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USE AND MAINTENANCE OF
SANITATION FACILITIES IN LOW INCOME SHELTER AREAS
STUDY OF MALKAPUR TOWN
MAHARASHTRA.

March, 1989

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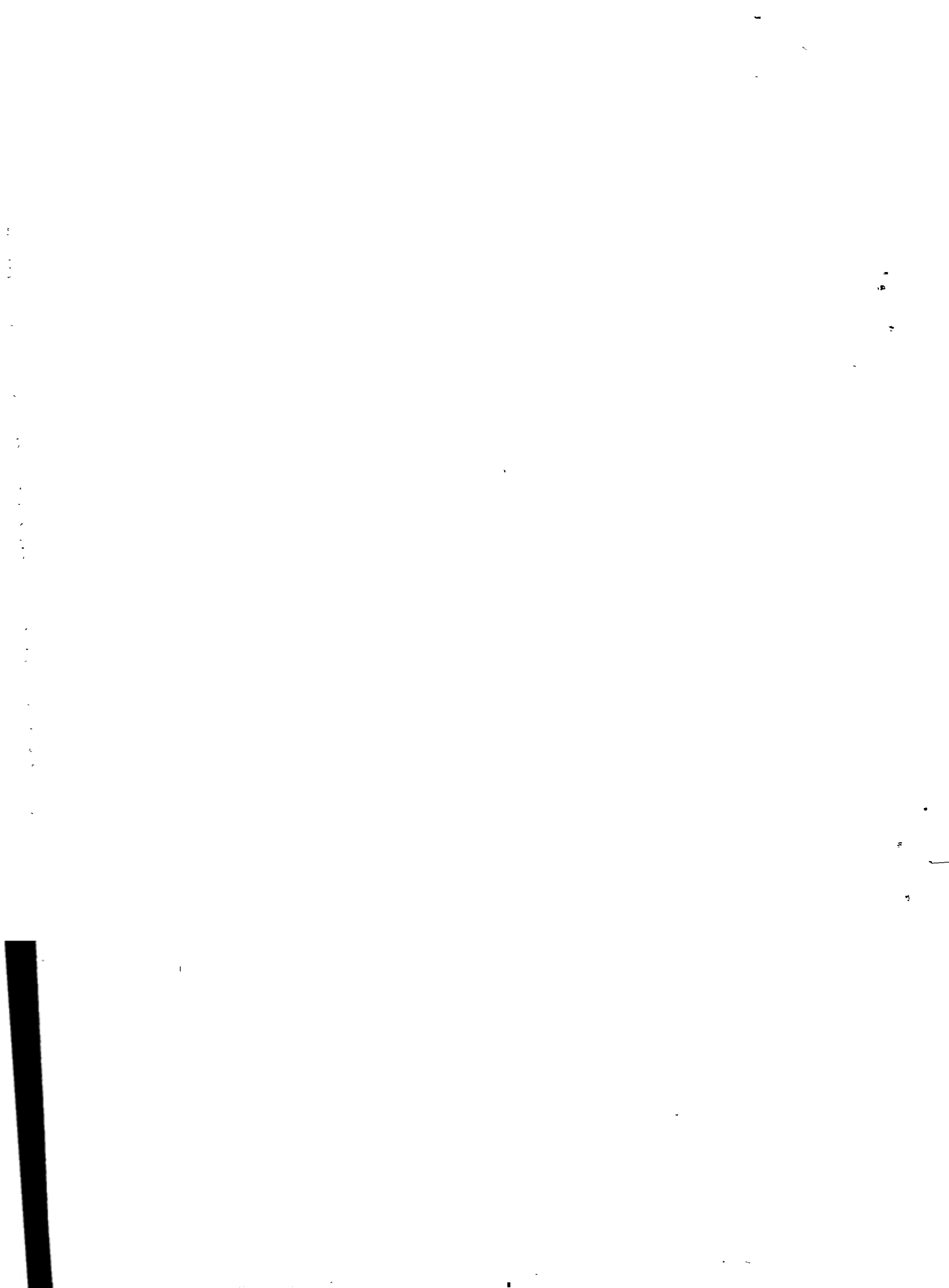
NATIONAL REFERENCE CENTRE
COMMUNITY WATER SUPPLY AND
SANITATION

hsmi

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New Delhi

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LIST OF ILLUSTRATIONS

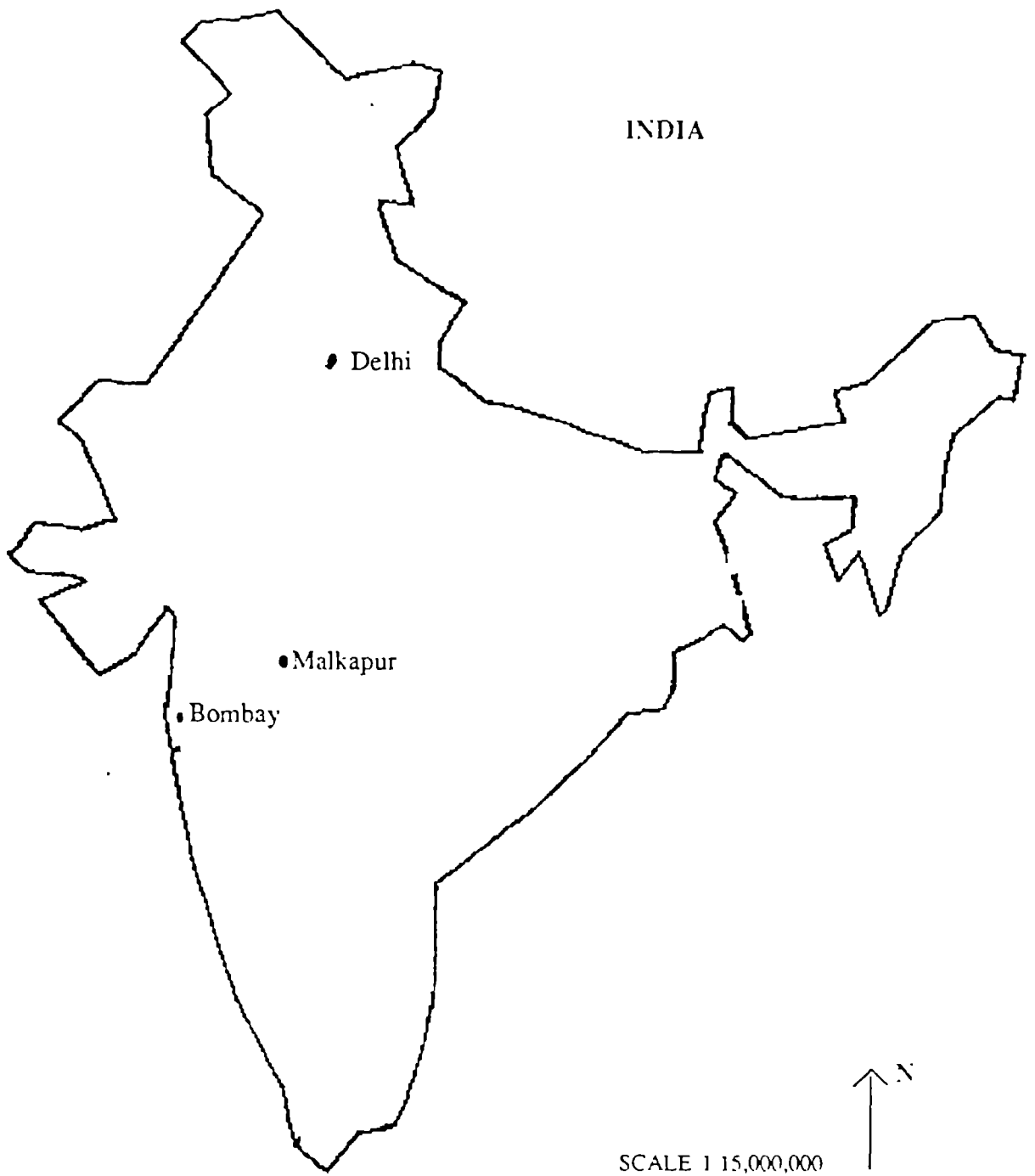
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LIST OF ABBREVIATIONS

GIA	-	Grant-in-aid
HH	-	Household
HUDCO	-	Housing and Urban Development Corporation
LPCD	-	Litres per capita per day
MC	-	Municipal Council
MLD	-	Million litres per day
MWSSB	-	Maharashtra Water Supply and Sewerage Board
O&M	-	Operation and maintenance
OMB	-	Operation and maintenance budget

LOCATION MAP - MALKAPUR, MAHARASHTRA





INTRODUCTION

Use and Maintenance issues of (notably low cost) sanitation facilities and the respective institutional arrangements are of key importance for their longer term functioning and effectiveness.

It is found in many cases that both public and private facilities - once built - tend to malfunction soon after completion and to rapidly fall into disrepair. Major factors which determine such performance are seen to be design, financial and management/organisational arrangements and user attitudes.

Given the consequent enormous loss of capital as well as the lost benefits of improved health and well-being it is thought of major importance to try and improve this performance. This research is meant to chart the problem field and to develop initial operational recommendations for both remedy of existing schemes and the prevention of similar problems in the development of new schemes.

The importance of the issue becomes even more evident when it is realised that the total area of existing settlements increases continuously. The time has come that the total number of existing schemes by far outstrips the annual increment. Oddly enough however the concern of most agencies is still largely focussed on the development of new schemes.

Given the important role which decision makers and implementors play in the planning, development and delivery of such facilities it is thought of strategic importance to investigate the issue in direct interaction with the actors concerned - viz. central/state/municipal agencies and the communities involved.

The present research forms part of a series of studies being conducted by the HUDCO/HSMI of low cost sanitation schemes at a number of locations around the country.

1.1 Project Background

This study was conducted in the town of Malkapur, Sub-division Shegaon, district Buldana, Maharashtra. The project corresponds to HUDCO Basic Sanitation Scheme No. 2813 for the conversion of 2038 dry latrines in Malkapur town to the two-pit, pour flush type. The scheme was sanctioned for commencement on 1.7.1984 with a HUDCO loan component of Rs. 14.39 lakhs. The implementing agency is the Maharashtra Water Supply and Sewerage Board (MWSSB).

1.2 General

Malkapur town is situated 45 km. away from Buldana in Buldana district of Maharashtra. National Highway No.6 (Calcutta-Bombay) passes through the town. Malkapur is also served by the railway and is on the Bhusawal division of the Central Railway.

1.3 Demographic/Hydrogeological/Climatic/Topographical data

As per the 1981 census the population of Malkapur was 43,121 with an average decadal growth rate (period 1961-81) of 20.03%. Extrapolating these figures indicates that the present population is about 49160.

The total number of households (HH) in 1981 was 7333 and the corresponding figure for 1988 is 8360. This indicates that, at the present population level, the original target would have covered 24.38% of all HH while the actual provision till date, of 1107 latrines covers 13.24% of all HH.

Climatic conditions in the area remain generally dry and hot. The rainy season starts from June and lasts till the end of September. It is followed by sultry weather in October, cold weather from November to February and hot weather from March to May. The highest temperature in summer is 44°C and the lowest winter temperature is 21°C. The average annual rainfall is 721.7 mm. The South-West monsoon starts by the end of the first week of June.

Soils in and around Malkapur are derived from trap rock of volcanic origin. There are three main categories of soils viz.:

- (1) Bharkali, which is a deep black soil of a very fine texture and is very retentive of moisture.
- (2) Morand, which is black cotton soil containing lime.
- (3) Barad, which is the shallow soils of the higher rocky areas and is black, brown or reddish in colour.

The eastern side of the town has soft soil strata while on the western side there is exposed hard rock at some places.

The ground water level in the lower, flatter areas varies from 3 to 5 m. below ground level.

Malkapur is divided into 31 municipal wards. Wardwise distribution of population and HH is given in Annexure 1.

1.4 Existing Physical Infrastructure

The town has a piped water supply scheme. The greater majority of the population get water from public standposts while some HH also have house connections. The connections are unmetered.

Surface water is treated at a treatment plant operated and maintained by the municipality. The treatment process embodies alum coagulation, clariflocculation, rapid sand filtration and disinfection with bleaching powder. There are a number of overhead service reservoirs of total capacity of 250,000 litres. The capacity of the plant is 3 mld. Therefore the per capita supply is about 60 lpcd.

Malkapur has no effective excreta disposal system. Hitherto the main excreta disposal options which have been prevalent are the septic tank, dry latrines and open air defecation. The septic tanks are mainly located in the more affluent areas of the town while the majority of the people had used the dry scavenging system.

There is a system of open surface drains to intercept sullage and stormwater from the various parts of the town.

Solid waste is collected periodically from various intermediate storage points by the sweepers of the municipality. Communities are responsible for transporting garbage to these points. Thereafter it is transported to dumps outside the town.

Other than the national highway the total road length of pucca, tarred road in Malkapur is 10.16 km. In addition there is 25.84 km. length of unpaved, kuccha roads.

2. RESEARCH OBJECTIVES & HYPOTHESIS

2.1 *Research Objectives*

The present study belongs typically to the field of applied research in the sense that it aims for the development of practical and immediately applicable guidelines.

The overall objective of the research is to contribute to better post construction performance of low cost sanitation facilities with the underlying aim to better serve public health and human well being in general.

The immediate objectives are the following:

1. To increase the attention of policy makers and implementors alike towards the issue of user response and O&M.
2. To develop operational recommendations in respect of planning, design construction and post construction management which would result in a better O&M performance.
3. To develop materials for the HSMI workshops and related training activities.
4. To provide a base for continued and expanded research in the field.

2.2 *Research Hypothesis*

There are various factors which require consideration during the planning, design, implementation and operation and maintenance of low cost sanitation schemes.

Overall

- a. Successful longer term functioning and effectiveness of low cost sanitation facilities can only be achieved through a comprehensive management of the manifold determinants involved as listed below.

Technology and Design

- b. Technology and design should be conducive to easy, correct and straightforward use, operation and maintenance. There should be minimum use of sophisticated tools and equipment. Replacement of parts should be easy and available at low cost from local suppliers.
- c. Planning and design should fully reflect user's customs and preferences.
- d. Quality of the facilities should be sufficiently sturdy in order to withstand rough handling during use and maintenance.

Planning

- e. There should be sufficient advance commitment of the beneficiary groups concerned both in terms of contributions towards the subsequent operation and maintenance activities.
- f. There should be sufficient involvement of NGO's neighbourhood groups, local women's groups and the households in the process of planning, development and maintenance.

Social Factors

- g. There should be sufficient awareness at the user level of the benefits to be gained from the proper use and maintenance of the facilities.

Management and Organisation

- h. There should be sufficient supply of water in line with the sanitation system's requirement.
- i. There should be sufficient coordination and integration between the various sectoral agencies; there should also be a smooth hand over from the agencies which plan and construct and those which operate, manage and maintain after construction.
- j. Development and management of schemes should preferably be at Local Government level. Next to sufficient training, professional motivation is very important. Low cost sanitation schemes are often considered a sub-professional activity.

3. DESCRIPTION OF THE RESEARCH

3.1 *Project Details*

Malkapur town was taken up for study in consultation with the Basic Sanitation Cell of HUDCO. It is a small town in the class III category in Buldana district with a population just under 50,000.

The Government of Maharashtra has been implementing low cost sanitation schemes since 1982/83 through the MWSSB in towns with population less than one lakh. The State Government has accorded administrative approval for conversion in 78 towns between November, 1982 and May, 1983 at an estimated cost of Rs. 707.75 lakhs. The Government of Maharashtra provided 50% of the funds as Grant-in-aid and the balance 50% was to be obtained by way of loan. The Government directed that the loan be obtained from HUDCO. Upto 31st March, 1988, HUDCO had granted loans for sanitation schemes in 22 Maharashtra towns with a total loan component of Rs. 54.40 lakhs (Annexure - 2).

The programme in Malkapur was started on 1.4.1984 with a total target of 2392 latrines.

The latrines were of four sizes:

- 6 users
- 10 users
- 15 users
- 25 users

The leaching pits were to be located within the premises, under footpaths and under roads as per the following break up.

- Within premises - 1270 Nos.
- Under footpath - 683 Nos.
- Under road - 288 Nos.
- Community latrines - 151 Nos.

The community latrines and the ones with proposed leaching pits under the road were deleted from the scheme vide a decision taken by the Supdt. Engineer, MWSSB, Akola in March, 1987. This left a final targetted number of 1953 latrine conversions. Of these 1110 have so far been converted (Annexure -3).

The original sanctioned costs varied from a low of Rs. 705/- for 6 user units within premises to Rs. 2051/- for 25 user units under footpath. These rates were revised in March, 1987 and the corresponding costs were Rs. 1108/- and Rs.3254/-.

3.2 *Methodology*

As per the printed data received from the Environmental Engineering Circle,

MWSSB, Akola, the targetted number of latrine conversions in Malkapur was 2241 spread over 31 wards out of 34 wards in the town. Of these 1110 have so far been converted. Lists of the beneficiaries was readily available and a prestructured questionnaire (Annexure - 4) was canvassed at the HH level for the purposes of a primary survey. A total of 98 questionnaires were canvassed on a random sample basis constituting a 9.6% sample of the completed conversions.

Five enumerators were identified with the help of the MWSSB officials in Akola and Malkapur. The questionnaire elicited user satisfaction levels and reactions with respect to the dry latrine conversions in the town. Further, interviews were held with officials of the MWSSB, Malkapur, Municipality officers and local contractors' representatives. Other secondary data was obtained from Census of India Publications.

Data processing of the completed questionnaires was done with the help of computer at HUDCO using the D - Base III package. Based on the computer analysed results, feed back from concerned professionals, study of secondary data and problems perceived, a diagnosis of the scheme has been attempted and a set of recommendations arrived at.

4. MAJOR FINDINGS

4.1 *Analysis of Household Questionnaires*

Wardwise Distribution

The questionnaires were canvassed in 19 of the 31 wards of the town where the programme was implemented. The five enumerators canvassed 8, 20, 20, 20 and 30 questionnaires each.

Provisional Level and Location of Latrines

From the households surveyed it was found that there is an average of 7.98 (say 8) persons per latrine. The majority of houses had only one toilet and only 5.1% of the houses had more than one toilet. In a majority of 84.54% of the houses the pits were found to be located outside the house.

Size of Houses

Average plot area	139.14 sq.m.
Range of the plot area	10 sq.m. to 900 sq.m.

24.74% of the sample beneficiaries live in plots larger than the average while 75.26% live in plots of size less than 140 sq.m.

Demographic and Socio Economic Characteristics

The average family size was found to be 8.39 which is 52.7% higher than the national average of 5.5. About 51% of beneficiaries were male and 49% female with children constituting 38.56% of the population. More than 50% of the beneficiaries belong to the muslim community.

Educational Level

The largest percentage (67.13%) of the people were educated upto school level while 9.19% were college graduates and the balance (23.68%) were illiterates.

Tenure Status

An overwhelming majority (97%) were owners of the house being lived in.

Income Profile

Almost half the beneficiaries questioned (46.94%) belonged to income range Rs. 700 - 1500 per month followed by 33.67% in the Rs. 0 -700 range. The details are as follows:

Rs. 0 - 700	33.67%
Rs. 700 - 1500	46.94%
Rs. 1500 - 2500	14.29%
Rs. 2500 & above	5.10%

Hygiene Parameters

The questionnaire revealed that 83.67% of the people use water for anal cleansing while 16.33% do not and/or use other solid or particulate material. 78.57% use soap for washing of hands after defecation while 21.43% use soil or nothing at all. A notable percentage of 51.02% evinced ignorance as to the danger of childrens' feces to human health. About 49% thought that a child's excreta is dangerous.

Level of Satisfaction

A high percentage of 89.8% were satisfied with the performance of the sanitation technology provided for latrine conversion.

Instructions on Use of Facilities

83.67% of the beneficiaries indicated that they were supplied with information leaflets with instructions on the new echnology and on its proper use and maintenance. 16.33% said that they had not received any written material from the municipality.

Payment by Beneficiaries

All beneficiaries (100%) said that they paid no amount as loan repayment to the authorities. Only a small percentage (13.27%) exhibited any willingness at all to contribute any monthly sum in the future towards improvement in infrastructural facilities. The range of contributions which they offered in future for any infrastructural upgradation varied from Rs. 5/- to Rs. 25/- per month.

Availability of Water

A majority of the people (58.7%) get water from house taps while 40.22% make use of communal taps. A small percentage (1.08%) use handpumps. Also, 8.33%, have a tap located within the latrine.

Public Health Campaigns/Community Organisations

Only 8.16% of the people had ever witnessed any type of public health or awareness creation campaign. Again only 17.35% said that they were members of any kind of community organisation. However, 46.94% of the beneficiaries expressed willingness to join one.

Area Cleanliness

The enumerators reported that the majority of the people are in the habit of dumping their

garbage in communal dumps thereafter to be cleared by the municipal authorities. However the questionnaires revealed that only 60% of the open surface sullage /storm water drains were clean; a further 20.5% were choked mainly with solid waste and wind blown street sweepings/soil; 16.5% had no drains adjacent to their dwellings. This indicates that a proportion of the beneficiaries do not properly remove their solid waste to designated dumping points.

4.2 Views of Implementing Agency

The implementing agency for the Malkapur Scheme was the Maharashtra Water Supply and Sewerage Board. In - depth interviews with the officials of the Board at Malkapur, Akola and the Head Office in Bombay revealed, however, that the implementing agency faces a number of problems when engaged in the type of sanitation scheme under study in Malkapur and have many reservations which they clearly stated.

The provision of clean sanitation is the responsibility of the Municipal Council. They, however, show little or no interest in programmes being implemented by the MWSSB. The latter feels that for successful implementation, the municipal councils should consider such programmes are their own and that they should also implement the same. Only then would they shoulder the responsibility of the programme being entrusted to them. Apparently, elected representatives at the state and municipal levels also concur with this view.

Once the municipal councils were made the implementing agency, the MWSSB would continue to provide technical know-how and guidance in the form of skilled personnel from the Board.

A summary of the financial, administrative and technical difficulties being faced by the Board is given here in extracts from a note to the Government of Maharashtra on the low cost sanitation programme being implemented by the MWSSB:

A. Financial Difficulties

- i) HUDCO requires that loan applications should be separate for each town. For preparation of loan proposal for each town voluminous data is required to be collected which takes about 3 to 4 months with special efforts, since information about each individual beneficiary has to be listed. Even though the proposal is submitted, it is not certain whether HUDCO would sanction that proposal and release the loan in the expected time. Although the conversion programme has been started in 66 towns, loan applications for 27 towns only could be forwarded to HUDCO. So far HUDCO has sanctioned loan of Rs. 159.60 lakhs for 22 of these towns and released Rs. 54.47 lakhs for 19 towns. The programme in 12 towns was completed without applying for HUDCO loan to utilise the G.I.A component then available. However, HUDCO has informed that they would not sanction loan for the work which is already carried out.
- ii) By the end of March 1988, an amount of Rs. 387.24 lakhs has been received for this programme towards G.I.A. However, the HUDCO loan received is Rs. 54.47

- lakhs only. The proportion of G.I.A. to loan of 1:1 could not be maintained.
- iii) Actual expenditure on the programme of a town is many a time more than the estimated cost due to various reasons. HUDCO does not sanction loan on the increased cost. This creates a gap between the loan required and loan received. It was proposed by the Board to utilise O.M.B. for meeting this gap. However, the Government turned down the proposal.
 - iv) Loan for HUCO is received by the Board on behalf of the Municipal Councils. Although the loan was released by HUDCO for 19 towns, only 8 Municipal Councils have executed the agreement. The remaining Municipal Councils did not turn up for executing the agreement inspite of repeated letters from the Board and Deputy Director of Municipal Administration.
 - v) Municipal Councils do not repay the loan instalment and interest in time. The Board has to pay the same to HUDCO as per schedule from its own funds. The amount paid by the Board to HUDCO and not received from M.Cs. as on 31.3.1988 works out to Rs. 26.11 lakhs.

B. Technical/Administrative Difficulties:

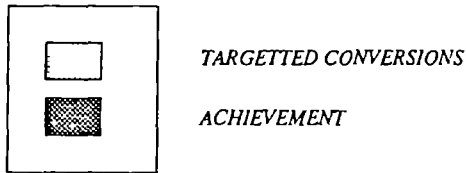
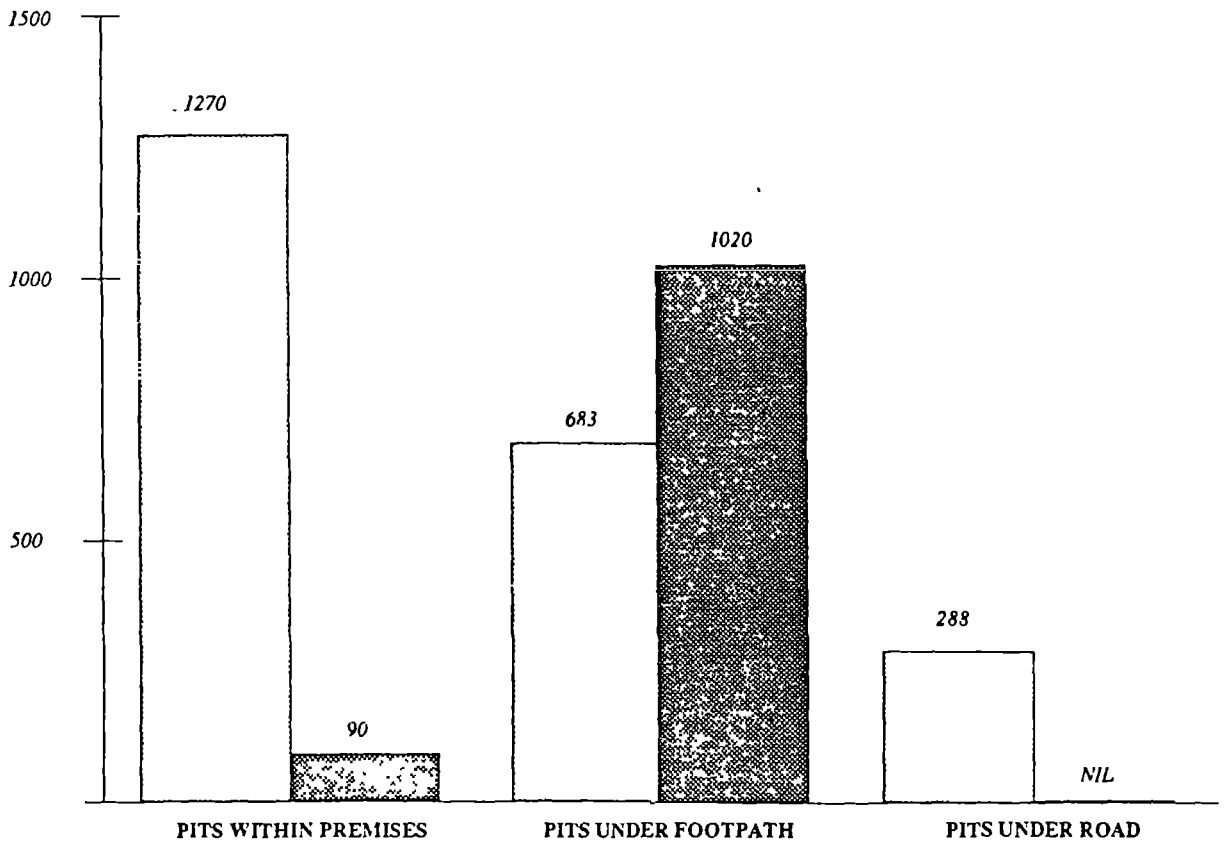
- i) Agencies are not easily available for conversion of bucket type latrines into twin pit low cost sanitation latrines because at each location the quantum of work to be executed is very small. The materials like bricks, sand and metal etc. which are collected in small quantities for conversion of latrines are stolen overnight. This is the main reason why the contractors are reluctant to come forward for construction of such works.
- ii) The house owners do not co-operate by tolerating inconvenience to them even for 3-4 days during which the existing bucket latrine is required to be closed down.
- iii) The house owners are reluctant to allow construction of pits within the premises even when sufficient space is available for construction of pits.
- iv) At many locations there is not enough space either within plots or on the adjoining lanes/roads for construction of pits. Such lanes are used as normal approaches to the houses and also accommodate water supply pipes etc. due to which construction of pits become extremely difficult.
- v) The success of this programme depends upon cooperation which can be received from the Municipal Council Authorities and the beneficiaries. Our experience in this respect is not satisfactory.

4.3 Related Findings

Achievements of Physical Targets:

It was found that only one component of the scheme has received overwhelming emphasis

ACHIEVEMENT OF PHYSICAL TARGET
LOW COST SANITATION SCHEME
MALKAPUR, MAHARASHTRA



Source MWSSB, 1988

throughout - the physical construction target. From the point of view of the MWSSB the main objective has always been physical implementation of the project with a view to transfer the assets created to the municipality within a prescribed time frame. The local municipal authorities are pleased that their town has been chosen for developmental activity from the centre/state level and await project completion with little thought of the various post installation issues and problems which will arise in future.

Coordination between Involved Agencies:

A fact which clearly manifested itself was the lack of coordination between the formal agencies involved. The MWSSB, through its statewide cadre of professional engineers operating through their various engineering circles and with their established tendering/contracting procedures are capable of fulfilling construction targets as per the requirements of the scheme. It was found, however, that there was little or no contact/coordination between the personnel of the local municipality and these MWSSB officials. Of the two municipal engineers, one was looking after the waterworks while the engineer (sewage) was completely occupied in the supervision of the work of the 110 municipal sweepers through the Sanitary Inspector.

Conviction Level in the Formal Sector:

A number of doubts were found to exist in the mind of officials of both agencies as to the appropriateness and viability of the sanitation technology being applied. Another category of persons, the contractors and their representatives, also expressed doubts as to the efficacy of the technology. The researchers wonder how a new technology can be transferred to the field via a hierarchy of personnel who are themselves not completely convinced about the particular technology.

User Awareness and Motivation for Conversion:

A low level of hygiene awareness was found in the beneficiary groups and as to knowledge of health related benefits of the technology being provided. This, coupled with the lack of conviction on the part of some of the provision agency officials, has led to a situation of poor motivation of beneficiaries towards conversion.

User Knowledge of Project Details

The community was found to be generally ignorant about important details of the project like grant and loan facilities which had made the scheme possible. They were unaware that the loan component was recoverable from them in phased instalments. All assumed that the programme was one of free provision of sanitation facilities. Hence the fact corroborated by the canvassed questionnaire that 100% of the beneficiaries do not pay any amount in monthly instalments.

Attitude towards Use and Maintenance of Facilities

Despite the fact that instruction booklets have been given to a majority of the

beneficiaries, knowledge on proper use and maintenance was found to be deficient particularly on issues like opening and desludging of pits. Most families knew when to switch to the second pit but had no idea as to when to open the first pit for removal of pit deposits. Questioning of users at random proved that most households had lost the booklets in question.

Contracting Procedures

Standard contracting procedures for tendering and allocation of works are followed by the MWSSB. The Contractors, however being used to executing large works, find small margins of profit in such schemes. They also complain of theft of construction materials due to the decentralised nature of the work. They therefore sub-contract the work to small masons and rarely bother to visit work sites. This, perforce, has a negative effect on the quality of construction. Visual observation by the researchers corroborated this fact.

Scavenger Liberation

The present scheme was called the 'Scavenger Liberation Scheme, Malkapur'. However, the sporadic and part implementation of the scheme still requires the presence of the scavenger since the majority of the latrines in Malkapur remain the dry, bucket type. Of the targetted number of conversions only 57% have been converted since mid 1984. It is to be noted however that the total number of dry latrines in Malkapur far exceed the number targetted for conversion.

Community Involvement

There has been a conspicuous lack of community involvement from the inception of the programme. Other than a questionnaire to elicit some basic situational and peripheral data (Annexure - 5), the community has hardly been consulted on the present scheme. Their involvement has not been sought in planning, designing, implementation or after care aspects.

Associated Infrastructure Provision

A singular related finding was in the field of provision of water supply. As already stated in 1.4 the majority of the people get unmetred water supply from public standposts. Water supply is therefore free. What is remarkable is the mode of provision. The researchers conject that one or more of the city fathers, seeking re-election, promised free adequate water in his/their election manifesto. As a result, it is found that the standposts have been provided in haphazard fashion with far too many tap points - it is not uncommon to find 3-4 standpoints in a pipe length of only 10 metres! The result is low pressure because of too many taps on line (often with the taps missing) and very high cost of provision. It would have been cheaper to give yard taps to each household with the added advantage of lower water loss since taps would not be stolen.

5. COMMENTS

The present low cost sanitation scheme under study envisages partial cost recovery of the loan component from the beneficiaries. The success of the cost recovery procedure however is affected by the mode and modalities of provision of other elements of infrastructure. In the Malkapur case the water supply provision is seen as a case in point. The researchers feel that the previous free provision of an associated infrastructure component is detrimental to the concept of cost recovery for a subsequent provision. It is felt that the poor cost recovery in Malkapur is partly because of this reason.

This is the first time that a scheme of this type has been implemented in the town. Whenever a new technology of this type is being promoted there is considerable demonstration effect which, in the long run, will be highly beneficial in the acceptance and establishment of the technology overall. Special emphasis and attention is therefore necessary in such new schemes if the 'whole town approach' for conversion of latrines is to be realised.

Part provision of a low cost sanitation scheme (as in the case of Malkapur) throws up specific problems such as the non-realisation of the concept of Liberation of Scavengers. Since a sizable number of latrines continue to be of the dry type, the scavenger remains indispensable.

A large number of house owners do not allow location of leaching pits inside their plots because of lack of knowledge and confidence in the new technology. In such cases if there is also no space available outside the plot then conversion is not possible. This reduces the success rate of the scheme.

It was noticed from MWSSB figures that there were no conversions at all in the cases where the leaching pits were to be located under the road. It seems that the beneficiaries do not want pits located within their premises and the municipality does not want to locate them under metalled roads anticipating problems when the pits are filled and the road surface will have to be excavated to open them.

In a number of instances it was found that there were long, exposed lengths of PVC pipe between connecting the latrines with the pits. These could easily be damaged by children or animals.

6. RECOMMENDATIONS

- Coordination between all involved agencies right from municipalities to state and central government institutions should be assured from the inception stage of schemes.
- Emphasis should be consciously shifted from only physical target achievement and should be enlarged to the broader goals of the project and should also keep in mind the after - care requirements.
- To ensure proper motivation of personnel of provider agencies, orientation/training programmes should be conducted to expose all concerned officials to the technology being applied
- Involvement of the beneficiaries should be solicited from the inception of the scheme and should be ensured through all stages. This will help smooth progress of the scheme, avoid theft of materials from site and ensure user participation in post installation operation and maintenance of facilities.
- Awareness creation cum health education programmes should be systematically conducted (even repeated if necessary) to synthesise users to the benefits to be gained from the technology and to emphasise the important connection between proper sanitation and good health.
- It is imperative for the caretaker agency to make an early assessment of future requirements particularly in terms of additional finances, equipment and personnel.
- Preferably the local body should be made responsible for the implementation of the scheme. If any state or central level agency is involved it should mainly have an advisory/facilitating role providing technical know - how, personnel and ensuring proper flow of materials and end quality of the product.
- Construction should be entrusted directly to local small contractors/masons. An orientation cum training programme should be conducted in the early stages of a project to acquaint them to the new technology, upgrade their skills and motivate them as to the main objectives of the project.
- Operation and maintenance arrangements should be planned for by the local body with the help of community organisations/NGOs and include the services of the liberated scavengers
- Special motivational efforts are required in those cases where houseowners do not allow location of leaching pits inside their plots because of uncertainty and lack of knowledge about the new technology. In really recalcitrant cases use can be made of the Maharashtra Municipal Act (Sub-section 1, Section 287) to enforce conversion in the interests of the overall benefit to the community

- Liberated scavengers should be trained in alternate occupations and assisted to find suitable job opportunities.
- It is necessary to create a market for the pit deposits since it is essentially a new "product" for the town. Horticultural departments should take a lead by buying these deposits and using it as manure in parks, gardens etc.
- Successful schemes should be adequately documented and information disseminated to all related agencies to boost confidence in the technology and aid in successful replication of projects.

**WARDWISE DISTRIBUTION OF POPULATION
MALKAPUR MUNICIPAL COUNCIL.**

Ward No.	No. of Households	Population		Total
		Male	Female	
1.	152	506	485	991
2.	213	681	684	1,365
3.	217	555	549	1,104
4.	121	442	407	849
5.	149	455	433	888
6.	197	565	538	1,103
7.	177	610	533	1,143
8.	134	449	440	889
9.	163	577	568	1,145
10.	251	688	663	1,351
11.	296	796	735	1,531
12.	221	759	692	1,451
13.	90	293	285	578
14.	138	707	673	1,380
15.	215	551	530	1,081
16.	243	768	792	1,560
17.	170	511	463	974
18.	125	391	435	826
19.	178	634	630	1,264
20.	145	565	562	1,127
21.	193	691	685	1,376
22.	275	989	926	1,915
23.	227	625	591	1,216
24.	245	753	645	1,398
25.	461	1,256	1,146	2,402
26.	196	561	540	1,101
27.	320	883	755	1,638
28.	274	849	774	1,623
29.	797	1,907	1,666	3,573
30.	519	1,489	1,359	2,848
31.	231	714	717	1,431
Total:	7,333	22,220	20,901	43,121

Source: Census of India, 1981 Primary Census Abstract

MAHARASHTRA WATER SUPPLY AND SEWERAGE BOARD

STATEMENT SHOWING DETAILS OF HUDCO LOANS FOR L.C.S AND RECOVERY FORM MUNICIPAL COUNCI UPTO 31ST MARCH 1988

Rs. in la

S. NO	NAME OF THE MUNICIPAL COUNCILS	HUDCO LOAN SANC- TIONED	HUDCO LOAN RELEASED	REPAYMENT DUE FROM M C upto 3/88	REPAYMENT MADE by M C upto 3/88
1	Kemptee	14.81	7.41	3.48	5684.50
2	Barshi	7.33	2.95	0.24	24377.50
3	Aket	10.24	6.37	3.11	4462.50
4	Malkapur	14.39	7.18	4.00	4462.50
5	Achalpur	13.07	7.96	3.62	10.00
6	Wardha	9.64	2.35	1.94	NIL
7	Washia	12.76	3.83	3.39	NIL
8	Nandurbas	7.96	2.38	2.11	80571.00
9	Hingoli	12.09	3.64	2.57	120571.00
10	Yavatmal	4.88	3.04	1.13	40522.00
11	Kastol	0.99	0.44	0.32	NIL
12	Shagaen	1.28		0.35	NIL
13	Tumzer	3.04	0.50	0.24	NIL
14	Bhandara	3.85	0.88	0.69	NIL
15	Shirpur	4.01	0.83	0.79	10516.00
16	Chalisgaon	3.26	0.81	0.32	2214.00
17	Chepda	6.67	1.72	0.50	7535.00
18	Ysola	1.24	0.50	0.13	NIL
19	Amalher	5.76	0.93	0.21	NIL
20	Arvi	11.49	0.00	-	-
21	Hinghanghat	9.36	0.00	-	-
22	Ramtak	1.42	0.00	-	-
Grand Total		159.64	54.40	29.14	303163.50

Source : MWSSB