

Nepal Water for Health
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**Developing Strategies to Improve Latrine
Coverage: a Follow-up Survey of NEWAH's
Rural Sanitation Projects 1991-1995**

A. B. Murray Shrestha

Data compiled by
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M. Bhattarai

June 2000

822NP-16537

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FOREWORD

Nepal Water for Health (NEWAH) is a national level NGO that works with some 50 local partners each year to implement integrated drinking water, sanitation, and hygiene education projects.

Of all the different aspects of this work, finding the best approach to achieving a wide coverage of latrines is possibly the most challenging. NEWAH has been modifying and developing its approach since the programme started in 1987, with changes being made to sanitation policy, procedure, and latrine design. In 1998, after ten years of implementing latrine construction, NEWAH decided that it was important to discover what had become of the latrines constructed during the course of earlier projects. Few studies of this type have been made by other implementing agencies. Published data on latrine coverage generally refer to the number of latrines constructed, not the number still existing or whether the latrines are used. Thus NEWAH felt that this study would not only be useful for directing internal policy on latrines in the coming years, but might also provide an indication of the overall long-term impact of sanitation supply programmes that would be useful for a more general audience. The study was made possible by the generous support of UNICEF and WaterAid.

The study was planned as a post-project evaluation survey of latrine status in a random sample of NEWAH projects in hill and Terai areas completed three to seven years previously. The report presented here describes the results of this study. It presents a synthesis of data on technical, financial, and social factors related to the long-term sustainability of the latrine construction programme. The study shows the overall long-term success of the programme, particularly in hill areas, but also the weakness of certain types of latrine design. It also highlights the occasionally extreme variation among different project sites, and the need to know more about the reasons for this.

It is my hope that this report will be of interest to other agencies working in the sector and will help others to evaluate their ongoing programmes, as well as providing the basis for NEWAH's own sanitation workers and partners to improve their programme further. NEWAH has already reviewed and modified parts of its latrine construction programme in the light of these results and is continuing to do so.

Umesh Pandey
Director, NEWAH

ACKNOWLEDGEMENTS

We would like to thank all the staff at NEWAH regional offices who provided the support and back-up that made this survey possible, in particular those who went out into the field and performed interviews, notwithstanding the problems associated with the monsoon. We would also like to thank all the staff at NEWAH Headquarters in Kathmandu who helped in the preparation of this report, in particular Renuka Rai for her information about the sanitation programme, and all the secretarial and general office staff for their friendly help and support.

Special thanks are due to Greg Whiteside of WaterAid who initiated the study, and provided friendly support and useful criticism at all stages of report preparation, to Kristine Haier of MS/Nepal who provided valuable help in the design of the questionnaire and spreadsheet during the planning stages of the study, and to Alan Etherington of WaterAid who made extensive comments on an earlier draft.

We are particularly grateful to UNICEF whose generous support enabled the study to be undertaken.

We hope that the publication of this report will also help repay the efforts of all the people at the NEWAH regional offices, in the partner organisations, and in the field, who spend many hours promoting and implementing the sanitation programme.

Finally, we all wish to thank the many hundreds of participants in the study who gave generously of their time and energy to answer questions.

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ABBREVIATIONS AND ACRONYMS

ADB-N	Agricultural Development Bank of Nepal
DWSS	Department of Water Supply and Sewerage
NEWAH	Nepal Water For Health
NGO	non-government organisation
NRs	Nepali Rupees*
PCRW	Production Credit for Rural Women
PMC	Project Management and Maintenance Committee
PRA	participatory rural appraisal
SFDP	Small Farmer's Development Programme
Unicef	United Nations Children's Fund
VDC	Village Development Committee
WDD	Women Development Division

*EXCHANGE RATES

at the time of latrine construction to the present

Date	USD / NRs	GBP / NRs
December 1999	68	110
December 1998	67	112
December 1997	63	104
December 1996	56	94
December 1995	55	85
December 1994	50	80
December 1993	49	65
December 1992	43	73
December 1991	43	78

EXECUTIVE SUMMARY

This report describes the result of a post-project survey carried out in 1998 of the status of latrines in NEWAH projects that had been completed between **three and seven years** previously. The aim was to look at the sustainability of the sanitation programme in technical, financial, and social terms, and to identify more systematically those factors contributing to the long-term success or failure of the latrine construction programme, and thus necessary or useful modifications that could improve the impact of the NEWAH programme.

The study was performed using PRA techniques and a household questionnaire survey. The report describes the numbers of latrines built during and after the project periods, the extent to which latrines are functioning and in use, the reasons for abandoning latrines and types of latrines abandoned, the causes of malfunction, the reasons why people don't or can't repair latrines, the reasons why people build or don't build latrines, the types of latrines people actually prefer to have, and the type of support needed from outside agencies. The average impact across projects in each of the two areas was estimated by calculating simple averages of the data for individual projects for the two areas separately. The main findings are summarised in the table below.

	HILLS	TERAI
Project Areas Surveyed	16	8
Total interviewed/Total households	1618/1691 (96%)	1249/3709 (34%)
Coverage of Latrines		
Total households with latrine now	53% (range 16-94%)	17% (range 1-49%)
Total households with latrine at time of project handover	61%	21%
Total households that built a latrine after project completion	7%	8%
Total households that abandoned a latrine	15% (32% of those without a latrine now)	12% (14% of those without a latrine now)
Reasons for Building or Not Building a Latrine		
Main reasons why households built an existing latrine	cleanliness, 69% convenience, 58% health, 39% privacy, 13%	convenience, 67% cleanliness, 66% health, 47% privacy, 9%
Main reason why hadn't built a latrine	not needed, 34%	not needed, 40%
Technical Issues		
Main types of latrines	60% improved simple pit latrines built with NEWAH components 29% simple pit latrines* built with local materials only *simple pit latrines proved non-durable and are now no longer promoted by NEWAH	35% ring system pit latrines of the type promoted by NEWAH 56% simple pit latrines* built with local materials only
Pit lining material	55% lined with stone 37% unlined	40% lined with concrete 37% unlined
Type of superstructure.	42% simple temp. shelter 27% permanent	44% simple temp. shelter, 18% permanent

	HILLS	TERAI
Average cost of latrine components	81% < NRs 200 3% > NRs. 500 (local stone a cheap option for pit linings)	56% < NRs 200 34% > NRs. 500 (durable pit lining needed, no stone)
State and Use of Latrines		
Clean	43%	44%
In use throughout the year	97%	94%
Of these fully functional	81%	93%
Percentage of family members who use latrine (excluding children under 3 yrs)	96%	96%
Number of pits that had filled at least once	38%	48%
Of these <1 year to fill	13%	60%
Pit contents used as fertiliser	35%	24%
Abandoned latrines		
Type abandoned	48% simple pit latrines	92% simple pit latrines
Abandoned because of	superstructure collapse, 56% pit collapse, 31% pit full, 14%	pit collapse, 41% pit full, 38% superstructure collapse, 21%
Not repaired because of lack of	manpower, 46% money, 16% materials, 11%	materials, 37% manpower, 31% knowledge, 16%
Needs and Wishes		
Percentage without a latrine who now want to build one	88%	86%
Of these want to build simple pit latrine	35%	48%

One of the most important findings was the **lack of durability of simple unlined pit latrines**, for many years promoted by NEWAH as the cheapest and thus most acceptable alternative to the more favoured improved single pit latrines and latrines with ring system pits. Particularly in the Terai, unlined pits tend to fill and collapse during the monsoon season. Simple pit latrines were once seen as a way to gain wider coverage, but it seems they may actually lessen people's enthusiasm for sanitation in the long-term—leading beneficiaries to feel that latrines in general are of little use since they don't last and need to be rebuilt at regular intervals. A further major finding was the importance placed by users on superstructures, their lack of durability, and the lack of the resources needed to repair them.

The main reason for the somewhat unsatisfactory rate of latrine coverage, particularly in the Terai, was the low number built during the project phase. Although subsequent abandoning of latrines played a role, it was *not* the major factor. One problem is that the subsidised rate for the components for the promoted latrines was lower in the hills than in the Terai. Pits in the Terai need to be lined with concrete rings, which must be bought, whereas pits in the hills can be lined with locally available stone. Another problem was the lack of land for latrines in the Terai.

Clearly the most important way to increase long-term coverage is to **increase the rate of uptake during project implementation**. Various strategies for this are suggested. The number of latrines abandoned can be reduced by building more durable types at the outset. NEWAH has stopped promoting simple unlined pit latrines, and is looking at ways of making the more durable, but more expensive, designs accessible to more members of the project communities by way of credit and increased subsidy schemes.

1 INTRODUCTION

Nepal Water for Health (NEWAH) is a national level Nepali non-government organisation (NGO) established with the help of WaterAid (a UK-based international NGO) in 1992 with the main goal of improving access to clean and safe drinking water, sanitation, and hygiene education in poor rural communities. It works principally through local NGOs including groups from the Small Farmer's Development Programme (SFDP) of the Agricultural Development Bank of Nepal (ADB-N) and from the Production Credit for Rural Women (PCRW) of the Women Development Division (WDD) of His Majesty's Government of Nepal. The programme was originally started under the auspices of WaterAid in 1987. At present, around 50 integrated drinking water, sanitation, and hygiene promotion projects are implemented each year.

Construction of domestic latrines has been an integral component of projects since the programme started in 1987, although there has been a gradual change in the precise approach used over the years. Health education (now expanded to hygiene promotion) was included as an integral component of programmes from the beginning, although it was not implemented in SFDP supported projects until 1992. The hygiene promotion programme strongly encourages people to build latrines, provides them with the knowledge and understanding needed to realise why latrines are important, and stresses the importance of cleanliness and hygiene (for details see Annex 1). Both the number constructed and the state and use of latrines were rather poor in early projects, but the results improved considerably after hygiene promotion was incorporated fully into the programme.

By 1998 NEWAH had been instrumental in the construction of some 10,000 latrines in more than 300 projects in different areas of Nepal. The sanitation policy, procedure, and designs of the latrines offered have all been modified over the last 10 years in the light of experience. In 1998, after ten years of implementing latrine construction, NEWAH decided to evaluate the long-term impact of the programme and perform a post-evaluation study of latrine status in projects completed three to seven years previously. The aim was to look at the 'sustainability of the sanitation programme in technical, financial and social terms', and to identify more systematically those factors contributing to the long-term success or failure of the latrine construction programme, and thus necessary or useful modifications that could improve the impact of the NEWAH programme. The survey was made possible by the generous support of UNICEF.

This report describes the results of this sanitation survey. The survey covered 16 projects in hill areas and 8 in Terai areas. Information on the status of latrines was obtained by a combination of household questionnaire and PRA (participatory rural appraisal) survey techniques.

1.1 The Sanitation Programme

NEWAH policy is to provide latrine components at a subsidised rate, and to provide the knowledge necessary to build a functioning latrine. In most cases, the beneficiaries themselves are responsible for all labour such as digging pits and fitting any lining, and installing the latrine components. They are also responsible for building the superstructure.

The sanitation programme is one part of an integrated water supply programme which also includes hygiene promotion (Annex 1), it is described in detail in Annex 2. At the time the projects covered in this survey were implemented, NEWAH mainly promoted an improved type of latrine using a concrete squatting slab with cover (provided by NEWAH at a subsidised rate) in the hills, and a latrine with a direct or offset pit lined with concrete rings in the Terai. In the hills, beneficiaries were encouraged to line pits with stone. Simple pit latrines built using local materials were promoted as an alternative if beneficiaries were unable or unwilling to pay for the components for improved latrines. In practice, these were often the main type of latrine promoted in many projects. (Since this time NEWAH has revised its policy and no longer promotes simple pit latrines. This type of latrine often collapses rapidly,

particularly if the pit is unlined, and rather than offering a good cheap alternative may even be counter productive, with beneficiaries feeling that latrines in general are of little use since they don't last and need to be rebuilt at regular intervals.) In the Terai, NEWAH provided a water seal ('U-bend') for the latrines. The different types of latrine are described in more detail in Annex 2.

1.2 The Survey Methods

The specific objectives of the survey were:

- i) to discover the present condition of latrines constructed during projects completed three to seven years previously;
- ii) to assess the sustainability of the sanitation programme in technical, financial, and social terms; and
- iii) to assess the overall impact of the NEWAH sanitation programme in the study areas and identify factors that influenced success or failure.

1.2.1 Study design and organisation

A random sample was selected of projects completed between 1991 and 1995 in Terai and hill areas in each of the five development regions of Nepal. The projects were selected regardless of other factors such as accessibility. The villages lay a maximum of eight hours walk from the next road head, (between 1 and 2 days journey from the nearest NEWAH regional office). Altogether eight Terai projects (out of 34) and sixteen hill projects (out of 105) were surveyed (Annex 3A). The survey was conducted over a period of seven weeks in June, July, and August 1998 by five interviewers, one for each development region. The interviewers were NEWAH staff. The interviewers visited each project area for two to eight days depending on the size of the project.

In each project, a part of the information was collected using PRA techniques at a mass meeting of beneficiaries. Following this, detailed information was gathered in a household survey using a questionnaire. Two separate questionnaires were used, one for households with and one for households without a latrine at the time of the survey. (The questions asked at the mass meeting and in the household survey are shown in Annex 4.) The aim was to interview all householders in hill project areas, and one third of householders in Terai project areas (which were much larger on average). In the Terai projects, one third of existing tubewells were selected on a random basis and all households surveyed who were beneficiaries of the selected tubewells. A total of 2867 households (1618 out of 1691 households in the hill projects, and 1249 out of 3709 households in the Terai projects) were interviewed. The average household size was around 6 (5.7 in the hills, 6.5 in the Terai).

In some project areas, particularly in the Terai, not all households had been project beneficiaries. This was partly the result of population changes since project completion. Households were interviewed regardless of whether they had in fact been beneficiaries of the project at the time of project completion. Some problems were also encountered because the survey was carried out during the monsoon season and many householders were busy planting rice. This made it difficult to meet people for interview, and meant that occasionally no one from a selected household could be interviewed. The final number not included was quite low, however.

The questionnaires were designed to acquire information about

- the existence, condition, and type of latrines;
- their use;
- the time taken for the pits to fill and subsequent actions;
- the original reasons for constructing (or not constructing) a latrine and the cost;
- the reasons for abandoning or loss of function;
- priorities of latrine design; and
- the type of support preferred by the community for latrine installation.

1.2.2 Data evaluation

Data from individual projects were compiled in tables. The average values for Terai and hill projects were calculated separately, as were the results for households with and without a latrine. Simple averages were used (i.e., not weighted according to the number of households in the sample) to show the average impact across projects. In two hill projects there were only two and three households without a latrine, and in two Terai projects only one household with a latrine. In order to prevent these small samples having an undue impact on the overall averages the results for these projects were deleted from the relevant tables (see Annex 3A).

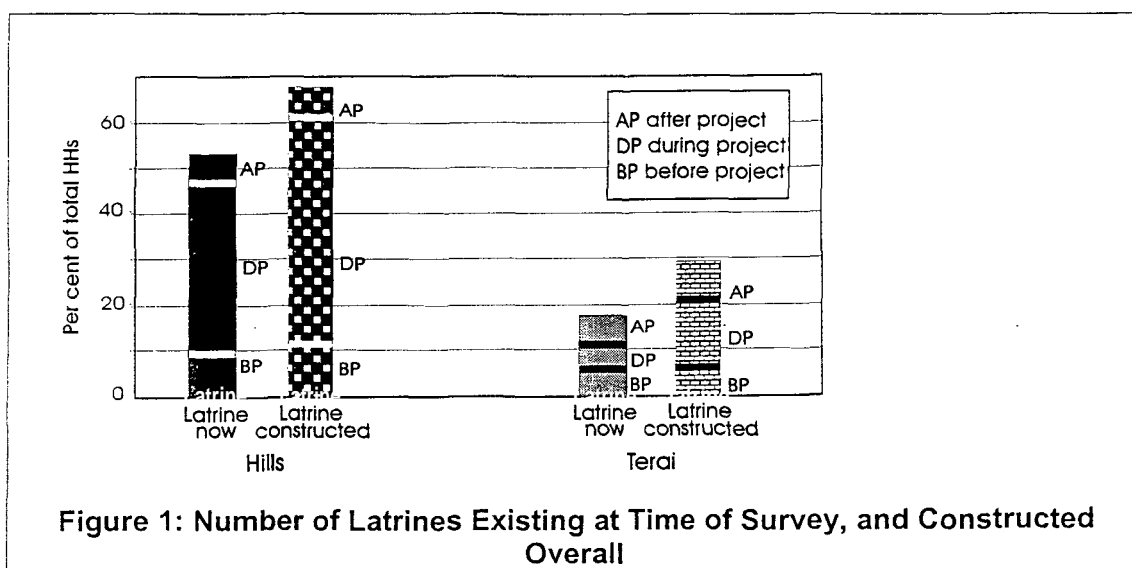
1.3 Hygiene Promotion

Hygiene promotion is an integral part of all projects. More details of the programme can be found in 'Learning for Health', Newah Information Series No.1 (Annex 1). Hygiene education sessions had been held for one year (or less) in all of the hill and six of the Terai projects, and for 18 months in the remaining Terai projects. In almost all cases, the health education had been carried out by local female health motivators. The range of topics covered has slowly increased in the past years. The main purpose of the hygiene promotion programme is to establish a link in people's minds between disease and unhygienic practices, and to provide information about what constitutes hygienic behaviour. Using a latrine (and keeping it clean and covered) is promoted as a major component of such behaviour.

2 RESULTS

2.1 Latrine Coverage

The percentage of all households in the hill and Terai projects areas with a latrine at the time of the survey and with a latrine at any time, and the percentage of those built before, during, and after project implementation, is shown in Figure 1 (Annex 3B, Table 1). The percentage of all households that had ever constructed a latrine was calculated by adding together the percentage of households with a latrine at the time of the survey and the percentage of households who reported having had a latrine at some time.



At the time of the survey, the proportion of houses with a latrine was much higher in the hills (53%) than in the Terai (17%). There was a considerable variation among projects. The proportion of households with a latrine in different projects ranged from 16% to 94% in the hills, and from 1% to 49% in the Terai. In one hill project completed in 1994, 90% of

households had a latrine, and the community had even introduced a fine of NRs.50 for defecation in the open. There was no obvious pattern over time in either area. In one hill project completed in 1992, 61% of households had a latrine, in another completed in 1995 only 16%.

Thirty-two per cent of those without a latrine in the hills (15% of all households), and 14% of those without a latrine in the Terai (12% of all households), had had a latrine at some time but had abandoned it. The percentage of householders who had built a latrine before, during, and after project implementation was calculated by adding together the percentage of existing latrines and percentage of abandoned latrines (in terms of total households) built at these times. The number of latrines existing at the time of project handover was calculated by adding together the total number constructed before and during project implementation. (This figure might be a slight overestimate if some of those constructed before the project had been abandoned prior to project completion.) In the hills, approximately 61% of households had had a latrine at the time of project handover and a further 7% had built a latrine after project completion. In other words 68% had built a latrine at some time. A total of 15% had abandoned their latrine, so that at the time of the survey 8% less households had a latrine than at the time of project handover. In the Terai approximately 21% of households had had a latrine at the time of project handover, and a further 8% of households had built a latrine after project completion. In other words 29% had built a latrine at some time. A total of 12% had abandoned their latrine so that at the time of the survey 4% less households had a latrine than at the time of project handover. There was some variation among projects, however. In both areas there were a few projects where the overall number of latrines had in fact increased post project completion. In at least two cases this was the result of intervention by other agencies, the remainder cited 'self-motivation' as the main cause.

In the hills, nearly three quarters of existing latrines had been built during the project implementation phase. Less than one fifth had been built before, and approximately ten per cent after. In contrast, in the Terai the percentage of existing latrines built before, during, and after project implementation was around one third in each case, with the most actually built post project.

When a latrine pit is full, the user has a choice between digging it out and reusing it or digging a new pit and relocating the latrine. Thus not all the latrines described as 'existing' were the original latrines constructed. In the hills, 72% of existing latrines were the household's first latrine, in the Terai, 62%.

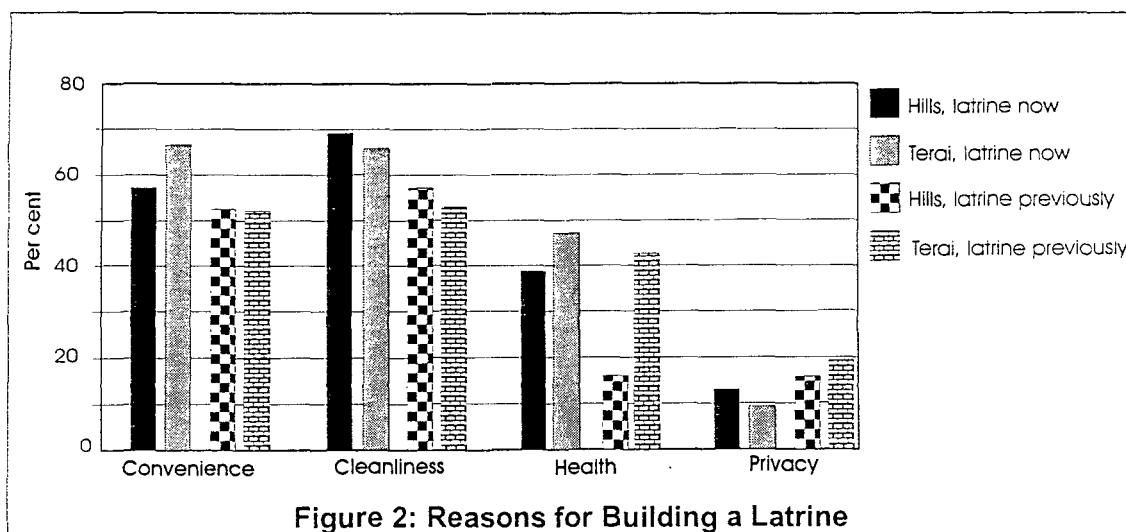
2.1.1 Post-project construction

The overall proportion of all households that had constructed a first latrine after completion of the NEWAH project was similar in both areas, an average of 7% in the hills and 8% in the Terai, but in the Terai this represented more than a quarter of all the latrines built. Particularly in the Terai, the proportion of households that had constructed 'post project' was markedly higher for those projects completed prior to 1993, a reflection of the low number of latrines constructed together with NEWAH in these early projects. In some projects, beneficiaries were asked about their reasons for constructing latrines after the project. The main reasons cited were self-motivation and support by other agencies, and in the hills the influence of the NEWAH programme. It seems likely that the awareness-raising programme carried out by NEWAH during the project period was the underlying cause of motivation in many cases.

2.2 Reasons for Building or Not Building a Latrine

The main reasons given for building a latrine are shown in Figure 2 (Annex 3B, Table 2). Similar reasons were given in both hill and Terai areas by those who still had a latrine. By far the most common reasons given were cleanliness and convenience followed by health, and privacy. Very few people mentioned social pressure, receiving a subsidy or any other reasons. Occasionally people in the Terai mentioned avoidance of wild animals and snakes as a further reason. Those who had abandoned their latrine gave similar reasons for building it in the first place, although the percentage for particular responses tended to be lower.

Around half of those who had abandoned their latrines in both the hills and the Terai cited cleanliness and convenience, followed by health and privacy as their original reasons for building.



Those who had never had a latrine were asked why they hadn't built one (Annex 3B, Table 2). In both areas around one-third felt they didn't need a latrine. In the hills manpower was the next most common problem, followed by lack of knowledge, money, lack of materials—all with roughly equal importance—and no land. Few people had problems with the idea of a latrine or the fear that it would be smelly. Lack of land and money were the next most important reasons in the Terai (and more important there than in the hills), followed by lack of manpower and lack of knowledge. Few people cited lack of materials as a problem. Some other reasons given included living alone, using someone else's, not in the house at the time of the project, various fears that a simple pit wouldn't last but a lined pit would be too expensive, and that no one else had built a latrine.

2.3 Details of Existing Latrines

2.3.1 Type of latrine

The percentage of different types of existing latrines in the hills and Terai is shown in Figure 3 (Annex 3B, Table 3).

In the hills, more than half of the existing latrines were improved single pit latrines with a rectangular or circular slab (31% and 7%) or rectangular or circular slab plus pan (21% and 0.5%) with cover, and nearly one third simple pit latrines. Most of the remainder were single pit offset latrines. The latter type was mostly found in two projects (Ranibari and Goganpani) implemented by an NGO that favoured this type of latrine. There were large variations among projects, in one early project (completed 1992), 94% of latrines were single pit with circular slab cover type, although only two other projects had any latrines of this type which was mainly introduced after 1994. In another (completed 1994) 93% of latrines were single pit with rectangular slab type. Biogas latrines (constructed independently of NEWAH) were only found in two project areas, but in one of these (completed 1994), 31% were of this type. There were no obvious trends over time, the main variations seemed to be project specific.

More than half of the latrines in the Terai were simple pit latrines, and around one third had ring system pits. There were very few improved single pit latrines (with slab/pan or cover). Again there were large variations among projects. In one project completed in 1995 all the latrines were simple pit type, in one completed in 1994 all the latrines had ring system pits apart from one with a proper septic tank.

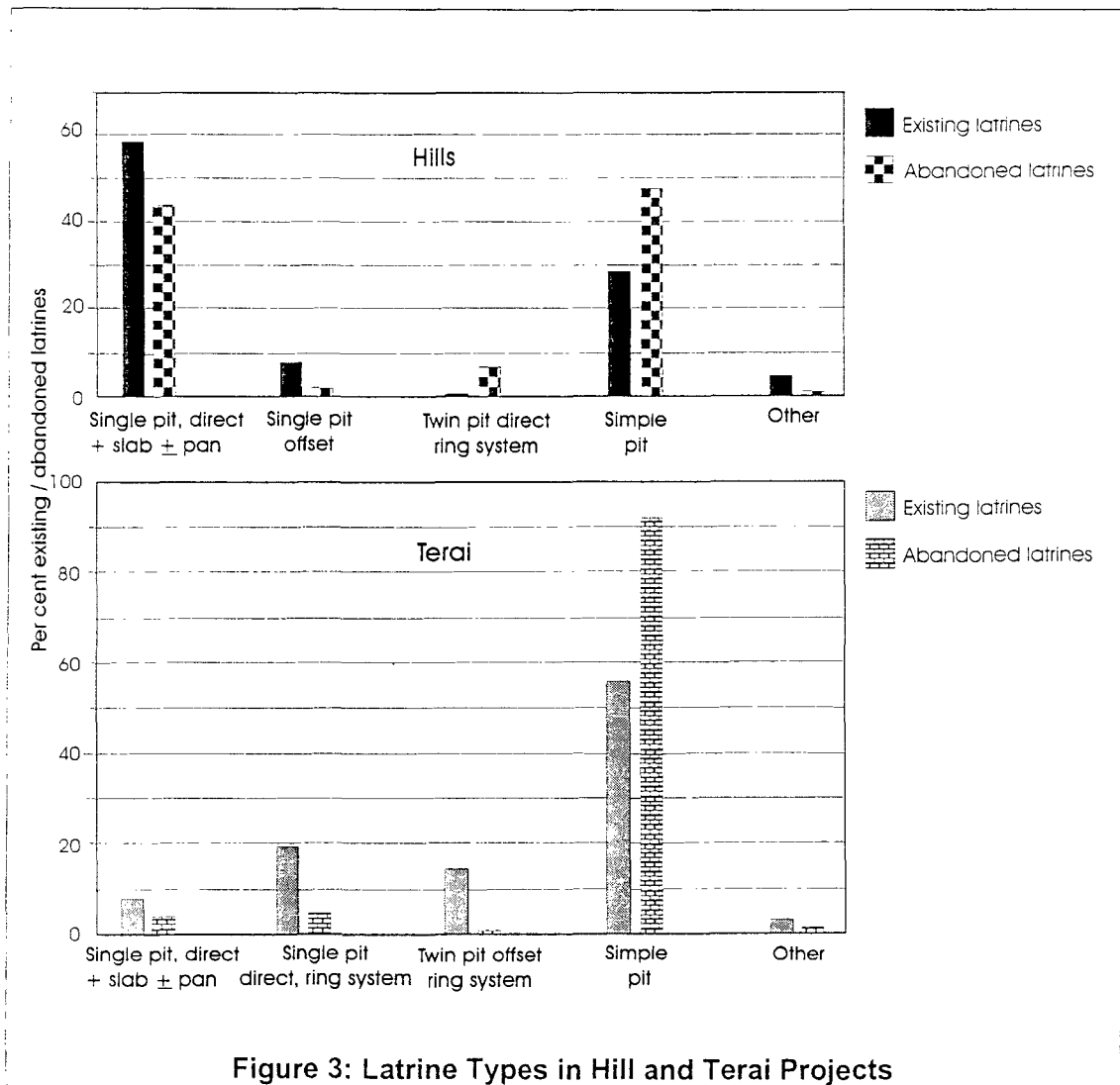


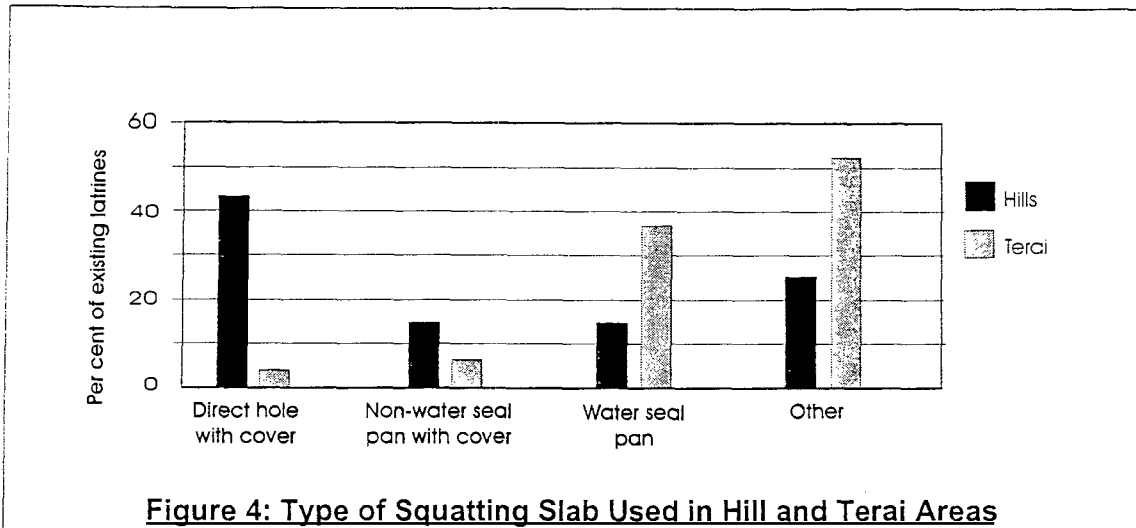
Figure 3: Latrine Types in Hill and Terai Projects

2.3.2 Type of Squatting Slab

Three main categories of squatting slab were defined: a direct hole slab with cover, a non-water seal slab plus pan with cover, and a water seal pan. The category 'other' mainly referred to simple pit latrines with a direct hole made out of local materials (Kachi). The proportion of the different types of types of slab used in the hills and Terai are shown in Figure 4 (Annex 3B, Table 3).

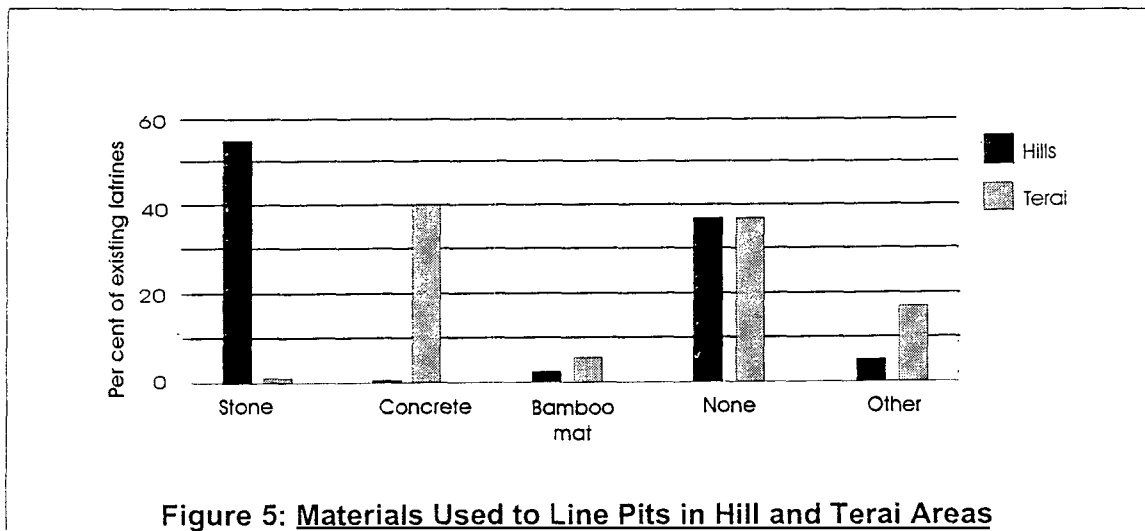
In the hills, nearly three quarters of the latrines were direct hole type, with either a concrete squatting slab with cover or a squatting area built with materials such as wooden planks or flat stones. Of the remainder, one half were non water seal pans and one half water seal pans. Three quarters of the water seal pans were functioning properly (11% of all latrines), but only one third of covers were used properly (19% of all latrines). In other words less than a third of the latrines were effectively sealed.

In the Terai projects, more than half of the latrines were direct hole type, most with a squatting area built with materials such as wooden planks or flat stones and a few with a concrete squatting slab with cover. Most of the remainder were waterseal pans. Ninety per cent of the water seal pans were functioning properly (34% of all latrines), and 40% of covers were used properly (5% of all latrines). In other words only a little more than a third of the latrines were effectively sealed.



2.3.3 Lining materials

The types of materials used to line the latrine pits are shown in Fig.5 (Annex 3B, Table 4). In the hills more than half the pits were lined with stone and in the Terai rather more than one-third with concrete. Stone was used in the hills because it was readily available, concrete was mainly used in the Terai to form the concrete lining rings in ring system pits, although it was sometimes used in other forms like concrete blocks. No one in the hills had used concrete, but a few people had used bamboo mats, bricks, or wood. In the Terai only 3 people had used stone, but a few had used brick, bamboo, or wood or located the pit in a hard rock area. In both areas around one third of the pits were unlined.



2.3.4 Size of pit

The size of non-ring system pits was estimated in terms of the pit depth and inside diameter (Annex 3B, Table 4). Over 90% of the pits in hill projects were more than 1 metre deep, and half more than 2 metres deep. Only 25%, however, had an inside diameter greater than 1 metre. Thus the volume of most pits was probably close to 2 cubic metres. The same type of pits in the Terai tended to be slightly smaller. Although nearly 90 per cent were more than 1 metre deep, only 25% were more than 2 metres deep, and only 21% had an inside diameter greater than 1 metre. Thus the volume of most of these pits was probably close to 1.5 cubic metres. The volume of ring system latrines in the Terai was calculated from the number of

rings used. Nearly half of these pits had a volume of 1.15 cubic metres (5 rings) and a few a volume of 0.35 cubic metres, the remainder were divided evenly between volumes of 0.69 and 0.92 cubic metres.

2.3.5 Superstructure

Figure 6 shows the proportions of different types of superstructure over existing latrines (Annex 3B, Table 3).

In both areas the most common type of superstructure was a temporary construction, either simple (using sacking, leafy branches, or similar), or improved (such things as bamboo, wood, and mud wattle). A quarter of people in the hills and just less than one fifth in the Terai had built a permanent superstructure out of stone, brick or concrete blocks. Thirteen per cent in the hills and 3% in the Terai had no superstructure at all, although they may have had some type of simple screen around the latrine, this was not recorded. Occasionally people in the Terai mentioned lack of protection from snakes as one problem with temporary superstructures.

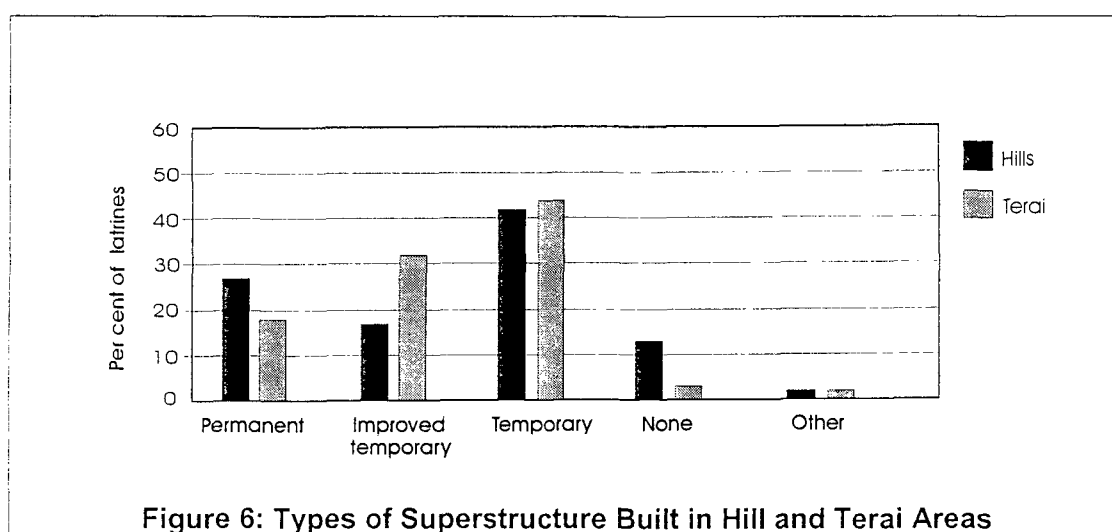


Figure 6: Types of Superstructure Built in Hill and Terai Areas

2.4 State and Use of Existing latrines

2.4.1 Cleanliness

The observer looked at latrines and evaluated whether they were clean and sanitary on the basis of such factors as visible excreta around the slab. Nearly half of the latrines in both hill (43%) and Terai (44%) projects were found to be clean (Annex 3B, Table 5).

2.4.2 Use and functioning of latrines

The data on use of latrines are summarised in Table 1 (Annex 3B, Tables 5,6). Virtually all the existing latrines in both the hills and Terai were still in use throughout the year. The main reasons given in the few cases in which latrines were not or not always used were that they were not functioning (33% hills, 13% Terai), that the users worked too far away (37%, hills; 38%, Terai), or in the Terai that the pit was full during the monsoon (50%). Only three users, all in the hills, didn't use their latrines because they were smelly, and only one didn't like the design.

Nineteen per cent of latrines in use in the hills and 6% of those in the Terai were said not to be functioning properly. There was considerable variation among projects in the hills: all the latrines were functioning in 3 projects, but only 41% in the worst case. The main reasons given for not functioning were collapse of the superstructure (55% hills; 50% Terai), or that the pit had collapsed (27% hills; 18% Terai) or was full. Other reasons cited included rats digging trenches, mud inflow, and outflow directly leading into water. In general it seemed

that people continued to use a latrine even when the superstructure had collapsed (Annex 3B, Table 5).

Table 1: Use of Latrines

LATRINE USE	HILLS %	TERAI %
Still in use		
Yes	97	98
Of these		
Throughout the year	97	94
Seasonally	1	4
Other	2	2
If in use, functioning properly?		
Yes	81	93
Do all family members use latrine?		
Yes	56	72
Who doesn't?		
Older people (>50 yrs)	1	7
Women	3	0
Men	3	6
Children under 3 yrs	91	87
Other	2	0

2.4.3 Use by family members

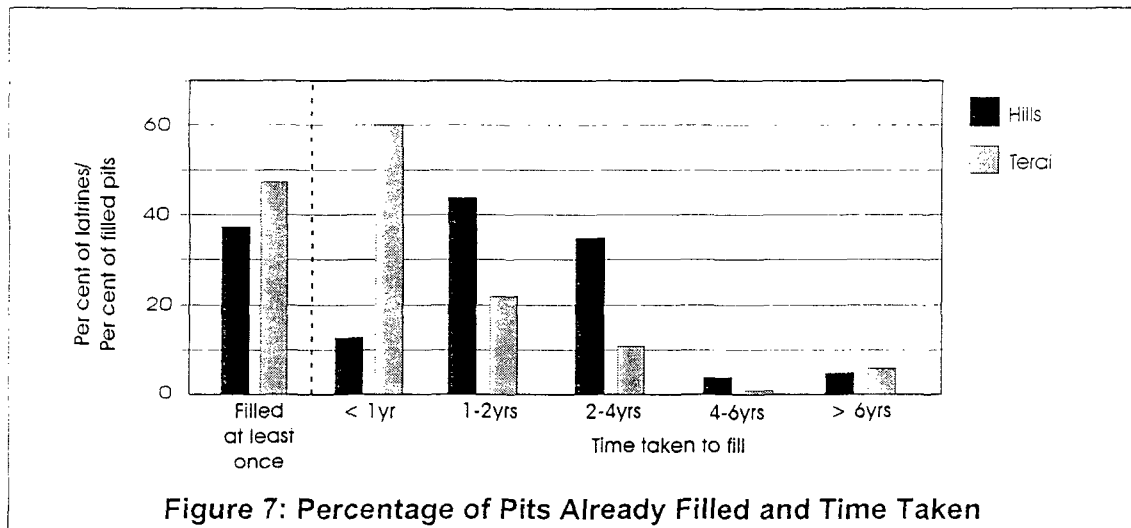
The percentage of family members who use the latrine, and details of those that don't, are shown in Table 1 (Annex 3B, Table 6). Between half and three quarters of respondents said that all family members used the latrines. The vast majority of those said not to use the latrine were small children under the age of three (91%, hills; 87% Terai) and if these are excluded then the rate of use was close to 100%. Men, women, and people over fifty were equally represented among the few adults said not to use the latrine in both areas, except no women were said not to use it in the Terai. The reasons given by all three groups for not using the latrine were habit (their long habit of defecating in open fields), not feeling comfortable, lack of a door or superstructure, or the latrine being too far from home.

Approximately three quarters of households in both areas disposed of children's faeces either in the latrine or in a manure pit (Annex 3B, Table 6). Approximately half of the remainder gave them to an animal.

2.5 Filling of Pits and Disposal of Contents

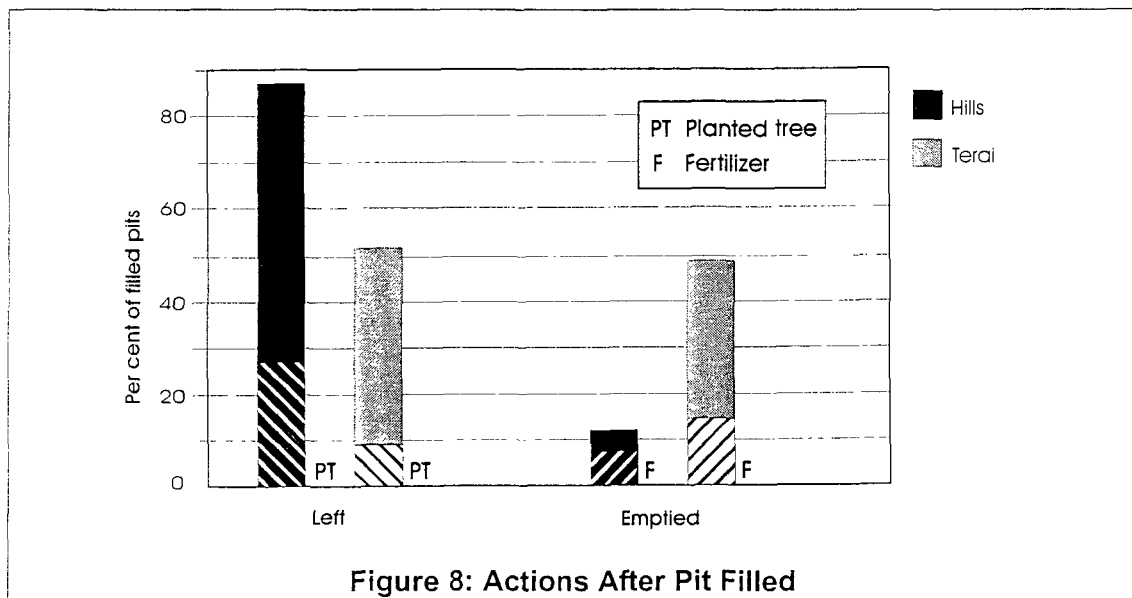
2.5.1 Rate of filling

Nearly half of the households with latrines in the Terai, and a little more than a third of those in the hills, said that their latrine pit had already filled at least once (Annex 3B, Table 4). Figure 7 shows the percentage of latrines whose pits had filled at least once, and the average time these pits had taken to fill. In the hills, nearly half had taken one to two years to fill (16% of all pits), and one-third between two and four years. Around 10% had taken less than one year or more than four years. The pits had filled much more rapidly in the Terai, mainly as a result of the lack of lining and in seepage of water during the monsoon. More than half of the pits in the Terai that had already filled had taken less than one year to fill (61%, or 29% of all pits) and a further 22% between one and two years.



2.5.2 Disposal of pit contents

Figure 8 shows the way in which people disposed of the contents of filled pits (Annex 3B, Table 7). In the hills, the great majority had abandoned the pit after it was full and dug a new pit (every household in nine of the 16 projects), whereas in the Terai approximately half had emptied it (all in two projects, but only 13% in another). Two facts probably account for this difference. First, the ring-lined pits in the Terai are permanent structures that are designed to be emptied; and second users with simple pits in the Terai may have more difficulty in finding a second suitable site for a pit close to the house. Most of those who did empty the pit did so within 6 months (Annex 3B, Table 4). In the hills, all the pits that were emptied were emptied by a household member, whereas in the Terai only half were emptied by a household member (Annex 3B, Table 7). In this area latrines are often emptied or repaired by people belonging to the Dom or Chamar caste.



In the hills, nearly one third of those who abandoned the pit planted a tree over it (27% of households with filled pits). The proportion varied greatly among projects, in two projects everyone planted a tree, in one project no one. Two-thirds of those who dug out the pit used the contents as fertiliser (8% of households with filled pits). But again there was a big

variation among projects: in one in which 33% dug out the pit no one used the contents as fertiliser, in three others virtually all those who dug out the pit used the contents as fertiliser. In the Terai, only 17% per cent of those who abandoned the pit planted a tree over it (9% of households with filled pits), and only 30% of those who dug out the pit used the contents as fertiliser (15% of households filled pits).

In summary, 35% of those with filled pits in the hills, and 24% in the Terai, used the pit contents to plant a tree or as fertiliser on the fields, 61% in the hills and 39% in the Terai simply abandoned the pit or contents, and 4% in the hills and 38% in the Terai disposed of the contents in some other way such as moving them into a new pit (particularly in the Terai) or, disconcertingly, throwing them into a canal or stream.

2.6 Upgrading of Latrines

A small number of beneficiaries, 6% in hill and 12% in Terai projects, had upgraded the latrine in one or more ways either during or after construction (Annex 3B, Table 8). The proportion varied considerably among projects from none in six hill and one Terai project, to nearly one third in one hill and one Terai project. Of these, in the hills more than half had built a permanent superstructure, a quarter had used a ceramic pan, a quarter had added an offset pit, and ten per cent or less had added an extra pit, added a vent pipe, or attached a bathroom (five people). In the Terai, between a quarter and a third had built a permanent superstructure, added an offset pit, added an extra pit, added a vent pipe, and/or used a ceramic pan; and two households had built a bathroom.

Similar priorities were mentioned when beneficiaries were asked how they could still improve their latrines (Annex 3B, Table 8). In the hills, nearly half suggested a permanent superstructure, the same percentage a twin pit or a single pit offset system, 14% a ceramic pan, 5% a vent pipe and 10% other alterations such as adding a door, plastering the structure, or attaching a bathroom. In the Terai, two-thirds suggested a twin pit (most) or single pit offset system, nearly half a permanent superstructure, and ten per cent or less a ceramic pan, a vent pipe, or other alterations such as lining the pit with concrete rings.

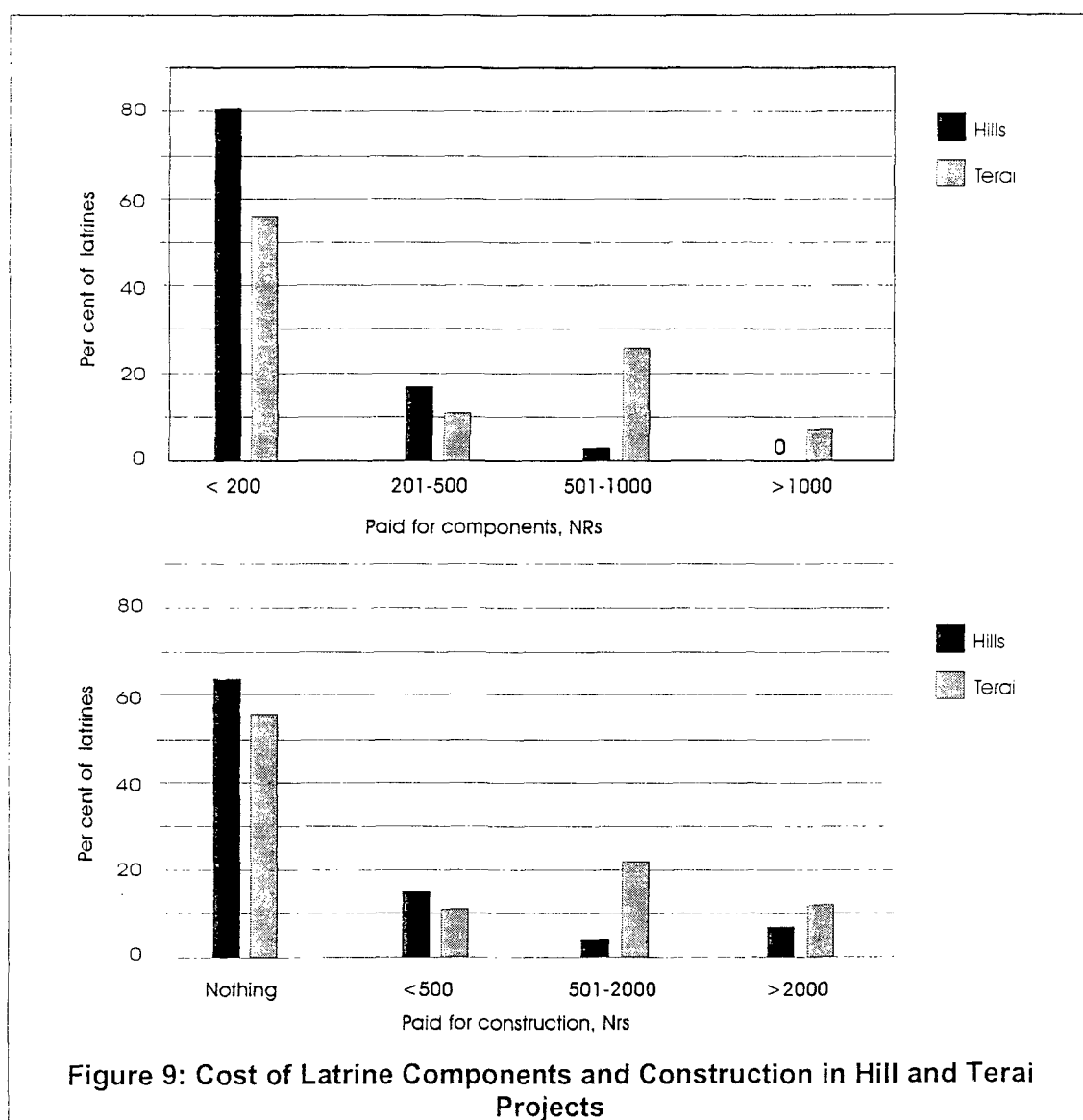
2.7 Agency Support and Cost of Construction

There was some problem in interpreting the answers to the question on who helped build the latrine (Annex 3B, Table 9). It is possible that some beneficiaries misunderstood this question, and answered 'built self' for latrines that they had installed themselves with components supplied by NEWAH. Similarly those who had built simple pit latrines using local materials replied 'built self' for latrines built as a result of NEWAH encouragement and example during project implementation

The majority (59%) of the latrines surveyed in the hills had been built using materials provided by NEWAH; 27% had been built by the people themselves; a few had been purchased from the market; a very few had been built with support from the village development committee (VDC), and some built by other means. Only 8% of the latrines observed in Terai projects were said to have been constructed with help from NEWAH. The great majority (62%) were said to have been built by the people themselves or bought in the market (17%, mostly various types of ring system pit). Other agencies that had provided materials in some cases included the Department of Water Supply and Sewerage (DWSS) and Unicef.

Figure 9 shows the amounts paid in hill and Terai areas for latrine components and construction (Annex 3B, Table 9). The average cost of latrine components and the subsidy arrangements are described in Annex 2. In the hills the great majority of beneficiaries had paid less than NRs. 200 for their latrine components; and only 3% had paid more than NRs. 500. Two thirds had paid nothing for construction (labour and other materials for latrine and superstructure); and only 20% more than NRs. 500. The costs were somewhat higher in the Terai. Those who had constructed simple pit latrines had paid less than NRs. 200 for the components and nothing for construction. But one third had paid more than NRs. 500 for

components (reflecting the cost of the concrete rings needed to line pits in the Terai, Annex 2), and more than NRs. 500 for construction and labour (and 12% more than NRs. 2000).



2.8 Abandoned Latrines

Fifteen per cent of households in the hills and 12% in the Terai, had had a latrine at some time but no longer had one at the time of the survey (Figure 1 and Annex 3B, Table 1). In other words 22% of all latrines constructed in the hills, and 41% of those in the Terai had been abandoned. In the hills, the proportion of abandoned latrines built before, during, and after project completion was similar to the proportions of existing latrines (17%, 73% and 9%). In contrast, the proportion of abandoned latrines built before, during, and after project completion in the Terai was markedly different to the proportions of existing latrines (9%, 76%, and 15%, compared with 33%, 30%, and 15%). This means that in the hills less than a quarter, but in the Terai more than half of the latrines built during project implementation had been abandoned.

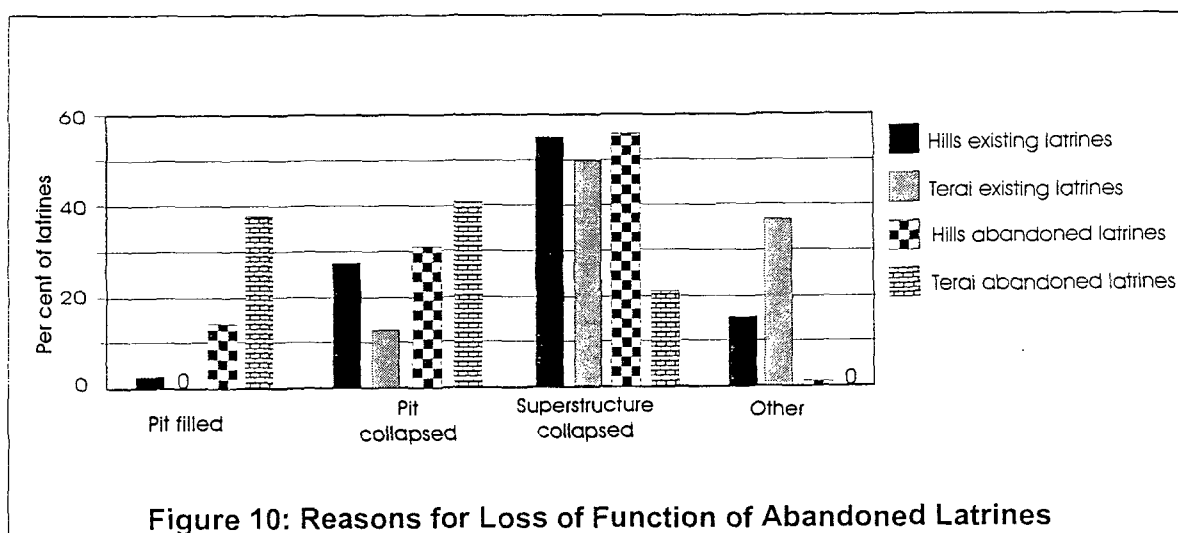
2.8.1 Type of latrine

In the hills, nearly half of the abandoned latrines had been simple pit type built with local materials (compared with 29% of existing latrines), and 43% improved single pit latrines with

a rectangular or circular slab (compared with 58% of existing latrines) (Figure 3 and Annex 3B, Table 3). In the Terai, nearly all of the abandoned latrines had been simple pit type (compared with 56% of existing latrines). Four per cent, nearly all in an early project, had been single pit ring system latrines. In other words in both areas a greater proportion of simple pit latrines had been abandoned than of improved single pit latrines. And latrines with ring system pits were almost never abandoned.

2.8.2 Reasons for abandoning

On average, people in the hills had used the latrine for two and a half years, those in the Terai for only 19 months (Annex 3B, Table 5). The great majority in both areas had abandoned the latrine because it was not functioning. Other reasons given included migration, separation from the family, latrine on someone else's land, and preferring to use the jungle. Figure 10 shows the main reasons given for loss of function. Collapse of the superstructure was the most common reason given in the hills (more than half, but with a range from 0% to 100% in different projects), followed by pit collapse and the pit being full. Pit collapse or pit being full were the most common reasons given in the Terai, with collapse of the superstructure accounting for only one fifth. Digging of trenches by rats inside the pits was cited as a cause of pit collapse in a number of hill projects, and in one project there was a problem with mud filling the pits.

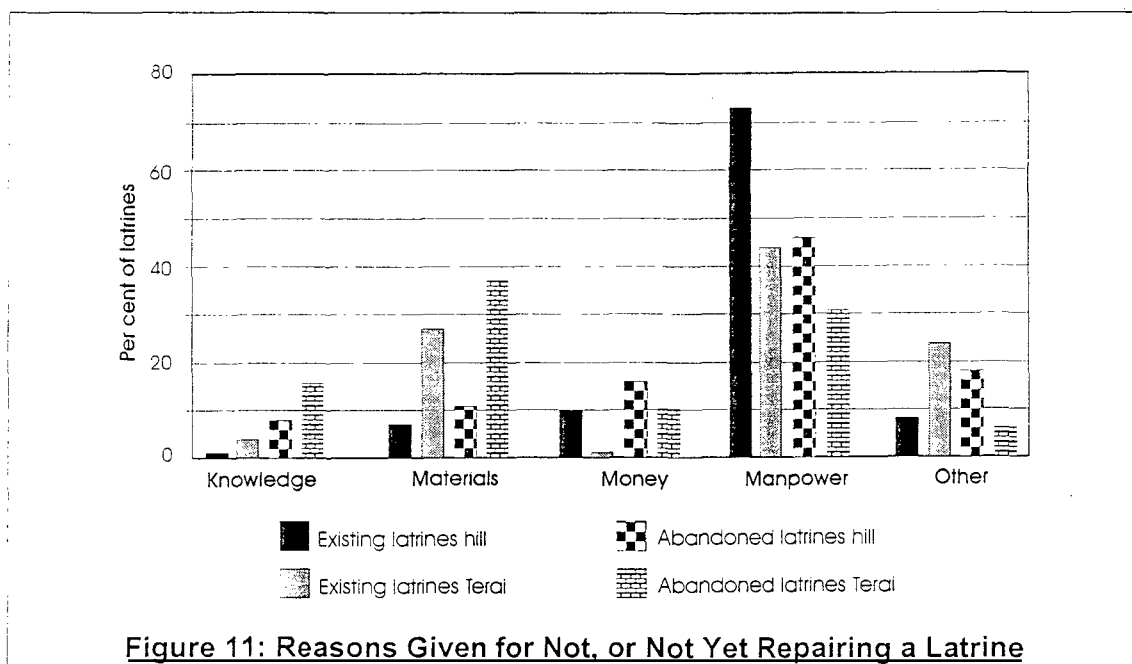


Interestingly, in projects completed 5 years previously there was a considerable difference between the reasons given by individuals for loss of latrine function, and the overall perception stated during the mass meeting of the main reasons for the reduction in the number of latrines. In particular, collapse of the superstructure wasn't seen as a major problem in the mass meetings, although in two cases nearly all individuals had cited this as the main reason for loss of function. Other problems mentioned included incorrect slab size, problems with the hole in the slab or pan, and breaking of rings (in one Terai project). One of the main causes of filling and collapse of simple pits in the Terai was seepage of water into the pit during the monsoon season.

2.8.3 Reasons for not repairing

The reasons given for not (or not yet) repairing a latrine are shown in Figure 11 (Annex 3B, Table 5). The reasons given were similar whether the latrine had been abandoned, or was existent but non-functioning, but the emphasis was sometimes different. The most common reason given in all cases was lack of manpower. This was especially apparent in the hills for latrines that were still in use but needed repair, and reflects a situation particularly prevalent in the hills where the younger generation leave to work in the town. In the Terai lack of materials was equally important, but this was much less of a problem in the hills. Less than

10-15 % of people in both areas cited no money or lack of knowledge as the main reason for abandoning or not yet repairing latrines. Lack of knowledge was more of a problem in the Terai, lack of money in the hills. Other reasons included it being the rainy season, and waiting to build a better one. A few people in both areas hadn't repaired their latrine as they didn't want to continue using it.



2.9 Future Wishes

The great majority of those without a latrine wanted to build one (88% in the hills; 86% in the Terai) (Annex 3B, Table 2). The reasons given were similar to those given by people who already had a latrine (Figure 2), although in the Terai this group placed less importance on health (25% citing it as a reason compared with 47% of those who already possessed a latrine).

Table 2 shows the type of latrine people would like to build and the sort of support they needed (Annex 3B, Tables 3 and 9). In the hills, rather more than a third wanted some type of offset pit (simple single pit or double pit ring system), the same number a simple pit latrine, and only a fifth some type of improved direct single pit latrine. Interestingly when all beneficiaries were asked during the mass meeting what type of latrine they thought people would prefer to have, 80% said some type of offset pit and only 13% a simple pit. In the Terai, nearly half of those without a latrine wanted a simple pit latrine and 30% some form of offset pit latrine, but in the mass meetings 100% of beneficiaries felt people would prefer an offset twin pit ring system. The difference in these figures presumably reflects the difference between what people realise would be the best option, and their realistic expectations of what is affordable.

In the hills more than half wanted a permanent superstructure, whereas in the Terai the same proportion wanted a non-permanent structure.

In the hills the support most needed was a materials subsidy, or technical advice followed by cash. In the Terai, cash, a materials subsidy, and technical advice were mentioned equally. Other types of support asked for included labour and ceramic pans in the hills, and cement for installation and land in the Terai. A few people in both areas said they wouldn't need any support.

Table 2: Type of Latrine Desired and Support Needed

LATRINE TYPE DESIRED	HILLS	TERAI
Type of latrine		
Single pit, circular slab ± pan + cover	18	2
Single pit offset, slab ±pan + cover	24	3
Twin pit direct, ring system	1	4
Twin pit offset, ring system	13	27
Simple pit	35	48
Don't know	5	12
Other	4	5
Type people prefer (PRA)		
Single pit direct	0	0
Single pit offset	27	0
Twin pit offset	54	100
Simple pit	13	0
Other	3	0
Type of superstructure		
Permanent	58	35
Improved temporary/temporary	40	58
Other	2	8
Type of support wanted		
Technical advice	43	35
Material subsidy	47	38
Cash	24	39
Other	9	13

2.10 Improvements to NEWAH Latrine Design

People in the mass meeting were asked what they thought were the main problems with the NEWAH latrines. A great variety of comments were made. Many relate to the problems that have already been recognised like rat trenching causing the pit to collapse, and some no longer apply to the types of latrine now promoted. But the remaining comments provide some idea of possible directions for improvement. A common complaint was about poultry and small animals falling into the pit, which can be avoided in improved latrines if the cover is used. The problem of not being able to use a single pit latrine when the pit is full until it has been dug out or a new latrine made was also mentioned. This highlights the need for twin pit systems. Some people felt the pans were too small, some that the hole in them was too small to allow easy passage of excreta, and that pans and particularly water seal pans, needed a lot of water to flush properly, with the result that the pit filled too fast. The need for annual maintenance of simple superstructures was also seen as a problem. Blocking and/or breakage of water seals as a result of insufficient flushing was a problem in the hills. Occasionally there were complaints about slabs and rings breaking, in situ or during transportation. Some people felt NEWAH should promote biogas latrines. It was also felt that a technician should be available on site until all latrines had been installed, even if this was after handover of the water project.

3 Discussion

3.1 Methods

Before discussing the significance of the findings it is important to consider the validity of the methods used to obtain the information. Both PRA and household survey methods were used. The PRA sessions were mostly used to obtain an overview of the situation in the project area. The rate of attendance at the PRA meeting was not recorded, but it is likely that the motivation to attend was not very high as these were completed projects with no direct promise of benefit following the collection of this information. Furthermore, the survey was held at the start of the rainy season when many people were busy with rice planting. It was clear from comparison of the information obtained by household questionnaire and from PRA that some of the numerical data obtained by PRA (for example the total number of households with latrines, or the number of latrines that existed at the time of project handover) was not reliable, and this information was not further evaluated for this report. However the information obtained from the PRA sessions was sufficient to plan the household surveys, and was useful in providing an overall insight into people's criticisms of and wishes for latrines.

The household survey was performed by five different interviewers. The ability of interviewees to understand questions, and their willingness to provide 'true' answers is clearly influenced by the approach of the interviewer. However, the questions asked in this survey were not of a particularly sensitive nature, and although there may have been minor differences in the interviewers' level of skill, there was no indication that this had had a major effect on the results.

There were some difficulties with the data that made it unsuitable for detailed statistical analysis. These included such problems as lack of firm data about the real situation at the time of project handover, occasional problems in the interpretation of questions (in particular the definition of a 'NEWAH' latrine as one built with NEWAH components or one built at the time of project implementation), and occasional inconsistency by interviewers in allowing or not allowing multiple answers to questions. The major problem, however, was the very wide variation among individual projects. These were sufficiently great that a small change in the sample size, particularly in the Terai, could well have affected the final averages considerably. Although there was sufficient consistency on broad issues to provide a good overall view of the situation related to building and maintenance of latrines, there were **clearly many project specific factors that were not identified**. Thus the results should be seen as broadly indicative rather than numerically exact, and their interpretation treated with care.

When assessing the results it is also important to understand the differences between hill and Terai projects. Both the areas and the projects themselves differ in a number of ways. First, the type of water supply technology varies, gravity flow taps in the hills, tubewells in the Terai. Second, the average size of projects is different. Hill projects tend to serve small, often isolated, communities (the average number of households per project in this sample was 90, ranging from 35 to 213). Terai projects usually cover all nine wards in a VDC (the average number of households in this sample was 464, ranging from 120 to 1160). Most settlements in Terai areas have developed over the last 40 years as a result of migration from other areas of the country. There is much greater ethnic diversity than in the hills, and the societies tend to be less close-knit and cohesive. There is greater variability in land tenure: many more people live in rented accommodation and work as hired labourers. People may have no land, or insufficient land to relocate a latrine. Thus the problems encountered and challenges faced by people in the two areas differ considerably. The problems in the Terai are compounded with respect to latrines by the difficulties related to the high water table in the monsoon season. Simple pit latrines tend to fill with water and often collapse at this time. It is essential that pits are lined, but stone is not readily available, and the alternative of concrete rings promoted by NEWAH remains expensive even when subsidised. Trials have been

carried out with ferro-cement and clay linings, but these materials have not proven sufficiently workable in practice

3.2 Coverage and Use of Latrines

At the time of the survey, more than half of the households in the hills, but less than one fifth in the Terai, possessed a latrine. Virtually all of the latrines were still used throughout the year, although a few were temporarily out of use either because they needed repair or the pit to be dug out, or for some other reason. One-fifth of those in use in the hills and less than 10% in the Terai were not felt to be functioning fully, mainly because the superstructure had collapsed and not yet been repaired, or because the pit had collapsed or was full. Nearly half of the latrines were clean. Virtually all family members used the latrines, apart from children under three, and the great majority of households put children's faeces in the latrine or in a manure pit. The few people who didn't use the latrine were divided equally between adult men, adult women, and people over fifty.

In the hills, more than three quarters, and in the Terai half, of the latrines in existence at the time of project handover were still in use. There had been some new construction since handover, however, (7% of households in the hills; 8% of households, or a quarter of all those built, in the Terai), so that at the time of the survey there were 13% less latrines in hill areas, and 20% less in Terai areas, than at the time of project handover (8% and 4% less households with latrines, respectively).

The rather low number of households with latrines at the time of the survey, particularly in the Terai, to a great extent reflects the low levels of construction in a number of the projects at the time of implementation. There was a very marked variation in 'latrine take-up' among projects, with no indication of any significant improvement over time, at least in the projects surveyed here. A survey at the time of project handover of all the projects completed in 1996 indicated a similar range of variation among projects, but rather higher overall figures for construction. There were no obvious reasons for the differences in latrine construction among projects. The reasons given for not building a latrine were not markedly different among projects in which a few or many people hadn't built one. This suggests that there may be project specific factors such as **motivation, the attitude of the implementing NGO, the conviction of key persons in the community, the level of poverty or access to land, isolation and distance from the road head, exposure to new ideas (for example working outside, or presence of other projects nearby), or the general feeling of empowerment, that should be investigated.**

Overall, 15% of households in the hills, and 12% in the Terai, had had a latrine at some time but no longer had one at the time of the survey. Overall, simple pit type latrines were more likely to be abandoned than improved single pit latrines or latrines with a ring-lined pit, and accounted for nearly all the abandoned latrines in the Terai. The main reason given for abandoning latrines was that they had ceased to function. In the hills, collapse of the superstructure was the main problem (more than half), followed by pit collapse, or the pit being full. This is surprising in view of the fact that many other users apparently continued to use their latrines without a superstructure, that a substantial number who used latrines had never built a superstructure, and that repairing a temporary superstructure would seem to be a less demanding task than digging out a latrine pit. It is also not clear why, during the mass meeting sessions, superstructure collapse was not thought to be the major reason for loss of latrines. These results do, however, indicate that the more common practice in the hills of lining pits with stone does reduce the problem of pit collapse considerably. In the Terai, the most common problem was pit collapse, closely followed by the pit being full. This reflects the problems associated with the high water table in the Terai during the monsoon season, and the failure of latrines built with local materials only. Collapse of the superstructure was a much less important problem, and clearly many people continued to use the latrine even when the superstructure was no longer intact.

By far the most important reason given in the hills for not repairing latrines was lack of manpower. In the Terai lack of manpower and lack of materials were equally important. In the hills, at least, it seems that it is also a question of priorities and the value attached to having a latrine. It seems unlikely that anyone who perceived a real need for their latrine would abandon it because they didn't have time to put up a superstructure.

3.3 Motivation

The main reasons people gave for building a latrine were for cleanliness and convenience, regardless of whether they had a latrine, had had one but abandoned it, or would like to build one. Health was considered less (or much less) important, privacy a minor issue, and peer pressure irrelevant. This indicates the high social priority given to latrines, but may also indicate that **people have not yet fully grasped the real health message**. The question of peer pressure is more difficult to evaluate. A number of people who had not built latrines gave the reason that 'no one else had'. And it seems likely that in many projects there is in fact a 'snowball' effect, with the enthusiasm of key people for latrines affecting the motivation of others who might otherwise remain undecided. Indeed, presence or lack of this would seem a likely explanation for some of the marked differences in latrine construction among projects. However, people clearly don't classify the urge to do things with the group as 'peer pressure'. It would probably be more interesting to try to obtain information about the effect of 'peer example', but this might need to be obtained in a different way.

In both areas, more than one-third of those who hadn't built a latrine said it was because they felt it wasn't needed. In the hills a quarter cited lack of manpower, and only around 10% problems with money, materials or land; in the Terai land was the most important problem followed by money and manpower. In both areas, however, nearly 90% said that they would like to build a latrine now. In other words at least **two-thirds of those who had originally considered that a latrine wasn't needed were now convinced of its use**. How many of these households would actually build a latrine if offered the possibility is not clear, however, particularly as long as problems like lack of land or manpower remain unresolved. Even so, this shows a clear change in opinion, presumably resulting from the effect of seeing the advantages at first hand once other villagers have a latrine. These results certainly indicate that thought should be given to introducing a **'second phase' for the sanitation programme**.

3.4 Types of Latrine

Sixty percent of the latrines built in hill areas were of the type promoted by NEWAH—improved single pit latrines with a concrete slab or slab plus pan—whereas only one-third of those built in the Terai were of the NEWAH preferred type—with a pit lined with concrete rings. Most of the remainder, i.e., 30% in the hills and 60% in the Terai, were simple pit latrines built with local materials. The main reason for this difference in the take up of the preferred (and more durable) type is presumably financial; in the Terai beneficiaries must contribute towards the cost of concrete rings to line the pit(s) in addition to the other components. Other factors might also be involved, ideally the ring-lined pits should be offset and thus require more land (and lack of land at all is an important problem in the Terai), and there is more labour involved in their construction.

For many years, NEWAH promoted the simple pit latrines built with local components as a cheap and easily constructed alternative to the preferred types of latrine, and thus the best means of obtaining wide coverage. There are major disadvantages to simple pit latrines, however, especially in the Terai. Without any strengthening, the pits tend to fill rapidly and collapse, particularly in the monsoon season. Thus the structure may have to be rebuilt one or more times every year. This is reflected in the rates for abandoned latrines. In both areas a much higher proportion of simple pit latrines were abandoned than of improved types. In the hills the problem can be circumvented by lining the pit with stone, which is readily available (although there can be still problems of collapse of the cover if this is made of wooden slats or bamboo poles rather than concrete). It seems likely that those pits

abandoned in the hills as a result of pit collapse were unlined. NEWAH has now stopped any promotion of simple pit latrines built with local materials only.

Notwithstanding the obvious problems associated with simple pit latrines, one-third of those without a latrine in the hills, and nearly half of those in the Terai, stated that this was the type of latrine they would like to build now. At the same time, however, less than 20% of people in the hills, and no one in the Terai, thought that this was the type of latrine that people preferred. **Thus it seems that everyone recognised the benefits of having an improved latrine, but many felt that for whatever reason this option was not a practical possibility for their own household.**

The other major factor to be considered is the type of superstructure. NEWAH had only provided some technical advice on superstructure construction, but no direct help or subsidy. In general, NEWAH recommends construction of an improved temporary structure made from local materials such as bamboo, wood, mud wattle, or mats of rice straw, with a thatch type roof to keep off the rain. Such structures are particularly suitable for improved single pit latrines. They are simple to construct, easy to relocate when the pit is full, and easy to repair. Permanent structures are promoted as the ideal, if beneficiaries are able to build an offset type latrine with a lined pit. A quarter of those in the hills (most of whom must have had some type of direct pit), and less than a fifth in the Terai (essentially all of those with offset ring system pits) had built a permanent superstructure; and one third in the Terai, and less than one fifth in the hills had built an improved temporary structure. In both areas, nearly half of those with latrines had built a very simple structure using such materials as sacking or leafy branches. More than ten per cent of those in the hills, but very few in the Terai, had never built a superstructure (although they may have had some type of simple screen around the latrine, this was not recorded). This might indicate less value being placed on a superstructure in hill areas (where latrines are less likely to be overlooked), but superstructure collapse was actually the main reason given for abandoning latrines in these projects, and the main reason why latrines although still in use were considered to be not fully functional. And the most common suggestion for upgrading a latrine in the hills was to build a permanent superstructure. In the hills there may be local or cultural factors that affect the value put on a superstructure. In the Terai, superstructure collapse was a much less common reason for abandoning a latrine, even though there was a similar proportion of very simple structures and this was also the main reason given why latrines in use were not functioning properly. Presumably vulnerable pits collapsed before the superstructures. Although it is not known whether it was the very temporary structures that collapsed easily, it does seem likely. **It seems that particularly in hill areas, people should be strongly encouraged, and perhaps helped, to build improved superstructures.**

3.5 Use of Pit Contents

NEWAH encourages beneficiaries to gain added value from the latrine by using the pit contents directly or indirectly as fertiliser, by spreading on the fields or by using as a base to plant a tree. One-third of households in the hills, and one quarter in the Terai, had in fact used the contents in one of these ways. **The great majority, however, had simply abandoned the pit or contents.** There were very marked variations among projects, and these indicate that in some project areas people were less aware, or less convinced, of the value of using the pit contents, or that there were cultural differences militating against it. These differences need to be investigated further, to discover whether more information and encouragement need to be given before project handover.

4 CONCLUSIONS AND RECOMMENDATIONS

The NEWAH latrine programme has clearly had a marked impact in project areas, with the majority of latrines (or a replacement) still in use 4-7 years after first being installed. The programme has been much more successful in hill areas than in the Terai, however. The results of this survey show that two aspects need to be considered to improve the impact of the programme. The first is to **increase the number of latrines built during the project phase**, the second is to **build the latrines in such a way that they will continue to function**. The main reason for the low number of latrines in the Terai, and for the lower than desired coverage in the hills, was the low uptake during the project phase. Subsequent abandoning of latrines played a role, but was not the major factor.

To increase uptake at the time of project implementation, it will be necessary to investigate further the factors that lead to high rates in one project or low rates in another. NEWAH has already taken a number of steps, the overall rate of uptake in projects completed in 1996 were already considerably better than in those surveyed here (81% hills, 36% Terai), although there were still marked variations among projects (Shrestha 1998). Recent steps taken to make latrines more available or more acceptable, include providing cement for installation of an offset pit, labour for installation of the pan, and cement or HDP pipe and labour to construct the drainage channel; and use of a precast glass fibre pan. A glass fibre pan (available from India on the open market) is being tested for acceptance and durability in a pilot study. It is light and easy to install and has so far proven very popular. It is relatively inexpensive (approximately Rs 425 plus Rs 60 for HDP pipe) although more expensive than a NEWAH pan (approximately 100 Rs for the pan alone). However, clearly more needs to be done and NEWAH should consider other possibilities like **raising the subsidy** on components in the Terai (to all or to targeted groups), and **setting up loan and credit schemes**. Some first steps in this direction are being considered within a series of pilot projects planned for the season 2000-2001.

The observations on abandoned latrines indicate a number of areas for improvement. Clearly **simple pit latrines without a lining are unsatisfactory**, particularly in the Terai. They tend to fill quickly and often collapse, in some places within a few months of being built. Even if the pit is lined, platforms built from local materials alone tend to collapse fairly rapidly. This problem was recognised some time ago, and from 1998 NEWAH stopped promoting this type of latrine in any way. In hill projects, the minimum standard now laid down for a latrine is a pit lined with stone or brick with a NEWAH or other easily available type of slab (e.g., from another agency) and cover. In the Terai, lined pits are promoted, preferably ring-lined. Brick or similar is also acceptable but generally more expensive.

The second major problem is the superstructure, particularly in the hills. It seems that the majority of **people in the hills prefer to have a permanent superstructure**. Three quarters of all respondents in the hills either had a permanent superstructure or suggested adding one as the most important improvement they would like to make. Collapse of the superstructure was the major reason for abandoning a latrine in the hills, and in both the hills and the Terai there are areas where the material needed to build improved temporary structures (e.g., bamboo, thatch grass) is not readily available. NEWAH now build a demonstration superstructure out of bamboo, but do not yet help people directly to construct a permanent building. NEWAH have already started to promote offset latrines as the method of choice in all areas, and this opens the way for people to build a permanent superstructure, i.e., a 'pukkha' type latrine. Other ways of helping people construct permanent structures should also be considered like **arranging for someone competent in dry stone walling to be available for hire at an agreed rate, provision of cement for mortar, and offering GI sheet for the roofs at bulk buy, wholesale rates**. In some areas construction of doors poses a problem as a result of lack and/or cost of wood, and possible (temporary) alternatives should be considered like mounting a rail to hang cloth, sacking, or straw matting.

Manpower was a problem in both areas, but more so in the hills. Some people hadn't been able to build a latrine because of lack of manpower—and again NEWAH might consider whether it is possible or useful to **offer more help with labour for construction, possibly by arranging for a labourer to be available at a reasonable daily or unit rate**. Manpower to dig out a latrine, or relocate a simple pit was also a problem. This can be ameliorated by having a twin pit system. When a pit is full the outflow is switched to a second pit, leaving plenty of time to empty the first. NEWAH are now **promoting twin pit offset systems** as the method of choice in all areas, with the possibility of constructing the second pit at a later time if necessary.

Lack of motivation was actually the most important single reason given for not building a latrine in both areas. Although there is some indication that the present system of hygiene education is having a greater impact on motivation (Shrestha, 1998) more remains to be done. The **value of a latrine for preventing sickness may need to be made even clearer** and increasing understanding in this area might motivate more people to build. Secondly, many people don't use the pit contents in any way, and it could be useful to **focus more on the potential uses for the pit contents during the implementation phase**. At present education efforts are focussed on individual rather than community motivation. NEWAH should consider some way of **emphasising the community benefit** (in terms of cleanliness and health) when all households have unrestricted access to a latrine, and suggest developing community approaches for solving the problems.

There may be a whole range of hitherto unrecognised possibilities for motivating and helping people to build lasting latrines and improved temporary or permanent superstructures, some specific to local areas and based on local building techniques and available products. **NEWAH should hold a series of participatory 'brainstorming' sessions with local groups to generate alternative ideas**. These might extend to suggestions for planting bamboo, thatch grass, and other materials that can be used to construct shelters in local community forest areas, cooperative arrangements to help resolve manpower problems, community-based loan and credit schemes, and community approaches to solving the problem of lack of land for latrines (particularly in the Terai).

Finally, it seems that many people first realise the advantages of having a latrine after they have seen other people using one. One way of increasing the construction rate in projects **might be to initiate a second round of latrine building after the water supply construction is completed** and handed over. NEWAH staff visit project sites regularly for two years following handover as a part of the maintenance and repair programme. The possibility of introducing a 'second round' of latrine construction (and upgrading of existing latrines) during this time should be considered.

REFERENCE

Shrestha, A.B. [A.B.M.] (1988) Hygiene Practices at NEWAH Project Sites: The Impact of Hygiene Education. Kathmandu: NEWAH.

ANNEX 1: Learning for Health

Hygiene Promotion and Education in Nepal

A leaflet describing the NEWAH hygiene promotion and education programme, one part of NEWAH's integrated water supply and sanitation projects.

Learning for Health

Hygiene Promotion and Education in Nepal

The first of a series of leaflets describing the work and philosophy of WaterAid Nepal.



The Benefits of Water

For many people easy access to a plentiful supply of clean water can mean a transformation in their quality of life. Being able to collect clean water suitable for drinking without a long walk or wait, can lead to a marked reduction in drudgery, and a major improvement in possibilities for general cleanliness. But the potential benefits of a water supply are much greater than this. Clean water can be crucial for improving the overall health of the population, in particular by reducing the incidence of excreta and water-related diseases. But simply providing water does not necessarily lead to any marked improvement in general health. And although helping people build latrines will help, it is also not enough.

To really benefit from having clean water, people must first understand the link between disease and hygienic behaviour. Thus behaviour change and improved personal hygiene are crucial elements of a successful water and sanitation project. This leaflet describes the hygiene promotion and education programme developed by NEWAH (Nepal Water for Health), WaterAid's principal partner in Nepal.



In Nepal

The full benefits of water and sanitation projects can only be realised where good hygiene practices are known and used

The population needs to be aware of the causes and routes of transmission of disease, and to practice preventative hygienic behaviour. If this is not the case, then it will be necessary to provide appropriate education.

NEWAH's hygiene promotion and education programme is an integral part of its water and sanitation projects.

Project proposals are only accepted if the community agrees to participate in the hygiene education programme.

The NEWAH Approach

NEWAH has recognised the need for hygiene promotion and education as an integral component of water and sanitation projects since its inception in 1992. Over the last ten years, NEWAH has developed an extensive programme for hygiene promotion and education in its project districts that has proven very successful. Through this comprehensive programme, communities are empowered to control the incidence of diseases transmitted by faeces or water. The programme is

- tailored to the special needs of rural Nepal,
- takes the constraints posed and opportunities offered by the varied multicultural and geographic situation of the country into account,
- covers a wide range of topics - from helping people understand the need for latrines, through a knowledge of why and how to wash hands properly, to knowing how to treat diarrhoea and dysentery and prepare rehydration solutions.

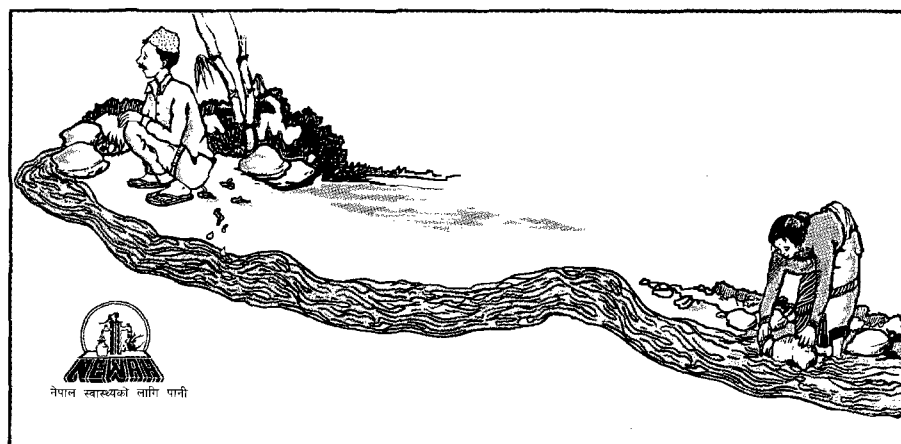
Past experience is used in a continuous process to update the approach to both hygiene promotion and provision of water and sanitation facilities.

Hygiene Promotion

Hygiene promotion is a holistic activity that includes the supply of water and help in building latrines as well as raising awareness of what hygiene is and what hygienic behaviour can do for the community. Hygiene promotion starts before water supply construction during discussions with the villagers about the existing situation and their perceived needs. Baseline information about hygiene attitudes, knowledge and practices in the village, and the incidence of certain faecal-oral diseases, is collected using a combination of PRA and questionnaire survey techniques. The collection of information is itself used to encourage discussion about the importance of factors such as proper sanitation, and to increase the awareness of villagers of their present situation, and the potential for change. Many people simply do not realise that their behaviour (hygienic practice) can have a big impact on the health of their family and the whole community. Recognition of this in itself can provide the motivation to learn more. One of the main components of hygiene promotion in NEWAH projects is a semi-formalised system of education about specific topics related to hygiene.

The main purpose of the hygiene education programme is to establish a link in people's minds between disease and unhygienic practices, and to provide information about what constitutes hygienic behaviour.

A series of simple pictorial messages portray the most effective primary and secondary physical and behavioural barriers to the transmission of pathogens via faeces. Singing and dancing, role play, puppets, games, storytelling, videos, demonstrations and practical exercises are all used to help participants understand the information.



Cloth poster used in teaching sessions

The Hygiene Education Programme

Hygiene education starts before water supply construction and continues beyond its completion. One or more health motivators (mostly women) are appointed from within the community for each project. The health motivators are provided with extensive training (3 weeks) both in the subject and on how best to convey the message. They are provided with teaching materials and supported by a health educator, a long-term professional responsible for a number of projects. In addition one female health volunteer is appointed by each user group (usually 6-10 households) and also given one week of training.

The hygiene education is divided into separate topics (see box). The local health motivator holds a series of between six and ten half to one day teaching sessions with each water point user group introducing each topic separately. Ongoing education is provided by the health volunteer. Whenever possible, the health motivators also visit all local schools and hold sessions for schoolchildren covering the basic principles of transmission of excreta and water-related diseases and hygienic behaviour.

The major points covered in the hygiene education programme

- the safe disposal of excreta (including from children), preferably through construction of a household latrine which is kept clean
- hand washing at critical times - after defecation, after cleaning children's bottoms, before handling food, before eating and before feeding children
- disposal and use of waste water
- prevention of contamination of water in transit and in the home
- food hygiene - protection by covering, and use of a dish rack
- attention to domestic and environmental hygiene - proper disposal of household refuse and housing of domestic animals
- knowledge of paths of infection and treatment of diarrhoea - oral rehydration therapy
- simple domestic medical treatment using clean water, e.g. water cooling of burns, saline rinse for eye infections

Health motivators are recruited directly from the local community. They speak the local language or dialect, and know of any special cultural features. They are often more acceptable as educators than someone from outside. They are provided with extensive training in the subject and in teaching methods, and any lack of expertise is compensated for through support from the health educator. Their knowledge remains in the community after project completion.



Preparing for a puppet show

Impact Monitoring

The immediate impact of hygiene promotion is monitored through collection of data on hygiene attitudes, knowledge and practices and the incidence of selected diseases at the start and after completion of the water and sanitation project. The results of these studies are used

- to tailor the needs of hygiene education to the specific situation in a project village,
- to assess the impact of hygiene promotion in a particular project area and discover whether there is a need to continue the programme,
- to assess the overall impact of hygiene promotion in all projects for the year,
- to identify any problems and develop suggestions for modifications and improvements in the implementation of the projects, and in particular in the hygiene promotion programme.

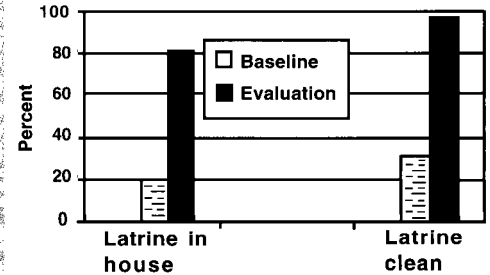
A detailed study of the impact of hygiene education in the projects implemented between April 1995 and April 1996 showed that the hygiene education programme had been very successful, and had had a major impact on people's knowledge about and attitudes towards a whole range of hygiene practices. After hygiene education the majority of people had

- understood the need for and knew how to store water hygienically;
- realised the importance of washing their hands at critical times, of isolating faeces from the environment, of protecting leftover food from contamination, and of disposing of refuse in one place;
- learnt the value of using waste water to develop a kitchen garden;
- understood much more about the causes of diarrhoea, how to prevent its transmission and how to treat it.

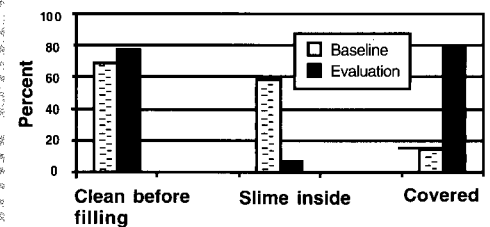
Few households (less than 1% in the hills and 11% in the Terai) thought a latrine was unnecessary, although particularly in the Terai lack of land or money meant that not all those who would like a latrine were able to build one.

People reported 58 deaths from diarrhoea in the project areas in the year before project implementation. This number was reduced to zero in the following year.

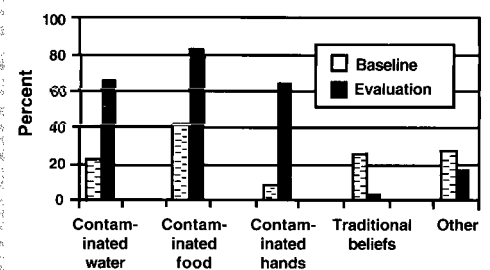
The impact of hygiene promotion in all hill projects completed in 1996



Latrines



Water container hygiene



Perceived causes of diarrhoea

The Way Forward

Despite the considerable success of the programme, there are still outstanding questions and areas with room for improvement.

- Individual project areas have been identified where the improvements in hygienic behaviour are clearly less than average. These are being studied to identify possible ways of improving the programme.
- Ways are still being sought to help those people who are convinced of the need for a latrine but have no land and/or no money to build one.
- The programme for teaching in schools is being extended in the expectation of improving long-term changes.
- The long-term impact of the programme still needs to be monitored.
- Motivation to participate in hygiene education sessions is sometimes low. In households living from subsistence farming, women may have little time to spare for such activities. Possibilities for increasing motivation, like linking with literacy classes, are being explored.

Hygiene Promotion in Water and Sanitation Projects

The NEWAH experience shows that integrating hygiene promotion and education with water and sanitation projects is a very successful approach to maximising the benefits to a community of a supply of safe water. Involving the community from the beginning in programme planning is essential for success, and the likelihood of acceptability is increased by using people from within the community to carry out education and training. The design of a basic programme appropriate for the needs of the country that can be tailored to suit the individual situation in a project area is very cost effective. Teaching materials can be prepared on a large scale, and training of motivators performed on a regional basis. Having a single basic programme also ensures that no important aspects of hygiene promotion are overlooked.

Monitoring of the programme is an integral part of the process. Besides ensuring effectiveness, the process of information collection and presentation of information to the community itself helps in creating awareness, and the results provide the information needed for continued improvement of project implementation.

This approach could be adapted to suit the needs of water and sanitation projects in any country to maximise the benefits of providing a supply of clean water.



Effective hygiene promotion comprises provision of water, help in building latrines, and passing on knowledge about hygienic behaviour.

WaterAid is a British NGO working with poor people in 12 developing countries in Asia and Africa. It has a vision of a world in which all people have access to safe water and sanitation, complemented by appropriate hygiene education. All projects use practical technologies that are low in cost so that user communities can take responsibility for management. WaterAid began its operations in Nepal in 1987.

NEWAH (Nepal Water for Health) is a national non-government organisation (NGO) established with the help of WaterAid in 1992 and is WaterAid's sole partner in Nepal. NEWAH is now a fully independent agency with funding from a variety of sources, although WaterAid still contributes the largest share. It is the largest NGO specialising in the water sector in the country. WaterAid continues to provide expert advice and assistance in programme development, as well as providing a direct link with developments worldwide.

NEWAH forms partnerships with locally based NGOs, Small Farmer's Groups, Women's Credit Groups and community groups to implement integrated water, sanitation and hygiene education projects in all five regions of Nepal. Projects are located in both Hill and Terai districts. Activities are decentralised, and carried out by four regional offices. Since 1992, approximately 318 projects have been completed benefiting a total of around 435,000 people (status 1998). Currently NEWAH implements around 50 projects a year in communities with beneficiary populations from as few as 150 to more than 5000 (average 550 in hill projects and 3500 in Terai projects).

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ANNEX 2: THE NEWAH SANITATION PROGRAMME

The first step in the sanitation programme is the information provided at the time of the baseline survey, immediately prior to project implementation (usually between April and June before the monsoon). NEWAH itself obtains information about the existence and state of any latrines in the project area, and about local people who could be trained as mistris (skilled labourers) or sanitation workers. The beneficiaries receive information about the sanitation programme.

Two or three people (at present usually men) are selected to be trained as mistris, and usually one person (male or female) to be trained as a sanitation worker, from each project area. The job of the mistri is to make the actual latrine components, and to install the components for offset type latrines. He works under contract for the implementing partner and is paid according to the number of components constructed and installed. The sanitation worker is employed by the implementing partner for usually six months to one year during the project implementation phase to give technical advice to beneficiaries on all aspects of latrine construction from digging pits to construction of the superstructure. In small projects, or projects where the demand for latrines is low, the job of the sanitation worker may be done by the NEWAH social technician (sub-overseer) responsible for the project, and/or the local health motivator. The people to be trained as mistris or sanitation workers are selected by the Project Management and Maintenance Committee (PMC, the local committee responsible for management of the project) together with NEWAH. The main selection criteria are that those chosen live within the project area and are likely to stay there well beyond the implementation phase of the project. In addition, the sanitation worker needs to have passed the eighth grade of school and be able to motivate others.

A four-day training course for sanitation workers and mistris is carried out at the project site by NEWAH's socio-technician (sub-overseer) at the beginning of the project implementation phase (usually in November or December). Training is concurrent, with some sessions held separately for the two types of worker and some together. Training covers all aspects of latrine construction, and for mistris construction of the components, with an emphasis on practical sessions.

During the training, a demonstration latrine is built at the project site. This latrine is usually of the improved type being promoted as the 'latrine of choice'. A simple superstructure (usually bamboo) is constructed by hired outside help. The other types of latrine component being offered are also displayed, but not as fully functioning latrines, and beneficiaries are told the price of the subsidised components. Prior to 1997, female health volunteers also constructed a simple pit latrine using local materials only (mostly bamboo/wood and mud wattle) during their training that was used for demonstration purposes (see NEWAH Information Series No.1 for details of health workers' training). This practice was later discontinued because of the poor durability of these structures. The demonstration latrine belongs to the site office and may be used by anyone in the village. The site office is responsible for ensuring the latrine is kept clean. After project handover the latrine becomes the property of the household on whose land it has been constructed. (Previously one or more additional domestic type latrines were constructed for demonstration purposes at the local school, if one existed. The school latrine programme is now implemented separately, although in parallel with project implementation, with a different and sturdier design of latrine.)

The names of beneficiaries who wish to build a latrine are collected during the first months of project implementation. A deadline is set for the end of February, but this can be extended with the agreement of the PMC, NEWAH, and the implementing NGO. Beneficiaries pay the price of the requested subsidised components into a 'latrine fund' held by the PMC (Table 1). The local health motivator collects the contributions to the fund. The details of payment collection are laid down by the PMC. In some projects beneficiaries pay 50% of the total contribution in advance and the remainder upon receipt of the components; in others

beneficiaries must pay the full subsidised cost in advance. Payments can usually be made irregularly over an extended period.

The mistri starts construction of slabs, pans, covers, and concrete rings as soon as a few people have completed their payment into the latrine fund. In general, cement is supplied by NEWAH. In the hills, beneficiaries are expected to supply sand and aggregate from local sources unless the nearest deposits are very far from the project site. In the Terai these materials are provided by NEWAH. The mistri selects an appropriate site in the project area for construction, and constructs the components in batches. Concrete ring moulds are supplied by NEWAH, whereas the pan mould is either constructed by the NEWAH social technician or supplied by NEWAH from a previous project. Meanwhile the sanitation worker helps beneficiaries to select a site for the latrine and provides technical advice on such things as digging and lining the pit, payments to the mistri, and collection of non-local materials. Most beneficiaries dig the pits themselves, but some employ outside labour. The beneficiaries are responsible for actually installing all direct types of latrine, advised by the sanitation worker. NEWAH provides some material and labour for the installation of offset latrines, which require more expertise.

Latrine design

NEWAH promotes improved types of latrine appropriate for the area, and attempts to convince beneficiaries of the considerable advantages of building a more lasting structure. Many beneficiaries, however, choose to build simple pit latrines using only locally available materials, i.e., a direct hole down to a pit with a squatting area built with materials like wooden planks or flat stones. These are not subsidised in any way by NEWAH, but until recently NEWAH did provide the technical know-how to ensure that they were constructed as efficiently as possible. From 1998 onwards, NEWAH stopped promoting simple pit latrines in any way as they proved to have poor durability.

During the time of the projects investigated in the survey, the following types of latrine were promoted. The main aspects of these are shown in Figures 1-4.

In the hills

- i) Single pit latrine with rectangular (concrete) squatting slab with direct hole or pan and cover (the main type promoted up until 1994)
- ii) Single pit latrine with circular (concrete) slab with direct hole or pan and cover (the main type promoted from 1994 to 1997)

In the Terai

- i) Single pit latrine with rectangular (concrete) squatting slab with direct hole or pan and cover
- ii) Single pit latrine with circular (concrete) slab with direct hole or pan and cover
- iii) Single pit latrine of one of the types described above, but with a concrete ring pit lining system
- iv) Twin pit direct latrines with a concrete ring pit lining system
- v) Twin pit offset latrines with a concrete ring pit lining system (the main type promoted)

A 'direct' latrine is one in which the latrine hole is located immediately above the pit. There may be planks or stone plates laid across the pit or the top may be covered by a concrete slab with a hole in it. Direct single pit latrines are essentially temporary structures. When the pit is full any superstructure must be removed and the slab lifted to access the pit. A new pit may then be dug elsewhere, and the slab fitted over the new pit, or the pit can be dug out and the slab refitted. If twin pits are constructed for a direct latrine (usually only concrete ring lined pits) then the slab can be lifted from the first pit when it is full and placed directly over the second pit.

Table1: Average Cost and Subsidy Rates for NEWAH Sanitation (Latrines) from 1991 to 2000 (in NRs) (main types promoted only)

Type of Latrine ¹	Materials received by Household ²	Year	Average Total Cost ²	Average Newah Subsidy ³	Paid by Household	Hill/ Terai
Single pit, rectangular slab with cover	1 slab, 1 cover	1991-1993	250	125	125	H / T
Single pit, rectangular slab with pan	1 slab, attached pan		300	150	150	H / T
Twin pit direct	10 rings, 2 slabs, 1 pan	1991	900	450	450	T
Twin pit direct	8 rings, 2 slabs, 1 pan	1992 - 1993	1000	500	500	T
Single pit, circular slab with cover	1 slab, 1 cover	1994	275	75	200	H / T
Single pit, circular slab with pan	1 slab, attached pan		350	100	250	H / T
Single lined pit, circular slab with pan	4 rings, 1 slab, attached pan		850	450	400	T
Twin lined pit direct	6 rings, 2 slabs, 1 pan		1200	550	650	T
Single pit circular slab with cover	1 slab, 1 cover	1995-1996	275	110	165	H / T
Single pit, circular slab with pan	1 slab, attached pan		350	130	215	H / T
Single lined pit, circular slab with pan	4 rings, 1 slab, attached pan		900	360	540	T
Twin pit direct	2 circular slabs and 1 pan		600	220	380	H
Twin lined pit direct	6 rings, 2 slabs, 1 pan		1400	560	840	T
Single pit, circular slab with cover	1 slab, 1 cover	1997-	250	100	150	H / T
Single pit, circular slab with pan	1 slab, attached pan		325	125	200	H / T
Single lined pit, circular slab with pan	4 rings, 1 slab, attached pan		900	500	400	T
Twin lined pit direct	6 rings, 1 slab with pan, 1 plain slab		1400	800	600	T
Twin lined pit offset	6 rings, 2 slabs, 1 pan, ½ bag cement, 1 mason (or up to Rs 150)		1700	900	800	T
Single pit offset	1 slab, 1 pan, 18 kg cement, 1.6 m HDP pipe, 1 mason (or up to Rs 125)	1999-	750	450	300	H
Twin pit offset	2 slabs, 1 pan, ½ bag cement, 1 mason (or up to Rs 150)		800	300	500	H
Twin pit offset	2 slabs, 1 pan, ½ bag cement, 2.2 m HDP pipe, 1 mason (or up to Rs 150)	2000-	900	400	500	H

All prices in NRs. ¹ Up to 1997, there was no additional subsidy for offset single or twin pits so these are not listed separately. 'Lined pits' means pits lined with concrete rings, other pits may be lined with local stone but this does not affect the prices for the components provided by NEWAH. Local stone is generally available in the hills so there is no provision (or subsidy) for concrete rings for lining pits.

² All slabs, rings, and covers made of concrete. Standard slab size 120 cm x 120 cm x 5cm, or 120 cm diam. x 5cm. ³ The total cost differs among projects as a result of differences in the costs of portage, wage rates, and such like. Since 1994, NEWAH policy has been to charge beneficiaries in all projects the same amount and to vary the subsidy according to the actual total cost. The average costs and subsidy rates are shown. Up to 1993 the subsidy was calculated as 50% of the total cost.

An 'offset' latrine is one in which the latrine hole is located some distance away from the actual pit, and joined to the pit by a sloping pipe or channel. Permanent latrines always have an offset pit so that access can be gained to the pit without moving the superstructure. Offset latrines require construction of a concrete lined channel or fitting of a piece of HDP pipe between the latrine and the pit, and an extra slab to cover the pit. It is not necessary to make a slab for the latrine itself, two footrests of any durable material and a concrete (or other) pan are all that is necessary. An offset twin pit system is ideal as the latrine outflow can be switched to the second pit immediately the first is full, allowing time to clean out the first pit. The second pit can be constructed later if there are financial or other constraints.

The squatting slab promoted by NEWAH is a simple flat rectangular or circular slab of concrete with a chamfered key-hole shaped recess and hole at the centre, and raised foot rests. A sloping concrete 'pan' with a hole at one end and a short 'down-pipe' or channel pointing into the pit can be attached underneath the slab to offset the hole to the pit. (This means it is no longer possible to see directly into the pit, flushed material runs through the hole in the slab and along the pan and sideways into the pit.) Slab covers are made to match the recess in the slab and have a long rod or piece of wire set in the concrete to facilitate lifting. The covers are necessary for direct pit systems without a water seal to prevent problems with flies and smell. Offset latrines do not require a cover as they do not open directly to the pit below.

In theory any of the NEWAH pan type latrines can have an extra water seal pipe fitted (U-bend). These prevent problems with smell and reduce flies, but more water must be used when flushing as they may otherwise block up. NEWAH provides a water seal in the Terai, but not in the hills where people tend to be more careful in the amount of water they use. Some households attach a bought water seal pipe to their latrine.

In theory, the pits for any of these types of latrine could be lined with stone, brick, concrete or other materials, to increase strength, prevent inflow of water during the monsoon, and increase the useful life of the pit. (A properly lined pit may take as long as 5 to 7 years to fill.) But many people don't line direct pit latrines. In the hills stone is easily available and more often used to line pits. In the Terai, where access to stone is much more limited, NEWAH promotes lining with concrete rings. Offset pits are almost always lined as the structure is more permanent. Direct pits are sometimes lined with simple materials like bamboo or straw mats to increase their strength, but the durability of these pits is poor. A few beneficiaries build a septic tank, a large pit with interconnected sub-compartments, lined with brick or stone plastered with cement, and with an outlet to a soak pit. These may not need to be cleaned for twenty years or more.

Superstructures can be divided into two groups: temporary (simple and improved) and permanent. A permanent superstructure is regarded as one built from stone or brick, usually with cement or mud mortar, with a leak-proof roof. Corrugated iron sheet is often used for the roof, but local thatch type structures are also common. Temporary superstructures are constructed from very simple materials like leafy branches or sacking, or in a somewhat improved form using materials like bamboo, wood and mud. Permanent superstructures are only usually constructed for offset pit latrines.

Some beneficiaries elect to build a latrine linked to a biogas plant. Latrines are an add-on to a biogas unit rather than the primary source of material. Such units offer valuable benefits (as an alternative energy source and a source of valuable compost) but the initial outlay is high compared to the cost of building offset pits for the type of latrine described here. (The actual cost (in 2000) of small units under the Biogas Support Programme is approximately NRs 20,000, and the subsidised cost NRs 10,000 to NRs.14,000, which can be further reduced through contributions of labour and materials to NRs. 5000 or less.) Biogas plants are not promoted by NEWAH at present. Further information can be obtained from the Biogas Support Programme of SNV-Nepal, P. O. Box 1966, Kathmandu, Nepal; Tel. +977-1-521742; Fax +977-1-524755; E-mail snvbsp@wlink.com.np

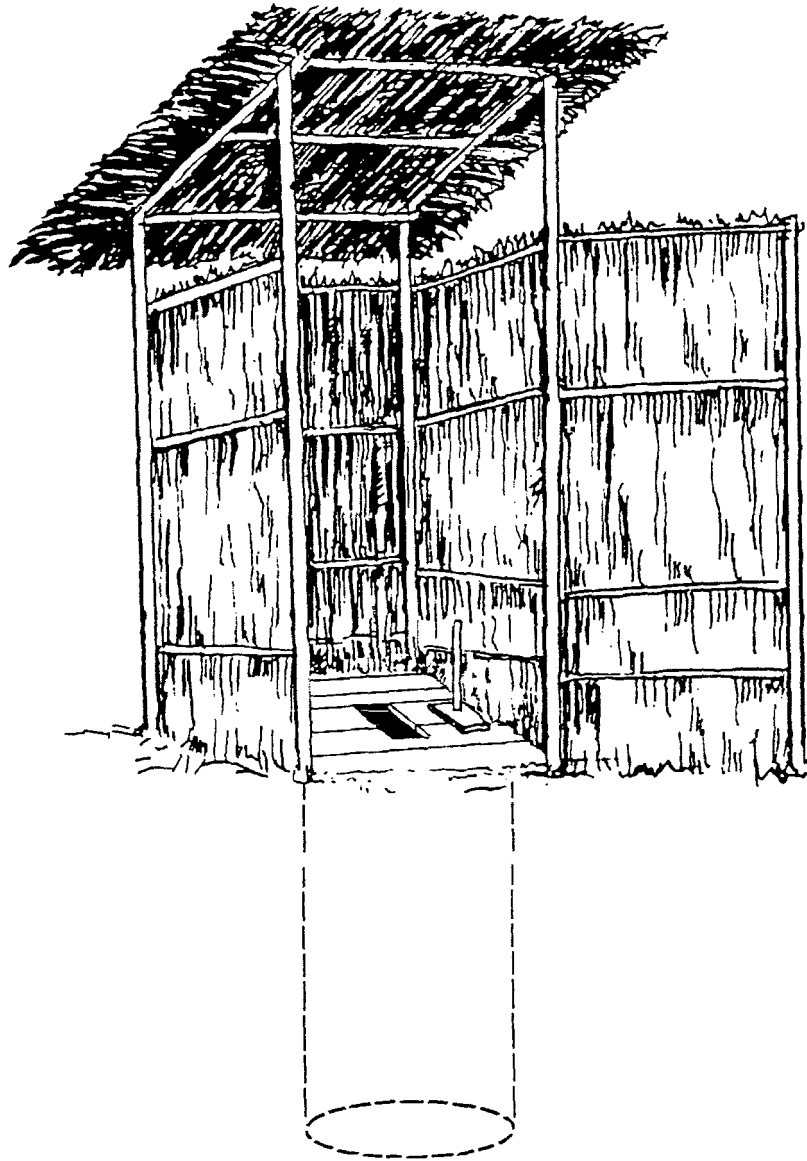


Figure 1: Simple Pit Latrine (direct single pit), constructed of local materials only. This example has a wooden cover, but most don't.

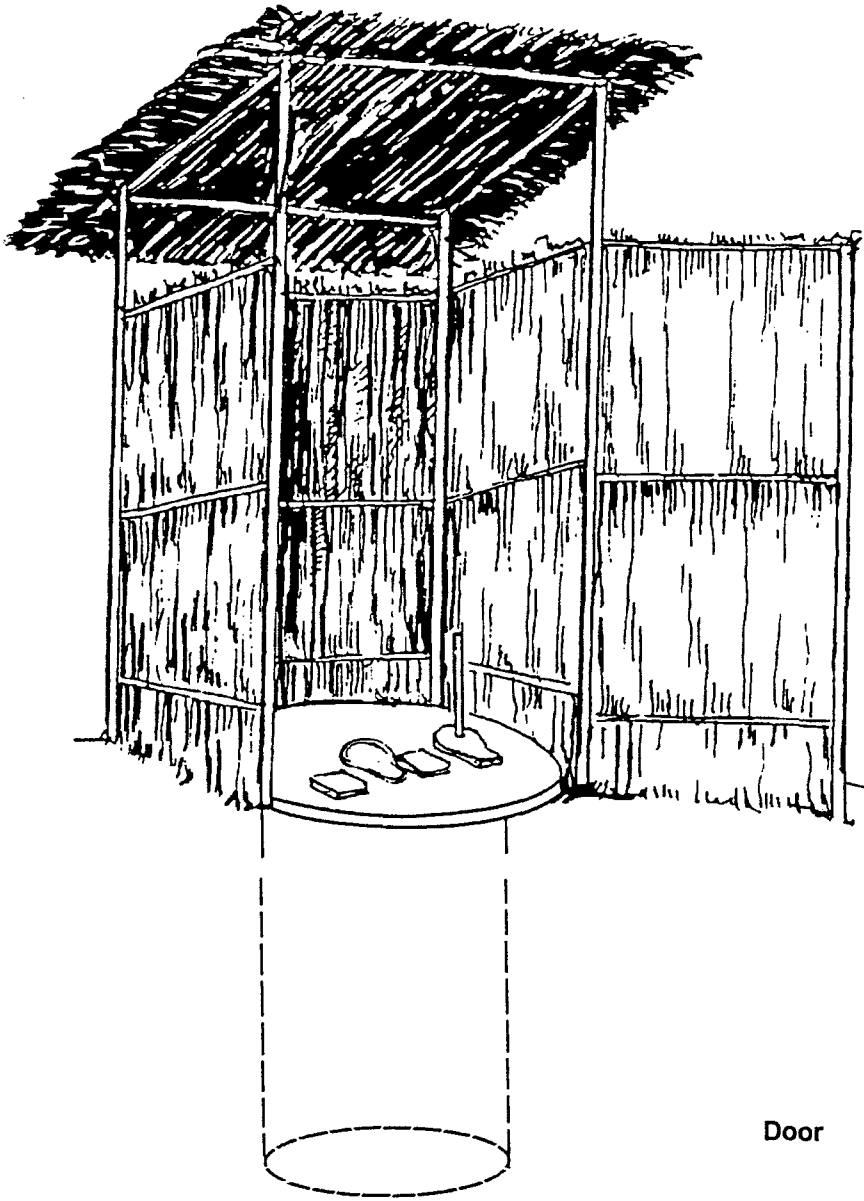
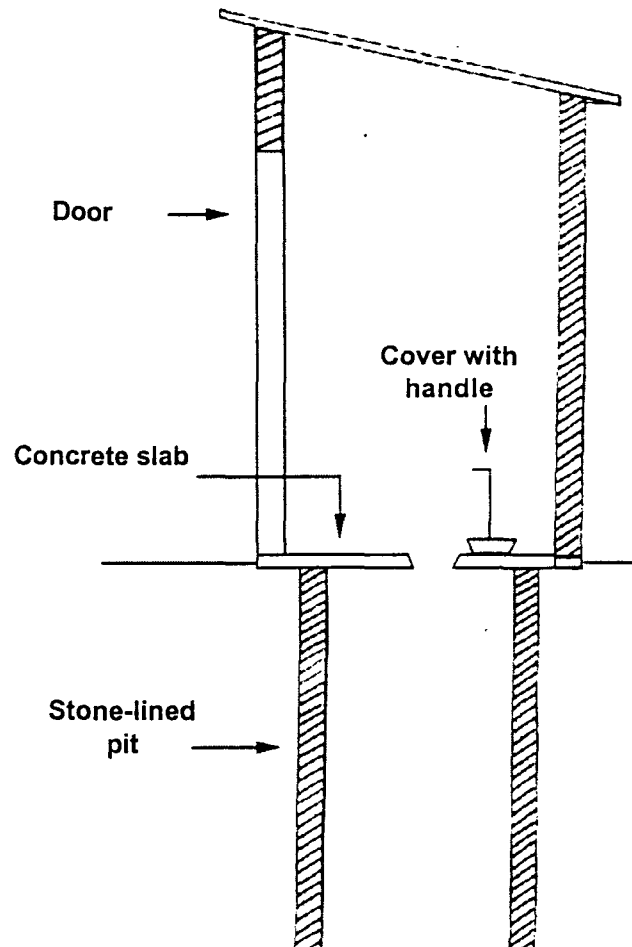


Figure 2: Single pit latrine with circular concrete slab with direct hole or pan and cover. Some of the different variants are illustrated in cross-section in the next three figures.

Figure 3: Cross-section of single pit latrine with circular concrete slab and direct hole with cover.



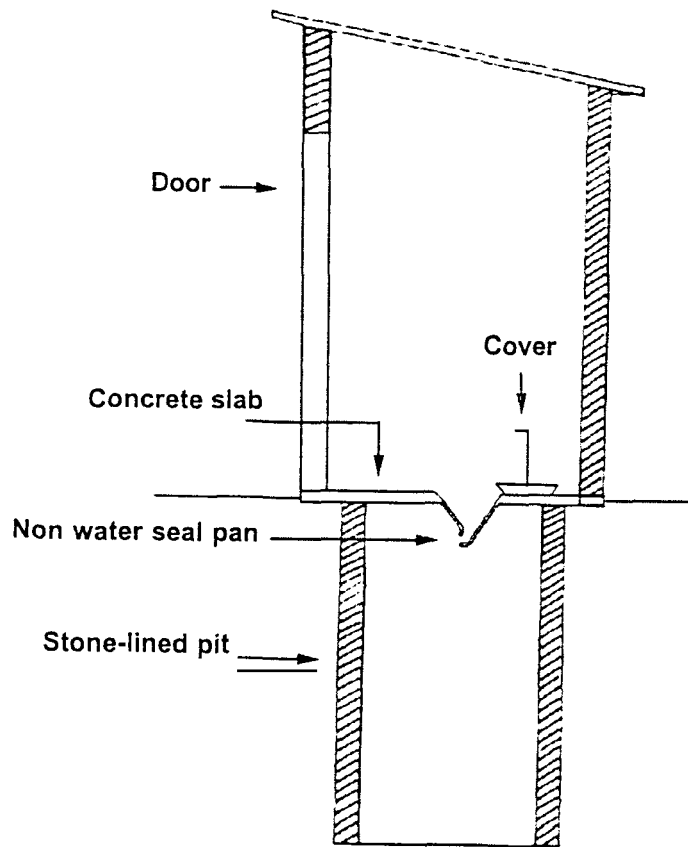


Figure 4: Cross-section of single pit latrine with circular concrete slab and non-water seal pan with cover.

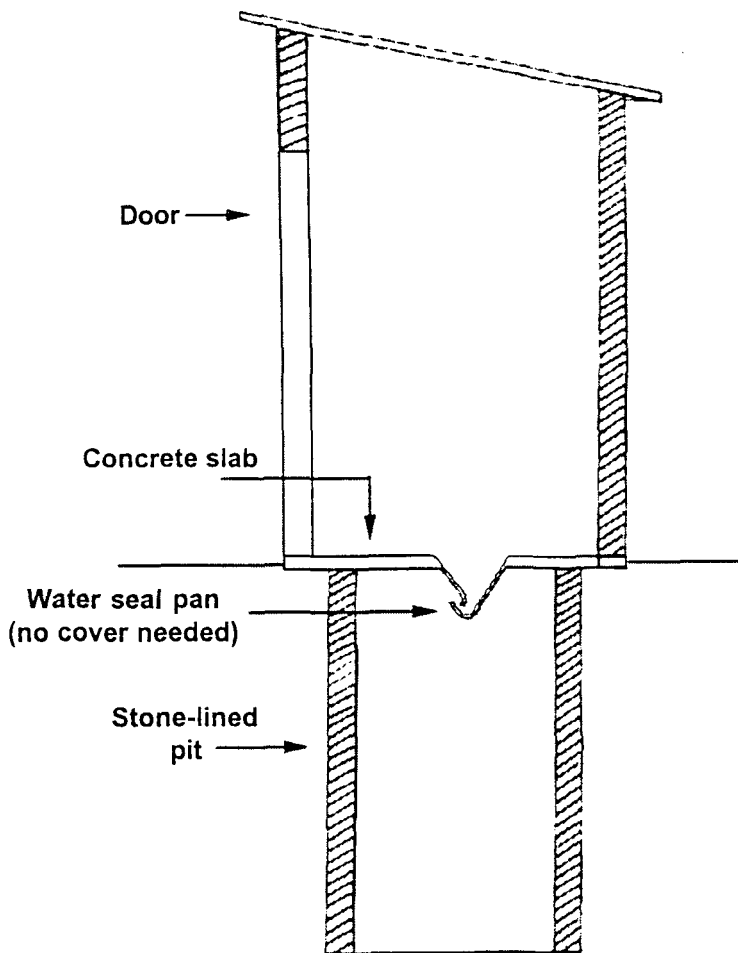


Figure 5: Cross-section of single pit latrine with circular concrete slab and water seal pan.

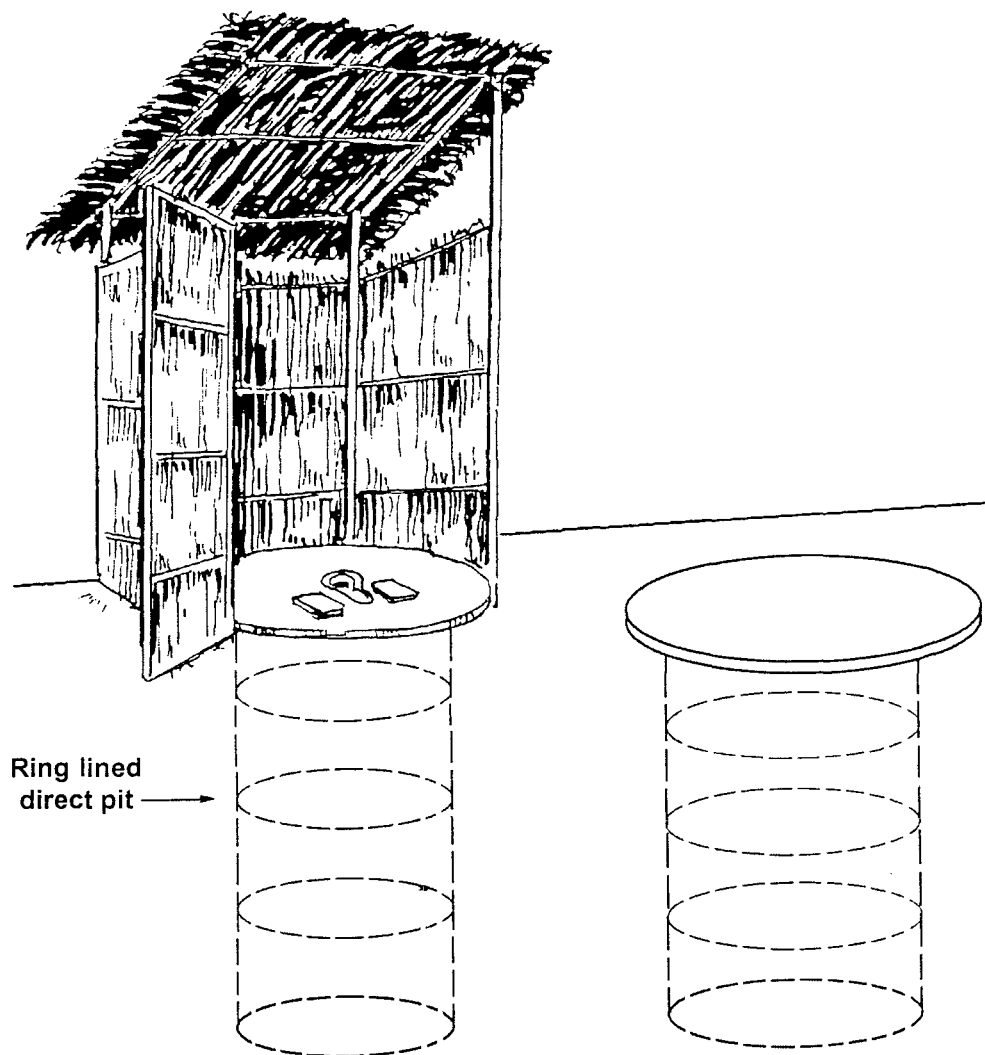


Figure 6: Twin pit direct latrine with a concrete ring pit lining system

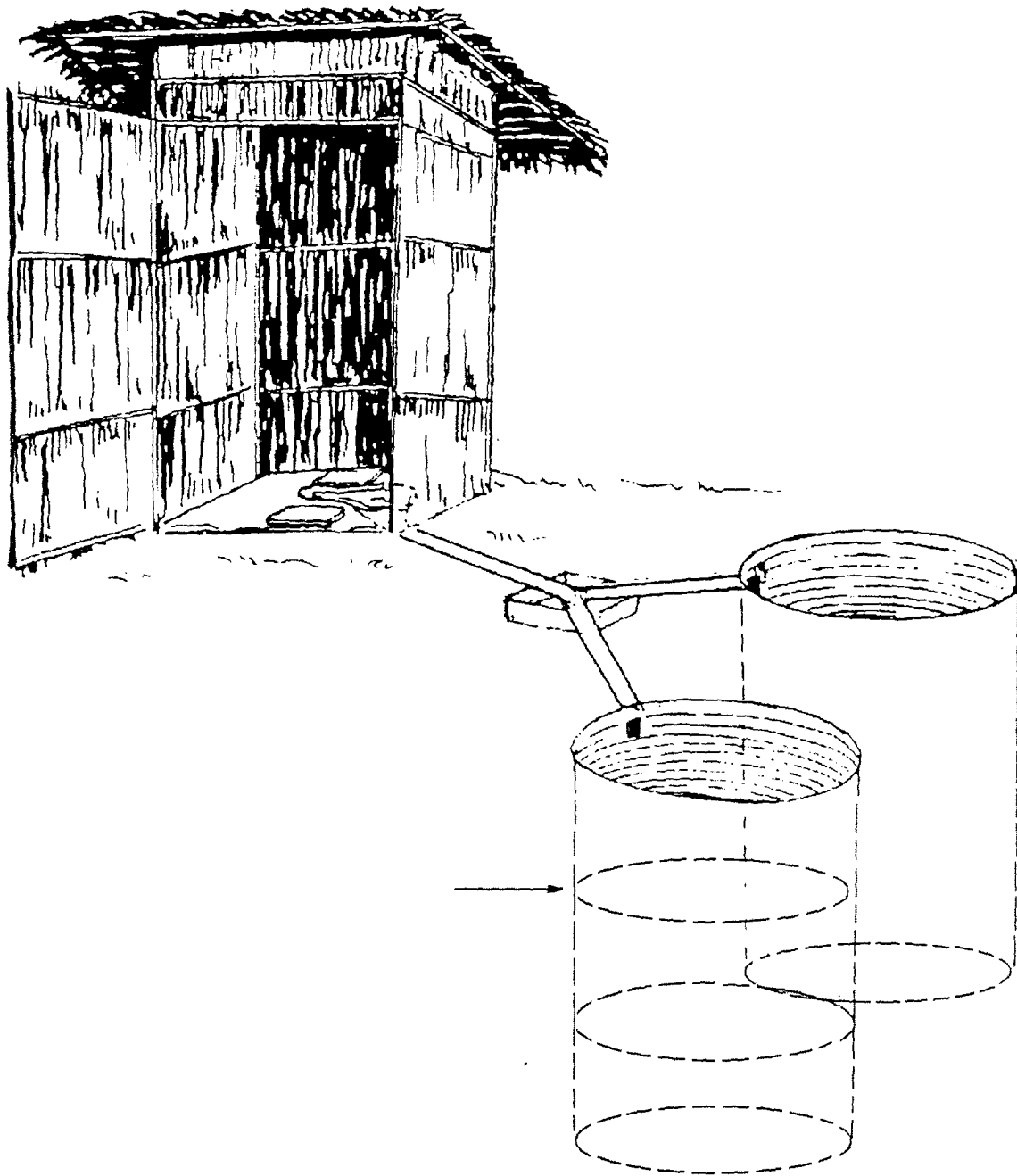


Figure 7: Twin pit offset latrine with a concrete ring pit lining system



ANNEX 3: TABLES

ANNEX 3A: TABLE OF PROJECTS

LIST NO.	NAME	DISTRICT/ REGION	DATE		TOTAL HHs	HHs INTERVIEWED			
			Start	Compl.		Total	With latrine		Had latrine previously
							No.	%	
HILLS									
1	Dhabuk	Syangja/W	1991	1992	107	104	53	60.6	9
2	Ramauli	Makwanpur C	1991	1992	54	49	15	32.7	17
3	Tamaphock	Shankuwasasna /E	1992	1993	52	47	41	87.2	6
4	Dhanabang A	Dang/MW	1992	1993	102	102	22	21.6	23
5	Rambeni A	Shankuwasasna /E	1992	1993	192	174	119	68.4	16
6	Arjun Chaupari	Syangja/W	1993	1994	179	179	115	64.2	32
7	Lankhu Deurali ²	Parbat/W	1993	1994	33	33	31	93.9	2
8	Ramghatar	Syangja/W	1993	1994	148	140	38	62.9	7
9	Karamkot	Dang/MW	1993	1994	59	59	16	27.1	37
10	Ranibari	Dhading/C	1993	1994	213	209	111	53.1	31
11	Rambeni B	Shankuwasasna /E	1993	1994	47	45	24	53.3	9
12	Chaintar ²	Khotang/E	1993	1994	35	32	29	90.6	1
13	Dhuwakot	Dhading/C	1993	1994	160	154	38	57.1	14
14	Goganpani	Dhading/C	1994	1995	80	76	43	56.6	11
15	Dhangbang	Dang/MW	1994	1995	79	75	26	34.7	2
16	Alayachaur	Surkhet/MW	1994	1995	141	141	23	16.3	28
	Total/Av.				1691	1619	855	52.8	245 (242)⁴
TERAI									
1	Bhandara	Chitwan/C	1990	1991	705	263	115	43.7	9
2	Beltar	Udayapur/E	1991	1992	166	55	27	49.1	3
3	Mahendra- nagar ¹	Dhanusha/C	1991	1992	1160	387	15	4.1	0
4	Bhagwanpur ²	Siraha/E	1991	1993	201	77	1	1.3	0
5	Bansbari	Morang/E	1993	1994	119	47	10	21.3	1
6	Dododhara	Kailali/FW	1993	1994	449	118	29	24.6	39
7	Khailad ³	Kailali/FW	1993	1994	295	106	1	0.9	15
8	Sadepani	Kailali/FW	1994	1995	614	194	11	5.7	80
	Total/Av.				3709	1247	210 (208)⁵	16.8	147

¹Supported by SFDP, no hygiene education conducted; ²omitted from data set 'without a latrine'; ³omitted from data set 'with a latrine'; ⁴number analysed in data set 'without a latrine'; ⁵number analysed in data set 'with a latrine'

HHs = households, FW = Far Western; MW = Mid Western; W = Western; C = Central; E = Eastern Region

ANNEX 3B: TABLES OF VALUES

Table 1: Number of Latrines

NUMBER OF LATRINES	HILLS		TERAI	
	Latrine now	Latrine previously	Latrine now	Latrine previously
Have/had latrine? ¹				
Yes	52.8	15.1	16.8	11.7
First latrine? ²				
Yes	71.5	-	61.6	-
Built when? ²				
Before project	17.7	17.4	33.4	8.5
During project	71.3	73.4	30.2	76.2
After project	11.1	9.1	36.5	15.3

¹Percentage of total HHs interviewed; ²Percentage of those with latrine plus with latrine previously

Table 2: Reasons for Building or Not Building a Latrine

REASONS FOR LATRINES	HILLS			TERAI		
	Latrine now	Latrine previously	No latrine	Latrine now	Latrine previously	No latrine
If no latrine, do you want to build?						
Yes	-	87.8			86.3	
Reasons for building/wanting to build ¹						
Convenience	58.0	52.4	57.2	66.5	51.9	56.8
Cleanliness	69.2	55.4	63.2	66.0	52.8	57.9
Health	38.8	16.2	35.5	46.9	42.3	25.3
Privacy	12.6	15.2	12.6	9.2	18.9	14.6
Pressure from others	3.0	3.6	0.7	0	1.9	1.2
To have subsidy	3.4	3.4	1.5	0	0	0.3
Don't know	2.7	4.4	4.6	1.2	5.4	7.5
Other ²	1.2	2.2	3.1	1.3	0.4	3.0
Reasons for not building ¹						
Not needed			34.1			39.6
Too expensive			12.0			15.2
Knowledge inadequate			14.1			11.9
Materials not available			12.4			6.5
Don't like idea			1.4			3.6
Smelly			1.0			2.0
No land			7.8			17.6
No manpower			23.4			11.9
Other ³			16.1			18.3

¹Multiple answers allowed; ²Other includes avoidance of wild animals and snakes; ³Other includes living alone, using someone else's, not in the house at the time of the project, fear that a simple pit won't last but a lined pit is too expensive, and no one else has built a latrine

Table 3: Latrines: Types of latrine and components

LATRINE DETAILS	HILLS			TERAI		
	Latrine now	No latrine now		Latrine now	No latrine now	
		Had previously	Never had		Had previously	Never had
Type of latrine¹						
Single pit, rectangular slab + cover	30.7	24.5	-	0	1.6	-
Single pit, rectangular slab + pan + cover	20.5	11.0	-	1.7	1.6	-
Single pit, circular slab + cover	6.7	0	10.7	0.2	0.7	1.1
Single pit, circular slab + pan + cover	0.5	7.8	6.9	5.8	0	0.8
Single pit offset, slab +pan + cover	7.9	1.9	24	0.3	0	2.9
Twin pit direct, ring system	0.3	6.5	1.1	0.7	0	3.6
Twin pit offset, ring system	0	0	13.1	14.2	0	26.6
Single pit ring system	0	0	-	19.8	4.3	-
Simple pit	28.7	47.5	35.2	55.8	91.9	48.4
Latrine with bio-gas	2.1	0	-	0	0	-
Don't know	-	-	5.1	-	-	12.0
Other ²	2.6	0.8	4.0	1.7	0	4.5
Type people prefer (PRA)						
Single pit direct		0			0	
Single pit offset		26.7			0	
Twin pit offset		54			100	
Simple pit		13			0	
Other ³		3			0	
Type of squatting slab						
Water seal pan	14.9			37.4		
Non-water seal pan with cover	15.1			6.5		
Direct hole with cover	44.4			3.8		
Other ⁴	25.6			52.3		
Water seal functioning⁵						
Yes	74.3			90.5		
Cover used properly⁶						
Yes	32.6			49.6		
Type of superstructure (have/desired)						
Permanent	26.6		58.0	17.9		34.9
Improved temporary	17.3		39.8	31.7		57.5
Temporary	42.2		-	43.9		-
None	13.1		-	3.3		-
Other ⁷	1.7		2.2	2.3		7.6

¹For those without, percentage of those who want to build (four types omitted); ²Other includes septic tank, proper bathroom, offset using local materials; ³Other is septic tank; ⁴Other mainly simple pit built with local materials and thus no cover; ⁵Percentage of those with water seal; ⁶Percentage of those with cover; ⁷Other includes fixed bathroom, affordable.

Table 4: Existing Latrine Pits: Lining Materials and Rate of Filling

PIT DETAILS	HILLS	TERAI
Pit lining		
Concrete ring	0.4	39.7
Stone	54.8	0.9
Brick	0.8	2.8
Bamboo mat	2.3	5.4
None	37.1	37.3
Hard rock area	1.3	3.3
Other ¹	3.2	10.7
Size of pit		
Average no. of rings 1-2	-	9.3
3	-	18.0
4	-	18.9
5	-	53.9
or.....Depth of pit <1m	8.9	11.5
1-2 m	41.0	63.8
>2m	50.1	24.8
Inside diameter pit <1m	74.3	78.9
>1m	25.7	21.1
Has the pit filled already?		
Yes	37.8	48.2
How long did it take?		
<1 yr	12.7	60.7
1-2 yrs	43.9	21.6
2-4 yrs	34.5	10.6
4-6 yrs	3.9	1.0
>6 yrs	5.0	6.2
How long did you leave it?		
<6 months	25.5	62.9
6-12 months	3.4	3.8
13-18 months	4.2	0.7
19-24 months	66.9	32.7
>24 months	0	0

¹Other includes wood, hollow trunk, and timber

Table 5: Latrines: State and Use

LATRINE STATE AND USE	HILLS		TERAI	
	Latrine now	Latrine previously	Latrine now	Latrine previously
Clean and sanitary?				
Yes	43.0		43.6	
Still in use?				
Yes	96.9		97.8	
Throughout the year	96.9		93.6	
Seasonally	1.3		4.2	
Other ¹	1.8		2.2	
Reason why not or only sometimes in use				
Not functioning	33.3		12.5	
Flies	0		0	
Smelly	19.0		0	
Pit fills with water in rainy season	7.6		50.0	
Cultural	0		0	
Don't like design	2.9		0	
Other ²	37.1		37.5	
If in use, functioning properly?				
Yes	80.8		93.6	
If abandoned, why?				
Don't like design		4.2		1.9
Not functioning		86.2		84.8
Other ³		9.6		13.3
How long did you use it?				
Average months		31		19
If not functioning (properly), because				
Pit filled	2.0	14.3	0	38.2
Pit collapsed	26.9	30.6	12.5	41.0
Superstructure collapsed	55.3	55.5	50.0	20.9
Other ⁴	15.8	0.9	37.5	0
If not working, why not repaired?				
Don't know how	1.1	8.4	4.0	16.1
No materials	7.2	11.0	28.0	37.4
No money	10.4	16.4	0	9.5
No manpower	73.2	46.0	44.0	30.7
Other ⁵	8.1	18.1	24.0	6.4

¹Other includes migration; ²Other includes work too far away; ³Other includes migration, separation from the family, latrine on someone else's land, and preferring to use the jungle; ⁴Other includes rat trenching, mud inflow, tree fell on it, direct flushing without pit or pit leads into water, still under construction, and destroyed by children; ⁵Other includes rainy season, waiting to build a better one, and don't want to use it.

Table 6: Who Uses Latrines

WHO USES LATRINES	HILLS			TERAI		
	Latrine now			Latrine now		
Do all family members use latrine?						
Yes	56.2			71.9		
Who doesn't?						
Older people (>50 yrs)	1.1			7.2		
Women	2.9			0		
Men	2.6			6.0		
Children under 3 yrs	91.1			86.8		
Other	2.3			0		
Reasons why don't use	Older	Women	Men	Older	Women	Men
Not comfortable	33.3	30.0	25.0	0	-	0
Too far from home	0	0	25.0	0	-	0
Culture	0	0	0	0	-	0
Habit	16.7	0	50.0	50.0	-	50.0
Cannot go in latrine	0	20.0	0	0	-	0
Other	50.0	50.0	25.0	50.0	-	50.0
Dispose of children's faeces where?						
In latrine	46.9			44.8		
In manure pit	28.6			33.1		
Give to animal	10.6			12.5		
Other ¹	13.9			9.7		

¹Other includes do nothing, and throw far away

Table 7: Disposal and Use of Pit Contents

PIT CONTENTS	HILLS	TERAI
After pit filled, pit		
Left	88.2	51.5
Emptied	11.8	48.5
Who emptied?		
Household member	100.0	51.4
Outsider	0	48.6
Contents		
Used as fertilizer	8.2	14.5
Tree planted over pit	26.9	9.0
Pit left	61.0	39.0
Other ¹	3.9	37.5

¹Other includes moving into a new pit and throwing into a canal or stream

Table 8: Upgrading of Latrines

LATRINE UPGRADING	HILLS		TERAI	
	Completed	Desired	Completed	Desired
Latrine upgraded?				
Yes	6.5	-	12.1	-
Type of upgrading				
Vent pipe	7.3	4.7	27.5	2.5
Ceramic pan	29.3	14.4	22.5	7.4
Offset type (single pit)	23.4	21.1	32.5	12.7
Attached bathroom	2.3	-	7.5	-
Extra pit added/twin pit offset	9.7	27.5	28.5	51.6
Permanent superstructure	52.7	47.5	35.0	43.1
Other ¹	11.3	11.0	5.0	9.5

¹Other includes adding a door, plastering, and attaching a bathroom

Table 9: Support for and cost of construction

SUPPORT and CONSTRUCTION COSTS	HILLS	TERAI
	Latrine now	Latrine now
Who helped build?		
NEWAH	59.0	7.8
UNICEF	0	2.1
Red Cross	0	0
DWSS	0	3.3
VDC	0.8	0
Other agency	0	0
Bought from market	4.4	19.4
Built myself	27.1	55.9
Other ¹	9.1	11.5
Cost of latrine components		
<NRs.200	80.5	55.5
NRs.201-500	16.5	10.9
NRs.501-1000	2.8	26.4
>NRs.1000	0.2	7.3
Cost of construction		
Nothing	64.1	55.9
<NRs.500	15.4	10.8
NRs.501-2000	13.9	21.5
>NRs. 2000	6.7	11.8
Type of support wanted	Want to build	Want to build
Technical advice	42.5	35.2
Material subsidy	47.3	37.9
Cash	23.8	38.7
Other ²	9.3	12.9

¹Other not defined; ²Other includes includes labour, ceramic pans, cement for installation, and land



ANNEX 4: QUESTIONNAIRE

Name of the Household:

Name of the Interviewee:

Relation with head of household:

Ward No.:

Tap No.:

Name of the Interviewer:

Date:

A. Questionnaire for households with a Newah, other agency, or self constructed latrine**1. How many persons in your household?**

- i) No. of persons
- ii) No. of persons now living in the house

2. When did you build your first latrine?

- i) Before Newah
- ii) During Newah
- iii) After Newah

a. Is the existing latrine your first latrine?

- Yes
- No
- Don't know

3. Which type is your present latrine? {One answer only} (HH interview and latrine observation)

- i) Single pit with rectangular slab with cover
- ii) Single pit with rectangular slab pan with cover
- iii) Single pit with circular slab cover
- iv) Single pit with circular slab pan with cover
- v) Single pit offset concrete slab / pan with cover
- vi) Twin pit direct ring system
- vii) Twin pit offset ring system
- viii) Single pit ring system
- ix) Simple pit latrine
- x) Latrine with bio-gas
- xi) Other please specify

**4. Which type of squatting slab do you have? (HH interview/observation)
One answer only**

- i) Water seal pan
- ii) Direct hole with cover
- iii) Non water seal pan with cover
- iv) Other please specify

***a. If 4 i), is the water seal functioning?* (HH interview/observation)**

- Yes
- No

***b. If 4 ii) or 4 iii), is the cover used properly?* (Latrine observation)**

- Yes
- No

5. Is the latrine clean?

(Latrine observation)

Yes No

(e.g. excreta outside or around the latrine slab, broom and bucket kept for cleaning latrine)

6. Why did you build your first latrine? (Multiple answers allowed)

- i) For convenience
- ii) For cleanliness
- iii) For health
- iv) For privacy
- v) By pressure of other (Project) (community) (within HH)
- vi) To get the subsidy
- vii) Don't know
- viii) Other please specify

7. Is latrine still in use & properly functioning?

(HH interview/observation)

(No, only those who do not use at all)

7a. **In use** Yes No 7b. **If Yes,**

- 7bi) Throughout the year
- 7bii) Seasonally (Give the reason why not using always:)
- 7biii) Other, specify

7c. **If No, or Yes but 7b ii) or 7b iii) (i.e. using only sometimes)****Give the reason why? (Main reason 1 and second reason 2))**

- i) Not functioning
- ii) Lots of flies
- iii) Smelly
- iv) Pit becomes full of water during rainy season
- v) Cultural
- vi) Do not like the designs
- vii) Other please specify

7d. **Is the latrine functioning properly?**Yes No 7e. **If No, Give the reason why** (main reason only)

- i) Pit filled
- ii) Pit collapsed
- iii) Superstructure collapsed
- iv) Other, please specify

7f. **If not functioning why haven't you repaired it?** (main reason only)

- i) Don't know how
- ii) No materials
- iii) No money
- iv) No manpower
- v) Other

8. If latrine in use, do all family members use the latrine?

Yes No

- a. ***If No, who does not use latrine?*** (Multiple answers allowed)
- i) Older (over 50 yr.)
 - ii) Women
 - iii) Men
 - iv) Small children, babies (below 3 yr.)
 - v) Other
- b. ***If 8. i), what is the main reason for not using a latrine for older?***
(Give one answer only)
- i) Not feel comfortable
 - ii) Latrine is far from home
 - iii) Culture (reporter should note how, type of culture)
 - iv) Habit
 - v) Cannot go in latrine
 - vi) Other, please specify
- c. ***If 8. ii), what is the main reason for not using a latrine for women?***
(Give one answer only)
- i) Not feel comfortable
 - ii) Latrine is far from home
 - iii) Culture (reporter should note how, type of culture)
 - iv) Habit
 - v) Cannot go in latrine
 - vi) Other, please specify
- d. ***If 8. iii), what is the main reason for not using a latrine for men?***
(Give one answer only)
- i) Not feel comfortable
 - ii) Latrine is far from home
 - iii) Culture (reporter should note how, type of culture)
 - iv) Habit
 - v) Cannot go in latrine
 - vi) Other, please specify
- e. ***If 8. iv), what do you mainly do with children's faeces?*** (Give one answer only)
- i) Put in latrine
 - ii) Put in manure pit
 - iii) Give to pig/dog/ chicken
 - iv) Other, please specify

9. Which type of superstructure did you build?

(HH interview)
(One answer only)

- i) Permanent type (used stone/brick/concrete block)
- ii) Improved temporary (used bamboo/wood/mud)
- iii) Temporary (used sack/leaves, etc.)
- iv) None
- v) Other please specify

10. Which material did you use for the lining. (HH interview/observation)
Main answer only

- i) Concrete ring
- ii) Stone
- iii) Brick
- iv) Bamboo mat
- v) None
- vi) Hard rock area
- vii) Other please specify

11. Size (volume) of pit. Answer a) or b1) and b2) or c) (HH interview/ observation)
(tick the correct

one) **a. Average no. of rings in each pit**

- i) 1 - 2 rings
- ii) 3 rings
- iii) 4 rings
- iv) 5 rings

b1) Depth of pit in metres (if not used concrete ring)

- i) < 1 metre
- ii) 1 - 2 metres
- iii) > 2 metres

b2) Inside to inside diameter of pit (except thickness of lining)

- i) < 1 metre
- ii) > 1 metre

c) Bio-gas (Only mark)

12. Has your pit been filled once already

Yes No Don't know

a. If Yes, how long does it take to fill the pit (in years)

- i) < 1 yr.
- ii) 1 - 2 yrs.
- iii) 2 - 4 yrs
- iv) 4 - 6 yrs
- v) > 6 yrs

b. If your pit has filled already, for how long did you leave the latrine after the pit filled.

- i) < 6 months,
- ii) 6 - 12 months
- iii) 13 - 18 months
- iv) 19 - 24 months
- v) > 24 months

c. What did you do with the full pit?

- i) Left
- ii) Emptied

d. If pits are being emptied who empties the full pit? (Main answer only)

- i) Household member (male, female, child), tick the right one
- ii) Outsider (male, female, child), tick the right one
- iii) Other please specify

13. What did you do with the contents of the pit? (One answer only)

- i) Fertilizer use in field
- ii) Planted tree over pit
- iii) Just left in pit
- iv) Other please specify

14. Have you upgraded your latrine?

Yes No

a. If Yes, in what way? (Multiple answersw allowed)

- i) Vent pipe
- ii) Ceramic pan
- iii) Offset type
- iv) Attached bathroom
- v) Extra pit added
- vi) Permanent superstructure
- vii) Other please specify

b. What are the ways you could (still) improve your latrine? (Multiple answers)

- i) Fix a vent pipe
- ii) Twin pit offset latrine
- iii) Single pit offset latrine
- iv) Ceramic pan
- v) Permanent superstructure
- vi) Other please specify

15. What organization helped you build the latrine, or how did you build it? (Main answer only)

- i) Newah
- ii) Unicef
- iii) Red Cross
- iv) DWSS
- v) VDC
- vi) Other agency, please specify
- vii) Bought from market
- viii) Built myself
- ix) Other please specify

a. What was the price of your latrine

- i) Latrine components

< Rs. 200 Rs 201 - 500 Rs 501 - 1000

> Rs. 1000.

- ii) Construction (materials + labour)

Nothing < Rs. 500 Rs. 501 - 2000

> Rs. 2000

B) Households who do not have latrine (including those who had one before)**1. How many persons in your household?**

- i) No. of persons
- ii) No. of persons now living in the house

2. Did you ever have a latrine?

Yes No

If No, go to Question No. 4

a. If Yes, when was it built

- i) Before Newah
- ii) During Newah
- iii) After Newah

b. If Yes, which type did you built

- i) Single pit with rectangular slab with cover
- ii) Single pit with rectangular slab pan with cover
- iii) Single pit with circular slab cover
- iv) Single pit with circular slab pan with cover
- v) Single pit offset concrete slab / pan with cover
- vi) Twin pit direct ring system
- vii) Twin pit offset ring system
- viii) Single pit ring system
- ix) Simple pit latrine
- x) Latrine with bio-gas
- xi) Other please specify

c. What was your main reason for building a latrine? (Multiple answers)

- i) For convenience
- ii) For cleanliness
- iii) For health
- iv) For privacy
- v) By pressure of other (project) (community members) (within HH)
- vi) To get subsidy (tick correct one)
- vii) Don't know
- viii) Other please specify

3. How long did you use the latrine? (in months)

_____ months

a. Why did you remove the latrine?

- i) Did not like the design
- ii) Not working
- iii) Other please specify

b. If not working (Main reason only)

- i) Pit filled
- ii) Pit collapsed
- iii) Superstructure collapsed
- iv) Other please specify

c. ***If not working why didn't you repair*** (main reason only)

- i) Don't know how
- ii) No materials
- iii) No money
- iv) No manpower
- v) Other

4. **Why did you not built a latrine?** (Mark main reason 1, second reason 2)

- i) Don't feel latrine is needed
- ii) Too expensive
- iii) Do not know about latrine
- iv) Materials are not available
- v) Do not like the idea (culture)
- vi) Latrines are usually smelly
- vii) Have no land
- viii) Have no manpower
- iv) Other please specify

5. **Would you like to build a latrine?**

Yes No

a. ***If Yes, what is your main reason to like build a latrine***

(Multiple answers allowed)

- i) For convenience
- ii) For cleanliness
- iii) For health
- iv) For privacy
- v) By pressure of other (Project) (community members) (within HH)
- vi) To get subsidy (tick correct one)
- vii) Don't know
- viii) Other please specify

b. ***Which type would you like***

- i) Single pit with concrete slab / pan with cover
- ii) Single pit offset concrete slab with cover / pan
- iii) Twin pit direct ring system
- iv) Twin pit offset ring system
- v) Simple pit latrine
- vi) Don't know
- vii) Other please specify

c. ***Which superstructure do you want?*** (Main answer only)

- i) Pakki (permanent superstructure)
- ii) Non permanent
- iii) Other, please specify

6. **What type of support would you prefer?**

(Multiple answers allowed)

- i) Technical advice
- ii) Material subsidy
- iii) Cash
- iv) Other please specify

C. Questions to be asked during the PRA session

1. How many latrines at present?

(MM/Key informant)

- No. of latrines

2. How many latrines constructed during project period?

(MM/Key informant)

- No. of latrines

3. Has no. of latrines increased since the project period?

(File/Key informants)

Yes No

a. If Yes, by how many?

b. What is the main reason for latrine construction since project completion?

(main reason only)

- i) Influenced by the Newah programme (increased awareness through health education)
- ii) Family separated
- iii) Help from other agencies
- iv) Self motivated
- v) Other please specify

4. Has the number of latrines decreased since the end of the project period?

Yes No

a. If Yes, by how many?

b. What is the main reason for the reduction in the number of latrines?

(main reason only)

- i) Pit filled
- ii) Pit collapsed
- ii) Superstructure collapsed
- iii) No manpower to maintain the latrine
- iv) Other please specify

5. What is the main problem with the Newah latrine?

- i) -
- ii) -
- iii) -

6. Which type of latrine do you think people would prefer to have

- i) Single pit direct
- ii) Single pit offset
- iii) Twin pit offset
- iv) Simple pit
- v) Other

7. Type of ethnic group resident in this area.

- | | | |
|------|--------------------------------|---------|
| i) | Lower cast (Sharki/Kami etc.) | % |
| ii) | Tharu/Chaudhary | % |
| iii) | Mongol (Gurung/Magar/Rai/Lama) | % |
| iv) | Brahman/Chhettri | % |
| v) | Terai people (specify) | % |
| vi) | Other please specify | % |

8. Duration of health education during the project period

- | | |
|------|-------------|
| i) | 1 year |
| ii) | 1 1/2 years |
| iii) | 2 years |

9. Health motivators (tick as many as needed and indicate the number of persons)

- | | |
|------|----------------|
| i) | Male _____ |
| ii) | Female _____ |
| iii) | Outsider _____ |
| iv) | Local _____ |

10. Health education training held by Newah during the project period (File/Note
down after ex HM asked)
(Give details of who received the training and approx. length)

- | | |
|-----|---|
| i) | - |
| ii) | - |
| ii) | - |

11. Other important information.

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