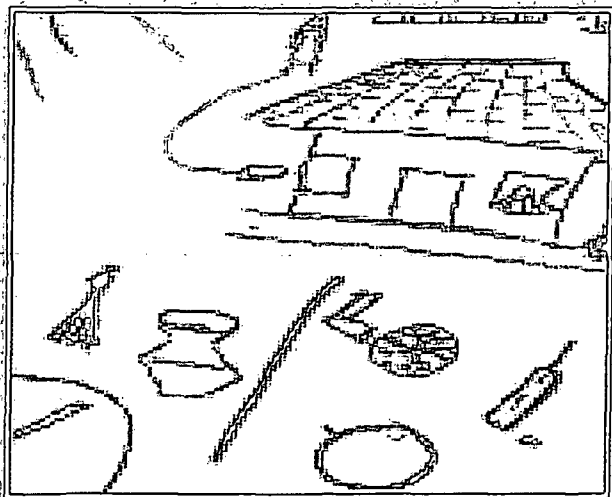


AN INVESTIGATION OF GENDER MAINSTREAMING & APPROPRIATE LATRINE TECHNOLOGY



By

Timothy James Marshall
University of Southampton
An internship report

Supported by Child's Environment Programme UNICEF ICo & UNICEF Patna

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AN INVESTIGATION OF GENDER MAINSTREAMING AND APPROPRIATE
LATRINE TECHNOLOGY IN RURAL INDIA

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A dissertation submitted in partial fulfilment of the degree of MSc in
Engineering for Development

BACKGROUND

In early 2001, we had received an enquiry from Mr. Ben Fawcett of the University of Southampton U.K. seeking an internship opening for a student of M.Sc. in Engineering for Development. The student Timothy Marshall was keen to work under a UNICEF internship programme in order to write a dissertation to fulfill the requirements for a M.Sc. course.

We felt that this was a good opportunity to gain insights into specific areas of concern in the water and sanitation programme. A ready possibility existed in the follow up to the recommendations of our First Annual Review of SIDA assisted programmes done in November 2000 when a field visit to East Singhbhum district was undertaken. One of the observations from the review was that UNICEF needed to strengthen gender programming in WES with far more vigour than was happening then. In view of our obligation to our donors to demonstrate actions taken on recommendations, we designed a proposal for Timothy Marshall to study local gender dynamics and undertake select activities for enabling women to participate on equal terms in decision making around water, sanitation and hygiene issues in a SIDA supported district. The proposal was further developed in consultation with the University of Southampton faculty to explore low cost technology options and to optimise local resources. Timothy Marshall started his work in East Singhbhum district with Jamshedpur as his base, in mid-July 2001.

This assignment was a source of mutual learning and was made possible on account of the support Timothy received from Jean Gough, STAR UNICEF Patna office and SN Dave, Project Officer WES, as also other colleagues from UNICEF Patna, who facilitated him to understand the framework of UNICEF co-operation. Timothy's stay in Jamshedpur including helping him to establish contacts with the district administration and the village communities where he worked was facilitated through a local NGO "SEEDS" which guided him in the field.

Timothy worked independently and was able to demonstrate that a participatory and interactive approach and a structured programme with some deliverables enables men and women to understand the basics of technology options and make informed choices regarding environmental solutions. Further, there is a need to nurture an enabling environment for achieving gender mainstreaming working with women and men.

Timothy worked in India from 11th July to 7th October 2001, spending 80 days in the field working in three villages and 10 habitations. The assignment covered analysis of gender roles in communities and priorities related to quality of life, search for appropriate sanitation solutions and skills based empowerment of women. At the end of the project, he made a presentation of his findings and tasks done to the East Singhbhum district administration. The community, especially the women whom he taught hands-on to fabricate sanitation platforms and "ultra low-cost latrines" i.e. without pour-flush pans, were sad to see him leave.

We are sharing this report with the hope that this generates more ideas and actions for placing gender programming centre-stage. If you have any queries, you may like to refer to Timothy or Shyam Dave directly.*

The purpose of this internship was to provide an open and learning environment that would both enrich the student while allowing him to contribute to UNICEF goals. The opinion and views expressed in this report are solely of the author's and do not reflect UNICEF WES position on any issue.

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ABOUT THE AUTHORS

Tim Marshall is a chartered mechanical engineer with 11 years professional experience working in consultancy in the UK and overseas. In 2001 he studied at the University of Southampton towards an MSc in Engineering for Development. As part of that course, he undertook an internship with UNICEF to carry out the research presented in this dissertation.

After a career working as in aid and development with international agencies, Ben Fawcett is now a lecturer and the coordinator of the MSc course in Engineering for Development at the University of Southampton's Institute of Irrigation and Development Studies. He supervised the research project presented here.

SUMMARY

The Integrated Water and Environmental Sanitation (IWES) Project is implemented in East Singhbhum District, in the Indian state of Jharkhand, by the Public Health Engineering Department and seven non-government organisations. Funded by SIDA, and coordinated by UNICEF, the project promotes sanitation in rural villages in the district.

Agencies perceive that mainstreaming gender is essential to project success, and it has been proposed that technical learning modules may help rural women and men to participate in decision-making on an equal basis, by enabling them to assess latrine options, and make informed technology choices.

This research investigates gender mainstreaming in the context of the sanitation component of the IWES Project, and reviews technologies that might be included in the proposed modules.

Fieldwork was undertaken in East Singhbhum during a UNICEF Internship over 3 months, from July 2001. The investigation of gender issues was achieved by undertaking a rapid rural appraisal in three villages to establish gender dynamics, and current attitudes to sanitation. At agency level, sensitivity to gender issues, and capacity for mainstreaming, were investigated by a review of project documents, observations of implementation methods, and a short questionnaire survey.

The research finds that women's active participation in decision-making is restricted by the constraints of their traditional patrilineal society. There is no tradition of men and women meeting in public, and this stands in the way of women's meaningful participation in water and sanitation committees.

At agency level, there is a lack of sensitivity to gender issues, and specific project goals towards mainstreaming are not defined. The emphasis of the project is currently on the provision of infrastructure, rather than addressing the strategic needs of women. There is considerable potential for the empowerment of women, and men, through their participation in the decisions that define the project objectives. To date, though, such decisions have been made at agency level. There is evidence to support the introduction of technical learning modules.

The IWES Project promotes a range of pour-flush latrines, and these were assessed against a series of criteria derived from the literature. A prototype latrine, fabricated with the participation of community members, was assessed against the same criteria. The investigation concludes that the promoted technologies, though technically sound, are perceived to be very expensive by villagers, and this may be a reason why increases in coverage have been disappointing to date.

The prototype latrine uses local materials and a SanPlat, and costs 50-70% less than the cheapest pour-flush model. It also compares well against technical, functional and environmental criteria.

The study concludes that any future learning modules should include such alternatives within their remit.

ACKNOWLEDGMENTS

The author extends his gratitude to all those enabling and assisting in this successful research project.

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The Chaturvedi Family	Jamshedpur
The Patak Family	Jamshedpur
Staff of the Management Development Programme accommodation	Xavier Labour Relations Institute Campus
Nani ke Dhaba	Musabani
The community members of Kuilisuta, Korashole and Bangora	

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GLOSSARY OF TERMS USED

Chatai	– Straw matting
Household Sanitation	– Safe excreta disposal, water handling and storage, garbage and wastewater disposal.
Majhi	– Headman
Paddy	– Rice, before it is threshed
Panchayat	– Lowest level of local Government in India
Pucca	– Neat / tidy / proper, e.g. a road, well or house.
Santhal	– One of the indigenous tribes of Jharkhand.
Tola	– Hamlet

CURRENCY EXCHANGE RATE

Throughout this dissertation, Rs.68/- = £1.00 is used. (September 2001)

LIST OF ACRONYMS AND ABBREVIATIONS USED

GoB	– Government of Bihar
Gol	– Government of India
HQ	– Headquarters
IED	– Institute of Entrepreneurship Development
IWES	– Integrated Water and Environmental Sanitation
KAP	– Knowledge, attitudes and practices
LFA	– Logical framework analysis
m	– Metre
mm	– Millimetre
NGO	– Non-government organisation
PHED	– Public Health Engineering Department
Rs.	– Rupees
SEEDS	– Socio-Economic and Education Development Society
SWASTHH	– School Water and Sanitation Towards Health and Hygiene
TPPF	– Twin-pit, pour flush
UNICEF	– United Nations Children's Fund
VWSC	– Village Water and Sanitation Committee
WATSAN	– Water and Sanitation
WSHG	– Women's Self-help group
NTFP	– Non-timber Forest Products
Ø	– Diameter

1 INTRODUCTION

1.1 Background

In India, around 450,000 children die each year as a result of diarrhoeal diseases (Gol, 2000; UNICEF, 2001). A lack of facilities for the safe disposal of human faeces results in the contamination of water sources and soil and this, in turn, enables the transmission of diarrhoea and other faecally transmitted diseases. The result is often poor health – particularly for children (Carter and Howsam, 1999).

Esrey et al (1990) caution that the impact on public health of water and sanitation programmes is difficult to quantify, but there is considerable support for the theory that many of these deaths may be preventable through improved access to safe drinking water and sanitation, and the improvements in hygiene that such infrastructure facilitates (e.g. Cairncross, 1990; Carter and Howsam, 1999; Esrey et al, 1985; Esrey et al, 1990; Esrey, 1996; Panda, 1997; Simpson-Hébert and Wood, 1998).

Health, though, is not the only motivation for instigating improvements in sanitation. A survey in rural India (Gol, 1990) recorded the difficulties respondents faced in going out at night, or in bad weather, and because of the time and effort required to find a suitable place to defecate. The absence of latrines can be a particular hardship for women, “for whom public defecation may be unacceptable” (Carter and Howsam, 1999) and Morgan (1994) points out that menstruation accentuates women’s need for privacy. This is one of a number of issues that relate sanitation and gender issues.

Women hold a wealth of knowledge about sanitation and hygiene (Simpson Hébert and Wood, 1998), and their traditional role as carers means they have much to gain from improvements in family health (Morgan, 1994). Although it is widely acknowledged that women’s involvement is vital to the success of development interventions, women are unfairly overburdened in most societies (WHO, 1992; Yoon, 1995; Smout and Parry-Jones, 1999) and the suggestion that development programmes must promote equitable sharing of social and economic benefits is increasingly accepted (Dayal et al, 2000; Maharaj, 1999; Smout and Parry-Jones, 1999; Srinivasan, 1992; WHO, 1992).

Increasingly, development projects are attempting to address gender issues. The term ‘gender mainstreaming’ means that the aim of meeting women’s strategic needs is fully integrated into the design and implementation of projects. (Legum and Field, 1995; Smout and Coates, 2000).

1.2 Context

Since 1966, the United Nations Children’s Fund (UNICEF) has worked with the government in India to develop and improve water sources in rural areas. In Bihar – one of the country’s most populous states – 90% of villages were provided with tubewells by 1998, but the state’s Public Health Engineering Department (PHED) has been unable to effectively maintain the wells and, in

2000, many were out of service (ORG, 2000). Additional programmes were initiated through the 1970s and 1980s to promote household latrines, but progress in increasing coverage has also been disappointing with only 2% of rural households served by 1999. (GoB et al, 1999; ORG, 2000. Data are for East Singhbhum District).

In an attempt to address these shortcomings, piloting of the Integrated Water and Environmental Sanitation (IWES) Project with SIDA assistance commenced in April 1998 and is continuing in one district in each of five Indian states. This is a joint venture between UNICEF, the respective state governments and the Swedish International Development Agency (SIDA). (UNICEF, 1995. SEEDS, 2001).

UNICEF promotes various areas of sanitation and hygiene, including a clean public environment, safe disposal of human excreta, of wastewater, and of solid waste, (Kolsky et al, 1998). The stated goals of the Integrated Water and Environmental Sanitation (IWES) Project are to safeguard children's right to survival, and the rights of citizens to a clean and safe environment. The project is distinguished from previous UNICEF/Government of India (GoI) undertakings by emphasis of social issues, specifically:

- a) Capacity building within communities through awareness programmes,
- b) Community participation, and
- c) "Gender Empowerment" (GoB et al, 1999; UNICEF 2001).

The IWES Project, then, attempts a more holistic approach to development. Hygiene promotion is included, and the wider concept of "environmental sanitation" has superseded the promotion of household latrines alone.

East Singhbhum is one of the districts in which the IWES Project is being piloted. It is in the new state of Jharkhand that was, until division in 2000, southern Bihar. Figure 1.1 shows the location of Jharkhand in the eastern part of India. Rural areas of East Singhbhum account for 95% of the land, and are home to 57% of the population (compared with 72% nationally). The state is rich in minerals and is highly industrialised through mining, steel and heavy manufacturing. 51% of rural people come from indigenous tribal communities. Overall, 31% of the district's rural population are literate (compared with 43% nationally), but amongst women literacy is only 18% (ORG, 2000) (compared with 45% nationally). (National data are for the year 2000; World Bank, 2001).

The project is underway in nine blocks in the district. The Public Health Engineering Department (PHED) acts as a nodal agency, reflecting UNICEF's goal of strengthening local institutions. In addition to its technical role, the PHED liaises between UNICEF, the government partners, and seven non-government organisations (NGOs) responsible for the implementation of the project at community level.

This research focuses on Musabani Block, which lies 60km from the city of Jamshedpur: the administrative hub of the IWES Project. Figure 1.1 shows the position of the block within East Singhbhum. UNICEF selected Musabani as the focus area and SEEDS as the host NGO for this research. Since 1995, SEEDS has undertaken work towards community development and

empowerment in Musabani. Specific schemes have included adult literacy and non-formal education, thrift and credit schemes, capacity building, the development of micro enterprises, and the formation of women's self-help groups (WSHG).

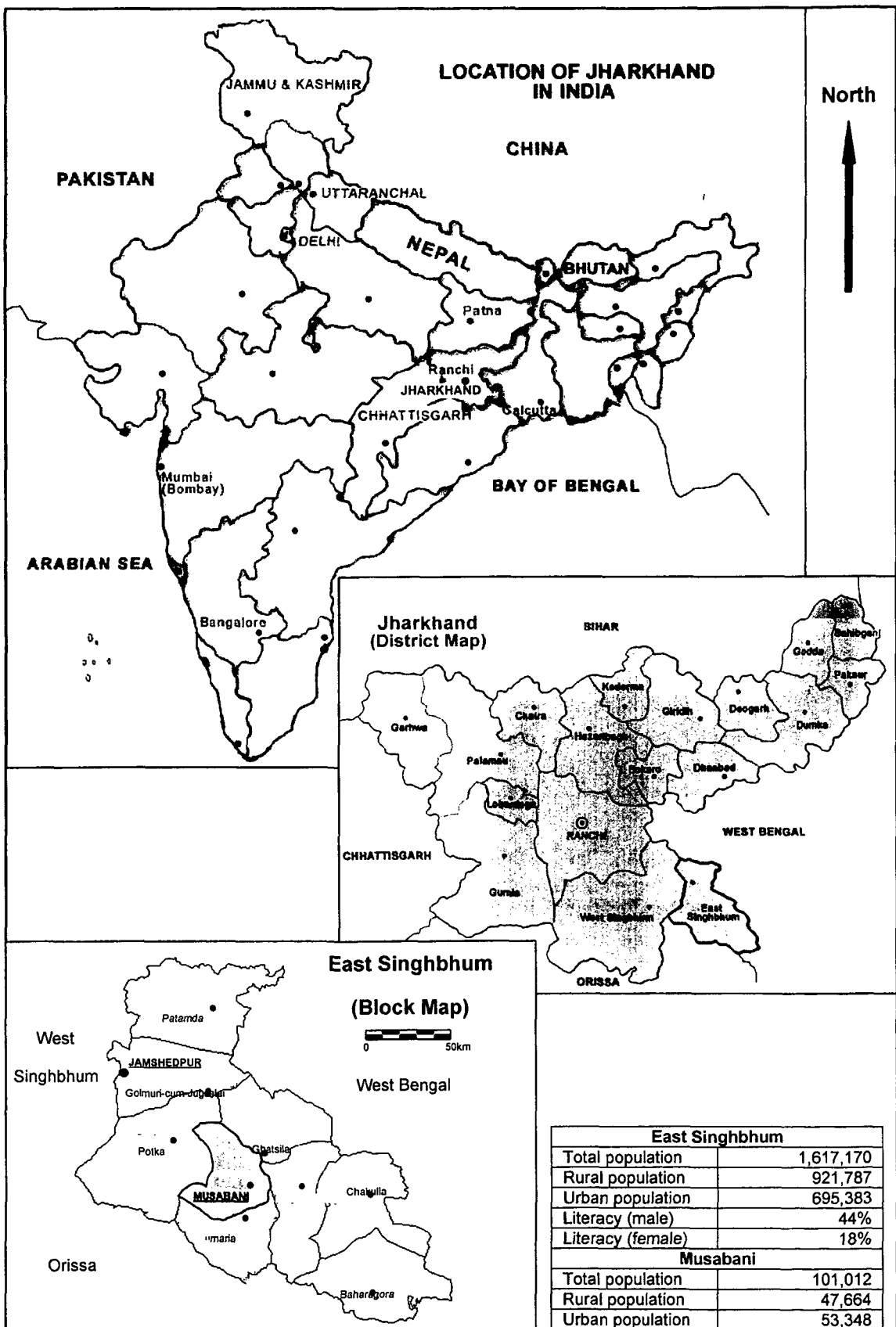


Figure 1.1 Maps showing the location of the study area

In Musabani Block, rural areas are home to 47% of the population; 66% of the rural people come from indigenous tribal communities (designated as “Scheduled Tribes”), with less than 3% from the Scheduled Castes. 33% of Musabani’s rural population are literate. Hence, the Block is reasonably representative of the district as a whole in terms of rural demographics and overall literacy. Many local rural people are poor, and 85% of the tribal population is in debt (SEEDS 1997). In the block as a whole, approximately 50% of families live below the official poverty line of Rs.55/- (£0.8) per day (Singh, 2001a). In the least accessible villages, 85% of families live below the poverty line. During the sowing season, male agricultural labourers receive paddy worth about Rs.25/- (£0.37) as a daily wage. Female workers receive paddy worth about Rs.20/- (£0.29) for doing the same job. In the slack season, remuneration drops by 15-20% (SEEDS, 1997).

In Musabani, there is evidence of disease that is related to poor hygiene and the lack of sanitation facilities. In interviews, health professionals revealed that:

- the local people suffer from malaria, gastro enteritis, dysentery, diarrhoea, fever and skin disease. Protozoan and amoebic infections are also present.
- hookworms, ascariasis and tapeworms are common, particularly in children.
- diarrhoeal and skin complaints are most common in the rainy season, when water runs off the fields and pollutes ponds and wells.
- fever and diarrhoea are responsible for the deaths of infants.

In August 2001, doctors reported that, of 148 patients attending a health camp in Musabani, 11% presented with faecally transmitted diseases or parasites, while 15% of patients suffered from skin infections.

Disease imposes an additional, financial burden. Diarrhoea can prevent villagers from working for a week or more. Treatment by a traditional healer or “ojha” can cost Rs.50-60/- (£0.75-0.9), or the equivalent in kind. Special foods may also be required, or transportation to get medical attention. (Prasad, 2001; Parta, 2001).

Villagers describe other disadvantages to the practice of open defecation, such as the time wasted, and the difficulties they face in going out at night, or during the rainy season when crops are in the fields. They report problems with flies, worms and mosquitoes, and bad smells from the fields that sometimes reached their homes. Women in some villages report problems due to a

lack of privacy – especially in the less forested, roadside settlements, and some limit their consumption of water to avoid having to relieve themselves during the day.

There is, then, a real case for increasing the local coverage of household latrines.

As of October 2001, the IWES Project has been running for two years. Significant progress has been made in setting up village water and sanitation committees (VWSCs) of which at least one third of the members are women (ORG, 2000). The PHED has trained community handpump mechanics, and most of the handpumps in the project area have been converted to the India Mark III type, designed for village-level maintenance. Community mechanics – women and men – have now taken on full responsibility for pump maintenance in some areas. Villagers have constructed soak-pits and garbage pits, and developed vegetable gardens for the safe disposal of wastewater. Community members support these activities through village water and sanitation committees (VWSCs) with voluntary contributions of money and labour.

Although the IWES Project has made progress in both water supply and environmental sanitation, demand for household toilets has yet to pick up in most blocks of the district – particularly in the more rural areas (Dave, 2001). By the end of September 2001 the PHED and private entrepreneurs, combined, had installed a total of 508 toilets (IWES Project meeting, 2001): an increase in coverage of less than 0.2% of the households in the district. The project goal is 10% coverage by the end of 2001.

Latrines are promoted through the three PHED-run sanitary parks, by the NGOs implementing the IWES Project, and by the private entrepreneurs. The PHED operates a number of production centres fabricating and selling ferrocement components for a range of latrine models. Private-sector entrepreneurs have been orientated to promote, manufacture and sell latrines, and are supported by the government's Institute of Entrepreneurship Development (IED). Trained community masons carry out installation and UNICEF pays a commission of Rs.50/- (fifty Rupees) to anyone motivating a household to adopt a toilet. The IED works to match supply with demand, and monitors the quality of manufacture and installation.

At the time of the fieldwork for this study, there were no IED-sanctioned private entrepreneurs within easy reach of Musabani. Promotion was therefore the responsibility of SEEDS, and of the PHED's Junior Engineer based 20km away, in Ghatsila. Their promotion efforts at village level began in August 2000.

The sanitary park at the Musabani Block HQ is fenced and, throughout the period of the fieldwork, the gates were normally kept locked. Accordingly, few villagers can report having been inside the Sanitary Park, and local knowledge about the types and costs of the latrines on offer is generally very limited.

There are plans, under the IWES Project, to promote latrines through school children under an initiative called School Water and Sanitation Towards Health and Hygiene (SWASTHH), but this had yet to begin in Musabani at the time of the fieldwork.

1.3 The Objectives of this Research.

It is widely documented that the benefits of development interventions are more likely to be sustained if communities participate, i.e. if they have control over key decisions (Carter and Howsam, 1999; Chambers 1983; Dayal et al, 2000; Eade and Williams, 1995; Elliot, 1994; Manikutty, 1998; Pickford, 1995; UNICEF, 1997).

However, women's disadvantaged position is a barrier to their full participation. "Their limited access to formal power reduces their negotiation capacity to get the...systems required for their practical needs" (Maharaj, 1999). Hence, development projects should focus on empowering women, to increase their influence and self-confidence, and enable them to participate more fully (Legum and Field, 1995).

Evaluations of the IWES Project, and of previous UNICEF programmes (Kolsky et al, 1998; UNICEF, 1997), have indicated that a focus on gender issues is not yet fully integrated in project design and implementation, i.e. gender is not 'mainstreamed', although this is perceived to be critical to project success. Despite some participation as mechanics and committee members, for example, women tend to be excluded from discussions leading towards decision-making (Ganguly, 2001).

As a step towards gender mainstreaming, this research investigates gender issues in the context of the sanitation component of the IWES Project. The specific objectives are:

- a) To investigate gender dynamics within the rural communities of Musabani Block, in order to identify barriers to women's participation in decision-making in the IWES Project.
- b) To investigate the gender focus of the IWES Project, and the agency capacity for mainstreaming.
- c) To identify measures that might promote gender mainstreaming in the IWES Project.

These objectives are addressed by qualitative research at community and agency levels, the results of which are appraised in relation to discussions of gender issues in current literature.

"To evoke community participation, we need to yield control over key decisions" (UNICEF, 1997). If community members are to take informed decision, information must be made available to them, and participation therefore implies learning on the part of community members. Learning empowers, and is a "step towards achieving a sense of ownership and responsibility for sanitation improvements" (Simpson-Hébert and Wood, 1998).

UNICEF considers that increasing women's understanding of technology might enable them to participate in decision-making on more equal terms. Towards this end, the agency has proposed that technical learning modules be developed to enable rural women and men to assess and analyse their situation, to search for appropriate sanitation solutions, and to compare the various options to arrive at logical conclusions (Ganguly, 2001).

A further objective of this research is therefore:

- d) The evaluation of latrine technologies, as a first step towards the formulation of the proposed learning modules.

This is addressed by critical scrutiny of the latrines promoted under the IWES Project, and by experimentation in which villagers participated in the construction of a prototype latrine using locally available materials. The technologies are assessed against criteria derived from the literature, and in the context of community attitudes elicited by qualitative research undertaken in Musabani Block.

This research therefore helps to move the IWES Project towards a demand-led approach, in which community members are enabled to express informed demand (Deverill et al, 2001) for sanitation services.

UNICEF's India Country Office authorised an internship to facilitate this study, and three month's qualitative research was undertaken in India, beginning in July 2001. Discussions with UNICEF and SEEDS representatives identified three villages, in Musabani Block, as the focal points for this project, namely: Kuilisuta, Bangora and Korashole.

Figure 1.2 shows the administrative hierarchy of the area (SEEDS, 2001). The three villages fall under the Kuilisuta Panchayat and are further sub-divided into the main villages and eight 'tolas', or hamlets (SEEDS, 2001). They were selected because of their relative ease of access, being close to the block headquarters, and their mix of settlements in terms of size, and proximity to the main Musabani-Dumaria road. It was considered that eleven settlements was the maximum that could reasonably be covered in the short time available for fieldwork.

State: Jharkhand									
District: East Singhbhum	Population: 1,617,170 Number of Blocks: 9								
Block: Musabani	Population: 101,012 Number of Panchayats: 7 Number of Villages: 49								
Panchayat: Kuilisuta	Population: 5,415 Number of Households: 959 Number of Villages: 6								
Village: Bangora Main village only	Population: 349 No. of Households: 62								
Village: Kuilisuta Main village + 7 tolas	Population: 1,418 No. of Households: 254								
Village: Korashole Main village + 1 tola	Population: 789 No. of Households: 143								
Tolas:	<table border="1"> <tr> <td>Rajestate</td> <td>Jatindih</td> <td>Mohulbani</td> <td>Salgadih</td> <td>Taledih</td> <td>Birgaria</td> <td>Nimdhi</td> <td>Bharlughatu</td> </tr> </table>	Rajestate	Jatindih	Mohulbani	Salgadih	Taledih	Birgaria	Nimdhi	Bharlughatu
Rajestate	Jatindih	Mohulbani	Salgadih	Taledih	Birgaria	Nimdhi	Bharlughatu		

Figure 1.2 The Administrative Hierarchy of the Project Area

1.4 The Structure of this Dissertation.

Chapter 2 introduces gender issues in development, with particular emphasis on sanitation. Women's traditional associations with cleanliness and family health are described, before a discussions of women's participation as a factor in promoting sustainability, and of gender mainstreaming as a means for addressing women's strategic needs. Suggested methods for mainstreaming gender in project design and implementation are reviewed. Section 2.3 presents a summary of literature about gender dynamics in Indian society with particular reference to the tribal culture of northeast India, and some historical influences are described.

Chapter 3 defines appropriate sanitation technology, deriving criteria from related texts. These form the basis for the assessment of the technologies investigated in the course of the fieldwork.

Chapter 4 describes the fieldwork in detail. It outlines the methods selected for the collection of data, describes constraints on the fieldwork, and discusses possible limitations on the research. Section 4.3 presents the fieldwork programme.

The results of the research are presented and analysed in Chapter 5. The chapter begins with the investigation of gender issues at community and agency levels, and this is followed by the results of investigations into sanitation technologies appropriate for the rural villages of Musabani.

Chapter 6 draws on the reviewed literature and the research results in order to draw conclusions that address the objectives of this study.

Finally, Chapter 7 makes recommendations towards gender mainstreaming in the IWES project, and for further research work.

2 GENDER

The IWES Project aims to increase the coverage of household latrines in East Singhbhum with greater emphasis on gender issues. This chapter therefore draws on a review of literature to examine gender issues in sanitation, to present the reasoning behind the concept of gender mainstreaming, and to discuss ways in which gender issues can be addressed in development programmes. Section 2.3 draws mainly on journals published in India, to introduce gender dynamics in Indian tribal society, and to discuss their historical context.

2.1 The Gender Perspective in Sanitation Projects

Women's domestic roles place them in an important position with regard to sanitation. They know about family health and hygiene practices (Simpson-Hébert and Wood, 1998), "are in constant contact with polluted water and faeces and are therefore the group most vulnerable to water and faeces related diseases" (Morgan 1994). Women are often responsible for taking care of the sick, and the burden of water and sanitation related diseases therefore falls to them. "Reductions in family sickness from improved environmental health will positively impact on women's lives" (ibid.). Furthermore, women face particular difficulties related to menstruation. Morgan (1994) explains: "the disposal of soiled rags and garments creates a unique set of problems for women. These practices are taboo and require complete privacy from other women as well as from men. Even defecation for women requires more privacy than men's [and] men may resist the construction of latrines, long after women have realised the advantages they have for privacy."

Development agencies have recognised that women are primary stakeholders in water and sanitation services, and that their participation in infrastructure projects can contribute to service sustainability. Maharaj (1999) acknowledges that "the involvement of women in water projects [has] resulted in better management of money, more regular and successful collection of payments, more regular opening of taps and a better chance of sustainable operation". Simpson-Hébert and Wood (1998) also offer some discussion of gender issues in the context of assuring project success, proposing that "one of the main obstacles to the sustainability and success of sanitation projects is that women do not always participate". In many development projects women have therefore been expected to contribute labour, or act on committees (Smout and Parry-Jones, 1999), even though they are often already overburdened by their economic, reproductive and domestic roles (Desai, 1994; Yoon, 1995; WHO, 1992; UNSO, 1991).

Despite being primary users of water and sanitation services, women are rarely involved in planning and decision-making (Yadava, 1998). Maharaj (1999) notes that project staff members typically consider technology and construction to be male domains. Furthermore, women are inhibited from attending meetings or expressing their needs in many societies. They may not hold sufficient sway within their households to influence decisions about latrine adoption (Desai, 1994; Maharaj, 1999; Simpson-Hébert and Wood, 1998), or be allowed to speak in public, or to meet with men, without a relative being present (Simpson-Hébert and Wood, 1998; Deverill et al, 2001; Coates and Patkar, 2000). Maharaj (1999) relates that women can be reluctant to participate

actively in meetings because of a feeling of powerlessness, a lack of experience of group work, and a lack of skills in planning and problem solving. She goes on to cite Christine van Wijk, writing that men heads of household often represent their families, and though it is assumed that husbands inform women, research shows that male members may keep information to themselves. Women's influence over issues that affect them directly is therefore constrained by both their social position, and by insensitivity of agencies to their needs, and their situation.

2.2 Mainstreaming Gender

The exclusion of women from decision-making, training or opportunities for paid work (Smout and Parry-Jones, 1999) indicates that their involvement in projects does not necessarily elevate their position. The motive of improving project performance (measured by technical or economic criteria) may eclipse that of promoting rights and equity (Smout and Coates, 2000; Srinivasan, 1992).

As well as providing services, development programmes should therefore address women's strategic needs, challenging traditional gender roles to achieve greater equality with men, to elevate the status of women, and to give them power, choice, ownership and control over resources (Legum and Field, 1995). Respecting and using women's knowledge of sanitation, for example, can raise women's confidence levels and self-esteem. Ensuring that women are allowed to take decisions, and enabled to develop skills, can lead to their promotion to positions of responsibility. "This can all contribute to empowering women, raising their status and shifting the balance of ownership of resources" (Smout and Parry-Jones, 1999). Hence, meeting women's strategic need not conflict with the goals of efficiency and sustainability (ibid).

Mainstreaming gender in projects means that the social components are fully integrated with the technical, and that "gender must stand alongside technical considerations at all levels of decision making and at all stages of the project cycle, including the design and construction phases" (Smout and Parry-Jones, 1999).

The literature suggests ways in which projects can be designed to mitigate against women's exclusion, and to address their strategic needs. These are highlighted in the following discussion.

Simpson-Hébert and Wood (1998) caution against directing development messages only to women. Instead, a gender approach is proposed that enables women and men to recognise and re-value existing patterns (Desai, 1994) and to seek ways to improve the balance between their inputs and benefits. Yadava (1998) points out that, too often, adult male community members have failed to provide positive help and facilitation, and have instead played an obstructive role. This was echoed by women members of a village water users' committee in west Nepal where men failed to realise that women's participation in committee meetings would be impossible if men did not share domestic chores. There, women suggested that projects should concentrate more on how to motivate men to share women's work, rather than spending time on trying to involve women in development activities (Regmi and Fawcett, 2001). Gender training is therefore

recommended to sensitise women and men about constraints that mitigate against equal partnership (IDRC, 1995) so that men “understand and support the changes taking place in social organisation” (Maharaj, 1999). This focus on both women *and* men highlights the relationships between their different interests and how these are expressed, and addresses the conventions that determine women’s and men’s positions in the hierarchies of family, community and society (ibid.).

Though much of the literature deals with gender issues amongst communities, there is a real need for sensitisation within implementing agencies. The IDRC (1995) remarks: “Often, men in positions of influence and with decision making power know very little about the women who will be affected by their policies.” Smout and Parry-Jones (1999) point out that technical staff “often find it difficult to relate to the sociological issues of gender” and note that little practical guidance is published. Dayal et al (2000) show that sensitivity of implementing agencies is directly related to project sustainability, and stress the importance of gender sensitisation amongst agency staff. They suggest that expenditure on building social capacity should be at least 10% of the technical training budget.

Hoque et al (1995) argue that social and cultural barriers to the involvement of women can be overcome with careful project design. Morgan (1994) suggests that “female technicians or community motivators may be required to make links with the women to gather their opinions and give them the confidence to contribute to policy decisions in public fora”. Deverill et al (2001) agree that skilled facilitation and additional project time are required if women are to be included in the consultative process.

In a case study recorded by Maharaj (1999), rural women stated that the most important method of mainstreaming women is enhancing their financial and managerial powers, and this approach is being implemented in some areas by UNICEF and the Government of India under the title of Convergent Community Action (CCA). This strategy is designed to respond to the multiple dimensions of poverty by empowerment and enablement, recognising that “local conditions in need of improvement are not compartmentalised but interact and influence one another” (Kolsky et al, 1998).

The basis of the CCA approach is the formation of women’s self-help groups (WSHGs) that develop around thrift and credit schemes. This monetary focus helps maintain member interest for the first 6 months, and produces immediate, tangible results in the form of the money saved. Group members become independent of private moneylenders and eventually gain access to bank facilities and credit. Thereafter, group meetings are held for the discussion of issues affecting the community. In the UNICEF scheme, a NGO facilitates training about, say, the system of Government departments and the legal entitlements of community members. Exposure visits to local administrative centres might be made available to women with little or no experience of life outside their village. Men are welcome to attend meetings and often, in time, come to realise the universal benefits of the group action. Men help to facilitate the actions of the women by accompanying them on visits and providing child-care while the women are busy (Gol,

1997; Sharma, 2001). However, women remain at the centre of the discussions, and this develops their capabilities more effectively than participation in mixed groups, which tend to marginalize women (Kekar and Nathan, 2001). CCA, then, represents a departure from the project base and hardware orientation of much development work. In the evaluation of UNICEF's work, Kolsky et al (1998) acknowledge that the approach was too new, at the time of their study, to evaluate comprehensively, and CCA's potential to build capacity in community management of WATSAN services was unproven.

Panda's 1997 study, carried out in Orissa, shows that education of mothers beyond primary level has a more significant effect than water and sanitation improvements in reducing the occurrence of diarrhoeal episodes. Increased levels of income amongst mothers are also shown to have significant positive effects (ibid.) and other research indicates that women's bargaining power in the household increases with maternal employment (Acharya and Bennett, 1983; Mencher, 1988; Thomas, 1992). This suggests that social development using the CCA approach can have the positive health impacts more usually attributed to improvements in infrastructure, and at the same time promote equitable social and economic development.

The literature indicates that women have much to offer sanitation programmes, but their meaningful participation requires sensitive facilitation by agencies, if social constraints are to be overcome. This research investigates the factors that inhibit women's full engagement in the IWES Project. Fieldwork undertaken within communities, and at agency level, is presented and analysed in Section 5.1. The IWES Project and CCA approaches are also compared.

2.3 Gender Dynamics in the Tribal Societies of North East India

In Musabani Block, most people are of tribal origin belonging, specifically, to the Santhal Tribe. SEEDS (1997) define a "tribe" as "a homogenous group of people with low social organisation, a primitive model of production for subsistence, without generation of surplus, using antiquated [sic] technology, human labour and community ownership with hardly any vertical stratification". The tribal economy is dependent on the local forest.

Santhal society is patrilineal, with authority vested in the senior, male family member (Singh, 2001c). Indeed, men hold nearly all positions of power and decision making (Kekar and Nathan, 2001), though observers have noted that in patrilineal, forest-based communities, women are economically more independent and have a higher status than is generally the case in India (Singh 1999; Bosu Mullick, 2000). Tribal women's knowledge of forests, herbs and agriculture, for example, is acknowledged and valued within their society (Bosu Mullick, 2000).

Despite this, the position of women is undermined by a number of factors. Kekar and Nathan (2001) cite the following:

- the expansion of Christianity and the fact that missionaries have usually dealt with senior village men;

- educational policies that have channelled women into domesticity; and,
- developments in healthcare that have reduced women's status as healers, and thus diminished their political power.

Most detrimental to women's position, however, have been changes in the management of forest resources over the past 200 years (ibid.). Centralisation of forest management dispossessed women of an important source of power, and resistance to centralisation was hardly less damaging: in the 19th Century, drives to re-establish tribal control over forests, in what is now Jharkhand, were "preceded and accompanied by the killing of women denounced as 'witches and poison-givers'". More recently, a swing back to devolved control has seen women excluded from meaningful participation in village councils and state-sponsored committees, despite their "acknowledged" expertise. Not only have women been dispossessed of their influence over a crucial food resource, but their expertise in ecology and subsistence has also been disregarded. "Although women's knowledge and skills are central to household survival and food security, they are of low status. When their knowledge is recognised as crucial, they tend to lose ownership of it" (IWTC 1990).

Finally, increased exploitation of the forests for timber has denuded resources of non-timber forest products (NTFPs) – a traditional source of independent income for women – leaving tribal communities more reliant on the cultivation of land owned by men. Women have no rights of inheritance (Singh, 2001c). Women rarely speak out regarding their subordinate position because they are "socialised" into accepting it by the self-interested male hierarchy. (Kekar and Nathan, 2001).

Where tribal culture is "modernising" under the influence of Hinduism, the roles and status of women may be further degraded. In Nepal, for example, the Hindu influence is responsible for a reduction in the number of women shamans because knowledge amongst women has become associated with witchcraft. The results can be an increase in women's domestic burden, and lower status within the family (Kekar and Nathan, 2001). Patriarchal society is justified in the Hindu culture by the 'pativrata' ideology, which holds that "a woman's spiritual salvation depends upon her total devotion, service, and subordination to her husband" (Mody, 1991).

Presenting a geographically broader picture of life for female adolescents in Rural India, Kumari (1995) notes deep-rooted gender inequity. Some parents encourage their daughters to remain behind closed doors, and to avoid emulating male behaviour in order to establish their "feminine identity". Many girls cannot venture outside alone, and often suffer multiple effects of their poverty, including malnutrition, a high domestic workload, limited education opportunities, and early marriage.

Section 2.2 suggests that mainstreaming gender requires a cultural understanding, and the foregoing discussion provides some background information to help in this regard. It offers a framework in which to analyse the gender dynamics that are investigated through the fieldwork,

and presented in Section 5.1. The literature review presents secondary sources against which the results of the research can be triangulated.

3 APPROPRIATE LATRINE TECHNOLOGIES

UNICEF has proposed the development of learning modules to enable poor women and men to evaluate latrine technologies, and this demands the definition of technologies that could be promoted in such modules. In this section, latrine technology is discussed, and criteria are derived for the assessment of different designs.

'Appropriate' technology is that which is matched to the context and conditions in which it is built and used. In the reviewed texts on low-cost sanitation (Cairncross and Feachem, 1993; Pickford, 1995; Winblad and Kilama, 1985, Kalbermatten et al, 1982) there is general agreement that the selection of appropriate technologies must take into account:

- a) the affordability of initial and recurrent costs;
- b) the performance of the service required;
- c) the fit of the technology within local, environmental and skills constraints; and,
- d) the requirements, traditions and attitudes of those who will use them.

These criteria are discussed in the following sub-sections on the basis of reviewed literature.

3.1 Latrine Costs

An evaluation by the UNICEF's Division of Evaluation, Policy and Planning of the agency's 32-year experience in water and sanitation in India (Kolsky et al, 1998) reveals that, between 1985 and 1992, only twin-pit, pour-flush (TPPF) latrines were sanctioned and promoted by Government of India (GoI) programmes. Thereafter, the range was broadened to include some simpler and cheaper options – but all based on the pour-flush design. Kolsky et al (1998) remark that, at more than Rs.2,500/- (£37), the cost of the TPPF latrine was "well beyond the means (or at least interest) of most of the rural poor, the target population". SIDA's recommendation for a reduction in latrine costs through the development of a range of technical options is supported by Brandberg (1997), "so long as the results are both safe and hygienic", and by Simpson-Hébert and Wood (1998), who note that better sanitation programmes have relaxed the definition of what constitutes "acceptable" latrines, and obtained political support for a less rigid range of good technologies. They point out that the achievement of low-cost, culturally sensitive technologies requires research, adding that project personnel should keep an open mind about possible technologies.

Sanitation projects should offer options that are, without subsidy, affordable to the great majority of households (Simpson-Hébert Wood, 1998), but the reviewed literature offers little advice about appropriate absolute costs for latrines. Carter and Howsam (1999) suggest that safe excreta disposal by the whole community, safe disposal of wastewater, and decreased environmental contamination should be achieved at a capital cost of no more than £20 (Rs.1,360/-) per person, with recurrent costs of no more than £2 (Rs.136/-) per person per year. They do not, however, break these costs down, or suggest what proportion of these sums might be apportioned to the construction and maintenance of household latrines alone.

Documenting the UNICEF-supported rural sanitation programme in West Bengal, Roy (1996) considers that even Rs.500/- (£7) is a significant cost for those living below the poverty line (earning below Rs.55/- (£0.8) per day). Roy goes on to ascribe the relative success (80% latrine coverage) achieved in some Orissa villages to the availability of a range of low-cost models. With partial subsidisation "many families [there] have constructed their latrines by spending an amount as low as Rs.100/- [£1:50]."

While these absolute figures place latrine costs in context, "willingness to pay" is perhaps a more useful concept for discussion, and one that is pivotal to the demand-responsive project approach (Deverill et al, 2001). Real consumer demand for sanitation is expressed "by the contribution people are willing and able to make to receive [a] service". The appropriate cost of a latrine is therefore that which offers value to the informed consumer when he or she has sufficient information to be able to weigh up the costs and benefits, and the expression of demand depends on marketing, promotion, and on the ability of individuals, including the poor, and women, to demonstrate their demand (ibid.).

3.2 The Performance and Design of Appropriate Latrines

Writing for the World Health Organisation and the Water Supply and Sanitation Collaborative Council, Simpson-Hébert and Wood (1998) state that "health promotion and protection from disease [require that sanitation systems] have the demonstrated capacity to prevent the transmission of pathogens". In terms of performance then, a latrine must interrupt the cycle of disease by physically containing faecal matter and preventing the transmission of pathogens via the soil or groundwater. The elimination of fly contact with faeces presents another barrier.

A latrine must also be safe, without risk of collapse, or of users falling into the pit, and should afford privacy for the user (Brandberg, 1997; Cairncross and Feachem, 1993, Pickford, 1995). Brandberg (1997) stresses the importance of latrine cleanliness in encouraging its use, discouraging flies, and reducing the risks of hookworm transmission. He advises that designs should encourage hygiene by showing up dirt and facilitating its easy removal.

3.3 The Fit of Technology with Environmental and Skills Constraints

Many texts offer technical advice regarding the geological, hydrological and meteorological factors affecting latrine design, including soil permeability and stability; the presence of rock, sand or clay; drainage characteristics; water table levels and rainfall patterns (Brandberg 1997; Cairncross and Feachem, 1993; Pickford, 1995; Reed 1994; UNICEF, 1997; Winblad and Kilama, 1985). Cairncross and Feachem (1993) advise that, where water table levels are high, a built-up pit is advisable, with the raised portion sealed against leakage and protected against erosion.

UNICEF's 'Sanitation Handbook' (1997) emphasizes the use of local materials to engage local people in the development and construction of latrines, and stimulate their use. However, Deverill et al (2001) point out that "engineers are not sufficiently familiar with a range of generic options

and their advantages and disadvantages, including the SanPlat system, various pit-lining technologies [and] the use of local construction materials". This is particularly pertinent in the Indian context where early standardisation based on twin-pit, pour-flush (TPPF) latrines has made it "difficult for engineers to...accept alternative designs that are more affordable" (Kolsky et al, 1998).

The choice between pour-flush and other systems is influenced by the availability of water. Cairncross and Feachem (1993) suggest 1-3 litres per flush while a figure of 4 litres per person per day is derived from Pickford (1995). Supporting arguments for matching latrine technology with resources, UNICEF (1997) notes the important effects of water supply upon "people's attitudes and aspirations (or non-aspirations)...for improved environmental sanitation".

3.4 The Fit of Technology with the Consumer

The literature is contradictory as to whether a threshold level of latrine coverage must be reached in order for public health to improve (studies cited by DFID 1998; Kawata 1978). However, it is clear that if any health benefits are to be realised, latrines must be accepted and used by community members (Simpson-Hébert and Wood, 1998) and designs must therefore match their preferences.

User preference is the most important consideration in selecting technology (UNICEF, 1997) because a household will switch to a new system only if its characteristics appeal (DFID, 1998). This corresponds with the demand-led approach that responds to "what people want and are willing to pay for" (Deverill et al, 2001). The literature illustrates the enormous range of possible latrine designs and the broad spectrum of technical and social factors influencing the decision-making process, justifying the statement that the design and construction of latrines is complex and requires expertise (Simpson-Hébert and Wood, 1998). Perhaps the best guide through the multitude of options is the advice that "sanitation improvements should be approached incrementally, based on local beliefs and practices and work towards small, lasting improvements that are sustainable at each step" (ibid.).

3.5 Summary

The consensus from the reviewed literature is that, as well as providing a physical barrier to pathogen transmission, designs should encourage the adoption and use of latrines by:

- a) Responding to user preference;
- b) Improving sanitation provisions incrementally; and
- c) Using local methods and materials to minimise costs and make the infrastructure user-friendly.

These recommendations, and the definitions of appropriate technology, are used to assess the latrines investigated through the field investigations, presented in Section 5.2.

4 THE RESEARCH

4.1 Research Methods

This research attempted to ascertain the practices, motivations and opinions of women and men in Musabani Block, asking not only what people are doing, but also why things are as they are. Understanding the factors that influence opinions and decisions demands the use of qualitative methods (Pratt and Loizos, 1992) suited to the collection of data that are "subjective, verbal and descriptive" (Moris and Copestake, 1993).

Surveys or direct questions about personal and potentially sensitive issues, such as defecation, gender relations and wealth, "may elicit only guarded responses" (Chambers, 1992) and less formal methods are recommended for the exploration of such matters (Chambers, 1992; Nichols, 1991; Pratt and Loizos 1992).

The choice of enquiry is also influenced by the resources available for research. Gosling and Edwards (1995), and Nichols (1991), agree that the relatively small sample size required in undertaking a qualitative investigation can make it economical in terms of time, money and personnel. Chambers (1992) relates that a qualitative appraisal can be more cost-effective, valid and reliable than more conventional methods based on questionnaires.

This research uses qualitative methods because:

- a) the data are qualitative in nature, and therefore best suited to collection and analysis in qualitative form;
- b) the sensitive, personal nature of the topics makes direct, formal questioning inappropriate and potentially unreliable; and,
- c) the limited timescale and budget prohibit comprehensive, quantitative research.
- d) The literature suggests that qualitative methods can yield valid and reliable results.

In the next sub-sections, there follows a description of the specific research methods used in the fieldwork.

4.1.1 Methods for the Investigation of Gender Issues

This element of the study comprised:

- the investigation of gender dynamics in the three Kuilisuta villages,
- participatory assessments of their underlying causes, and
- enquiries about attitudes and practices at agency level.

Data were collected using methods and tools that are, along with others, described by Chambers (1992) as Rapid Rural Appraisal (RRA).

Both informal and formal methods were employed. At the outset of the fieldwork, the approach was deliberately less structured to limit the bias that might result from following very specific lines of enquiry. Later, as the relative importance of issues was determined, and as research goals were fulfilled (or not), enquiries were increasingly guided and formalised. By this method, practical and appropriate methods could be selected, and gaps in the data could be filled. Guidance notes were generated as a prompt (for the researcher) to help ensure that discussions covered the issues under investigation. As the work progressed, the notes were developed by adding relevant issues to them. Thus, issues raised in one interview prompted discussions in the next, to develop emerging themes or elicit more detail. The complete set of guidance notes is reproduced in Appendix A1. Nearly 100 questions were ultimately devised but, typically, only a few would be discussed during a single interaction.

The specific tools selected from the array suggested in the literature (Chambers, 1992) are as follows:

- a) Secondary sources were used to provide and triangulate information. The background information presented in Chapters 2 and 3 is based on a review of literature, and previous studies and project documents were also used, notably SEEDS (1997, 2001a, 2001b); Kolsky et al (1998) and GoB et al (1999).
- b) Participatory ranking, to determine the interests and priorities of villagers (Figure 4.1).
- c) A participatory exercise was undertaken to depict graphically the distribution of work between women and men as a basis for gender task analysis, and this was used to prompt discussions about the different roles of women and men.
- d) Participatory exercises were undertaken to determine and diagram causality, with regard to gender relations. The exercises elicited community opinions as to the reasons for existing conditions, and how change might be achieved.
- e) Semi-structured interviews, "the core of good RRA" (Chambers 1992), were undertaken. The written checklist described previously in this Sub-section was used as a prompt (for the researcher) to guide discussions with community members towards relevant topics.



Figure 4.1:
Women of Mohulbani sort cards to prioritise factors that they consider would improve their lives

- f) Interviews were conducted with key informants, i.e. those with particular knowledge of specific issues. Health professionals provided information about the effects of disease, for example, and a group of cultural performers recounted experiences of the many marriages they attended within the tribal communities. A more senior community member provided a narrative of changes that had occurred over the years.
- g) Structured observations were made of behaviours at village meetings between women and men, to determine who spoke, who sat at the front, and who sat at the back of the room etc. Decision-making processes and gender sensitivity at agency level were similarly investigated at meetings held between NGO, IED and PHED representatives.
- h) Focus group discussions with NGO field workers, and members of VWSCs and WSHGs.
- i) A short questionnaire was used to elicit information about the environment within the Project agencies with respect to gender mainstreaming and decision-taking. The questions were based on a methodology for assessing the gender focus of development projects proposed by Dayal et al (2000). The questionnaire is reproduced in Appendix A2.

Using these methods, data were successfully collected in the forms of notes and diagrams. Field notes have been consolidated by topic and are discussed and analysed in Section 5.1, alongside reproductions of the diagrams produced in participatory exercises.

4.1.2 Methods for the Evaluation of Latrine Technologies

Information about latrines was gathered in interactions with both community members and agency staff.

At agency level, information about the latrines promoted under the IWES Project was gathered by visiting both government- and privately-operated production centres. Interviews were conducted with the PHED engineers and entrepreneurs responsible for management of the centres, and with the Project representative of the Institute of Entrepreneurship Development (IED). The range of promoted latrines was inspected at two government-run sanitary parks, and further information was found in a promotional leaflet produced by the IED.

At village level, research was undertaken about perceptions of, and provisions for, household sanitation. Installed toilets were inspected in some households, and discussed with their owners. Semi-structured interviews were undertaken with groups of women and men, together and separately, and meetings were held with members of village water and sanitation committees (VWSCs). Discussions focused on sanitation practices and options, including the latrines marketed under the IWES Project, and alternative options suggested in the literature (Brandberg, 1994; Brandberg, 1997; Cairncross and Feachem, 1993).

Research was undertaken to identify local materials and building methods appropriate for latrine construction. Structured observations were undertaken to identify materials and techniques already in use around the villages, and a group of men in the tola of Bharlughatu mapped out the

different soil types underlying the three villages. They also participated in a group discussion focussing on the availability and costs of building materials.

Noting suggestions in the literature (Kolsky et al, 1998; Simpson-Hébert and Wood, 1998; UNICEF, 1997), and in response to the interest shown by local people, the feasibility of building latrines using mainly local materials and methods was tested by participatory experimentation. At a meeting with VWSC members, three householders volunteered to build prototype latrines, though two later decided against it because of constraints on their time and finances. One family however, in Rajestate, committed themselves to building a prototype toilet.

In the construction of the prototype latrine, the design decisions were taken by the volunteer householders, based on advice from the literature. The family decided how to build the toilet, and chose to employ their neighbours to carry out some aspects of the work. Throughout the process, members of the Rajestate Women's Self Help Group (WSHG) visited the site periodically to keep abreast of the work, to help out and to learn about the techniques involved. Their involvement offered the opportunity to elicit their opinions about the prototype as it was being built.

For both the promoted latrines, and the prototype, cost and performance data were gathered, and the designs were analysed in relation to criteria for 'appropriate' technologies derived from the literature in Chapter 3. The results of the assessments are presented in Section 5.2.

The programme the fieldwork is described in Section 4.3.

4.2 Constraints on the Fieldwork

The timescale for work in India was predetermined at a little under 3 months, in keeping with the constraints of the academic calendar, and fieldwork commenced in mid July 2001. This coincided with the rainy season in the project area, and held some practical implications. The economies of the studied communities are based largely on the cultivation of paddy and, in the rainy season, most villagers are busy in the fields. Unmetalled roads are waterlogged and travel becomes slow and difficult. As the rains recede in September – 10-11 months after the previous harvest – many villagers take the opportunity to replenish their dwindling resources by working to maintain the local roads for payment by the government. The advent of drier weather also marks the beginning of the football season and this preoccupies much of the male population.

Most of the research work was supported by the Public Health Engineering Department (PHED) and the staff of the NGO, SEEDS. These organisations, inevitably, were themselves constrained by external demands on time and transport resources and this, in turn, influenced the scheduling of fieldwork.

Denscombe (1998) states that "the sex, the age and the ethnic origins of the interviewer have a bearing on the amount of information people are willing to divulge and the honesty about what they reveal". Pratt and Loizos (1992) add that difficulties can be encountered in learning about how people think and feel if the target community members do not perceive the researcher as "being fully human". The gender focus of the research meant that consultation of women was

vital, and the work emphasised the intimate issues of sanitation and health. Hence, the fact that a 33 year-old, English speaking, European male conducted the fieldwork undoubtedly influenced results of interactions with the rural villagers in India. Attempts were made to appear “fully human” by taking some time to build up a rapport with the villagers, using family photographs and discussions about UK village life and agriculture. It is likely that respondents were further influenced by the fact that the research was overtly connected with UNICEF and the government, and there was some evidence that villagers used contact with the researcher as a means of directing messages to the establishment.

During interactions with villagers, NGO staff provided essential translation. Pratt and Loizos (1992) point out that translators may give edited or sanitised versions of what is said by informants, or that the informants themselves may be influenced by the presence of a translator who is not integrated with the community. In the case of SEEDS, the Block- and Panchayat-level coordinators who lived among the communities were able to use Hindi, Santhali and Bengali – these last two being the indigenous languages of the rural project area, and the only dialects available to many women. When senior, office-based staff members were present though, they tended to take responsibility for translation, even though they spoke only English and Hindi. Hence the conduct of a given interaction was, to some extent, dependent on which of the agency representatives were present.

Musabani Block is 60km from Jamshedpur and this meant a 4-hour round trip. Hence, a ‘day’ in the villages typically meant 4-5 hours of productive time, arriving in Musabani around 11:00 am, although it eventually became possible to stay in the Block Headquarters during two weeks towards the end of the fieldwork programme.

These constraints imposed some limitations on the research. The short timescale and the full-time engagement of villagers in their work meant that it was not possible to select settlements, or groups, to ensure that the interactions covered a truly representative cross section of the community. The water logging of the roads prevented some attempts to visit the most remote villages, such as Bangora, and this introduces “tarmac” or “roadside” bias to the work (Chambers, 1983).

The effects of cultural, gender and age differences on the results of the research are unknown, although NGO and UNICEF staff remarked on the good rapport that had been established between the researcher and the villagers.

Though there were some exceptions, the greater part of the fieldwork was assisted by Jagabandhu Sanda, SEEDS’ block-level coordinator, who speaks the local dialects and excellent English, and who’s quiet nature was central to achieving many useful and relaxed interactions with local people.

4.3 The Programme of the Work

Work was carried out in India over a period of 13 weeks. A total of 89 days were spent in India, of which:

- 34 days were spent collecting data.
- 20 days were taken up with the cycle of planning, documenting and reviewing the work.

5 days were devoted to IWES Project meetings, and 10 were spent with UNICEF project staff, or travelling.

Initially, 29 visits to villages in Musabani were planned over nine weeks: a nominal 3 visits to each of the settlements. In fact, 26 days were spent in Musabani Block.

Investigations of both gender issues and appropriate latrine technology were undertaken in parallel. A week-by-week programme outline is given in Appendix A3, and the progression of the fieldwork is outlined in the following sub-sections.

4.3.1 Weeks 2- 6 of the Programme

The first fieldwork took place outside Jharkhand and comprised visits to Koriwayan and Muradpur Villages in Phulwarisarif Block, to the southwest of Bihar's capital, Patna. The visits were facilitated by Integrated Development Foundation, a local NGO responsible for the implementation of UNICEF's Convergent Community Action (CCA) programme in five blocks around Patna. During the visits, it was possible to meet women members of CCA groups and briefly discuss both the CCA intervention, and sanitation issues.

During the first three weeks of the fieldwork programme in East Singhbhum (weeks 4-6), each of the 11 settlements was visited at least once for the purposes of acclimatisation and data gathering. It was possible to observe the layout and style of each settlement and, with the assistance of staff from SEEDS, to speak with small groups of villagers. They often chose to demonstrate their progress in developing environmental sanitation systems such as garbage pits, handpump soakaways, kitchen gardens etc. The protocols for these interactions were observed and noted, and the process of communicating through translators was fine-tuned. In some cases the NGO staff arranged for representatives of the women's self help groups (WSHG) or village water and sanitation committees (VWSCs) to be present. These introductory, informal discussions provided opportunities for mutual familiarisation, and for community members to raise queries or matters of interest. It usually proved possible to turn the conversation towards the issues under research. As time progressed, and with the use of the guidance notes in Appendix A1, the appraisals became more formally structured.

The Block Medical Officer and a homeopathic practitioner, in Rajestate, were interviewed. These key informants provided background information regarding the prevalence and consequences of faecally transmitted diseases in the Musabani area.

Research into the technology and promotion of household latrines was undertaken. Visits were made to the PHED production and demonstration centre in Jamshedpur (in week 2), and to private production centres in nearby Ghatsila and Chakulia Blocks (in week 4). In each case, discussions were held with the centre managers and, in Chakulia, a newly installed latrine was visited and the owner interviewed.

In week 6, a review was carried out, assessing the recorded data against the project objectives. It was found that some progress had been made in recording villagers' perceptions regarding open defecation and household latrines, while the key informant interviews had revealed the nature of prevalent diseases and their cost to community members. The visits to production centres yielded data on the range of promoted latrines, and methods of promotion. Ten village visits had been achieved in three weeks, approximately as planned. The methods and progress therefore seemed satisfactory, and a strategy was developed to focus the research towards:

- a) Identifying the barriers to household adoption of latrines;
- b) Analysing gender dynamics.
- c) Identifying alternative low-cost latrine designs from text sources.
- d) Investigating locally available materials and construction methods to assess the scope for their incorporation in latrine construction.

4.3.2 Weeks 7- 9 of the Programme

During weeks 7-9, four villages were visited, as well as a school in Kuilisuta.

Investigations continued regarding the local geology, and the materials and technologies suitable for toilet construction. In Bharlughatu, for example, a group of villagers mapped out the different soil types across the project area, and locally available building materials. In Bangora village, investigations into the different roles of women and men continued, by participatory diagramming.

Much of the data collected during this period resulted from interactions with groups at various meetings arranged by SEEDS and by the PHED, namely:

- a) A progress meeting with the NGO field coordinators working in Musabani Block;
- b) Two meetings of NGO and government functionaries, to plan hygiene promotion for the IWES Project.
- c) A "health camp" held by SEEDS in the village of Bakra – a neighbouring Panchayat within Musabani Block.
- d) Three orientation sessions for Musabani VWSC members, with regard to household latrines.
- e) Meetings with community handpump mechanics.

f) A regular, monthly meeting held between representatives of all the IWES project partners.

These meetings were not arranged specifically for the purposes of this research, but it was possible to hold focus-group discussions with the NGO field workers, the VWSC members and the mechanics, and to observe group dynamics. It was at such a meeting of VWSC members in Kuilisuta village that discussion about appropriate technologies resulted in three householders volunteering to build prototype latrines at their homes.

At the health camp, run in association with the local Rotary Club and Red Cross Society, villagers were able to receive free consultations and medicines. Four doctors, including a specialist in obstetrics and gynaecology, attended the camp. It therefore provided an opportunity to gather further information about disease patterns in the area, and any particular health problems faced by women.

The hygiene promotion meetings, in Jamshedpur, were held so that NGO, IED and PHED representatives could devise hygiene messages for use across the District at community level. The meetings demonstrated the decision-making process within the IWES Project, as well as the gender sensitivity of the project agencies. These issues were further investigated using a questionnaire that was distributed to project functionaries at the regular monthly meeting of NGO and government representatives.

4.3.3 Weeks 10-12 of the Programme

In week 10, with three weeks of fieldwork remaining, a second review was carried out. The tabulated results of all the previous interactions and observations were consolidated and compared using a spreadsheet. Thus, it was possible to observe which areas had been covered, and where there were gaps in the information. This exercise revealed a lack of information in some key areas. In particular, the conduct of women and men at VWSC meetings remained unclear and, critically, so did community attitudes to women's participation.

VWSC meetings were reportedly held each month, but repeated attempts to attend one had been fruitless. Such meetings were, in fact, arranged as and when issues arose, and when time allowed. To improve the chances of witnessing a meeting, arrangements were made to stay in the Block HQ. SEEDS field staff arranged some meetings during weeks 10-12, but these were somewhat contrived and on one occasion, in Jatindih, most of the attendees were not committee members, but a passing football team co-opted to attend. It was possible, however, to turn such incidences to the advantage of the work. The footballers, for example, offered their opinions regarding women's participation in meetings.

During these final visits to Musabani (in weeks 10-12), a prototype toilet was constructed in Rajestate – a tola of Kuilisuta village. During the consultation process, two other volunteer households had decided against going ahead with their own toilets but this, too, yielded some data regarding decision-making roles within families, and the priorities and economic constraints facing some villagers. The construction of the prototype in Rajestate successfully demonstrated

some alternative technologies and allowed nominal material and construction costs to be calculated. As the latrine progressed, the local WSHG were continually involved. With their frequent visits to the site, a good rapport was established and this offered further opportunities to discuss local gender dynamics and the attitudes of the women to the ongoing IWES intervention.

Lastly, SEEDS convened their regular meeting of WSHG officers from Musabani Block. There, participatory exercises were carried out to further investigate the constraints on women's roles in mixed fora, and perceived options for enhancing their active participation at meetings.

Each day's fieldwork was written up immediately to guard against the loss of information from memory, and so that data could be backed-up for security.

Overall, the fieldwork yielded results that are relevant to the issues under research. The constraints that have been described were generally overcome by persistence and/or flexibility, making the best use of any opportunities for information gathering. Where possible, results have been triangulated.

In the next chapter, the collected data are presented and discussed in relation to the research objectives.

5 PRESENTATION AND ANALYSIS OF RESULTS

5.1 Investigation of Gender Issues

Fieldwork was undertaken within communities, and at agency level, to investigate factors that inhibit women's full engagement in the IWES Project.

Chapter 2 indicates that women's participation must be facilitated by skilled project implementation and this, in turn, demands an understanding of existing social constraints on their involvement.

In this section, the results of field investigations of gender issues are presented. First, the gender dynamics of the studied communities are discussed. This is followed by an analysis of the strengths and weaknesses of the project agencies with regard to gender mainstreaming. Finally, evidence is presented to support recommendations of steps towards gender mainstreaming in the IWES Project

5.1.1 Gender Dynamics in Bangora, Korashole and Kuilisuta

When asked about household decision-making, many villagers stated that decisions were shared between men and women, but there was evidence that men's views usually prevail. At a meeting with VWSC members and hand pump mechanics in Musabani, participants stated that men control household finances and take decisions about household expenditure, and this was confirmed in eight separate instances. In each of three male-headed households interviewed, the decision to adopt a household latrine had been taken by the senior male family member. Conversely, in one relatively wealthy Kuilisuta household, where no latrine was installed, five of the nine members were women expressing a desire for one. One man in Birgaria initially stated that the decision on whether to adopt a household latrine would be taken jointly with his wife but, asked what would happen in the case of a disagreement, he replied, "If I'm ready to install a toilet, then she must be ready!"

During interactions with villagers in their homes, men dominated the discussions. In Korashole, a garden discussion with a group of women was interrupted when a group of five men stopped by. The women immediately gave up their seats and settled on the ground some distance away while the men spoke to the researcher. Such physical marginalisation of women was also evident in meetings, and it served to restrict the participation of women. Figure 5.1 shows a semi-structured interview in Salgadih as an example. During informal discussions with mixed groups in the villages, men generally sat on seats closest to the NGO representatives and the researcher, while women stood or sat at the back of the group.

During these interactions, and in meetings of VWSC members, women appeared shy. They would rarely interject, and usually spoke only if addressed directly.



Figure 5.1 During village discussions, it was observed that men usually sat on seats at the front, while women stood or sat on the ground at the back

The interview in Salgadih, shown in Figure 5.1, illustrated another factor discriminating against the involvement of women. During the discussion it was observed that the conversation repeatedly slipped into Hindi. The presence of a Hindi-speaking NGO representative, and the predominant involvement of men in the discussion, made Hindi their easiest choice. Because the women in the group spoke mainly local dialects, many soon lost interest and began to drift away. Similar tendencies were observed on three occasions when Hindi-speaking project functionaries were present, though women were also observed to be reticent at VWSC meetings where no Hindi was spoken.

Each VWSC is guided by a printed set of the rights and duties of the committees and their members. The lists prescribes the functions expected of the committees in terms of ensuring clean water supplies through the upkeep of tube wells, and their rights to collect and allocate funds for the provision and maintenance of infrastructure. The guidelines do not, however, make any mention of the responsibilities of committee members and officers with respect to the conduct of meetings. Hence, the committees are not orientated towards positively facilitating or encouraging contributions from women members, or other disadvantaged groups.

Men do most of the speaking at VWSC meetings, although it was observed in some mixed gatherings that two separate discussions went on simultaneously: one between men, and one between women. In Rajestate, one member of the WSHG said that involvement in the water and sanitation committees did little to empower women because they did not participate fully in the discussions. Male VWSC members in Jatindih were therefore asked why they did not take

advantage of women's knowledge by actively encouraging them to speak at the committee meetings. They replied that they did not object to women speaking, but that any such a change was bound to take time. In a similar vein, the chairman of Kuilisuta's VWSC said the position of women in meetings might change in the future "according to need".

Discussions in the villages showed that women's special skills in brewing, and their roles at festivals, are acknowledged and appreciated, as suggested by Bosu Mullick's findings (2000). However, it appears that women's expertise in water and sanitation is not actively sought by their male counterparts at meetings, and this may be because it is underestimated. In Salgadih, a man was quickly put right by the women of the group when he suggested that women knew nothing of the sanitary park in Musabani.

This situation has its roots in the customs of the villages, where there is no tradition of men and women meeting together in public. VWSC members in Kuilisuta said that women attend their meetings only because this is imposed by the IWES Project. In Rajestate and Kuilisuta, villagers reported that women are not invited to regular village meetings (i.e. meetings unrelated to water and sanitation). In Kuilisuta, the men stated that the meetings were not meant to convey information to women. Members of Rajestate's WSHG spoke about their wishes to be included in such village meetings. They said that they, too, had issues to raise, but were unable to do so because they were women.

These matters were researched in more detail at a meeting of WSHG officers at SEEDS' field office in Musabani. There, discussions focused on the reasons why women generally remain silent at mixed meetings, and the group participated in the generation of a causality diagram, which is reproduced as Figure 5.2.

In the figure, the sketches at the foot of the page depict two men speaking together, while a woman remains silent in the background. The underlying reasons given by the women's group correspond closely with the findings of Kumari (1995) presented in Section 2.3. They are described in the following list, beginning with the image in the top-left corner of Figure 5.2, and proceeding clockwise around the diagram:

- a) Men are greater than women. A man is like a god.
- b) Boys are more likely to pursue higher education, while girls return to the home after finishing at the local school.
- c) Boys are free to move around outside, while girls remain in the home.
- d) Boys are allowed time to play, but girls have to help with domestic chores.
- e) It is the custom.
- f) In the home, boys are encouraged to speak openly, and are praised for doing so by parents. Girls are scolded for speaking.

Tellingly, the image chosen by the group to depict "custom" was that of a hand wielding a stick. This, they said, reflected the tradition that men with sticks would chase women away from village meetings, if they approached uninvited.



CUSTOM

Bengali - Rītaj / Rītī
 রীতাজ / রীতি

To further investigate gender differences in village society, a task analysis was carried out in Bangora. Men and women participated in depicting the work they undertake throughout each day. At the time, participatory analysis of the results was curtailed because the women participants had to return to their work in the fields, and attempts to represent the tasks and times by drawing on the ground made the resulting matrix difficult to understand. However the results, reproduced in Figure 5.3, were transcribed on to a large sheet of card, and proved useful in prompting later discussions about gender roles, some of which have already been described. Figure 5.3 shows the day split into six parts, with the different types of work undertaken by women and men illustrated in two rows across the page. A legend, explaining each of the illustrations, is given in Table 5.1.

Table 5.1 Legend for the Gender Task Analysis (shown in Figure 5.3)





















 Bundling paddy	 Harvesting paddy	 Drying paddy	 Collecting fuelwood
 Domestic cleaning	 Taking food to the fields	 Tending animals	 Collecting water
 Pounding NTFPs	 Threshing paddy	 Cutting straw	 Cutting wood
 Cutting straw	 Washing children	 Digging	 Cooking
 Collecting NTFP	 Planting/weeding	 Ploughing	 Cleaning utensils

Figure 5.3 is not comprehensive. Men were sometimes observed carrying bundles of fuelwood on yokes for example, and the road repairs undertaken by men and women are not shown. The villagers who saw it, though, generally agreed that it was a fair representation. The figure shows that women undertake a greater number of tasks than men, and Bangora villagers confirmed that women rise earlier and retire later each day than their male counterparts. Men also rest during some afternoons, while women continue to work. Much of women's work, such as cooking, domestic cleaning and childcare, is unpaid. In contrast, men's tasks are mostly undertaken for wages.

Before seeing the gender task diagram, men typically stated that work in the villages was split equally between women and men. Faced with the analysis carried out in Bangora, though, most eventually agreed that women had the greatest workload. Again, tradition was the main reason given for this unequal sharing of labour. Men in Kulisuta joked that it was "the law of India", and said that men did women's work only in cities, where they had the time. They said they rarely rested during the day, except during the hot summer season, but, notwithstanding these statements, men were observed sleeping during the period of the fieldwork, and had often finished their day's work by 2pm. A man in Mohulbani reluctantly agreed, "It's true: when we get time, we sleep."

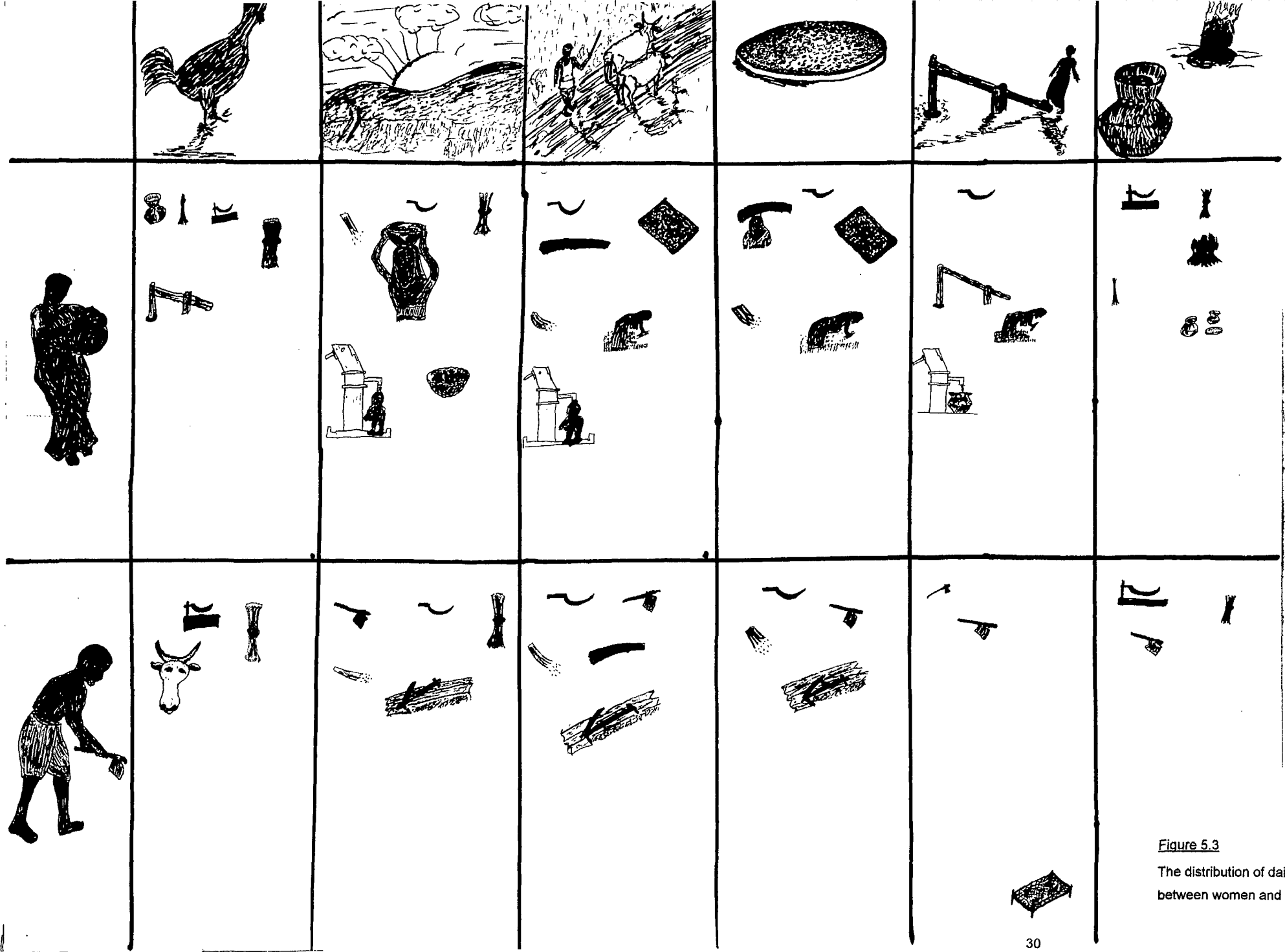


Figure 5.3
The distribution of daily tasks
between women and men

When asked whether there was any perceived difference in the levels of skill required to carry out the depicted tasks, men in Kuilisuta responded that none of the work was skilled. However, the gender task diagram, and further observations made in the villages, indicate differences in the types of work undertaken by women and men. Men are mainly responsible for digging and ploughing, and for tending oxen and buffaloes. Women, on the other hand, are responsible for cooking and childcare, and they do most of the cleaning, fetching and carrying. These traditional roles can pervade beyond the environments of home and field. Observation of a mixed team of mechanics at work, changing a handpump riser pipe, showed that the women repeatedly carried pipe sections from the truck to the pump, while the men took a minutes' rest.

In Rajestate, members of the WSHG said it was impossible to redress the balance of work between women and men. Similarly, a group of women in Mohulbani said that women had always worked harder and that, unlike men, women worked until they died. This, they said, was the way of society, and a God-given fact of life. For most, the only perceived potential for change was the arrival in their homes of a daughter-in-law to share the work.

Finally, some fieldwork linked local social and economic circumstances to those purported, in the literature (Kekar and Nathan, 2001), to underlie current gender relations in tribal societies. An interview conducted with a 60-year old community member in Kuilisuta confirmed that the denudation of local forests by government contractors had restricted the availability of fruits and other non-timber forest products (NTFPs) that have been a traditional source of independent income for women. Reliance on the forests has been replaced, for some men, by work in the mines. In Salgadih, it was confirmed that only men sit on the local forest liaison committees. This senior key-informant further pointed out that, though the Kuilisuta school opened in 1970, girls began attending later, in 1975, and then only a few. Hence, even if all else was equal, women now in their 30s are educationally disadvantaged in relation to men of the same age.

The fieldwork, then, reveals that society in Kuilisuta conforms in many ways to the literature reviewed in Chapter 2. Men take household decisions and control domestic expenditure, and where women want latrines, for example, they may hold little sway over the matter, as suggested by Desai (1994), Maharaj (1999), Simpson-Hébert and Wood (1998).

At meetings, women are sidelined both physically, and in much of the discussion. Women's presence at VWSC meetings is tolerated only because of external influences and, in itself, is insufficient to secure their participation. This, perhaps, points to a lack of cultural consideration in project design, as described by the IDRC (1995). At the same time, the use of Hindi in interactions with mixed groups reflects a lack of gender sensitisation at agency level (Dayal et al, 2000).

That women work harder, and for less remuneration, than their male counterparts in many communities is well documented (Desai, 1994; Yoon, 1995; WHO, 1992; UNSO, 1991). It is shown to be the case in Kuilisuta Panchayat, and is likely elsewhere in the IWES Project area. This is certainly relevant to the IWES Project's goal of encouraging of women's participation, but

of particular interest here is the fact that villagers are not necessarily conscious of these gender differences, and many were clearly unfamiliar with thinking about the gender distribution of work and power. Most seem to accept their lot and believe that **nothing** can be done to change the situation. Men are not supportive of women's input to discussions and do not see any advantage in seeking their knowledge. They are not orientated towards sharing the burden of work more equitably.

When these gender differences were analysed by villagers, they generally ascribed them to tradition. Certainly, the causality diagram produced by WSHG officers suggests that the underlying reasons stem from gender distinctions that are instilled from childhood by the different treatment of boys and girls. There is evidence that they are linked to the external issues of macroeconomics and environmental management that are documented in the literature (Kekar and Nathan, 2001; Maharaj, 1999; Singh, 2001c)

Finally, it seems that villagers hold their own work in low esteem, even though both men and women work very hard and hold specialised knowledge of agriculture, forest products etc.

Overall it appears that women are prevented from full and active participation in the IWES Project by community traditions of male dominance in decision making, and of low regard for women's knowledge.

The IWES Project calls for women to engage in discussions and decisions about water and sanitation issues, but the committees have not been orientated to encourage women's input, and their attendance at meetings is not sufficient, in itself, to overcome established norms of behaviour.

Local people are fatalistic about this situation and appear to have given little collective consideration to possible alternatives. There is therefore considerable potential for villagers to analyse existing gender roles, perhaps as a precursor to change.

If the IWES Project is to really engage women, it must overcome the constraints of tradition, perhaps through social orientation. This requires expertise within the project agencies, though, and this is investigated in the next sub-section.

5.1.2 Gender Mainstreaming at Agency Level

The fieldwork included research to investigate the opportunities for, and barriers to, gender mainstreaming within the partner agencies responsible for managing and implementing the IWES Project. This included a review of key project documents, a questionnaire survey of staff, and observation of project meetings.

The goals, and methods of implementation, of the IWES Project are defined by a document produced by the Government of Bihar, UNICEF and SIDA (GoB et al, 1999). It is based on a logical framework analysis (LFA) undertaken in July 1998 by project representatives of all the partner agencies. The document states that shortcomings in previous water and sanitation

interventions have included a lack of "gender empowerment", and proposes that the IWES Project will facilitate women's empowerment.

The document does not, however, define comprehensive project objectives with respect to addressing gender issues. In the LFA, the only related item is the proposal that women should comprise one-third of VWSC members. Though this has been achieved, Sub-section 5.1.1 indicates that women's level of active participation is very limited.

The LFA was revised in February 2001, and this latest version includes additional proposals for:

- a) disseminating messages on gender mainstreaming at village level, and
- b) promoting gender mainstreaming by sensitising key stakeholders on gender issues.

By the end of the fieldwork period, in October 2001, no such communication effort had been implemented, and formal gender sensitisation of key stakeholders (meaning agency staff) had been limited to a presentation by UNICEF lasting under an hour.

In June 2001, SEEDS made a proposal for conducting activities including:

- the orientation of women's groups on water and sanitation issues,
- gender sensitivity workshops for block-level and NGO functionaries, and for Panchayat VWSC members.
- The preparation of a participatory rural appraisal (PRA) plan.

These activities, though, were not approved by the PHED. The cost to carry out such activities in all 9 blocks represents approximately 2% of the IWES Project technical training budget for 1999-2000 (GoB et al, 1999). Dayal et al (2000) suggest that, in water and sanitation interventions, expenditure on social capacity building at agency level should equate to 10% of the technical training budget.

Though these documents indicate that some measures are proposed to focus the project on gender issues, these have yet to be implemented.

To further investigate agency capacity with regard to gender mainstreaming, a questionnaire survey was carried out amongst project staff members. The questions were intended to elicit their opinions about decision-making roles, project objectives and the strengths of the agencies.

32 questionnaires were distributed, and 11 returned. The respondents comprised five NGO staff members and six government employees. The questionnaire is reproduced in Appendix A2, along with the responses.

The results have been analysed using a method proposed by Tesch (1990), in which responses are studied to determine common themes that underlie them. These themes are noted, categorised, and then used to gauge the prevalence with of specific ideas and attitudes.

In the questionnaire, parts (a), (b) and (c) of Question 11 are very similar in nature, and responses to them have therefore been consolidated in the analysis.

The most predominant outcome from the questionnaire survey is the heavy focus of the IWES Project on quantitative targets. Goals and progress are expressed in terms of numbers of pumps, of toilets, of committees, of the numbers of women members etc., and this reflects the indicators specified in the LFA. Despite this, respondents identify that raising community awareness is also an important project goal, along with improving villagers' quality of life.

With regard to community participation, staff members record associations with concepts such as ownership, strengthening and decision-making though, overall, a similar emphasis is placed on villagers meeting their responsibilities for maintenance and as caretakers.

Lastly, respondents indicate an absence of clear objectives related to the roles of women and men, and to gender issues. This is associated with a lack of gender focus at agency level, and is particularly apparent in responses from Government employees. NGO representatives indicate a perceived contrast between the gender sensitivity of their own organisations, and that of the IWES Project overall. The responses reveal that measures to strengthen agency partners, such as gender training and performance incentives, are perceived to be insufficient. That there is a need for such strengthening is supported by responses that associate women's "participation" with their traditional roles in domestic cleaning and water carrying. The promotion of equity did not feature highly in the returns.

The results of the survey show that there is recognition, within the agencies, that the IWES Project seeks to strengthen communities and improve the quality of life for villagers, but indicators of progress towards these goals are not clearly defined. Instead, the project uses quantitative indicators related to hardware installation.

In particular, project aims related to gender mainstreaming are undefined and the lack of gender training means that in some cases, staff members hold misguided, or perhaps outdated, perceptions about community participation and women's roles.

Further evidence about the existing perceptions of agency staff came from meetings convened to *discuss hygiene promotion messages for dissemination at community level*. During the meetings, staff generated a number of slogans intended to promote positive hygiene behaviours such as hand washing, and the protection of drinking water. The messages were all generated in Hindi, and some included catchy rhymes that would not, presumably, withstand translation into other dialects. They were to be incorporated into wall-writings in the villages. However, any such messages would be useless to the majority of women in the rural communities, for whom the Hindi language and the written word are inaccessible. The meeting participants went on to *consider some dedicated messages that would "address the gender issues"*. Thus, the conduct of the meetings exposed a perception that gender is an issue to be dealt with separately, rather than a theme that pervades every project activity, and potentially all hygiene messages, to

ensure that they are meaningful to both women and men. Such perceptions are clearly a barrier to gender mainstreaming in the IWES Project.

The generation of hygiene messages at agency level is contrary to advice, in current literature about hygiene promotion, that messages should start with the target communities (Almedom et al, 1997; UNICEF, 1999) and this is indicative of a prescriptive approach within the IWES Project. This, too, was investigated in the questionnaire, which asked specifically who had been responsible for decisions made under the IWES Project. Respondents indicate that:

- Choices regarding the technologies to be promoted were taken by UNICEF and the PHED.
- Decisions about the locations of handpumps were predominantly influenced by government partners, and the NGOs.
- Performance targets were similarly determined, by government bodies and the NGOs.

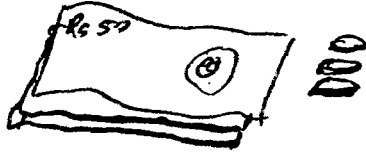
The questionnaire further indicates that, though community members had some input to determining the levels of their own financial contributions, the main influences were, again, the implementing agencies.

The prescriptive approach of the IWES Projects was further demonstrated by a participatory card-sorting exercise. A group of women in Mohulbani drew a series of pictures on cards to indicate the services and developments that they considered would improve their lives. They were then asked to sort them in order of priority. The cards are reproduced, in order, in Appendix A4. Many of their ideas were unrelated to water and sanitation services, however, out of 14 prioritised cards:

- an open public well was selected as the third priority, because the women perceived handpumps to be unreliable.
- a bathing pond was selected as number six, and
- toilets were selected as number eight

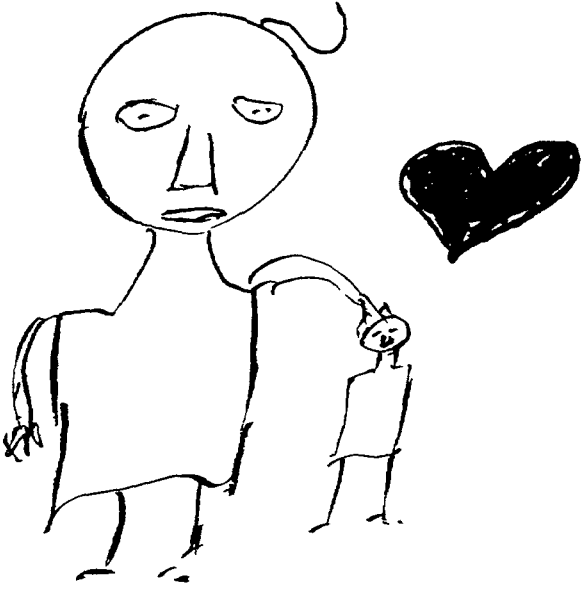
Open wells and bathing facilities are not being promoted in Kuilisuta, under the IWES Project, and this indicates that it is not responding to the expressed priorities of these particular women, because they have not been consulted about their practical needs. Hence, they have not been given an opportunity to participate in the decision-making process that defines the goals of the project.

In summary, gender mainstreaming requires definition of specific goals that shift the focus of the IWES Project away from meeting qualitative targets to addressing the strategic needs of women and men in the villages. The agency partners require training inputs, to sensitise staff towards



211N piece

(participatory/empowerment)
211DARI
Participation



211R - Hindi

211BANGAL - Bengali

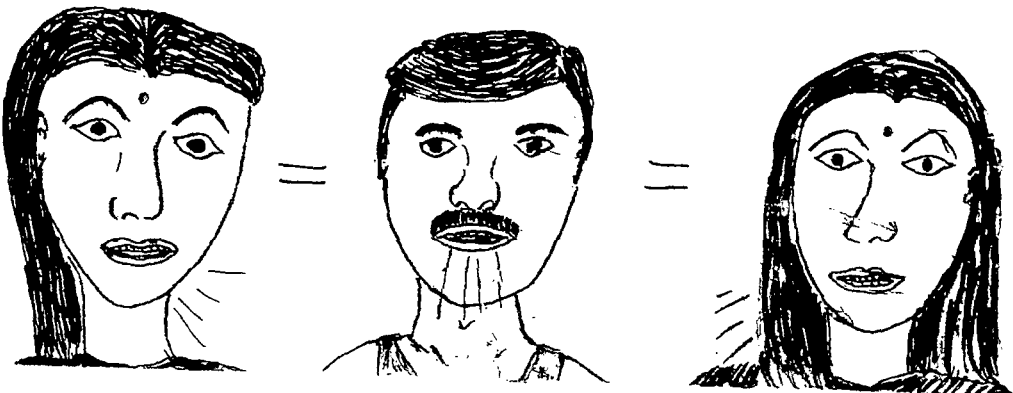


Figure 5.4

Causality diagram illustrating measures leading to gender equity in participation at meetings

gender issues, and orientate them towards using language and media that are accessible to women in the rural villages.

UNICEF (1997) advises that, "to evoke community participation, we need to yield control over key decisions" but this has not been the case in the IWES Project, and presents a barrier to participation by community members, including women. Opportunities to engage women in decision-making have therefore been missed, and this is reflected in their limited capacity to participate fully in VWSC meetings, and to influence decisions within their households.

5.1.3 Measures Towards Gender Mainstreaming

Research was undertaken in the villages of Kuilisuta to identify measures that would help address women's strategic needs.

After completing the diagram showing their perceived causes of women's marginalisation (Figure 5.2), the same WSHG officers moved on to a second diagram that shows suggested measures towards gender equity, and this is reproduced as Figure 5.4 on the following page.

In Figure 5.4, the figures at the foot of the page depict women and men contributing to conversation on an equal basis. Factors that would potentially result in this more equitable situation were proposed by women in the group and are described in the following list, beginning with the image in the top-left corner of the Figure 5.4, and proceeding clockwise around the diagram:

- a) Education
- b) Love between parents and children
- c) Participation
- d) Peace
- e) Money

Asked what could ease the burden of women's work, a member of Mohulbani's WSHG replied that improving opportunities in education would empower women so that they could "force" their husbands to help out. Other villagers also suggested the link between education and equity. Women in Rajestate suggested that women's participation would increase as they became more educated, and went some way to demonstrating it. As a result of a presentation made by the local PHED Engineer, they could speak knowledgably and confidently about the different commercially available latrines, their advantages and disadvantage, and this supports the argument that technical learning, carried out in ways that are appropriate to the local context of poor, illiterate women, encourages their participation.

Further evidence came from a VWSC meeting in Bangora. There, women spoke amongst themselves about domestic cleaning in advance of a forthcoming festival. Domestic cleaning is an area in which the women are expert, and perhaps, if the breadth of their expertise expanded, then so might their level of contributions at such meetings.

There was also evidence that education for men would be a useful measure towards gender equity. Field coordinators working for SEEDS suggested social orientation for men, in which they were encouraged to consider the distribution between women and men of work, payment, benefits and responsibilities. This type of self-assessment, which could be called a participatory rural appraisal (Chambers, 1992), might encourage men to actively support women's participation, and could, perhaps, build on men's existing ideas of their responsibilities. A band of musicians in Korashole spoke about local marriage rites, in which men vow to support their wives and share the workload. They said that a "good" husband is one who works hard, does his fair share and takes care of the family.

This contrasts sharply with a picture of society in which women speak of being chased away from meetings by men with sticks, and that has a history of witch-hunts. Although no such dramatic reports could be verified during the fieldwork, the WSHG officers' calls for peace, and love between family members, may underlie an atmosphere in which some women feel intimidated. Kekar and Nathan (2001) recount a contemporary case study from Northeast India in which women are forced to remain silent at meetings through fear of being beaten. This underlines a need for social development.

As previously reported, women in Rajestate felt that their exclusion from discussions at meetings detracted from their genuine empowerment. However, they acknowledged that women's presence on VWSCs is a step forward. Likewise, women handpump mechanics recounted that their work had earned them respect in their communities, elevated their self-confidence and offered them exposure to life outside their homes and villages. Members of Korashole WSHG reported that their participation in the groups helped them with literacy skills and problem solving, empowering them and increasing their self-confidence. Women in Rajestate concurred and offered the examples of Raj Kumari Parta and her neighbour, who had persuaded their families to adopt prototype latrines. This reflects assertions in the literature that participation can enhance confidence, and be a precursor to decision-making (Simpson-Hébert and Wood, 1998).

Another key aspect of the women's self help groups is that they are a source of income for their members. Evidence from the fieldwork clearly supports the relationship between financial power and influence in decision-making suggested in Figure 5.4. In Bangora, the Majhi (headman) of the village volunteered to build a prototype latrine, but later decided against it. Subsequent discussions revealed that his son was the household's main money earner, and had strongly influenced the decision against building a latrine. Hence, despite being the senior male in both his home and the village, the Majhi yielded some influence to the son, apparently on the basis of his financial contribution to the household. This was further supported by members of Rajestate's WSHG, and by NGO representatives, who confirmed that, where women have an income, they exert greater influence in domestic decision-making.

Further data comes from discussions with members of the CCA groups in Phulwarisarif Block, near Patna. Women there related that they had problems with water supplies, drainage and excreta disposal. When asked who was responsible for making decisions about these issues, they replied that they would make any decisions themselves.

In both Koriwayan and Muradpur villages, members of the CCA groups were able to talk in detail about the relative merits of communal and household facilities, and of the costs and benefits of single versus twin pit latrines. They listed various advantages including privacy, prestige, the prevention of faecally transmitted disease, environmental cleanliness and the avoidance of flu and leeches through staying out of the wet fields.

"CCA" they said, "has opened our eyes." Prior to the intervention, no knowledge had been available. Now, some of the women were learning literacy skills and could write their names.

They said they appreciated the importance of education, and that their thrift and credit activities had made them independent of local moneylenders and given them access to bank facilities.

The group recounted that money had always been short. Other than during the sowing season, many families were dependent on the income of male family members, some of which was spent on liquor and tobacco. CCA meant that they could use household money for their own needs, and were in a stronger position to argue their case. Now, the women said, the only thing standing between them and the adoption of household latrines was the unavailability of hardware.

This evidence is qualified by the brevity of contact with these groups, and any comparison with the IWES Project must account for the differences between Phulwarisarif and Musabani. Much of the land there is irrigated, and three harvests are gathered each year. There is little or no forest, and Patna is only 25-30km away. Rural people account for 72% of the Block's population, compared with 47% in Musabani. Overall literacy is 51%, and literacy for women is 37%, compared with 31% and 18% respectively in East Singhbhum (IDF, 2001).

This element of the research clearly indicates that the empowerment of women, to engage in discussions and decision-making in sanitation, is associated with their financial independence and their education. That the women of Phulwarisarif want latrines, and also have the money and autonomy to buy them, supports suggestions in the literature that meeting strategic and practical are interrelated (Smout and Parry-Jones, 1999).

There is also evidence to support social development in the villages to help community members to analyse existing gender dynamics, and to consider changes.

5.2 The Investigation of Appropriate Latrine Technologies

In this section, the latrines promoted in East Singhbhum under the IWES intervention are described and analysed to determine whether they conform to the definition of "appropriate" given in Chapter 3, namely affordability, performance, compatibility with the local environment, and acceptability to consumers.

5.2.1 The Latrines Promoted under the IWES Project

The promoted latrines are all of the pour-flush type.

Emptying a fresh pit by hand is unpleasant and poses a threat to health (Cairncross and Feachem, 1993). Therefore, if a latrine is constructed with the squatting plate directly over a single pit, the plate and superstructure must be eventually removed and placed over a new pit. This means that a second site must be found, and someone has the unpleasant job of removing the squatting plate.

Figure 5.5 shows a typical arrangement for a twin-pit, pour-flush latrine. Though more expensive, twin pits offer an operational advantage. When one pit is filled, flow is diverted into the second at the junction chamber. The contents of the first pit should mature into benign compost after about

12 months (Cairncross and Feachem, 1993) and it can then be excavated and reused when the second pit has filled. There is no need to move the squatting plate or superstructure. Options with a single, offset pit offer the facility to add a second pit at the purchaser's convenience.

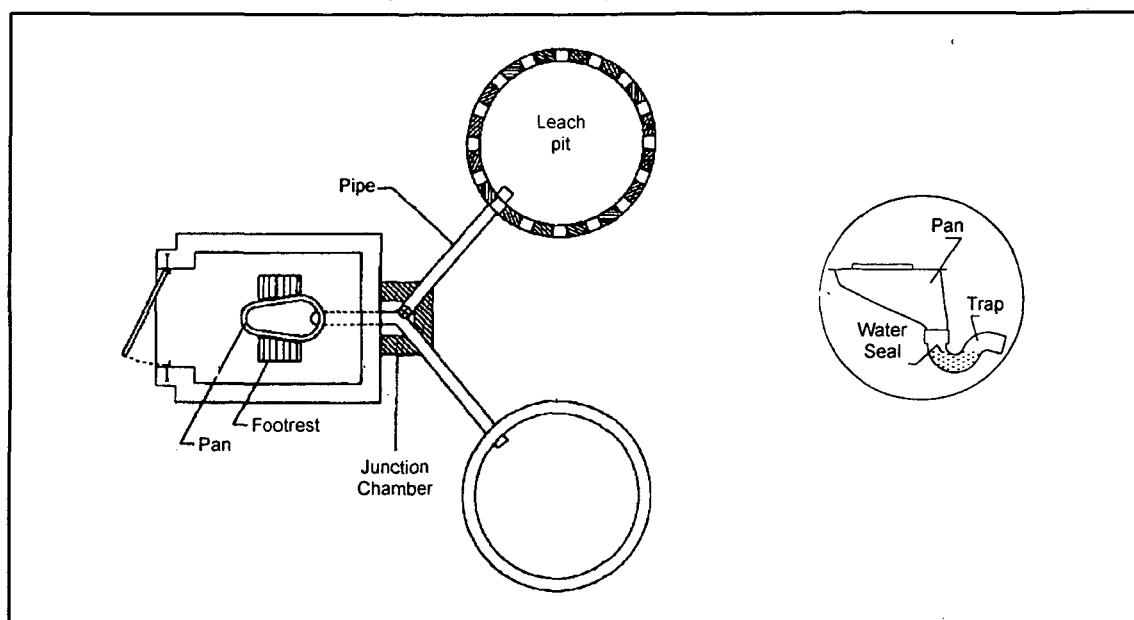


Figure 5.5 Plan of a typical twin pit, pour-flush latrine, with a cross-sectional detail of the pan and trap assembly, showing the water seal

“Latrines are consumer products and their design and promotion should follow good marketing principles, including a range of options, designs attractive to consumers (based on consumer preferences), affordable prices, and designs appropriate to the local environmental conditions” (Simpson-Hébert and Wood, 1998).

The IWES Project offers a variety of latrines, varying in sophistication and cost. The range of options was inspected at the PHED-run sanitary parks and discussed with government engineers, private entrepreneurs and the IED representative.

IWES Project policy is that each latrine be supplied with the pan, footrests and water trap in porcelain. UNICEF subsidises the porcelain fittings so that their cost to the consumer is Rs.160/- (£2.4), the same as the plastic pan that they have superseded. In fact, the government centres continue to provide fibre-reinforced plastic pans and cement footrests, though this is expected to change as the old stock runs out (Patak, 2001; Haidri, 2001). The pans – both plastic and porcelain – are steeply sloping and designed to be flushed using only 2 litres of water. The most popular latrine is reportedly the option priced at Rs.2,200/- (£32) comprising a cement squatting platform with cast-in porcelain and footrests. The trap is connected via a junction chamber to twin, offset pits that are lined with ferrocement rings. (Dutta and Jha, 2001).

Eight examples from the range are described and compared in Table 5.2.

Table 5.2 Details of Some Latrines Promoted under the IWES Project.

Cost	Number of Pits	Description	Super-structure
Rs.5,500/- (£81)	2	Complete with cement pit covers. Pit(s) offset and connected to the pan by pipework via a junction chamber. Full-height pit lining comprising 3 x 300mm ferrocement rings in each pit.	Ferrocement wall panels and roof
Rs.4,900/- (£72)	1		
Rs.2,200/- (£32)	2	Complete with cement pit covers. Pit(s) offset and connected to the pan by pipework via a junction chamber. Full-height pit lining comprising 3 x 300mm ferrocement rings in each pit.	None
Rs.1,600/- (£24)	1		
Rs.1500/- (£22)	2	Complete with cement pit covers. Pit(s) offset and connected to the pan by pipework via a junction chamber. Full-height lining, comprising a lattice of open brickwork in each pit.	None
Rs.1200/- (£18)	1		
Rs.850/- (£13)	1	Pit directly below the pan. Full-height lining/plate support comprising 3 x 300mm ferrocement rings.	None
Rs.500/- (£7.4)	1	Pit directly below the pan. Part-height lining/plate support comprising a single, 300mm ferrocement ring.	None

The table indicates that most of the models are supplied without a superstructure, leaving consumers to make their own arrangements. Superstructures inspected in the villages were without roofs, and fabricated from locally available woven-palm matting, called "chatai", or from adapted jute sacks. Such a superstructure typically costs Rs.150/- (£2.3) (Dwivedi, 2001).

The costs shown in Table 5.2 are inclusive of installation, but exclude transportation of the components from the production centre to the home of the purchaser, and the digging of the pit(s). Private entrepreneurs will install a latrine on receipt of 50% payment, with the remainder payable on completion of the work (Dutta and Jha, 2001). The PHED requires full payment before work commences (Singh, 2001b).

5.2.2 Analysis of the Costs of the Cheapest, Promoted Latrine

The true capital and recurrent costs of a single, over the pit latrine, to a 6-member household in Musabani, are estimated in Appendix A5. Table 5.3 shows these costs, which include transport of hardware from Ghatsila to Musabani. If the hardware were produced locally, the capital cost would reduce by approximately 15%, and the recurrent cost by 7%.

Table 5.3: Calculated Costs for a Single, Over-the-pit Latrine to a Musabani Household.

	Cost, per latrine (for hardware produced in Ghatsila)	
	Pit dug by paid labourer	Pit dug by householder
Capital cost	Rs. 630/- (£9.3)	Rs. 600/- (£8.8)
Annual recurrent cost	Rs. 85/- (£1.3)	Rs. 66/- (£0.97)

For the single, over-the-pit latrine promoted under the IWES Project, per-capita costs are 8-10% of those recommended by Carter and Howsam (1999) for overall environmental sanitation. Roy (1996), however, recommends that latrine costs should be assessed only in relation to local economic conditions, and proposes Rs.630/- is a considerable outlay for poor families.

When household latrines were discussed with villagers, their high cost was the primary, stated obstacle to adoption. This occurred in 11 separate interactions with groups of men, women, mixed groups, children at school, NGO field coordinators and VWSC members. Further support is found in a study of knowledge, attitudes and practices (KAP) undertaken by SEEDS (2001a) in which 33% of respondents recorded that cost prevented them from adopting toilets. In the three villages under investigation here, only 5% of households were prepared to pay Rs.600/- (£8.8) for a latrine (ibid.), and women in Rajestate reported that a facility to pay by instalments was fundamental to any possibility of future latrine adoption. Cost, then, appears to be a critical issue. However, this requires some qualification.

Firstly, many villagers are unaware of the true costs of latrines promoted under the IWES project, and usually overestimate them greatly. This was evident in 5 separate interactions undertaken in Musabani Block. One woman in Salgadih guessed that a toilet cost Rs.20,000/- (£294) and another, in Kuilisuta, thought Rs.10-15,000/-. A group of men in Bharlughatu based their estimate of Rs.18,000/- (£265) on the actual cost of "very pucca" brick-built toilet and bathroom combination owned by one of their wealthy neighbours. NGO field coordinators concurred that there was a general lack of knowledge about prices amongst villagers and, in SEEDS' KAP survey (2001a), 83% of respondents from the three studied villages had not heard of low cost toilets.

Secondly, the widely expressed opinion that toilets are too expensive reflects perceptions that the necessary outlay is unjustified by the benefits. In Chapter 3, 'appropriate' cost is defined as that which offers value when the consumer can weigh up the costs against the advantages (Deverill et al, 2001). 42% of respondents from Kuilisuta, Bangora and Korashole to stated that they had no need for a household toilet, suggesting that perceived benefits of latrines are limited (SEEDS, 2001a). The same households expend up to Rs.5,000/- for special occasions such as the three main annual festivals (SEEDS, 1997; Dwivedi 2001), so some money is apparently available to meet costs that are perceived to be important, even though 50% of Musabani households live below the poverty line.

Lastly, there is evidence that the low household demand recorded (SEEDS, 2001a) is unrepresentative of women, who may want latrines and perceive them to offer value for money. Although the KAP data (SEEDS, 2001a) are not disaggregated along gender lines, a man in Jatindih explained that male heads of household would normally speak to visitors, and it is therefore inferred that demand from women may not be recorded.

The literature suggests a tendency for men's and women's opinions to differ on the need for household latrines (Morgan 1994), and there was evidence of this in Musabani. On five separate occasions, villagers said that household toilets were of particular benefit to women, some of whom are restricted to defecating only during the hours of darkness. In Korashole, a group of men reported that their wives were "always asking them for toilets", though they themselves enjoyed the peace and solitude of their morning walk. Further substantiation is inferred from the notable number of female-headed households had installed latrines that were funded, in some cases, by widows' pensions from the local mines. Conversely, in Jatindih, men reported that there was plenty of space available for open defecation, and that toilets seemed too small. A male householder in Kerukocha reported that, though the women of his family used their new latrine, he preferred to continue defecating in the fields.

Summarising: the position of many Musabani households is that household toilets are too expensive, and this situation may be amenable to change by:

- a) Facilitating the expression of demand by women.
- b) Disseminating information about the true costs of toilets.
- c) Marketing the benefits of latrines.
- d) Making toilets cheaper.

Items (b) and (c) pertain to sanitation promotion, and are outside the remit of this discussion. There is evidence, though, that, even with effective communication and promotion, some villagers would still consider Rs.600-630/- as expensive. In Bangora, a household that volunteered to build a prototype latrine later decided against it, because the estimated cost of Rs.300/- was too great. Other villagers who acknowledged the benefits and knew the actual costs of latrines, such as the women in Rajestate, remained without them.

This supports a case for cheaper latrine options, and these are investigated in Section 5.3.

5.2.3 The Functionality of the Promoted Latrines

Single- or twin-pit pour flush latrines safely contain faeces, and the water trap prevents flies from entering the pit. If the latrine is used and flushed regularly, the breeding of mosquitoes in the pan will be prevented.

In each of the designs, full pit-linings are available in brick or cement rings, with a single ring promoted as the minimum necessary support for the squatting plate. There is therefore little danger of collapse and the presence of the pan and trap eliminates the risk of users falling into the pit.

In all but the most expensive designs the purchaser provides a superstructure, so the degree of privacy is a matter of user preference, while the use of porcelain fittings facilitates cleanliness.

Hence, the latrines promoted under the IWES project function in accordance with the criteria suggested in the literature, and described in Section 3.2.

5.2.4 The Fit of Promoted Latrines with Environmental and Skills Constraints

With a range of options for pit linings, the promoted latrines are suitable for a variety of geological conditions. In friable formations, a full-height brick or cement lining can be selected, while in self-supporting soil a single ring is used as a support for the squatting platform.

In Bharlughatu, a group of men mapped out the soil types around the three villages around which this research centred. They stated that, since they were farmers, they knew the local soils very well. The map is reproduced in Appendix A5 and identifies four different soil types:

- a) Sandy soil (black type), which is a mixture of sand and clay.
- b) Soil with pebbles
- c) Sandy soil
- d) Rocky soil

Low porosity of the black, clay soil around Korashole may necessitate relatively large pits to achieve desired leaching rates, but this could not be verified because the only latrine available for inspection in that area was of the septic-tank type, and drained into a pond. Furthermore, ponds in Bangora and Kuilisuta showed that local water table levels can rise to within one foot of ground level during the wet season, and villagers in Birgaria confirmed that this was case. This need not hinder the excavation of pits during the dry season, though larger households might require pits greater than the standard size on offer, to ensure that sludge can decompose over at least 12 months (Cairncross and Feachem, 1993) before it is excavated.

At the time of the fieldwork, only a few households in Kuilisuta had chosen to adopt toilets. Most of them (six) were inspected, and it was observed that they were all owned by the slightly better off, i.e. those having a tiled roof and a private, cement-lined well on their premises. Water for flushing was therefore readily available in each case and most users reported that they used a bucketful of water for each flush. Cairncross and Feachem (1993) suggest that pour-flush latrines are compatible with water availability corresponding with a yard tap. None of the users could verify whether the pans sold under the IWES Project could really be flushed effectively with 2 litres of water, and there was no opportunity to test this during the fieldwork. In general, the water supply situation has improved under the IWES intervention, and the project goal is to ensure that each household is within 500m of a handpump. For flushing water, ponds and less developed wells are also available, although some of these were reported to periodically run dry. Flushing with grey water might be a possibility for some, but many families bathe and wash kitchen utensils either at ponds, or at handpumps. There could potentially be cases, then, in which the

15-20 litres required for flushing by a family of 6 would have to be carried 500m from source to the household latrine.

Installation of the promoted, pour-flush latrines is skilled work and this has been addressed by training community women and men as masons. They install latrines for payment by the adopting households. The use of materials readily available to villagers is minimal, the only exception being those used in homemade superstructures. All the components are prefabricated and supplied by the production centres on a commercial basis. SEEDS (1997) observes that, with their tradition of subsistence from the local forests, many tribal villagers are unused to operating within the market economy. Apart from the digging of the pit, the construction of those latrines requires skills that are unavailable to all but the specially trained.

On the basis of these data, it is considered that the range of latrines promoted under the IWES project is generally appropriate for the geological conditions around the villages of Kuilisuta, Korashole and Bangora, though larger pits than standard may be appropriate for some households.

The need for flushing water presents a possible disadvantage, but this might be mitigated by promotion of the low water requirement of the supplied pans.

UNICEF (1997) advises that local materials and skills should be the first choice if local people are to become engaged in sanitation development. The minimal use of local materials in the promoted designs, and the need for skilled labour in construction, contribute significantly to the costs of the latrines, and perhaps make the designs less compatible with the local consumers.

The promoted latrines do not, therefore, meet all the criteria for environmental and skills compatibility.

5.2.5 The Fit of Promoted Latrines with the Consumers

In the studied villages, most of those owning latrines professed that they were quite happy with them, even where there had been prior concerns about bad smells etc. A few villagers commented that a smart toilet would be incompatible with their poor houses and a group of men in Jatindih said that there was plenty of space for open defecation in the fields and forests, and that toilets were more suitable for the urban environment. Reportedly, one latrine in Kuilisuta remained unused because the owner, who discouraged the researcher from inspecting it on two occasions, was reluctant to make it dirty.

It is also apparent that the transition from open defecation directly to a porcelain, pour-flush toilet, is a much greater step than the incremental improvement recommended in the literature (Simpson-Hébert and Wood, 1998; Cairncross and Feachem, 1993). Deverill et al (2001) remind us that that options for safer excreta disposal include some that do not require a latrine, such as the burial of faeces in the field and the use of shallow pits, while DFID (1998) lists four developmental interim steps between a simple pit and the pour flush latrine.

5.2.6 Summary on the Promoted Latrines

In terms of preventing spread of disease, the models being promoted would no doubt be effective – if only local households adopted them. The latrines are structurally sound and their finish makes them easy to keep clean. They are suited to the local geology, although the need for flushing water is a consideration in villages where water must be hand-carried over distances up to 500m.

However, the promoted pour-flush models do not represent good value to the majority of villagers in Musabani Block. The costs reflect the use of few local materials, and the need for paid, skilled labour. They represent a significant step from the open defecation practised by the great majority of local people, and some villagers think that they are too smart. They are not, therefore, considered appropriate in relation to the criteria given in Section 2.1, and this may underlie the fact that only 508 latrines have been adopted after 18 months of promotion, while over 167,000 rural households remain without.

There is therefore justification for the investigation of alternative designs, and this is addressed in the following section.

5.3 Investigation of Alternatives to the Promoted Pour Flush Latrines

With step-by-step sanitation improvements in mind, proposals for burying faeces after defecation in the open were discussed in two meetings with villagers. In Bharlughatu, a group of men laughed at the idea, while a member of Kuilisuta's VWSC observed, "a cat may bury its own waste, but people don't!" No resident of Kuilisuta Panchayat reported burying faeces in SEEDS' KAP Study (2001a) and, even if the practice became widespread, it would not address lack of privacy, nor the problems faced at night or during the rainy season.

Consideration was therefore given to alternative latrine technologies, with a view to finding appropriate designs that address the shortcomings of the promoted, pour-flush toilets. The previous section records that villagers identified capital cost as the main barrier to latrine adoption. In considering alternatives, the principal goal was therefore to reduce capital costs by using a greater proportion of local materials, and methods that would enable householders to save on labour costs by building a latrine for themselves. The fieldwork further identified cases in which women's demand for latrines was remaining unmet because of their limited influence in decisions about household expenditure, and it was considered that a simpler, cheaper option might even enable women to build latrines independently. An additional aim was to reduce the requirement for flushing water.

Brandberg (1997) and Pickford (1995) suggest a variety of low-cost materials for constructing squatting platforms and lining latrines using traditional construction methods found in many rural communities. The SanPlat – a small cement platform with integral footrests, a narrow squat hole and a tight-fitting lid – is also extensively discussed by Brandberg (1997). The SanPlat improves a simple pit latrine by controlling odours and flies, helping users to position themselves above the

squat hole, and offering a smart, easily cleaned finish (ibid.). This element of the fieldwork therefore focused on observation of local technologies to determine their suitability for adoption in the designs featured in 'the texts. Figures 5.6-5.8 show some examples of suitable, local materials and techniques that were observed in the course of the fieldwork.

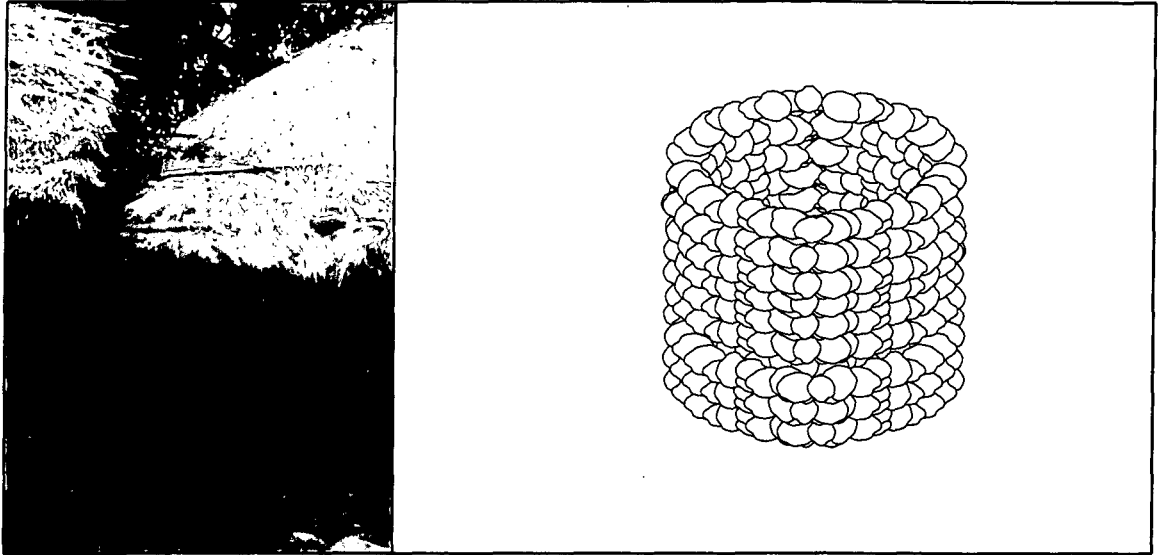


Figure 5.6 The eroded wall of this Musabani house shows stonework suitable for the lining of a latrine pit (Brandberg, 1995).

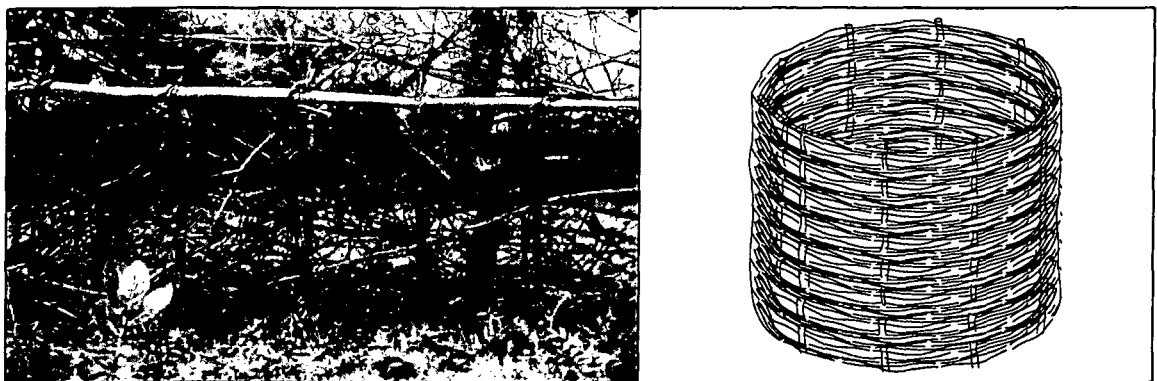


Figure 5.7 This type of rough wicker fencing is common in Musabani, and it too can be used to line a latrine pit, although it's life is limited (Brandberg, 1995).

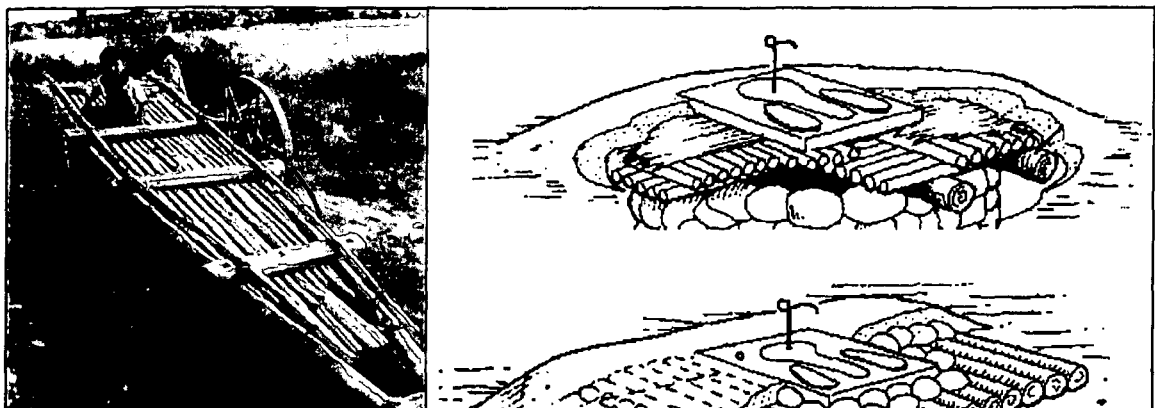


Figure 5.8 In Musabani, buffalo carts are built from bamboo and timber. Squatting platforms can be similarly fabricated (Brandberg, 1995)

Interviews were undertaken with villagers in Bharlughatu and Birgaria to establish the local costs and availability of materials. Bamboo is commonly seen growing by the roadside in the villages, and in people's gardens. It is privately owned, and can be bought on the market in Musabani in 4.5-6m lengths. Local costs for such lengths of bamboo are shown in Table 5.4:

Table 5.4 Local Costs for single, 15-20 ft lengths of bamboo

Size		Cost	
Small	(ø50-75mm)	Rs.10-15/-	(£0.15-0.22)
Medium	(ø100-130mm)	Rs.25-30/-	(£0.37-0.44)
Large	(ø180-200mm)	Rs.45-50/-	(£0.66-0.74)

Cement was described as "readily available", and can be bought by the kilogram. 1kg costs Rs.3/- (£0.04), while a 50kg bag costs Rs.138/- (£2.03).

When alternative latrine designs were discussed at meetings with three groups of VWSC members and NGO field coordinators, they generated considerable interest amongst the participants. Three householders expressed interest in building prototypes and one of them, Raj Kumari Parta, followed through to build an experimental latrine at the home she shared with her husband and mother-in-law.

Both bamboo and timber were available in the Parta's garden, and the family decided to use these materials to fabricate the squatting platform, and use a small, 600 x 600mm SanPlat, rather than opting for a larger and more expensive cement squatting plate. Figure 5.9 shows Raj Kumari Parta fixing the bamboo in place using second-hand nails, with the help of her neighbours.



Figure 5.9 The fabrication of the squatting platform

They had no experience of using bamboo and timber in the ground, but after some discussion the consensus was that they might remain sound for 2-3 years. The available timber (of unknown type) was approximately 120mm in diameter and 3m long. It had been lying in the garden for some time, but was strong nevertheless, and formed two load-bearing members over which were laid lengths of split bamboo. The platform was soaked with used engine oil in an attempt to protect it from rot and termite attack.

A design life of 3 years was specified for the pit, matching the estimated life of the squatting platform. Like much of the area, the Parta's garden was scattered with rounded, 100-200mm stones. The family preferred a full-height, dry-stone lining to other options suggested by Brandberg (1997), such the wickerwork shown in Figure 5.7, because they perceived this to offer greater stability and longevity. The option of lining the pit with empty oil drums (ibid.) was discussed, but the family considered that these would be too expensive.

Calculations by the researcher derived overall pit dimensions of 1.2m diameter and 1.1m depth. The lining reduces the pit diameter by approximately 0.3m, to 0.9m and, if the pit is said to be filled when the contents have risen to within 0.5m of the squatting platform, the useful volume of the pit is 360 litres. Based on a sludge accumulation rate of 40 litres per person per year (Pickford, 1995), such a pit is predicted to last 3 years, with three users.



Figure 5.10 Finishing the Lining of the Prototype Latrine



Figure 5.11 The surface of the SanPlat is smoothed whilst it is in the mould

The Partas employed their neighbours to dig the pit and line it (Figure 5.10). Brandberg (1997) suggests that the upper three layers of such a stone lining should be held by cement mortar, and this advice was followed in the construction of prototype.

A wooden mould for casting small SanPlats was fabricated by a carpenter in Jamshedpur. When it was ready, the Parta family called on the expertise of another neighbour who had been trained as a mason under the IWES Project.

Cement, sand, aggregate and reinforcement bar were purchased from a nearby Kulisuta business specialising in the production of well linings. Figure 5.11 shows the mason, Baskoo Murmu, finishing the dished surface of the SanPlat to ensure that it can be cleaned easily when the latrine is in service. Drawings of the mould, and of the Sanplat, are given in Appendix A7.

Figure 5.12 shows the squatting platform and SanPlat in place. To achieve the right levels and afford a degree of drainage, the platform's timbers were supported on small stones laid in troughs, with the bamboos bridging between the timbers and the pit lining. More stones were used to fill the small gaps between the bamboos before adding a covering of mud, mixed with cow dung and bound together with husks from threshed paddy. This technique produces a hard, smooth finish and is used to form the floors of tribal houses in the local villages.

Figure 5.13 shows the finished groundworks. The mud mix was formed into a dome and made flush to the SanPlat, before being rendered with a sand-cement mix. The render was chosen by the owners, despite some concerns that it might crack in time.



Figure 5.12 The squatting plate and SanPlat in position



Figure 5.13 The finished groundworks, rendered in cement and with the lid in place

5.3.1 Analysis of the Costs of the Prototype Latrine

The capital and recurrent costs of the prototype latrine are estimated in Appendix A8. Recurrent costs are those incurred by the excavation of a new pit when the first one has filled, and to replace the squatting platform when the materials have deteriorated. Table 5.5 shows a summary of these calculated costs.

Table 5.5: Calculated Costs for the Prototype Latrine to a Musabani Household.

	Costs, per latrine		
	Based on the Parta's Latrine (using their own materials where possible)	Using paid labour	Unskilled labour by householders
Capital cost	Rs.210/- (£3.1)	Rs.270/- (£4.0)	Rs.168/- (£2.5)
Annual recurrent cost	Rs.60/- (£0.88)	Rs.90/- (£1.3)	Rs.36/- (£0.53)

Table 5.6, shows the costs of the prototype are compared with those of the single pit latrine promoted under the IWES Project (from Sub-Section 5.1.2).

Table 5.6 Comparison of the Costs of the Prototype and Promoted Latrines.

	Using Paid Labour		Householders provide unskilled labour	
	Promoted Latrine	Prototype Latrine	Promoted Latrine	Prototype Latrine
Capital cost	Rs. 630/- (£9.3)	Rs.270/- (£4.0)	Rs. 600/- (£8.8)	Rs. 168/- (£2.5)

Annual recurrent cost	Rs. 85/- (£1.25)	Rs. 90/- (£1.3)	Rs. 66/- (£0.97)	Rs.36/- (£0.53)
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Comparison shows that, if paid labour is employed, the capital costs for the prototype are 43% of those of the cheapest, promoted latrine. If householders carry out the unskilled work themselves, the capital cost of the prototype falls to 28% of that for the promoted latrine.

If paid labour is used, recurrent costs are similar for the prototype and promoted latrines, but a 45% saving is possible if families undertake the unskilled labour themselves.

All the costs described are exclusive of the superstructure but, if lightweight, low-cost materials are used, they may become unserviceable after 1-2 years, giving an additional recurrent cost of up to Rs.25/- (£0.37) per person per year.

Payment for the prototype latrine is flexible because a household can choose the rate at which work is carried out, and the extent of their own labour inputs. Not every family, though, may be willing to contribute their labour. The headman (Majhi) of Bangora village decided against building a prototype latrine because the estimated cost of Rs.300/- was too great. He would not, however, entertain the idea that members of the household might undertake some the work to reduce the financial cost.

5.3.2 The Functionality of the Prototype Latrine

The prototype latrine safely contains faeces, and the tightly fitting lid discourages flies from entering the pit. Brandberg (1997) advises that the occasional addition of hot ashes helps prevent fly breeding in the pit. Locally, dung and fuelwood are used for cooking, so ashes would generally be available.

The installation of a dry-stone lining guards against structural collapse of the pit. Members of the women's self help group (WSHG) in Rajestate suggested that the prototype offered particularly good value because the lining was full height, whereas the cheapest commercially available toilet has only a single cement ring supporting the squatting plate.

The prototype's squatting platform proved to be extremely rigid in tests. There was no perceptible movement of the platform, even if someone bounced up and down on the SanPlat.



Figure 5.14 The squatting plate was strong enough to support three people with no perceptible movement

Figure 5.14 shows it safely supporting the combined weight of the owners, Dr and Raj Kumari Parta, and the mason Baskoo Murmu.

The platform will, however, deteriorate over time, and the elimination of perishable materials through the use of larger, domed cement SanPlats (Brandberg, 1997) may prove a more convenient and economical option in the long term – particularly in cases where households do not have their own materials to hand. This would also eliminate the mud dome, which will require maintenance as it is eroded by heavy rain.

A high quality finish was achieved for the dished surface of the SanPlat, especially for a first attempt, and it should be easy to keep it clean.

5.3.3 The Fit of the Prototype Latrine with Environmental and Skills Constraints

Like the commercially available latrines, the prototype is suitable for the range of geological conditions found in Musabani Block. In self-supporting soil, it may be possible to do without the full-height, dry stone lining.

WSHG members appreciated the fact that the prototype eliminates the need for flushing, and therefore offers a relative saving in the labour required to carry water. In Musabani, this would have the greatest impact on women, who are responsible for the carriage of water.

With the exception of the SanPlat itself, the prototype uses many materials that are readily available to tribal villagers, whose lifestyle traditionally revolves around the collection of local, natural products (SEEDS, 1997). In relation to local skills constraints, members of Rajestate's WSHG stated that they could, if necessary, build a similar latrine themselves. They said that they would usually ask their husbands to carry out digging but, if necessary, they could excavate pits themselves. They appreciated the fact that costs could be minimised by undertaking much of the work themselves.

In this case the SanPlat was made by a woman mason living in the same tola as the volunteer family. Since both the prototype and promoted latrines employ local masons in their construction, they may offer similar potential for economic development at village and tola level. The commercial and PHED production centres could, of course, produce SanPlats themselves, or share the potential market with small-scale entrepreneurs operating from their own homes.

5.3.4 The Fit of Prototype Latrine with Consumers

The prototype may address the perception, expressed in the villages, that a toilet is "too smart" to be compatible with poor housing, and an ultra-low cost home-made toilet may also represent a more realistic first step on the sanitation ladder for the majority of households who are familiar only with the practice of open defecation. With regard to further, incremental sanitation improvements, the design of the SanPlat could be developed to facilitate the later incorporation of a pour-flush pan and water trap. The SanPlat described here, and shown in the drawings in Appendix A7, features a small, keyhole-shaped drop hole, which is too small to accommodate a pan. Hence, households wishing to upgrade their latrines from a SanPlat to a pour-flush design would require a new squatting platform, and thus incur additional costs.

Most members of the WSHG in Rajestate stated that they would wait until the prototype had been in service for a while before making up their minds about it. Odours were of particular concern. Indeed, the absence of a water trap was certainly a key factor for one of the original volunteer households that eventually decided against building a prototype. However, one household neighbouring the Parta's immediately placed an order with the mason, Baskoo Murmu, for a SanPlat and began excavating their own pit.

The Partas were very pleased with their latrine. Reportedly, they continue to use it regularly three months after it was built. They remain satisfied, and there are no odour problems (Dwivedi, 2001).

5.3.5 Summary on the Prototype Latrine

As a barrier to faecally transmitted disease, the prototype latrine is probably as effective as the commercially available latrines – as long as it is used and kept clean, and the lid controls flies adequately. If any latrine is to have a positive health impact though, it must be adopted on a wide scale, and some features of the prototype may make it more attractive to consumers than the options currently on offer.

- a) The prototype is less than half the cost of the cheapest, commercially available model, and can be built and paid for over a period of time that suits each household.
- b) The use of local skills and materials means that the latrine is perhaps more in keeping with the culture of the local tribal population, and it could be built independently, if necessary, by women.
- c) There is no requirement for flushing water, and adoption of such a latrine therefore represents a lesser, long-term physical burden to women than adoption of a pour flush toilet.

It is not suggested that the prototype described here is the single sanitation solution for East Singhbhum, or even for Kuilisuta Panchayat. However, six further households have reportedly placed cash deposits with Baskoo Murmu for their own SanPlats, and this experiment therefore indicates that there is scope for the development of alternatives to the pour-flush latrines promoted under the IWES Project, and these could form a part of any future technical learning modules.

6 CONCLUSIONS

In rural East Singhbhum, women are socially disadvantaged. Their society is patriarchal, and the literature describes a history in which women have been disenfranchised of traditional food resources and, with them, their status and influence. This is compounded by the unequal treatment of boy and girl children at home, described by Kumari (1995), and recounted by women in Musabani in the course of the fieldwork. Educationally, women are disadvantaged in comparison to men. Few speak Hindi, and this can exclude them from interactions with more senior agency staff.

By convention, men are responsible for taking decisions and controlling the little money available to most families. There is no tradition of public meetings between women and men, and in the mixed forum of the water and sanitation committee, men tend to dominate discussions. The IWES Project rules governing the committees do not extend to the conduct of their meetings, and men do not encourage women's input. Indeed, women and men seem resigned to these established roles. They are unused to analysing their roles, and are not orientated towards the potential for change.

At executive level, there is recognition within agencies that women should be empowered to take a proactive role in the IWES Project. However, this research identifies a need to translate this into specific project goals, and activities for implementation. Currently, the project remains focused on meeting infrastructure targets, and this may reflect the technical orientation of key agencies. Smout and Parry-Jones (1999) describe the difficulties faced by technical staff in addressing social issues such as gender, and the literature points to a real need for social capacity building within agencies, as a precursor to addressing strategic gender issues with communities. This requires the allocation of financial resources by donors.

In order to mainstream gender there must be a shift of emphasis, to focus the IWES Project on people as it currently focuses on hardware, and this research identifies some possibilities for achieving this.

The women's self-help groups, which currently operate alongside the VWSCs, are evidently helping to address women's strategic needs, and could perhaps be linked formally with the IWES Project, to foster women's participation in activities related to water and sanitation. The CCA groups in Phulwarisarif show that women's socio-economic development can lead to a demand for sanitation services, that is backed by women's independent incomes.

Lastly, education was highlighted as an important factor in empowering women to participate in discussions and decisions on a more equal basis, and this strongly supports proposals for participatory learning modules. These need not be restricted to technical issues, however, and could aim to motivate more equitable sharing of burdens and benefits between women and men. This was highlighted in the course of the research, and is echoed in a case study cited by Regmi and Fawcett (2001).

UNICEF (1997) suggests that sanitation programmes should promote a range of technologies, and this is achieved in the IWES Project. However, they are derived from the expensive twin-pit, pour flush model that was, for some time, promoted as the only acceptable option.

The case for addressing sanitation in incremental steps, using cheap local materials and indigenous methods is undisputed in the literature. This not only serves to reduce costs, but also to engage people in addressing their own needs. This study has demonstrated one option for achieving this, and at the same time, meet criteria for function, technical performance, and environmental compatibility. The analysis of the design undertaken for this study indicates that the prototype will be as effective as the promoted models in preventing the transmission of disease.

Early indications are that it is functioning well, and has been instrumental in stimulating demand by a number of neighbouring households.

There is strong evidence to suggest that, if technical learning modules are to be developed, to help women and men make informed decisions, they should include alternative latrine designs to those currently promoted under the IWES Project.

7 RECOMMENDATIONS

The study has identified that, amongst agency partners, there is limited appreciation of themes and ideas that are currently guiding the mainstreaming of gender in development programmes. It is therefore recommended that steps be taken to sensitise and orientate staff in this regard. The questionnaire survey of agency staff indicated that some of the NGO partners may be able to provide valuable inputs to this process.

The key recommendation resulting from this study is for the agency partners to define specific goals towards mainstreaming gender in the IWES Project. The study identifies barriers to women's participation, and it is clear that these cannot be easily overcome in the project timeframe of one or two years. Partners must therefore identify what can realistically be done to achieve a gender focus, within its water and sanitation remit. This process, though, can be meaningful only after the capacity of agencies has been strengthened through training.

Indicators must be identified to measure progress against the chosen gender-related goals, and the literature offers some assistance here. Simpson-Hébert Wood (1998) offer a checklist that identifies both barriers to gender mainstreaming, and potential areas in which improvements can be made. Dayal et al (2000) offer a method for the participatory evaluation of water and sanitation projects with the emphasis on mainstreaming gender and poverty issues.

If the focus of the IWES Project is to transfer from infrastructure to people, however, it is imperative that stakeholders in the communities are involved in the definition of goals and progress indicators, and it is recommended that the women's self help groups, for example, are invited to participate in this process.

Finally, it is recommended that project staff consider alternative latrine technologies, such as that demonstrated in this study, and that steps be taken to evaluate such alternatives amongst stakeholders at agency and community levels, with a view to their incorporation into the range of services promoted by the project. This study has identified that community members can provide comprehensive environmental data to assist in the selection of technologies, and exercises such as participatory soil mapping are recommended, both to engage community-level stakeholders, and to help match hardware to the local environmental conditions.

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APPENDIX A1

PRO FORMA GUIDE NOTES FOR SEMI-STRUCTURED INTERVIEWS

Village	Tola	Date

Type of consultation:

Formal / Informal

Place:

Present:

Mr Jagabandhu Sanda:

SEEDS Block Level Field Coordinator

Mr S K Patak:

J.E. PHED

Mrs Parvati Munda:

SEEDS Panchayat Coordinator for Kuilisuta.

Ms Sita Mardi:

SEEDS Coordinator/VWSC and WSHG member

Mr MN Jha

SEEDS, Head Office Representative

Plus:

No. Women

No. Men

Additional Information:

1. Meetings	
a) Where do women meet?	
b) Where do men meet?	
c) Where does everyone meet together?	
d) Do women and men use the same place?	
e) What happens at the VWSC meetings?	
f) Who speaks? Who decides?	
g) How do people find out what has been discussed at the meetings that they didn't attend?	
h) In what other ways is information disseminated? Which are the most effective?	
i) Who do you rely on and trust in order to gain information?	
j) Are records kept of the meetings?	

2. The roles of Women and Men / Financial Issues	
a) Who builds things? Houses, wells, furniture?	
b) What materials are used? Who collects them?	
c) Who does what work?	
d) Who built the soakaways and garbage pits?	
e) Who is responsible for cleanliness?	
f) Who is responsible for decisions about taking care of the health of the family?	
g) Who makes decisions about spending money? Why?	
h) Who makes decisions about building/changing the home? Why?	
i) What is the payment for work?	
j) When is there money in the household?	

3. Mobility	
a) Who travels where?	
b) Who goes to the block HQ?	
4. Sickness/Health	
a) What kinds of disease/sickness occur?	
b) What are the causes of the diseases?	
c) What can be done to prevent the diseases?	
d) At what times of year do they is occur? Seasonal calendar?	
e) How many people suffer?	
f) Can they continue to work?	
g) How long are they off work?	
h) Are there particular gods associated with health/well-being?	

5. Sanitation	
a) What are the sanitation arrangements now?	
b) Are there any advantages to open defecation? What are they?	
c) Are there any disadvantages to open defecation? What are they?	
d) Do people always use the same place each day?	
e) Do people come across the waste of others when defecating?	
f) What is the feeling about this? What are the perceived disadvantages?	
g) What are the negative aspects of human waste? Sight/smell/flies/the spread of disease/others?	
h) Any positive aspects? Fertilizer/environmental recycling?	
i) What can be done to make open defecation safer? Burying? Treatment?	
j) Have you seen any household toilets?	
k) What do think of them?	

l) Are there any advantages to household toilets? What are they?	
m) Are there any disadvantages to household toilets? What are they?	
n) Are the advantages the same for both women and men?	
o) What are the barriers preventing the adoption of household toilets?	
p) For those with toilets:	
(i) What/who motivated those with toilets to go ahead?	
(ii) Did you visit the sanitary park? What did you think of it?	
(iii) Did you see any literature or information about the options? What did you think of it?	
(iv) Who made the decision to go ahead?	
(v) What do you think of your new latrine? What are the positive/negative aspects?	
(vi) Are you using your new latrine? Who uses it? Why doesn't everyone use it?	
(vii) How long have you had it?	
(viii) Do you think it was worth the money/efforts?	

(ix) How much did it cost?	
(x) How did you pay?	
(xi) Who built it?	
(xii) Is it kept clean?	
(xiii) Who keeps it clean?	
(xiv) How could it be improved?	
(xv) Any health benefits?	
(xvi) Any interest from others?	
(xvii) How much water is required for flushing?	
q) If every household had a toilet, who would use them? who would not use them?	
r) Have you seen the toilets installed in the community? What do you think of them?	
s) Did you visit the sanitary park? What did you think of it?	

t)	Did you see any literature or information about the options? What did you think of it?	
u)	What are the options for household toilets?	
v)	What is the minimum acceptable option? What is a good design?	
w)	What are the advantages – disadvantages of each option?	
x)	What are the main purposes of household toilets?	
y)	Do the available options meet the requirements?	
z)	Could it be made cheaper?	
aa)	What about smells in the home?	
bb)	What about flies?	
cc)	What about mosquitoes?	
dd)	Where can cement be bought?	
ee)	Are there particular requirements for the siting and orientation of household toilets?	
ff)	When do people have time to make changes/do building in the home?	

gg)	When is the best time to buy a toilet?	
hh)	When is the best time to build a toilet?	
ii)	What is the ground like? Is it easy to dig a pit? Will it support itself, or is a lining required? What type of lining?	
jj)	What else is needed to go with the toilet? A water source? Soap?	
kk)	Where does a household latrine lie on a list of priorities for gaining a better life?	
ll)	What happens when the pit fills up?	
mm)	Who could build a latrine?	
nn)	How much would it cost?	
oo)	Where would the money come from?	
pp)	What would the gods and ancestors think?	

6. School Sanitation	
a) Are parents/teachers/children aware of the SWASTHH programme?	
b) What do parents/teachers/children think of the SWASTHH programme?	
c) What are the sanitation facilities like at schools? Who uses them? • Who cleans them?	
7. Wider Social Issues	
a) Are people moving away from the villages? Who? Why?	
b) What could be done to encourage people to stay in the villages?	
c) Issues of status and respectability – raising the profile of the villagers, making their voice heard in the outside world?	

APPENDIX A2

**QUESTIONNAIRE TO DETERMINE THE ENVIRONMENT, WITHIN
PROJECT AGENCIES, FOR GENDER MAINSTREAMING AND
DEMAND-LED DEVELOPMENT**

SIDA-Assisted IWES Project.
Questionnaire for Research Purposes.

Please take some time to answer the questions below. Information provided will not be disclosed on an individual basis. Your honest, considered answers are of most benefit.

Please return the questionnaire to Tim Marshall, either at the SEEDS office, or at the District Level Coordination Meeting on 10 September 2001.

Thank you for your cooperation.

1. Your Organisation:

UNICEF Other government body
PHED NGO

2. Your position:

Senior Junior

3. Yourself:

Male Female

4. Who made the decisions concerning the types of technology promoted in this project (i.e. the selection of pumps vs wells, the types of toilets available? (you may select up to 2 options).

UNICEF Other government body Community groups
PHED NGO Other community members

5. Who made the decisions concerning the locations of handpumps? (you may select up to 2 options).

UNICEF Other government body Community groups
PHED NGO Other community members

6. Who made the decisions concerning the level of service to be provided in this project (i.e. the number of pumps and wells, the target coverage of toilets/garbage pits/soakaways etc.? (you may select up to 2 options).

UNICEF Other government body Community groups
PHED NGO Other community members

7. Who made the decisions concerning the level of payments made by community members for the provision, upkeep and maintenance of services? (you may select up to 2 options).

UNICEF Other government body Community groups
PHED NGO Other community members

8. Briefly, what are the project objectives in terms of:

Water supply?

Sanitation?

9. What are the project objectives in terms of the roles and positions of women and men?

10. In your organisation, how is progress towards these objectives monitored?

Water?

Sanitation?

Roles of women and men?

11. Please mark a cross on each line at the point corresponding to your feeling:

a. "In my organisation, gender issues are usually considered by personnel at every level of operations"

Strongly	Strongly
agree	disagree

b. "In my organisation, gender issues are considered at every stage of decision-making"

Strongly	Strongly
agree	disagree

c. "In my organisation, the management encourages consideration of gender issues "

Strongly	Strongly
agree	disagree

d. How is the incorporation of gender issues in your work encouraged by your organisation?

12. What training is offered to members of your organisation to help ensure that they are sensitive to issues of gender?

13. Why do you think gender issues are considered in this project?

14. Why do you think community participation is promoted in this project?

Responses by Government Staff to the Questionnaire.

(numbers represent the number of responses in a given category)

1. Organisation:

UNICEF Other government body 1

PHED 5 NGO

2. Position:

Senior 3 Junior 3

3. Respondent:

Male 6 Female

4. **Who made the decisions concerning the types of technology promoted in this project (i.e. the selection of pumps vs wells, the types of toilets available? (you may select up to 2 options).**

UNICEF 5 Other government body Community groups

PHED 5 NGO 1 Other community members

5. **Who made the decisions concerning the locations of handpumps? (you may select up to 2 options).**

UNICEF Other government body 3 Community groups 1

PHED 5 NGO Other community members

6. **Who made the decisions concerning the level of service to be provided in this project (i.e. the number of pumps and wells, the target coverage of toilets/garbage pits/soakaways etc.? (you may select up to 2 options).**

UNICEF Other government body 1 Community groups

PHED 5 NGO 2 Other community members

7. **Who made the decisions concerning the level of payments made by community members for the provision, upkeep and maintenance of services? (you may select up to 2 options).**

UNICEF 2 Other government body 1 Community groups 2

PHED 3 NGO 3 Other community members

Responses by Government Staff to the Questionnaire (contd....)

8. Briefly, what are the project objectives in terms of:

Water supply?

To provide safe drinking water from deep well handpumps.

To provide regular and reliable water supply and to reduce the water related diseases.

To generate awareness about safe water and its handling, to introduce different types of diseases due to drinking of unsafe water in community and make a system in community so that they would maintain O&M of existing safe sources without any government support and make decision also.

One return with no answer.

To provide sustainable safe water supply to community to reduce the child mortality rate and upgrade the level of life.

Awareness generation regarding use of safe drinking water. To provide safe drinking water @ 55 litres per person per day and make the source sustainable.

Sanitation?

To develop the community group in village side about personal hygiene, group cleanliness in village and to develop and promote the daily behaviour in their old practice. The objective of the projects is to create awareness among the people regarding the advantages of personal hygiene and harmful effects of the continuing their present habits.

To reduce the diseases concerning sanitation by providing toilets and garbage pits for garbage and human excreta disposal surrounding settlements and to promote hygiene awareness habituating self-cleaning and to keep the forest and drinking water and surroundings clean.

To generate awareness about seven components of sanitation, to introduce different types of diseases due to ill sanitation and strengthen capacity building in community members so that they will arrange to keep clean environment of water, land, air and surroundings by making required infrastructure and also they may be able to maintain them without any government support.

To discourage open defecation.

To cover 30% of the households with latrine, to degrade the open defecation, empower personal hygiene, village sanitation, house sanitation, this to reduce the diseases.

To improve hygiene and health practices by awareness generation of general mass and make them aware about the latest low-cost technology and provide infrastructure at their cost for installation of household toilets.

Responses by Government Staff to the Questionnaire (contd....)

9. What are the project objectives in terms of the roles and positions of women and men?

Empowerment of women with respect to men; reduction in the drudgery of women and community involvement

To improve self-confidence and build capacity. The roles of women and men are those of owners – making policy and taking decisions, and to participate at each level of operations.

Not clear, but recently gender issues have been brought under discussion

Women should take more responsibility for implementing cleanliness and sanitation because they spend more time at the house and uses water more than anyone else. Men should educate their women and promote, support and encourage clean habits.

The roles of both men and women are necessary for the achievement of the project aim. But the role of women is more appreciated because they are serving the most household affairs.

To involve both the women and men in making decisions about the use of safe drinking water, improve health and hygiene, installation of household toilets, and keep the environment clean.

10. In your organisation, how is progress towards these objectives monitored?

Water supply?

Satisfactory

More provision for safe drinking water

Number of sources constructed

One return with no answer

Down time of handpumps reduced in terms of repairing. Purification of water of drinking well.

Number of tubewells constructed and repair of tubewells. Community participation in preventative maintenance to tubewells, repair of tubewells etc.

Sanitation?

Marginal progress.

Increasing gradually the use of toilets.

Number of latrines, soak pits, garbage pits, washing platforms and drains constructed as per demand and requirement per population.

Number of toilets/number of private producers.

Construction of latrine, kutchra and pucca drain, soakage and garbage pits.

Number of toilets constructed

Responses by Government Staff to the Questionnaire (contd....)

Roles of women and men?

No. of VWSC members; No. of HP mechanics; No. of caretakers; activities

Both men and women serve on VWSCs and actively participate in project activities

Two returns with no answer

Satisfactory

Both men and women are more aware of water and sanitation.

11. Please mark a cross on each line at the point corresponding to your feeling:

a) **“In my organisation, gender issues are usually considered by personnel at every level of operations”**

Strongly				Strongly
agree	1		5	disagree

b) **“In my organisation, gender issues are considered at every stage of decision-making”**

Strongly				Strongly
agree			6	disagree

c) **“In my organisation, the management encourages consideration of gender issues”**

Strongly				Strongly
agree	2	1	3	disagree

12. **How is the incorporation of gender issues in your work encouraged by your organisation?**

Officially it is not

Participation of women in greater numbers

Efforts are being made towards gender balance

We are trying to include the women in a private production centre

Negligible

By personnel

Responses by Government Staff to the Questionnaire (contd....)

13. What training is offered to members of your organisation to help ensure that they are sensitive to issues of gender?

No such training is provided

Workshop on 25 February 2001

No such training is given

No such training has been implemented

Motivators carry out training

Training in watsan matters

14. Why do you think gender issues are considered in this project?

Women are the first stakeholders.

Knowledge about watsan issues should be the same for both men and women. Errors by one will affect both.

Because there should be equal rights for both men and women

Because of comments by SIDA

In rural areas women can make a major difference, as they are responsible for cleanliness and sanitation.

Gender issues [women's labour?] are considered "to be reduced" by the O&M of HPs and the provision of latrines, and these aspects are progressing in the project. Hence, gender issues are being considered in the project.

15. Why do you think community participation is promoted in this project?

Ownership always improves the attitude.

To enable the community to sustain the expensive facilities provided by government, as the government funds are insufficient for O&M.

The community takes interest in implementation of activities of the project.

To bring about longer term and sustainable impact of the project

Watsan committees have been formed in each village and are functioning smoothly.

Community participation is promoted because VWSCs, caretakers and mechanics have been trained and they are serving in the public field.

Responses by NGO Staff to the Questionnaire.

(numbers represent the number of responses in a given category)

1. Organisation:

UNICEF Other government body
PHED NGO 5

2. Position:

Senior 4 Junior 1

3. Respondent:

Male 3 Female 2

4. **Who made the decisions concerning the types of technology promoted in this project (i.e. the selection of pumps vs wells, the types of toilets available? (you may select up to 2 options).**

UNICEF 3 Other government body Community groups
PHED 5 NGO 2 Other community members 1

5. **Who made the decisions concerning the locations of handpumps? (you may select up to 2 options).**

UNICEF Other government body 2 Community groups 2
PHED 1 NGO 3 Other community members 1

6. **Who made the decisions concerning the level of service to be provided in this project (i.e. the number of pumps and wells, the target coverage of toilets/garbage pits/soakaways etc.? (you may select up to 2 options).**

UNICEF 1 Other government body 1 Community groups 3
PHED 3 NGO 3 Other community members

7. **Who made the decisions concerning the level of payments made by community members for the provision, upkeep and maintenance of services? (you may select up to 2 options).**

UNICEF 1 Other government body Community groups 4
PHED 2 NGO 1 Other community members

Sanitation?

Awareness and motivation on sanitation habits.
2% household latrines have been constructed in the block.
Village WATSAN groups.
It is an ongoing process.

Responses by NGO Staff to the Questionnaire (contd....)

Roles of women and men?

Initiatives are lacking through the project plan
Involvement of man is more, so far
The roles of men are higher than the roles of women
To maintain personal and community water and sanitation habit and work
Men are dominant whereas women are supportive

11. Please mark a cross on each line at the point corresponding to your feeling:

- a) **“In my organisation, gender issues are usually considered by personnel at every level of operations”**

Strongly	Strongly
agree 5	disagree

- b) **“In my organisation, gender issues are considered at every stage of decision-making”**

Strongly	Strongly
agree 5	disagree

- c) **“In my organisation, the management encourages consideration of gender issues ”**

Strongly	Strongly
agree 5	disagree

12. How is the incorporation of gender issues in your work encouraged by your organisation?

Women's participation in every programme

Very much

Gender issues are at the core of every activity

Motivating male members and empowering female members

Womens' participation in each activity is discussed at the meetings

Responses by NGO Staff to the Questionnaire (contd....)

13. What training is offered to members of your organisation to help ensure that they are sensitive to issues of gender?

Regular training

Not answered

It is a general guideline

Gender sensitisation workshop

By open discussion and giving examples

14. Why do you think gender issues considered in this project?

So that women are involved in water and sanitation issues mainly.

The success of the project depends on the involvement of women.

It is essential to the success of the project because both groups are equally responsible as users

They are not fully considered

Women are required in each activity. It is perhaps more for women that sanitation is required

15. Why do you think community participation is promoted in this project?

Because the community faces the problem and without community leadership the problem cannot be solved.

Because change in social behaviour must be inculcated in the community and must come from within

For the sustainability of the project

Community participation is considered

Without the participation of women the project is not complete. They are 50% of society

APPENDIX A3
FIELDWORK PROGRAMME

Outline programme of the work carried out in India

Week No.	Date	Location	Key Activities
1	9 Jul	New Delhi	Introduction to IWES project at UNICEF's national office.
2	16 Jul	Patna	Review of documents at UNICEF's state office. Field visits to two nearby CCA community groups.
		Jamshedpur	Introduction to IWES Project partners; visit to Jamshedpur sanitary park.
3	23 Jul	Jamshedpur	Project planning with the NGO SEEDS.
4	30 Jul	E Singhbhum	Fieldwork in the villages of Musabani Block; Visits to private production centres, Chakulia and Ghatsila.
5	6 Aug	Musabani	Fieldwork in the villages of Musabani Block.
6	13 Aug	Musabani	Fieldwork in the villages of Musabani Block. First interim review of results and strategy.
7	20 Aug	E Singhbhum	Fieldwork in the villages of Musabani Block; Visits to PHED production centre, Ghatsila; Health camp, Bakra Village
8	27 Aug	Musabani	Fieldwork in the villages of Musabani Block.
9	3 Sep	Musabani Jamshedpur	Prototype latrine planning and design.
10	10 Sep	Musabani	Second interim review of results and strategy; Fieldwork in the villages of Musabani Block; Prototype latrine construction.
11	17 Sep	Musabani	Fieldwork in the villages of Musabani Block. Prototype latrine construction.
12	24 Sep	Musabani	Fieldwork in the villages of Musabani Block. Prototype latrine construction.
13	1 Oct	Musabani Jamshedpur	Completion of Prototype Latrine. Debriefing with UNICEF staff.

APPENDIX A4

**RESULTS OF A CARD-SORTING EXERCISE UNDERTAKEN BY
WOMEN OF MOHULBANI**

APPENDIX A5
COST CALCULATIONS FOR PROMOTED SINGLE, OVER-THE PIT
LATRINES

Calculation of Total Capital Cost of a Single, Over the Pit Latrine

It is estimated that one labourer can dig a standard pit in one day (Khanna, 1999) (this was confirmed when the pit for the prototype latrine was excavated) which, at typical rates for unskilled labour in Musabani, gives a cost of Rs.30/-. The nearest production centre at Ghatsila lies about 20km away from Musabani, and transport costs are typically Rs.5/- per km. It is therefore possible to calculate the true capital costs of a single, over-the-pit latrine to a householder in Musabani as follows:

Capital cost of hardware	Rs.	500/-
Transport costs from Ghatsila to Musabani	Rs.	100/-
Cost of digging a single, standard pit	Rs.	30/-
Total cost per latrine	Rs.	630/-
Total capital cost, per person (=630/6)	Rs.	105/- (£1.5)

Note that this calculation reflects the situation at the time of the fieldwork, i.e. with hardware manufactured in Ghatsila. However, if the IED is successful in orientating an entrepreneur in Musabani Block, transport costs will be reduced to an average of approximately Rs.15/-, giving a total capital cost, per person Rs.91/- (£1.3).

If householders dig their pit themselves, the total capital cost per person is Rs.100/- (£1.5).

Calculation of Total Recurrent Cost of a Single, Over the Pit Latrine

In the promoted latrines, the standard pit size is 3-4' (0.9-1.2m) deep with a diameter of 3' (0.9m). If a pit is said to be full when the contents are 500mm below ground level (Khanna, 1999; Pickford, 1995), such a pit has a working capacity of 350 litres. The average household in Kuilisuta Panchayat has 6 people (SEEDS, 2001) and, based on a sludge accumulation rate of 40 litres per person per year (Pickford, 1995), the standard pit will fill in 1-2 years.

Because a skilled mason is required, the cost of removing the squatting plate/pan/trap assembly and reinstating it over a new pit is estimated at Rs.60/-. The IED representative advised that it is not normally possible to remove the cement support ring, and that a second ring must therefore be purchased. If the pit fills after 18 months, the cost can be calculated as follows:

Cost of digging a second, standard pit:	Rs.	30/-
Cost of a second support ring:	Rs.	150/-
Transport costs from Ghatsila to Musabani	Rs.	100/-
Cost of removing and reinstating the squatting plate and pan assembly:	Rs.	60/-
Total cost incurred after 18 months:	Rs.	340/-

Assuming that, when the second pit is filled, the first pit is excavated and re-used, the costs after the each subsequent, 18-month period are calculated as follows:

Cost of excavating the standard pit:	Rs.	30/-
Cost of removing and reinstating the squatting plate and pan assembly:	Rs.	60/-
Total cost incurred after 18 months:	Rs.	90/-

Thus, over 10 years, the calculated annual recurrent cost is:

$$\frac{340 + \{(8.5/1.5) \times 90\}}{10} = \text{Rs. 85/- (£1.25)}$$

$$= \text{Rs. 14/- (£0.21) per person}$$

Again, this calculation reflects the situation at the time of the fieldwork, i.e. with hardware manufactured in Ghatsila. If the IED is successful in orientating an entrepreneur in Musabani Block, transport costs will be reduced to an average of approximately Rs.15/-, giving an annual recurrent cost, per person of Rs.13/- (£0.19).

If householders dig their pits themselves, the recurrent cost per person is Rs.11/- (£0.16).

APPENDIX A6

**MAP OF SOIL TYPES AROUND THE VILLAGES OF KUILISUTA,
KORASHOLE AND BANGORA**

Drawn by men of Bharlughatu, Korashole, and translated by Jagabandhu Sanda of SEEDS

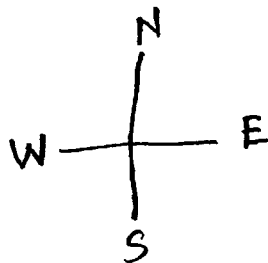
on 21 August 2001

DRAWN BY MEN OF
Bharlughata, Korashole

21 August 2001

Translation + Legend
by Sighandu Sanyal

9051151 3 HR



राजस्थान SALGADIAH
राजस्थान JATINDIAH
Maha Bahar
GARIA BIS
Taladik
DURA
मौसमी
मौसमी
मौसमी

(RAJESTATE) KuitSakē
मौसमी
मौसमी

बान्धारा
BHANDAR BORO
मौसमी

मौसमी

→ BHANDAR BORO

शिम

भरलुघुतु BHORLUGHUTU

मौसमी
KARASHOLE
बान्धारा
Symbol

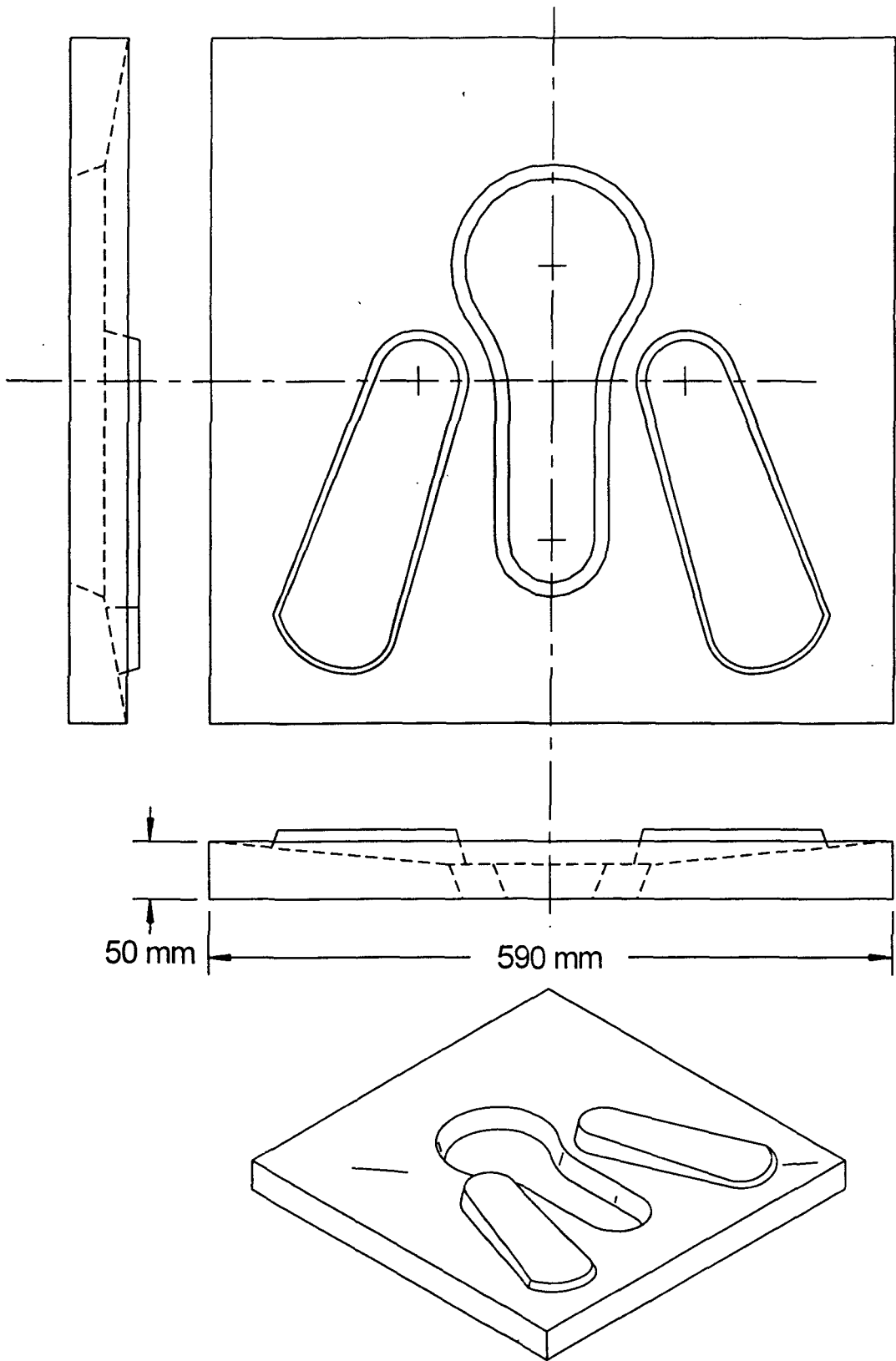
↓
DUMURIA

- (20-25') Rock
- SANDY SOIL Black type
- SOIL WITH PEBELS (10-15') Rock
- SANDY SOIL (25-30') Rock
- ROCKY (5-10') SOIL ROCK

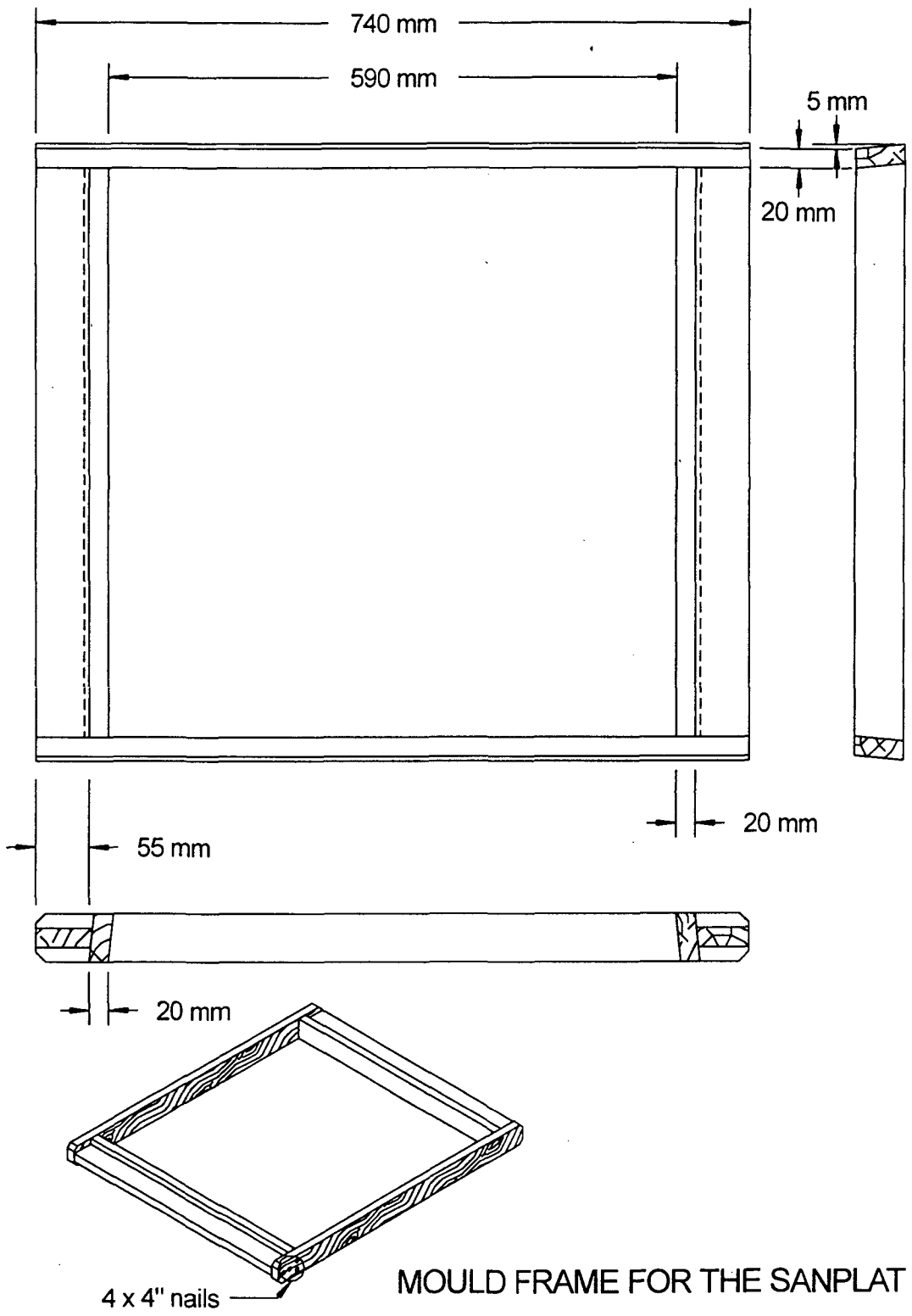
शिम

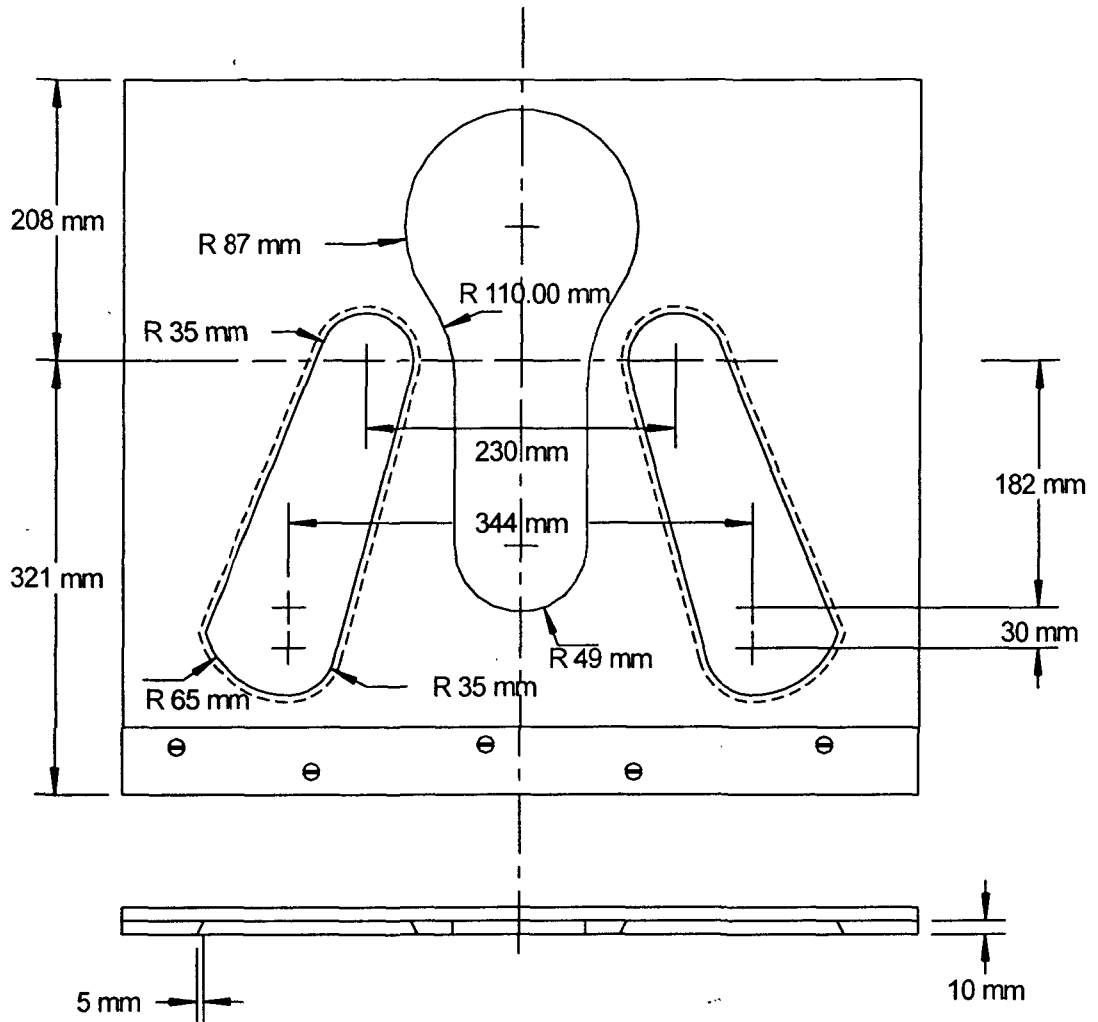
APPENDIX A7

DRAWINGS OF THE SANPLAT AND ITS WOODEN MOULD



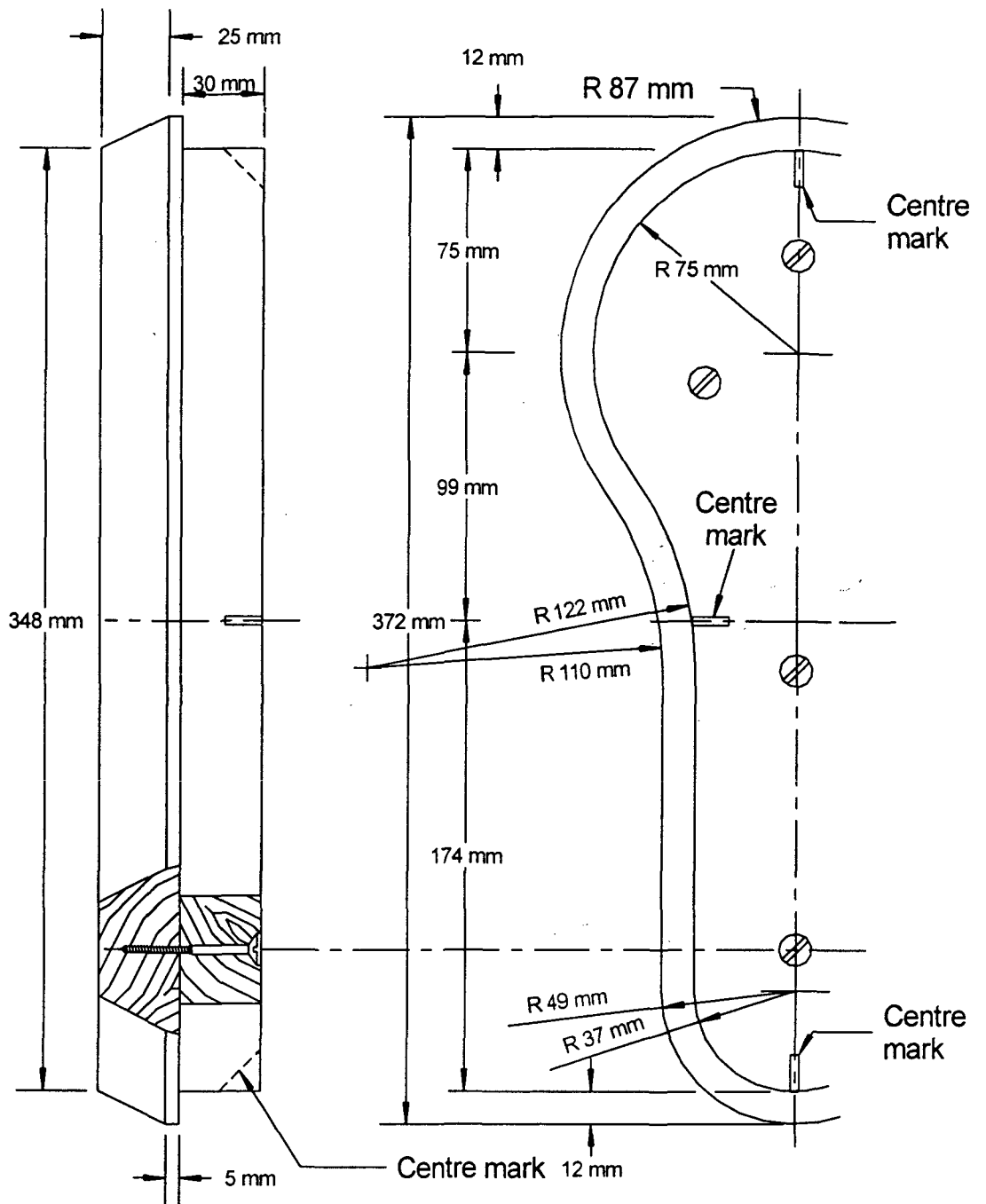
THE SANPLAT





To be fabricated in 10mm plywood or hardwood sheet

FOOTREST MOULD FOR THE SANPLAT



Parts to be joined by 5 (No) 50mm screws.
 Parts to be made in well-seasoned hardwood.

DROPHOLE MOULD FOR THE SANPLAT

APPENDIX A8

COST CALCULATIONS FOR THE PROTOTYPE LATRINE

Calculation of Total Capital Cost of the Prototype Latrine

The following schedule lists the materials used in the construction of the prototype latrine and their costs, both to the Parta family and on the market.

Item	Unit	Rate	Quantity	Cost to the Partas	Market Price (in October 2001)
Cement	kg	Rs.3/-	10kg	Rs. 30/-	Rs. 30/-
6-12mm Aggregate	Box	Rs12/-	1½ boxes	Rs. 18/-	Rs. 18/-
Sand	Cu. Ft (28 Litres)	Rs.5	14 Litres	Rs. 3/-	Rs. 3/-
6mm Reinforcement bar	kg	Rs.15/-	½kg	Rs. 8/-	Rs. 8/-
Timber	-	-	-	Nil	Unknown
Bamboo (ø4-5")	15-20ft	Rs.30/-	2 lengths	Nil	Rs. 60/-
Nails				Rs. 5/-	Rs. 5/-
Used engine oil	1 Litre	1 Litre	1 Litre	Rs. 12/-	Rs. 12/-
Total				Rs. 76/- (£ 1.1)	Rs. 136/- (£ 2.0)

Labour costs for construction of the prototype latrine are outlined in the following schedule:

Item	Unit	Rate	Time taken	Cost
Digging of the pit	1 day	Rs. 30/-	1 day	Rs. 30/-
Carriage of stone	1 day	Rs. 30/-	1 day	Rs. 30/-
Lining of the pit	1 day	Rs. 30/-	1 day	Rs. 30/-
Casting of the SanPlat and Lid	1 day	Rs. 60/-	½ day	Rs. 30/-
Mixing and laying the mud/dung/husk mix	1 day	Rs. 30/-	½ day	Rs. 15/-
Total				Rs. 135/- (£ 2.0)

Hence, the total cost to the Parta family was Rs.211/- (£3.1). Had the full market price been paid for all the materials, the cost would have increased to Rs.271/- (£4.0).

Conversely, if a family were to undertake the unskilled labour themselves, the total cost would be Rs.166/- (£2.4), even if the materials had been bought in the market.

Calculation of Recurrent Costs for the Prototype Latrine

A self-dug pit can be sized for several years of service but, the life of the prototype latrine is likely to be dictated by the deterioration of the timber and bamboo squatting platform (Brandberg, 1995). Only time will tell how long such a platform might last so, for the purposes of this calculation, a lifetime of 2 years will be assumed (ibid.).

If, after 2 years, the Parta family chooses to build a second, similar pit and squatting platform, the cost to them will be Rs.122/-. Dividing this cost between 6 family members gives a recurrent cost of Rs.10/- (£0.15) per person.

On the market, the materials required to fabricate a new squatting platform cost Rs.77/-, and the paid labour costs Rs.105/-. Hence, the recurrent market cost is Rs.91/- (£1.34) per year, or Rs.15/- (£0.22) per person per year for a family of 6 members.

If householders carry out the unskilled labour themselves, the recurrent costs are reduced to Rs.6/- (£0.09) per person.