I R C

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INFORMATION DOCUMENT

ON

CONVERSION OF DRY LATRINES, CONSTRUCTION OF POUR-FLUSH LATRINES, REHABILITATION OF SCAVENGERS AND COMMUNITY AND PUBLIC TOILETS IN INDIA

Developed in the context of the Appraisal of the KfW-supported HUDCO-V Sanitation Project

The Hague
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ABBREVIATIONS AND ACRONYMS USED

ACDIL	Academy for Community Development and International Living
CRSP	Centrally-sponsored Rural Sanitation Programme
DANIDA	Danish International Development Agency
DM	Deutschmark
ESI	Environmental Sanitation Institute
EWS	Economic Weaker Section
HIG	High Income Group
HUDCO	Housing Urban Development Corporation
HSMI	Human Settlement Management Institute
IDWSS	International Drinking Water Supply and Sanitation Decade
IEC	Information, Education and Communication
IHS	Institute of Housing Studies (Rotterdam, The Netherlands)
ILCSP	Integrated Low Cost Sanitation Programme
IRC	International Water and Sanitation Centre
ITI	Indian Training Institute
IWID	Initiative Women in Development
KfW	Kreditanstalt fur Wiederaufbau
LCS	Low-Cost Sanitation
LCSP	Low Cost Sanitation Programme
LIG	Low Income Group
LS	Liberation of Scavengers Programme
M&E	Monitoring and Evaluation
MIG	Middle Income Group
MoUD	Ministry of Urban Development
MoW	Ministry of Welfare
NHA	National Housing Authority
NGO	Non-Governmental Organization
NSSO	National Sample Survey Organization
ODA	Overseas Development Agency
O&M	Operation & Maintenance
PRIA	Participatory Research in Asia
RWSG-SA	Regional Water and Sanitation Group for South Asia (UNDP/World Bank)
TP-PF	Twin-Pit Pour-Flush Latrine
TRYSEM	Training of Rural Youth for Self-Employment
UBSP	Urban Basic Services Programme
UNICEF	United Nations Children Fund
UNDP	United Nations Development Programme

US$1 = Indian Rs 31 (Jan'94)

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INTRODUCTION

In preparation and support of the Appraisal of the urban sanitation component of HUDCO-V an Information Document was to be developed. The information to be compiled concerned the existing data and experience on the major areas of the appraisal, i.e:

- conversion of dry latrines
- construction of pour-flush latrines
- rehabilitation of scavengers
- community and public latrines

Using the TOR and the developed checklists, a list of contents of the Information Document was made.
As sources of information were used references present in the IRC Documentation Centre on the above areas in sanitation in India.
This Information Document gives particularly an overview of general experiences, findings and statistical data. The document was primarily developed to assist the Appraisal Mission in giving a brief state-of-the-art of the concerned issues. It may also be useful for other agencies involved in the urban sanitation sector in India.
Information collected during the Appraisal mission in January 1994 is compiled in the Appraisal Report and its appendices. The two documents should be seen as complementary to each other.

A. CONVERSION BUCKET LATRINES AND BUILDING NEW LATRINES

1. PROBLEM DEFINITION

Water supply

Water supply is in general well organized in small and middle towns with less than 500,000 people. Most houses have house connections and in the peri-urban areas at least standpost service levels are provided.

Excreta disposal facilities

For these towns on-site sanitation is being promoted as the most feasible technology. Conventional sewerage will in many situations be beyond the financial and management capacity of the municipality and the individual households.

Latrine coverage

Nath and Chatterjee (1984) reported on latrine coverage of all India: of the urban population 27% have sanitary latrines, of the rural population 0.5% have access to minimal sanitation facilities (i.e. at least sanitary latrines, so no bucket latrines).
The survey coverage results for small and medium towns are: 23% flush toilets; 29% bucket latrines; 12% no facility, use open air defaecation.
The overall Indian urban situation is: 27% sanitary latrines; 40% dry latrines; 33% no latrines. With huge variation per state and town.

The efforts of the International Drinking Water Supply and Sanitation Decade have not contributed much to the improvement of this situation. During the first half of the decade the urban sanitary latrine coverage increased with 3.3 % (from 25.1 to 28.4%), and the rural from 0.5 to 0.72%. (Ministry of Urban Development, Mid-term Review of Decade Programme) (see appendix 1) State-wise sanitation coverage in same appendix. The figures for 1988 are also given in appendix 1.

In the evaluation of Madhya Pradesh-LCSP (HUDCO, 1991) it is stated that (appendix 2): the number of dry latrines (1981) in Madhya Pradesh is 100,380, and the number of scavengers involved is 74,000. The total population in Madhya Pradesh is 14,716,000 (1988).

Communal latrines

Most communal latrines are in poor condition as far as cleanliness and operation and maintenance is concerned (HSMI et al., 1993) (appendix 3). Quite a significant number of the communal latrines makes still use of the bucket system. The septic tanks of communal latrines are often not emptied in time. This results in overflowing of septic tanks and blockage of the pipes (choked). In such cases people use the area directly around the latrine blocks causing direct and indirect health risks.

Health risks

The health risks from handling buckets filled with fresh faeces are probably so obvious that they are not explicitly mentioned in the Indian literature. Feachem et al. (1983) gives an 'Environmental classification of excreted infections' to which scavengers are exposed (appendix 4). Only if many precautions are taken and the collection is largely mechanized then the disease-transmission risks are significantly reduced. This is not the case with the scavengers. The health benefits of the bucket latrine have been ranked against other sanitation technologies by Feachem et al. (1983) (appendix 4).

Although many scavengers may know the health risks for obvious reasons, they do not express it as a problem. Most scavengers feel the major difficulties in their occupation are low salaries, delayed payment, hard work, lack of tools/equipment and exploitation (Pathak, 1991) (table 29, appendix 5).

According to the studies done by Pathak (1991) all households with bucket latrines are aware of the unhygienic conditions created by this sanitation technology. For the households that converted the system to a pour-flush system more than 80% said that 'unhygienic conditions' were the main reason for converting.
Also most scavengers like the pour-flush design as it is more hygienic than the bucket latrine (appendix 5).

Socio-cultural factors

Scavengers have expressed their opinion on their work:
(HUDCO, Evaluation Maharashtra 1990)

- desire to come out of scavenging
- stop working as scavenger is even acceptable if at marginal financial loss
- want to have other jobs for their children but due to job security and housing facilities they tell their children to accept the scavengers job instead of investing in education
- need to finance self-employment: starting shops; training for trades as masons, carpenters etc.
- also private scavengers prefer other jobs, if employment will be secured.

Pathak (1991) describes (based on studies in three towns Patna, Arrah and Muzaffarpur) the social and economic status of the unliberated and liberated scavengers of these towns; appendix 5. The issues described include the relation of their status and the social stigma with factors as housing, income level, sanitation habits, education, attitude towards education of their children and sex of the scavenger.

Pathak (1991) also reports on unliberated scavengers that they had not chosen the occupation but had "inherited" it. All interviewed scavengers disliked the job because it was dirty and the lower social status associated with the job did not carry any social respect. Scavengers said they were hated by social higher groups and they do not have any social interaction with higher castes. Most of the scavengers (54%) would like to change profession even if they

receive less income. All interviewed would change to start business if they are assisted in this. Most preferred jobs include peon, sweeper, assistant or clerk, business man or any possible job for their qualifications (appendix 5).

The reasons given by people for converting bucket into pour-flush latrines are (as expressed by people) (HUDCO, Evaluation West Bengal 1990):

- less frequent cleaning , which gave problems with bucket latrines
- more privacy
- non-availability of scavengers
- LCS is an environmentally safe method
- no need for scavengers

People in West Bengal expressed their dissatisfaction with bucket latrines etc. because of: (HUDCO West Bengal, 1990)

- irregular cleaning by scavengers
- bucket latrine smells badly
- bucket latrine is not hygienic

Pathak (1991) reported as reasons for conversion (as expressed by people) also high cost of bucket latrine (27%); absence of sewerage (46%); and by order (5%).
Problems associated with service (bucket) latrines seen by people (both adopters and non-adopters):

- bucket latrine is unhygienic
- due to irregular scavenging the foul smell sometimes becomes unbearable
- when scavenging is being done there is a very bad smell in the house
- it gives a foul smell
- irregular scavenging
- when scavenger comes, someone in house has to arrange for water and ashes for cleaning of latrine

The caste of the people does not make a significant difference in reasons mentioned. (Pathak, 1991) (tables 67,68, 72, 73; appendix 5).

The acceptance of liberated scavengers in certain jobs may be a problem. However, when they or their children are no longer associated with "scavenging" then their social status increases. They even avoid contact with people still scavenging (Pathak, 1991).

Faecal disposal in bucket latrine system

Studies (AIIHPH) have shown that about 60% of the night soil in bucket latrines is collected. The remaining portion flows over the latrine and soils and contaminates the direct home environment (Nath and Chatterjee, 1984)

Disposal of night soil from bucket latrines is supposed to be done on special disposal grounds where pits are dug. The nightsoil is dumped in the rough pits but usually not covered with ash or soil. In several cases nightsoil is dumped into roadside ditches and water bodies. (Nath and Chatterjee, 1984). HUDCO Evaluation Madhya Pradesh (1991) reports that human excreta collected is transferred by tanker to trenching grounds for composting with solid waste.

Environmental risks

The O&M Research Study (HSMI et al., 1993) found that most scavengers dump the liquid from single pits and septic tanks in the open drains. The solids from these systems and from the double-pit pour-flush is also taken to compost yard, the trenching ground or buried on the plot. No distinction is being made between pathogen-containing waste from single pits and septic tanks, and pathogen-free waste from double-pit pour-flush toilets (see appendix 3, p.33)

The environmental risks and groundwater contamination from TP-PF depends on the hydro-geological conditions (groundwater table, soil type, permeability). If fine soil is present and the water table remains more than 2 m below the bottom of the pit, bacterial travel would not take place beyond 3 m from the pit. (NEERI and SPHL, mentioned in Nath and Chatterjee, 1984)

Installing a sand envelope of fine sand around the pit would reduce the risks for contamination of groundwater sources (All India Institute of Hygiene and Public Health, Kerala State Water Pollution Prevention and Control Board and IRCWD in Nath and Chatterjee, 1984). It is unclear whether this idea has been further developed.

In West Bengal Evaluation survey (HUDCO, 1990) (appendix 6) around 40% of all pits were within 10 m from water source (unclear whether these were groundwater point sources such as wells, boreholes)

Income level of scavengers at present

Average income of scavengers interviewed in four towns was before liberation Rs. 283-595/month (typical Rs.463), and after liberation Rs. 804-1204/month (typical Rs. 1068). Evaluation (Sinha/Ghosh, 1990)

For unliberated scavengers the personal income ranges from Rs. 100 to more than 600 per month; the majority earns between Rs 300-500 (Pathak, 1991; based on figures from 1982-1983). The family income varies per town and is in most cases between Rs 400-800 and in a few cases between Rs. 800-1200 per month.

Cost of latrines

1984: (Nath and Chatterjee):

No. of Users	Unit costs(Rs) for conversion Bucket to TP-PF	Unit costs (Rs) for new construction TP-PF
5	800	1100
10	1000	1400
15	1300	1600

According to recent HUDCO information (Guidelines for Integrated Scheme of LCS for Liberation of Scavengers, see appendix 7) the cost of conversion may not exceed Rs. 2500 per unit (5-10 users) (Rs. 3000 for hilly and island areas and north-eastern states)

HUDCO (1990b) states a figure of Rs 2300 - 2400 up to plinth level; Municipal Development Programme gives a unit cost of Rs 3000 including superstructure.

The research on O&M (HSMI et al., 1993) gives a reported cost range between Rs. 870 - 3079, excluding the superstructure, with an average of Rs 2188 for construction up to the plinth level. The lower cost figure came from an older programme, but since then construction material costs have gone up.

Kanpur Mirzapur Project (1988) made overview of estimates rates for PF construction and conversion bucket latrines. see appendix 8.

2. ORGANIZATION

Experiences from other similar projects

There have been several massive programmes for conversion of dry latrines into low cost pour-flush latrines. A list of programmes and towns is attached (appendix 9; from Evaluation LCS)

The major programmes and projects on low cost sanitation and scavengers liberation implemented recently are:

- Integrated Development of Small and Medium Towns (IDSMT) of the Ministry of Urban Development
- Scavengers Liberation Scheme of the Ministry of Welfare
- Basic Sanitation Scheme
- UNDP/World Bank Schemes
- Urban Basic Services of the Municipal bodies with UNICEF support.

A table with overview of these programmes and some basic programme description is given in appendix 3 (HSMI et al., 1993)

Institutions involved

On-site technologies are being promoted as the only feasible solutions for cities with a population below 100,000 people. Government institutions at national, state and municipal level, each have distinct roles in the planning and implementation of the low cost sanitation schemes. A detailed description of agencies and tasks, as well as an overview table are given in appendix 3 (HSMI, et al. 1993)

Summarized, the following agencies are involved:

- At national level the *Ministries of Urban Development* and of *Welfare*, and *HUDCO* are involved.
- At state level the *Directorate of Municipal Administration* and/or the *State Water and Sewerage Boards* are involved. Sometimes other state government organizations having a coordinating and monitoring role.
- At municipal level the municipal departments are the key institutions: viz. *Public Health Department, Public Works Department, Revenue Department.*
- NGOs, as *Sulabh International, Safai Vidhalaya, Rajastan Institute for Local Self Government* have been involved in the implementation of sanitation schemes.

Town selection

The towns covered in the programmes on scavengers liberation are all small and middle towns with less than 500,000 people.

Priority is given to towns with a high percentage of bucket latrines or no latrines, or with a wide-spread of open-air defaecation.

Socio-economic data are accompanied with information on number of households requiring upgrading or construction of new latrines (as per income group). Also the number of scavengers to be liberated will be given.
So the main town selection criteria are:

- percentage of bucket latrines
- percentage of open air defaecation
- socio-economic status of the households in need of improvements
- number of scavengers

The programme aims at a "Whole Town" approach, so that towns become "scavenger-free". Although the "whole town approach" is the starting point in planning, it turns out that often only part of the target group converts its bucket latrine or builds a new one. Sarma, Dave and Jansen, (1989) reported that often not all "bucket latrines" and "non-latrine" households are included in target. Furthermore, there are problems with progress in conversion, so the programme takes a long time.

Many disputes were reported over sites and costs between tenants and owners causing hindrances and delays of implementation programmes.

Planning

The municipalities and local NGOs are to some extent involved in planning of programmes. At municipal level the Municipal Council and different departments could be involved (e.g. Engineering Dept., Municipal Development Programme, etc.)
Their tasks are:

- selection of beneficiaries
- tendering, supervision
- preparation of bills of payment

Evaluations from different project reveal the following findings:

= In *Madhya Pradesh*: Evaluation Madhya Pradesh (HUDCO, 1991)
steps in project development:

- project preparation
- motivation: Sulabh staff posted to town; house-to-housecontact to interest people; information on technology and financial issues; construction procedures. Application submitted to local municipal office.
- construction: easiest way to have one agency doing all things from step 1 till end!! Eg. Sulabh does!

= In *Maharashtra* the following measures were taken (Evaluation HUDCO, 1990)

- the councils increased through changing the bye-laws the sanitation tax levy from Rs. 60 to Rs. 300/year to force the people to convert their bucket latrines to TP-PF.
- municipal-controlled scavengers' services were discontinued after declared dates.

- councils did not permit construction of bucket latrines.
- officials and ward members use pressure tactics to create awareness among the people.

= The *Evaluation* of LCS (HUDCO, 1990) lists a number of possible by-laws that were not passed:

- non-appointment of new scavengers when existing scavengers are released from the present services and absorbed in other services;
- to demolish bucket latrine structures, if constructed after the execution of the programme;
- to levy penalty on use of bucket type latrines to refrain the users;
- to provide places owned by Councils (such as roads, gutters wherever the space is insufficient) to beneficiaries for construction of pit/septic latrines;
- to initiate legal action in case of default in carrying out conversion or loan repayment;
- to finalize and earmark the place/area (where the converted unit is to be constructed) if it is not done due to dispute;
- to force/instruct tenant or owner if there is a dispute between tenant and owner regarding who has to bear the costs;
- to prohibit private scavenging.

The construction of demonstration latrines for the typical new technology would promote the enthusiasm of the potential beneficiaries. Why invest in something unknown? The demonstration units should also show different types of superstructure using locally available materials: cheap, moderate and expensive superstructures. Cost range indications of each system should be given. Liberated scavengers could have a role in selling building materials, construct superstructures, etc.

Households have to contribute to the construction of the double pit PF, depending on their own income (see table Section "Credits and Loans"), although this is prepaid as a loan, while the other part is a grant. The costs of the superstructure will be borne by a combination of loan and direct own contribution as indicated in the same table.

To reach an equity the Evaluation of HUDCO (Evaluation Madhya Pradesh (HUDCO, 1991)) made the following recommendations:

* financial assistance to the beneficiaries should be based on their capacities and affordability
* rate of interest and repayment period of loan could vary per affordability of beneficiaries
* emphasis should be put on economically weaker and low income groups

In West Bengal (HUDCO, 1990b) contractor selection is based on:

1. on lowest bid, or
2. contractors execute work on the lowest cost quoted; then work is distributed among them per area.

Operation and Maintenance

According to Nath and Chatterjee (1984) the municipal authorities can not be expected to cover the costs of O&M of the sanitation programmes.

Municipalities have in general no budget for O&M of LCS. Most of the budget of the sanitation section is consumed by salaries.
See appendix 3, p.40-41 (HSMI et al., 1993).

Evaluation-Maharashtra (HUDCO, 1990) indicated a number of constraints in conversion of latrines:
* the O&M aspects were not explained to beneficiaries;
* beneficiaries were not aware of operational aspects including:
  - the changing from one pit to the other;
  - how to clean latrine;
  - how to empty the pit;
  - amount of water required for flushing;

* if insufficient space available, it is unclear what design alterations to make.

Some examples of adjustments according to local conditions (Evaluation on Madhya Pradesh, HUDCO, 1991):

Balaghat:
* NGO (Sulabh ?) did not give guarantee period on construction defects;
* municipalities had not set up "complaint cell" nor a desludging unit. However, desludging by municipality possible for Rs 75/pit.

Dewas:
* Sulabh gave guarantee (5 years) but contractors did not give any guarantee.

Durg:
* "complaint cell" was set up by municipality.
* Pit emptying services available against Rs. 80/pit.

Sarni:
* no "complaint cell";
* pit emptying /desludging at Rs. 70/pit by local contractor (after tendering)

The research on Sanitation Systems (HSMI et al., 1993) reports on the O&M conditions of sanitation systems found in 1322 household including 973 double-pit pour-flush toilets. Issues covered are water use, cleaning of pans, pit switching and pit emptying (see appendix 3, p.32-33).

Promotion and marketing

In West Bengal, most people did not know about LCS programme although some knew the design.

The evaluation and reviews indicate that health is the most important promotional point.

The reported reasons for having a latrine are (HSMI et al., 1993):

- health (particularly in one town with extensive hygiene education and promotion campaign)
- dissatisfaction with existing dry latrines and public latrines
- not having access to any latrine at all
- motivation from municipality
- forced by municipality

According to the Seminar Proceedings of the O&M of Sanitation Systems in Urban Low Income Areas Project (appendix 10) social marketing may be very effective. This approach should include the elements of convenience, privacy and status. These issues were also raised during the Country and Inter-Country Seminars of the same project in India in April 1992 (appendix 11). It was viewed that the health benefits would not very much appeal to the people. This is contrary to the reasons expressed by the households that converted their bucket latrine (see appendix 5; Pathak, 1991). Even non-adopters to pour-flush systems express that the hygienic conditions of the bucket latrine is what they dislike the most.

Extensive user awareness campaigns in Shertallai resulted in two major findings for this town (HSMI et al., 1993. p. 36):

- health considerations are the main reason for having a new toilet
- use of latrine by all family members, which is significantly higher than in other towns without such campaign
- awareness on O&M was significantly higher than in towns without such campaigns

The O&M Research (HSMI et al., 1993) found that no funds were allocated for promotional campaigns at municipal level, neither was trained staff available to carry this promotional campaign out. In some cases (Shertallai) this was done by a local NGO.

Evaluation Madhya Pradesh (HUDCO, 1991) found that in **Durg** promotion was done through hand bills, newspapers and house-to-house contact. Sulabh educated people on use and maintenance, and gave a five-year guarantee on the construction.

Methods for promotion applied in different projects:

- UNDP-World Bank project suggested (in Nath and Chatterjee, 1984) that a project management cell is set up at the state or local government level for coordination between all levels and involved organizations and target groups. This Cell would also guide and assist the municipalities in publicity, motivation and health education.

- (HUDCO Evaluation, Maharashtra, 1990) information to beneficiaries was done through circulars.

NGOs

Sulabh International:
Is a non-profit earning voluntary social organization. It does not receive grants from government and ESAs. The only income is from implementation charges: design, survey, project reports, motivation campaigns, sanitation education, construction, supervision, follow-up.

Other NGOs:
- Safai Vidyalaya in Ahmedabad (see Pathak, 1991)
- Harijan Sevak Sang ""
- Bhangi Mukti Yojna ""

Hygiene Education Programme

The current activities on health and/or hygiene education in UBS towns:
- In many towns the level of hygiene awareness was found low among beneficiaries; also the level of knowledge on health benefits from PF technology.

The experiences with the hygiene education programmes in UBS towns are:
- Evaluation-Maharashtra, 1990: 75-98% of the people with converted bucket latrines were aware of the benefits of conversion and their role in the conversion.

- In one town included in the O&M Research (HSMI et al., 1993), called Shertallai, the use of the latrines by all family members and the awareness on related health issues was rather high compared to other towns without promotional and Hygiene education campaigns (appendix 3, p.33-34).

3. TECHNICAL ISSUES

An overview of sanitation systems usually found in the smaller and middle towns is given in appendix 3 (HSMI et al., 1993). The systems reported on are:

- bucket latrines
- overhang latrines
- single pit latrines
- flush-latrines with septic tanks
- two-pit pour-flush latrines
- public latrines

Design adjustments

Town project sometimes adjust the design to reflect local preferences and requirements (from HUDCO evaluations, 1990):

- sometimes the available space it too limited for a TP-PF and the design is changed. In some cases therefore aqua-privies have been constructed. In other cases the design is not adhered to: pits are put closer to each other.
- sometimes the environment is too heavily contaminated, and labourers demand extra money to do their work there.
- when no space is available, options are low cost sewerage (e.g. shallow sewerage) or combined leach pits, or larger septic tanks (for neighbourhood). Required space could sometimes be found under footpath (but this is not liked by municipality for reasons of access to pits)
- could loan/grant (same amount as for LCS) also be provided to households preferring conversion to septic tank system?

In cases where any risks of contamination of groundwater (used for drinking water purposes) exists because soakpits are too close to groundwater source, the use of sewerage could prevent contamination in such cases.

In most cases the PF systems were over-dimensioned e.g. design for 10 persons while used only by less than 5 people. The pits could be safely emptied after 18-24 months, but in many cases emptying did not take place within 5 years (HUDCO et al., 1993)

In some cases the design was adjusted to reflect local hydro-geological conditions: groundwater table, leaching capacity:

- sometimes standard design is not suitable for impermeable black cotton soil, as this becomes hard after some time, and water does not seep out anymore. Need for design adjustments.

- In situations with clayey black cotton soil, as in Shajapur, the design was adjusted as the leaching capacity of the soil was insufficient. The double pit was converted into a double-compartment septic tank with overflow into the open drain (HSMI et al., 1993).

The PF technology is generally seen as appropriate, although some officials have some doubts:

- some officials and municipal engineers were not convinced of the appropriateness and viability of the technology (PF).
- on the efficacy.
- on the transfer of technology if engineers are not convinced of appropriateness

Use of local materials

Local materials are not often used for pit lining:
In situations were people improve the sanitation excreta disposal facilities themselves, often a single pit is constructed (HSMI et al., 1993). The pit lining may be made of honeycombed brickwork or truck-tyres. In some other cases the research found bottle-shaped pits without lining. Where a double-pit was involved, the design followed the recommended one using honeycombed brickwork.

Sometimes inferior quality of construction materials is used (cement, aggregates, bricks)
Fixtures are sometimes of low quality

Ceramic pans are preferred over fibre glass, which was standard in West Bengal.
(HUDCO Evaluation 1990)

Functioning and use

- The conditions and performance of the basic sanitation systems (single pit, double-pit pour-flush) have been reported in the Operation and Maintenance Research (HSMI et al., 1993) (appendix 3, p. 26-30). This includes system parts as pits, pit covers, junction box, pans and footrests, ventpipes, and superstructures. A general research finding was that the filling rate of the pits was much slower than calculated. Most of the pits had not filled up after 5 years in use.
- The same research reports also on the non-use of sanitation systems. This appears to range from 16-57%. Most of these non-used latrines have never been used as the superstructure is missing. For the once used latrines the reasons for non-using anymore are frequent blockage, damage to the latrine structure and difficulty in emptying.
- all (West Bengal) are satisfied with LCS because of privacy and safety
- most people use less than 6 liters of water
- use restricted/delayed if superstructure is missing

Common problems as viewed by people:
- clogging of pipe
- bad smell (officials say due to lack of maintenance and/or improper flushing)
- in some cases collapse of pit walls

Remarks on condition, design and cost superstructure:
- non-provision of superstructure is a major problem
- investments for superstructure were between Rs. 300 - 1200 (first for bamboo/thatch)
- superstructure design options to be made for different cost levels
- in some cases TP-PF were not used for several years as superstructure was missing
- in Madhya Pradesh (HUDCO, 1991) the majority of the TP-PFs were missing superstructures (and so not used) as no grants/loans were given for this.
- in West Bengal none of the pits filled up in period of 5-6 years: conclusion, pits are too large/over-dimensioned. There is a need for a more economical design (smaller pits) of a pit filling up after 2 years.
- sometimes insufficient space for twin pits; people are reluctant to have the double pits under their veranda or room

A manual pit an emptying device that can be used for single pits and septic tanks emptying is developed in Tanzania (appendix 12)

Decomposed faecal material could be utilized for several purposes. The market for this potential product is unclear and some studies should to be done for further investigations.

Options are:
- sale to horticultural gardens, parks, private gardens agriculture etc.
- in some cultures (towns as Srinagar, Kashmir) there is a tradition of using human excreta (even though they are mainly muslims) as fertilizer on the land (Malyari land)
- mixing with compost

Contractors and masons

In some towns contractors indicated interest and in other towns there were complaints in the profit made.

Issues included:
- low margin for contractors, depending on location of town (construction materials may be more expensive in certain towns (hills))
  (sometimes not sufficient water is available)
- in some places contractors did not tender as the profit was too low.
- Larger contractors are not so interested in conversion/construction latrines as amount of work per site is rather limited; sometimes their materials required for construction (sand, cement etc.) get stolen overnight. (Sarma, Dave and Jansen, 1989) (appendix 13)

Even though many particularly small contractors and masons do not have experience in latrine construction, skills have often been developed with instruction and assistance from officials.

4. Institutional and Human Resource Development

The organization/institutional structure of LCS projects varies per state and town. Some of these structural set-ups documented are:

- in Madhya Pradesh (HUDCO, 1991) Madhya Pradesh Slum Clearance Board was nominated by Local Self Government, as Nodal Agency for channelling subsidy from Central Government and loans from HUDCO. They transfer the money to local authorities controlled by the Director of Municipal Administration (State Gov't). Sulabh International did nearly all the implementation (till 1991: 182,021 converted/constructed PF in 188 towns)

- in Maharashtra via Maharashtra Water and Sewerage Board and then to Municipal Councils. Municipal Councils formulate projects, submit proposals for obtaining funds, allot work to contractors, supervise work, release funds and rehabilitate scavengers. Varying per town, different implementors:
  - via Sulabh Int. (control of grants and loans), monitoring by Engineering Dept.
  - direct appointment of contractors, via Engineering dept.
  - through tendering for contracts, via Engineering dept.
  - through appointment of contractors by households; after inspection by dept. , with completion certificate grant and loan can be claimed.

- in West Bengal the work was given directly to contractors without tendering, on "least-cost-quoted" basis. (mostly less than 50 latrines per contractor)

Payment of contractor: first 50% at signing contract, balance against certificate by contractor and household, countersigned by Ward Commissioner. In some cases pan and cement are provided by municipality while the amount of money for these is deducted from the grant.

Some constraints and problem areas identified in evaluations are:

- Evaluation Maharashtra(HUDCO, 1990): supervision is done by Junior Engineers and Sanitary Inspectors (non-technical). However, they do not keep records/documentation of visits or reports to Council.
- inspections are needed for technical audit to check construction quality, adherence to standards by contractors and NGOs.
- poor coordination between the Nodal Organization (state level) and the municipalities, because (Sarma et al., 1989)
  - no personnel at municipal level available to communicate with
  - some engineers were not convinced of the appropriateness of the technology
  - need for training also for Sanitary inspectors
  - Ward officers have very important role in communication with the households, both in planning and after installation service; intermediary between users /households and municipality

- according to municipal officials, contractors did not implement the suggestions for improvement of construction quality given by municipal engineers; contractors should be closely supervised and final products inspected.

Municipal councils need more information on procedures grant/loans application and timing of funds.

One Nodal Department per State responsible for implementation of the LCS programmes; if there is more than one organization involved in implementation, then a Nodal Organization is needed for coordination (in Evaluation Madhya Pradesh (HUDCO, 1991))

Procedure in projects with the NGO Sulabh International involvement:

1. NGO does survey (house-to-house)
2. motivation to house owner to apply for loan for conversion
3. NGO fills out application forms on behalf of household
4. head of household signs
5. NGO receives on behalf of household a grant/loan
6. NGO carries out the construction work
7. house owner gets work progress card and guarantee card (five years)
8. household receives education on use and O&M of latrine
9. close liaison is established for follow-up.

Some practical problems were reported in Sulabh Int. executed projects:
- O&M problems were not corrected (during five year guarantee) due to poor communication
- reporting was often done to Municipal Corporation
- NGO did not properly monitor functioning and use.

A number of good recommendations for improvement of the LCS programmes have been made in a "Use and Maintenance Study" by Sarma, Dave and Jansen, 1989. (appendix 13). The recommendations include (the ones on training of scavengers are dealt with in Section B):
- improve communication between NGO and households in after-construction phase;
- establish monitoring on functioning and use of TP-PF
- establish local community organizers system for communication, education etc.
- make arrangements that all TP-PF latrines get superstructure
- local bodies should make arrangements to get filled-up pits emptied
- control the dumping of night soil in towns with bucket latrines to prevent pollution and contamination of environment
- promote further conversion of bucket latrines whenever not yet started or not yet complete

- improve reporting on progress programmes by state departments in order to speed up release of instalments and implementation of programmes
- state departments should speed up the approval of proposals for conversion programmes
- municipal dept's should adhere to preferences of households in terms of type of latrine
- establish local coordinating committee to solve problems and monitor progress of implementation;

Training

Out of the Special Central Assistance, 10% can be utilized for job training, in particular, vulnerable groups including scavengers of the Scheduled Castes. Training programme costs can be covered from this assistance.

Although municipalities are supposed to carry out hygiene education and promotional campaigns, no funds are allocated for this nor for the training of municipality staff (HSMI et al., 1993).

Orientation needed for town and state engineers convincing them on efficacy and appropriateness of pour-flush leaching technology (PF).

5. Financial issues

The financial conditions and loan/grants procedures are described in the Guidelines for Integrated Scheme of Low Cost Sanitation for Liberation of Scavengers (appendix 7).

HUDCO's Urban Infrastructure Financial Wing coordinates the programme; regional HUDCO offices assist in formulation proposals.

LCS programmes have the following procedure:
- government grant (45% actual costs with max. of Rs. 1125) and HUDCO loan (10.5%, 7 year period) (50% actual costs, max Rs. 1250) plus 5% our contribution. If costs are higher, the 5% grant for Scheduled Castes and Scheduled Tribes Welfare may be used for this purpose. See also following table on loans and subsidies.
- in Maharashtra (with the via Maharashtra Water and Sewerage Board as the State Nodal Agency and the Municipal Councils): Loans/grants distribution and allocations to households and re-payments of loans were not clear at the time of the reporting of the evaluation.

There are only a few organizations eligible to receive loans:
- Nodal State Agencies (e.g. Tamil Nadu Urban Finance and Infrastructural Development Corporation - TUFIDCO) or
- local bodies such as Housing Board, Slum Clearance Board, Development Authority, Improvement Trust, Water Supply and Sewerage Board, Cantonment Board etc.

Credits and Loans

The World Bank supported the conversion in Madhya Pradesh starting in 1984; it was envisaged that 100% loans could be given, but this was changed to 50% loans and 50% grants as project did not start off. Community latrines were built with 100% loans from the local authority. (Evaluation, HUDCO, 1991)

The interest of the target group in grant and loan/credit schemes varies per state and town.
- in West Bengal more applications for LCS than funds available: "first-come-first-serve" system; the closer to the Ward Commissioner the easier funds are secured by households.
- in West Bengal: 80% interviewed willing to pay on a monthly instalment basis (ranging from Rs. 25 - 37/month) ; 20% not willing or not able to pay.

The re-payment of loans is very low: (breakdown per income group)
- The O&M Research (HSMI et al., 1993) reports that among the 752 families that had taken loan, 64% did not repay any amount of money; of the others most did pay irregular (appendix 3, p. 37)

- Recovery of loans takes place at two levels:
  - from household to Municipal Department (sometimes via NGOs as Sulabh International)
  - from Municipal Corporation to State Nodal Agency. The municipal department has to pay back the loans to the State Nodal Agency. If they were not received from beneficiaries they have to use their own funds.
- the State Dept. has to pay back the loans to HUDCO

The agreements with the Municipal Corporations state that the recovery of loans should be done according to HUDCO rules.

Income groups:

EWS	up to Rs. 1250/month
LIG	Rs. 1251-2650 /month
MIG	Rs. 2651-4450 /month
HIG	above Rs. 4450/month

Table loans and subsidy for TP-PF

	UP TO PLINTH				SUPERSTRUCTURE			
Beneficiary category	EWS	LIG	MIG	HIG	EWS	LIG	MIG	HIG
Loan	50%	60%	75%	75%	90%	85%	75%	60%
Central subsidy	45%	25%	nil	nil	nil	nil	nil	nil
contribution beneficiary	5%	15%	25%	25%	10%	15%	25%	40%
interest rate per annum (%)	10.5	10.5	10.5	10,5	9.5	12.5	15.0	17.0
loan period (year)	7	7	7	7	15	15	15	15

- loan period of max. 7 years include the construction period of about two years.
- The State Government may decide to increase the subsidies to cover the beneficiaries' contribution.

There are several systems of loan recovery:

- Evaluation Madhya Pradesh (HUDCO, 1991) Durg using existing revenue staff; no bills for loan repayment sent, just collected.
- Evaluation Madhya Pradesh (HUDCO, 1991): Sarni: hardly any money was recovered from the loans! Majority had not paid back any money.
- (Sarma et al., 1989): Repayment of loan is sometimes poor as earlier infrastructural improvements were entirely covered by grants.

Hardly ever legal action is being taken against defaulters in repayment of loans and sanitation taxes. (HUDCO, Evaluation Mahar. 1990)

Loans can be given by HUDCO for community and public latrines (pay&use)

- for the poorest sections of town, including footpath dwellers
- for public locations: bus stand; market place

6. Monitoring of project progress

Reporting on progress of disbursement of loans and grants is required every quarter as per pro-forma. The State Government has to get quarterly reports from the Nodal or Municipal bodies.

The release of the last loan/grant installment will be done after site inspection.

Reporting on effects of the LCS and Scavengers liberation projects should be made by agency with competent staff and field experience in LCS

Municipal Corporation states that they cannot do the follow-up due to financial/managerial problems

Sinha and Ghosh (1990, p. 43) suggest the establishment of a committee at district level, to follow-up the scheme, and review the scavengers rehabilitation programme.

Sarma et al., 1989, suggest the involvement of Ward Officers in the monitoring of the functioning and use of LCS systems (appendix 13).

The literature suggests an improved system for monitoring of functioning and use of toilets and the project's effectiveness

B. INCOME GENERATING ACTIVITIES FOR LIBERATED SCAVENGERS

The Liberation of Scavengers Programme is coordinated by the Ministry of Welfare. Such schemes can be prepared according to their Guidelines.

Scavengers employed by Municipal Corporations have been provided alternative jobs such as cleaning of roads and drains within the same corporations.

Non-municipal corporation scavengers received training through:

Scheduled Caste Development Corporation
NGOs, e.g. Sulabh International

Also the children of scavengers received special attention through training for different professions by the same organizations.

Several organizations identified the need for more training institutions: e.g. one per state, each with hostel facilities

Socio-educational effects of liberation

As programmes on the liberation of scavengers started as from 1957 (Malkani Committee) there are numerous experiences to date. Some are given below:

- Pathak (1991) reports on the social, economic and educational status of liberated scavengers in three towns: Patna, Arrah, and Muzaffarpur. Appendix 15. In all towns the liberated scavengers were most women. Some 92% of the liberated scavengers are illiterate, but many (varying from 16-62%) are interested in adult education, particularly among the younger women.
- The effects of their liberation on their social status was also reported in terms of (i) visiting temples visited by caste Hindus; (ii) engagement of Brahmins to supervise religious ceremonies; (iii) invitation by other caste people on ceremonial occasions; (iv) taking water from common places along with other caste people; and (v) taking food and catering in hotels and other places. Apparently, there has been a noticeable change among liberated scavengers and other low and high caste people. (see appendix 5). Liberated scavengers do not usually have close relations with people still doing scavenging work now.

Types of training

The type of training given is usually the same:
(Sinha and Ghosh, 1990): Tailoring (17.4%), mechanics (17.4%), typing (6.8%), driving (13.7%), manufacturing cane materials (10.0%), manufacturing leather goods (9.3%), latrine pan manufacturing (5.8%), carpentry (9.5%), electrician(10.7%). Figures are from training given between 1985-1988: total trained 2564. See appendix 14.

Training of liberated scavengers

The interest for training for new jobs after liberation is generally high. Several experiences have been documented:

- in **Madhya Pradesh** three out of four scavengers liked to change profession. Out of the rehabilitated scavengers nearly 85% reported that the change has improved their social status. However, the living conditions have not yet changed.
- the Sulabh Institute of Research and Rehabilitation (Patna) offers training for scavengers and their children (Sinha and Ghosh, 1990).
- More training institutions are needed, in all states (e.g. through branches of these institutes)
- **Bihar** (1985-1987) training for scavengers and their children: 1464 trained, 71 or 5% rehabilitated (50 women self-employed in sewing). 1987-1988, 1450 scavengers and their children trained; self-employment programme started: sofar 90 (6.2%) self-employed in sewing, weaving, leather goods manufacturing and carpentry (Sinha and Ghosh, 1990)
- **Rajasthan** (1981-1982) 103 scavengers liberated; most working for the Municipality now; very few engaged in private business. No training of scavengers children; planned now.
- In **Madhya Pradesh** number of scavengers liberated is not available, but most scavengers are rehabilitated through employment within municipality in road and drain cleaning jobs.

Success rate of scavengers' training

The success of training of liberated scavengers varies, as is reported in several references: Sinha and Ghosh (1990) report in their evaluation that in their sample population in selected towns 86.3% of the scavengers obtained employment as sweepers in the municipal corporation, hospital, railways, etc. Another 7.5% is working in governmental and non-governmental departments as class IV employees other than sweepers, while the rest is privately employed as hawkers, rickshawpullers, labourers, petty traders, drivers, artisans, scavengers, mali etc. The tables in appendix 14 give the distributions of the scavengers household members for (i) level of education, (ii) workers versus non-workers, and (iii) occupations.

Training of scavengers' children

In several states training institutes for scavengers' children have been established.

- Sinha and Ghosh (1990) report that some 70% of the these children received education up to primary, middle and secondary level, while some 22 % remained illiterate. Trades included in the training are typing, carpentry, tailoring, manufacturing cane products. The girls received particularly training for tailoring.
- Sulabh International played an important role in the training courses. Unemployment is very high among the trained children: 97%, while the others received employment from Sulabh International. The government did not further support them in finding employment or starting their own business.

Some reported problems are:

- The impact of the scavengers liberation programmes on the socio-economic conditions and behaviour of scavengers has been evaluated by Sinha and Ghosh (1990). They report on their present occupational activity, their socio-economic status, their conditions of living, and their social behaviour and attitudes. (appendix 14)
- The drop-out rate in training courses for scavengers' children is high: 46% (courses 1985/86 and 1986/87). The given reasons were insufficient stipend, lack of interest in trade, lack of understanding, overwork during training, too much strictness, poor quality of food, homesick. (Sinha and Ghosh, 1990)
- The monitoring of the impact of the training is poorly done.
- The follow-up (including the rehabilitation) and guiding of trainees is poorly done.

Suggestions and recommendations were given by Sinha and Ghosh (1990) on the TP-PF latrines and scavengers (appendix 14): in short:

- establish local coordinating committee to solve problems and monitor progress on training/rehabilitation programme
- establish regional training centres for scavengers and their children
- trades in training courses should be in line with the local occupational needs
- training institutes should be better equipped for practical training
- rehabilitation after training should be the responsibility of the training institute
- funds required for training and rehabilitation should be directly allocated to the training institutes
- institutional arrangements should be made within the training institutes to improve the rehabilitation of the trainees
- follow-up of training and guiding of trainees could be improved by more departmental coordination in rehabilitation by Sinha and Ghosh: e.g. dept. of Welfare, dept. of Labour, Employment Exchange, Scheduled Caste Development Corporation, local banks, NGOs, etc. and guidance in starting private business: bank loans, bookkeeping, raw materials procurement, marketing products.

C. PUBLIC LATRINES

Present situation assessment

In West Bengal: small units of 3, 4 and 6 seaters; close to the houses (<20-60m)
In Madhya Pradesh: varying: small (8 seats) to larger (23 and more seats)

Functioning and use
Functioning and use of communal latrine facilities:

- In Maharashtra (Evaluation, HUDCO, 1990): According to 80% of respondents interviewed in 99 public latrines, latrines choke up regularly, for reasons of: (i) throwing stones in pan; (ii) insufficient flushing water; and (iii) overflowing of septic tanks.

- In some cases construction was not complete: doors missing or not included in design! For women this is a serious drawback to use the latrine.

- In other cases sitting arrangements were found unsuitable; to be corrected. Review through users views!

- Users avoid dirty public latrines and visit then other places. On average 86% of the interviewed found the latrines unclean.

- Evaluation Madhya Pradesh (HUDCO, 1991):
  (a) for 'pay&use' Public Latrines: more than half of Public Latrines users also bathes, and third also urinates. Problems reported are: (i) latrine far away, (ii) prefer open air defaecation, (iii) cannot afford payment.
  (b) for the non-'use&pay': also 26% did not use Public Latrines as latrines are found dirty.
  (c) for municipal-managed latrines: nearly all users reported that they are dirty and no attendant remains at site.

Organizational issues
The organizational system, including the O&M system varies. The most common options are:

- In Maharashtra (Evaluation HUDCO, 1990) O&M of community latrines was by municipal departments. The status of O&M was very poor in nearly all 99 visited community latrines.
- In Madhya Pradesh (Evaluation HUDCO, 1991) almost all new community latrine blocks are being constructed, operated and maintained by Sulabh Int. as the local authorities failed to maintain them properly.
- Who inspects and supervises the cleaners of public toilets?
  Evaluation HUDCO suggests that Makadams[1] and Sanitary Inspectors should supervise and inspect cleaners.

[1] municipal supervisors of sweepers, cleaners etc.

- Evaluation Madhya Pradesh, HUDCO gives three systems for management of public latrines by Sulabh:
  a. In many cases Sulabh Int. operates and maintains them; local authorities meet the electricity and water charges. People "pay and use" except women, children and disabled. Urinating is free (often outside Complex)
  b. In other cases in Madhya Pradesh, the local authority charges Rs 1-4/month per user family. Fixed O&M charges are being paid to Sulabh Int., who manages the block.
  c. Use is free, and local authorities pay O&M costs to Sulabh Int., about Rs. 2500-3000/month per community latrine

  Sulabh operates and maintains 150 comm. latrines (Sulabh Complexes) in 37 towns in the state Madhya Pradesh.

- In Madhya Pradesh: management varies per town: (Evaluation Madhya Pradesh (HUDCO, 1991)):
  1. all done by municipality; no"pay&use" latrines. Mostly one sweeper comes from 5am to 1 pm. All miss electricity; some have no water connection; sweeper is expected to fill surface water tanks from nearby public standpost, handpumps or wells.
  2. O&M by Sulabh; "pay&use" type.
  3. O&M by Sulabh; non-pay&use. Municipality pays Rs 2500/month for O&M.

- Sulabh Int. runs the Sulabh Complex "Pay&use" for 30 years. Service around the clock. Cleaning, O&M and soap powder is provided free for handwashing by users. Evaluation Madhya Pradesh (HUDCO, 1991)

Users of Public Latrines ventilated the following problems in using non-"pay&use" Public Latrines (HUDCO evaluation: West Bengal 1990):

- scarcity of water
- lack of lighting facility
- emission of bad smell
- defective fixtures
- irregular and unsatisfactory cleaning by municipal scavengers
- some units are cleaned with drain water and without detergents!

One survey reports that present non-"pay&use" Public Latrines are found dirty by users. Only 30% of them said that they cannot afford payment for use.

Needs assessment is based on public demand; Council conducts survey to decide on location and number of seats. Designs are made. Tendering. Contractor.
Sulabh Int. constructs Sulabh Complexes on turn-key basis. 20% advance for starting off.

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APPENDICES

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14. parts from Evaluation of Sanitation ... Sinha and Gosh 1991

15. Abstracts of eight non-Indian publications relevant for this subject.