.	mrt.	apr.	may	jun.	jul.	aug.	sep.	oct.	nov.	dec.	
1.	ARAB MOHALLAH	16	7	23		3			1		2											2	1	3
2.	BALUCH COLONY	40	28	68	1	5	1	1	2	2	3		2									5		7
3.	BALUCHPARA	2	6	8		1			1														1	1
4.	CAMBELLPUR	71	37	108	13						13		4	9										13
5.	CHANCHIPARA	93	40	133		15			3		12										10	4	1	15
6.	GUJRAT COLONY	46	30	76	4	3	2			1	8	6	2	1										9
7.	JAMNAGGER	17	13	30		5			1		4												5	5
8.	KUMHARWARA	222	203	425		51			1	12	38				10		16	2	2	1	10	5	5	51
9.	KUWIHARWARA MIC	54	58	112		15					15										10	5		15
10.	NEW ANJAAM COL	108	54	162		19			1	18					14	5								19
11.	RASHEEDABAD	39	51	90	10					10					5	5								10
12.	SARHAD COLONY	109	53	162		16			2		14											10	6	16
13.	SHURAAT COLONY	45	42	87		10			3		7												10	10
14.	TAI COLONY	28	18	46	1	3			1	2	1	1			1							2		4
15.	TURK COLONY	5	1	6	1				1			1												1
	TOTAL	895	641	1536	30	146	3	1	17	45	117	8	8	10	30	10	16	2	2	1	30	33	29	179

PROGRESS CHART — BALDIA SOAKPIT PROJECT — 1984

No.	MOHALLAH	BENEFICARES			TYPE OF SOAKPITS			CATEGORIES			MONTH												TOTAL
		Adult	Children	Total	B	C	B/2	I	II	III	jan.	feb.	mrt.	apr.	may	jun.	jul.	aug.	sep.	oct.	nov.	dec.	
1.	ARAB MOHALLAH	6	6	12		1	1			2				2									2
2.	BALUCH COLONY	5	1	6		1				1					1								1
3.	BALUCHPARA	210	236	446		41	4	1		44		10		7	3		9	2		2	8	4	45
4.	CAMBELLPUR	44	46	90		12	1			13					5		7		1				13
5.	GUJRAT COLONY	10	6	16		2				2									2				2
6.	HUSSAININAGAR	82	54	136	2	16	1	2	1	16		5		7								7	19
7.	JAMNAGGER	45	30	75		8		2		6		3	2	1				2					8
8.	KUMHARWARA	142	107	249		36		3		33		15		5	3		2	2				9	36
9.	MADNA COLONY	30	15	45		3	1			4									2			2	4
10.	RASHEEDABAD	206	244	450	4	66	5	5		70		1		8	14	3	9	4	8	4	14	10	75
11.	SARHAD COLONY	169	155	324	1	47		1		47			13	3			2	1		6	20	3	48
12.	SHUJAAT COLONY	24	32	56		7		1	1	5			5		2								7
13.	TAI COLONY	94	92	186		21	1	4	3	15		9		7	3		3						22
14.	TURK COLONY	5	6	11		1	1	1	1									1				1	2
	TOTAL	1072	1030	2102	7	262	15	20	6	258		43	20	40	31	3	32	12	13	12	42	36	284

PROGRESS CHART — BALDIA SOAKPIT PROJECT — 1985

No.	MOHALLAH	BENEFICARES			TYPE OF SOAKPIT			CATEGORIES			MONTH												TOTAL
		Adult	Children	Total	B/2	C	Total	I	II	III	jan.	feb.	mrt.	apr.	may	jun.	jul.	aug.	sep.	oct.	nov.	dec.	
1.	BALUCHPARA	25	35	60	2	6	8			8	6	2											8
2.	GHAUS NAGAR	10	10	20		3	3			3							3						3
3.	JUNAGARH	26	37	63	7	2	9			9	3						3					3	9
4.	KUMHARWARA	122	129	251	2	29	31	7		24			9	1			1			5	5	10	31
5.	LOHARWARA	7	12	19	3		3			3											3		3
6.	MADINA COLONY	83	92	175	6	3	9	1		8					6	3							9
7.	MUSLIM MUJAHID	45	42	87	1	6	7	1		6							6	1					7
8.	MECCA COLONY	2	6	8	1		1			1							1						1
9.	NEW ASAAM	9	10	19	2		2	1		1											2		2
10.	RASHEEDABAD	268	359	627	66	50	116	2		114	29	5	9					9	32	10	10	12	116
11.	SARHAD	153	134	287	34	15	49			49	2	12	25	5						5			49
12.	SH.KATCHI COLONY	6	5	11	2		2			2								1				1	2
13.	SWAT COLONY	4	5	9	1		1			1		1											1
14.	TAI COLONY	11	13	24	1	2	3			3								3					3
15.	TURK COLONY	22	23	45	3	2	5	1		4	4	1											5
	TOTAL	793	912	1705	131	118	249	13		236	44	21	43	6	6	3	14	14	32	20	20	26	249

ANNEX

IRC Publications

IRC's Technical Paper Series cover a wide range of subjects. The series aims to integrate technical and non-technical issues, such as community involvement and operation and maintenance of water supply and sanitation facilities. Prepared jointly by IRC staff and consultants, these publications are written for those working in the community water supply and sanitation sector.

Ongoing work at IRC and related organizations is presented in the Occasional Paper Series. The Training Series provides practical information and knowledge for use in training of various target grou The Reference Series includes directories, inventories, a thesaurus glossaries and other information tools in support of technical information exchange for community water supply and sanitation. These publications are designed to assist both documentalists and technical staff with information collection, storage, retrieval and use

IRC titles of related interest include:

Partners for Progress
An approach to sustainable piped water supplies
IRC
TP 28 150 pages 1991

Ten years of experience
Community water supply and sanitation programme, Pokhara, Western Development Region, Nepal
Prepared by Marieke Boot and Han Heijnen
TP 26 127 pages 1988

Participation of women in water supply and sanitation
Roles and realities
Prepared by Christine van Wijk-Sijbesma
TP 22 191 pages 1985

On-Site Sanitation: Building on Local Practice
Prepared by Madeleen Wegelin-Schuringa
OP 16 78 pages 1991