



**World Health  
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**CASE STUDY  
ON  
COMMUNITY ATTITUDES  
TOWARDS PUBLIC  
AND  
PRIVATE TOILETS,  
MALDIVES**

**New Delhi, India  
1985**

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## FOREWORD

This publication is based on a **Case Study of Community Attitudes towards Public and Private Toilets in the Maldives**. The three-month study involved five islands - Thulusdoo, Naifaru, Hinnavaru, Kadholhudhoo and Tuladhoo - with a combined population of a little under 10,000. In all, some 228 villagers were interviewed, representing as broad a cross-section as possible of the island communities.

These interviews, along with group discussions, model demonstrations, observations and informal household visits have enabled the study team to assemble a comprehensive picture of sanitation practices and attitudes, which will have application not only throughout the 200 inhabited islands of the Maldives group, but also in other island communities with similar sanitation problems.

Proposals are outlined for future toilet programmes, drawing on the experiences of the Maldives Water and Sanitation Authority (MWSA) in implementing earlier programmes, and on the views of island people and their leaders revealed by the survey. An important outcome of the study has been the development of a new design for a community toilet. The Maldives CW4 toilet has a central well serving four compartments, and combines privacy and ready access to water with easy cleaning, good ventilation and natural light. It thereby overcomes many of the factors inhibiting greater use of public toilets in the Maldives.

The Maldives study was funded by a grant from UNDP's International Drinking Water Supply and Sanitation Decade Advisory Services Project and executed by the South-East Asia Regional Office (SEARO) of WHO.



### A NOTE FROM THE AUTHOR

In the long term, the best way of combating diarrhoea epidemics in the Maldives atolls is to encourage as many people as possible to build household toilets. The people recognize the health benefits of proper sanitation; they want to own their own toilets; and they are very willing to build them for themselves.

Private toilets are the only safe facilities which people will use during diarrhoea, when the disease itself makes journeys to public toilets or the beach difficult or impossible. The alternative of using the house compound or gifili is the fastest way to spread the disease, as it rapidly contaminates the shallow groundwater.

✓ The ultimate target of any health improvement strategy, therefore, should be maximum use of appropriate household toilets. Unfortunately present private toilets are far from appropriate. The flush toilets waste precious water and also lead to contamination. So promotion of household facilities must await development of suitable dry toilets, perhaps based on the Maldives Ash Latrine or the sealed-pit toilets now on trial.

When proven designs are available, government and external support agencies should seek ways of helping people to overcome the two things which hold them back now - lack of money; and no relevant construction training. Subsidies on toilet components and a revolving fund to help overcome financial constraints will need to be backed by training courses for willing individuals.

Meanwhile, a great deal can be done to improve the design, construction, and use of communal toilets. The people have demonstrated very clearly that they want to use cleaner, safer, more private facilities than the beach or gifilis. But community toilets have not yet been able to offer a proper alternative.

Two options have emerged from this case study. The Maldives CW4 Toilet is a four-compartment building with a central well providing water inside each compartment. It is spacious, light and airy, easy to clean, and so overcomes many of the shortcomings of the present design. A simpler and lower-cost alternative is a development of the Divehi Fakhana, a short wooden jetty extending over the sea, with a simple hole-in-the-floor seat and a tin container on a rope for washing water. Both designs were enthusiastically received by the island people, who contributed substantially to their development; and together they offer the opportunity to design toilet programmes to suit the wishes of the islanders and the funds available.

Getting the technology right is an important part of any future toilet programme, but it is not the only element. In the past, there have been many problems in implementing the programmes, and inconsistencies in the policy on different islands.

The Maldivian people want to improve their sanitation facilities; and they have a long tradition of public participation. On the other hand, toilet programmes must run alongside other community projects to build mosques, schools, etc. The case study has identified a number of things which went wrong with the previous programmes, and recommended a package of community participation and education, government technical support, and fixed financial arrangements, which aims to maintain the villagers' motivation throughout the programme.

The strategy recognizes the difficulties in recruiting qualified personnel, and is based on the proposed long-term organizational structure of the Maldives Water and Sanitation Authority. The Atoll Water and Sanitation Programme will be staffed by a civil engineer, 4 construction supervisors, 4 craftsmen, and 2 trainees, supported by two boats and crews.

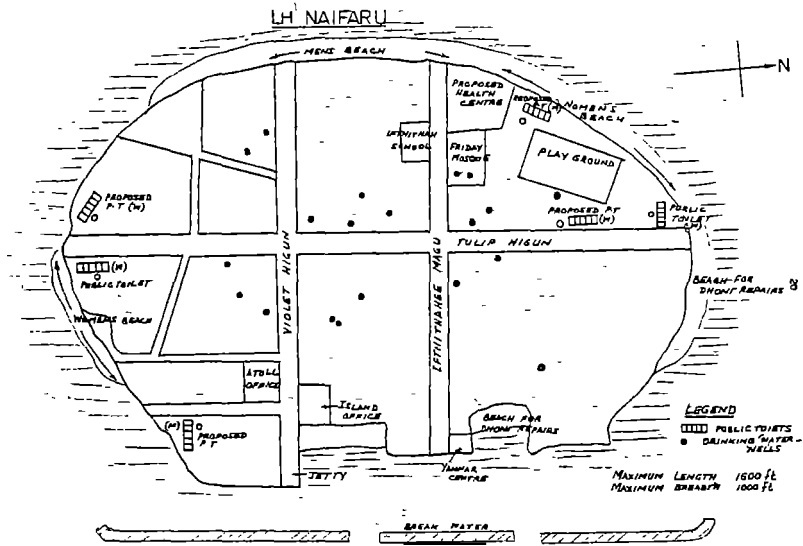


Cooperation with other government departments, with private non-governmental organizations, and with individual island authorities will be essential, and will help MWSA to cope with project support and follow up.

Convenience, easy access to water, privacy and cleanliness are the factors most influencing the choice of sanitation facilities in the atolls. This means that there must be enough toilets close to people's homes, they must be properly designed, and facilities must be available for keeping them clean. If these targets can be achieved, this case study suggests that the community toilet programme could have a dramatic impact on diarrhoea incidence in the atolls.

For the island people who shared their valuable and stimulating thoughts with us, that would be a just reward.

**Deepa Narayan-Parker**  
**Chief Investigator**



Naifaru, population 3,127, is one of the five Maldivian islands which provided data for this case study. Its maximum length of 450m and width of 300m mean that, as on the other islands, no-one is far from the sea. The flat coral islands rely on shallow groundwater as the only drinking water source. Historically, the beach has been the islands' sanitation facility, with separate stretches earmarked for men and women. On the crowded islands, this practice has become unsatisfactory and attempts have been made to introduce communal toilets. Early results have been disappointing. This case study set out to discover why.

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## SUMMARY

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### 1. Sanitation in the Maldives

There are four common methods of human waste disposal practised in the Maldives, and from a health standpoint all of them are risky. About half of the people interviewed for this case study used the beach for defecation. Some 18% of the sample had access to their own or someone else's private toilet. Another 13% used the gifili (a section of the household compound containing the water well, also used for bathing and washing of cooking utensils and clothes). Of the remainder, 16% were regularly using the community toilets installed since the Maldives Water and Sanitation Authority (MWSA) was created as a department of the Ministry of Health in 1973, while the final 3% used a variety of other means.

#### 1.1 The Beach

On the less-crowded islands of the Maldives, and provided it is accompanied by good health education, beach defecation followed by burying of the excreta remains an appropriate option. On the more crowded islands included in this survey, it is causing increasing problems and cannot be seen as a satisfactory long-term solution. Though specific beaches are designated for the purpose, space is restricted, there is little privacy, and unburied faeces are a clear health risk.

Use of the beach is a convenience as much as a tradition; the study found much less of a commitment to the beach than had been expected, with 22% of the interviewees saying that they used it only because there was no alternative. Nevertheless, the feeling of space, breeze and light is important, and has to be taken into account in any future toilet programme. Early morning observations revealed that quite a number of people pass by unoccupied toilets in favour of the beach.

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Table 1. Sanitation Facilities Used by the Sample Group

Location	Urination		Defecation	
	%	number	%	number
Beach	38	100	50	124
Gifili	37	97	11	26
Gifili+sea disposal			2	4
Own Private Toilet	12	32	13	33
Others Private Toilet	3	8	5	13
Community Toilet	9	22	16	40
Other facilities	1	4	3	8
<b>TOTALS</b>	100	263	100	248

Before any specific questions were asked about sanitation practices, each of the 228 villagers who took part in the survey was asked to specify the type of facility most frequently used. The responses are shown in Table 1 (some respondents mentioned more than one type of facility).

## 1.2 Gifili

The gifili is a small marked-off area of the household compound, in which the well is usually located. Its most important use is for washing and bathing, and in some homes it is also the place in which firewood is stored and plants are grown. Within the gifili there may be a handusburi, or special area designated for defecation.

Those who use the gifili as the main sanitation facility do so for the privacy and because it is convenient, particularly during diarrhoea or other illnesses, during menstruation, and at night. Few people like using the gifili for defecation, many recognising that it is unhygienic and that it pollutes the groundwater or spreads disease.

A majority of those who do so told the interviewers that, after defecation, they go to the well to wash; only 38% carry water away from the well for washing. Washing near the well produces an obvious risk of spreading disease, something that the study suggests must be stressed more in health education programmes.

A worrying element to emerge is the increased use of the gifili for sanitation during diarrhoea. In all, some 29% of those interviewed said that they used either the gifili or the house compound in those circumstances. Convenience is then a major consideration, and the diarrhoea epidemics of recent years emphasize the need to find satisfactory hygienic alternatives close to houses.

## 1.3 Private Toilets

Every person interviewed would have liked to have a private toilet. In fact, just 35 of the 228 households had at least one toilet. All the others expressed a strong interest in building their own toilet, but lack of money prevented the vast majority from doing so.

Though there is a clear desire for private facilities, the toilets which do exist are far from satisfactory. The problem is that flush toilets connected to soakaways or septic

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tanks pollute the shallow groundwater, which is the only source of drinking water on the islands. The few sewered systems deplete the scarce resource; and frequent blockages contaminate the groundwater when pipes have to be dug up.

Before MWSA can take advantage of the obvious motivation of the people towards building private toilets, it will need to be sure that the right kind of toilet is being promoted. The Authority is closely following two promising designs:

- The Maldives Ash Latrine, developed by the International Human Assistance Programme (IHAP) on Raa Atoll, is a twin-vault composting toilet in which the waste decomposes in a sealed vault with ash added to it. Eventually, the contents of the vault can be removed and used as fertilizer. More trials are needed on social acceptability.

- A sealed-pit toilet presents no health risk, but obviously has a life limited by the size of the pit. MWSA has begun work on a pit toilet that is technically sound and socially acceptable in the Maldives, and one model has been built in Lamu Atoll in association with the Redd Barna Integrated Atoll Development Project.

Once these or other designs are proven, the survey has shown that a big majority of villagers (78%) would like to build their own toilets, if the right form of financial and technical help can be offered. The study recommends that a private toilet programme should run alongside the community toilet programme.

#### 1.4 Community Toilets

Recognizing the health hazards associated with each of the common sanitation methods used in the Maldives, MWSA began a programme to build community toilets in the atolls in the mid 1970s. Rows of five cubicles were built on the beach, facing in towards the island. Water for washing comes from a well in a compound outside the block.

By 1982, 16 toilets had been constructed on 8 islands, and it was already obvious that the programme had a host of



problems. The toilets were dirty and smelly; water containers were missing; doors were missing or jammed; distances were too great for many of the community; and outlet sewers were broken or too short, leading to beach pollution.

Use of the toilets was much lower than had been hoped, and MWSA decided to halt the programme pending an evaluation of the basic concepts. Following agreement between the Maldives Government and UNDP's IDWSS Decade Advisory Services Project, this evaluation, implemented by SEARO, got underway in February 1984. It was entitled "**Case Study of Community Attitudes Towards Public and Private Toilets, Maldives**".

The study has revealed that most villagers (97%) would use toilets (public or private) in preference to the beach or gifili if the facilities were designed and operated differently. Dissatisfaction with the existing toilets was related to cleanliness, the number of toilets available, access to water, and, to a lesser extent, the design and location of the toilets. Design is clearly important, however, as both cleanliness and water access can be improved by better design.

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*      beach or gifili if the facilities were         *
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Construction of the toilet blocks has been a big problem. With assistance from UNICEF and UNCDF, MWSA had originally planned to build a total of 126 toilets on 48 islands by the end of 1983. The idea was that the government should provide imported materials, like toilet seats and pipes, with the community itself carrying out the building

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work under MWSA supervision. Nearby crowded islands were chosen for the first few toilets, to make monitoring easy.

In reality, implementation has varied enormously from island to island, with MWSA providing different cash incentives, as community interest has waned for a number of reasons. Shortage of skilled staff within MWSA has meant that supervision has not always been available when needed, and villagers have been left to tackle problems for which they were not equipped. Though community participation is traditional and common in the Maldives, the toilets project has been less successful in maintaining interest and commitment than, for example, the building of schools or mosques.

The study identified a number of shortcomings in implementation policy which contributed to the disappointing results. As a recipe for more successful future programmes, it recommended:

- (a) Full community participation in project conception, site selection, design choice, operating and maintenance proposals, scheduling, and construction.
- (b) Delivery of materials should follow immediately after site selection.
- (c) A MWSA construction supervisor must be on the spot at the start of the project and at each crucial stage, such as plumbing or laying of seats. (It is unlikely to be practical for full time supervision to be arranged, but one supervisor covering three or four neighbouring islands seems feasible).
- (d) The policy on payment must be consistent. IHAP on Raa Atoll has a contract system for school building which might be a useful model. Another suggestion is for the island office itself to decide how it will spend the fixed amount of money paid over at the beginning of the project.
- (e) Links should be fostered with the Ministry of Education, to ensure the right health motivation.

MWSA has been disappointed at the number of people apparently using the toilets which have been completed. The study team, on the other hand, were encouraged that 18% of the sample survey claimed to be regular users despite the fact that there were only two blocks per island and that the people were critical of the design and condition of the toilets.

The conclusion reached was that with more toilets and a better design, villagers would use the blocks more and keep them clean.

The biggest problem with the existing toilets is the difficulty of keeping them clean. For the Islamic people of the Maldives, cleanliness is of fundamental importance, and the dirty toilet blocks are in stark contrast to the general tidiness of the islands, and the bathing frequency of the villagers themselves.

Directly linked to the cleanliness issue is the location of the well - at the end of the toilet block. In almost every case, no water containers were available, and anyway many people expressed embarrassment at the need to make two or three journeys from the cubicle to the well.

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*           "..with more toilets and a better
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*      design, villagers would use the blocks
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*           more and keep them clean."
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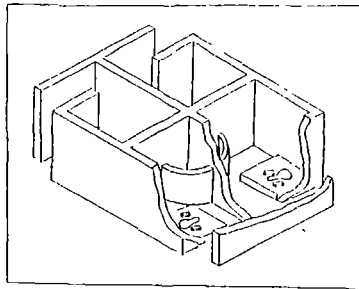
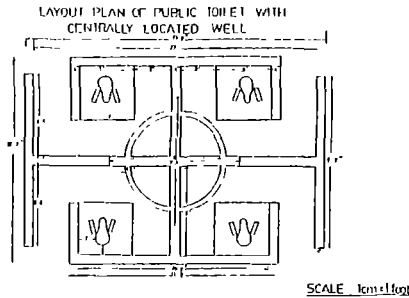
Lack of privacy was another frequent objection. The present toilets face inland and have a low outer compound wall. Tin doors have not proved successful; they rust and often have holes, frequently jam, and have ineffective latches. Overlapping walls have been introduced on one island (Naifaruru) with some success, though the women particularly felt strongly that any new design should include doors.

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Through the use of toilet models with interchangeable parts, the survey team stimulated considerable interest at group discussions in the development of new designs. The over-riding considerations were that water should be available inside each cubicle and that the materials used should ease cleaning of the cubicles.

Other parameters which emerged during the interviews and general discussions were:

- (a) Separate blocks should be provided for men and women.
- (b) Five cubicles per block is too many. Rarely are they all used.
- (c) Overlapping walls is a good idea, but some form of door is also required. Doors should be loose-fitting and, should they break, might be dispensed with or replaced with a plastic curtain once the habit of using community toilets has become established.
- (d) As far as possible, the sense of space and openness which attracts people to the beach should be replicated in the toilet design; the present cubicles are tiny, dark, and airless. A completely roofless toilet was not acceptable, though partial roofing providing shelter for the seat was.
- (e) Careful attention is needed in designing the discharge pipes to the sea. Seasonal currents are important, as waste may be washed back onto the beach. A reasonable gradient has to be provided to prevent blockages, and the length of the outfall pipe must be enough to prevent discharge of waste directly onto the shore. Pipes should extend sufficiently far into the sea to avoid the possibility of sewage washing back onto the beach at any time of year.
- (f) Walking distance is an important consideration in determining toilet use. More blocks are needed per island, situated centrally in each section.



ISOMETRIC VIEW

Though different islands favoured slightly different variations, there was considerable support for the four-compartment toilet with a single central well serving all four cubicles, designed by the WHO sanitary engineer and illustrated in the diagrams above. Villagers were enthusiastic enough to develop their own modifications between discussion sessions - a good indication that they saw a chance of their reservations about the present toilets being overcome.

Two possible roof types proved popular: twin strips sheltering the seats but leaving the rest of the cubicle open; or a large central hole slightly larger than the well to provide air and light and create a more spacious feeling.

The so-called Maldives CW4 toilet can be modified to suit the views of each island community.

### 1.5 Divehi Fakhana

A number of individuals with homes close to the beach have built their own sanitation facilities called Divehi Fakhanas. A wooden platform at the end of a 1.5-2m pier jutting out into the sea has makeshift walls to waist height and a central hole discharging directly into the sea. Water is obtained by lowering a tin container into the sea.

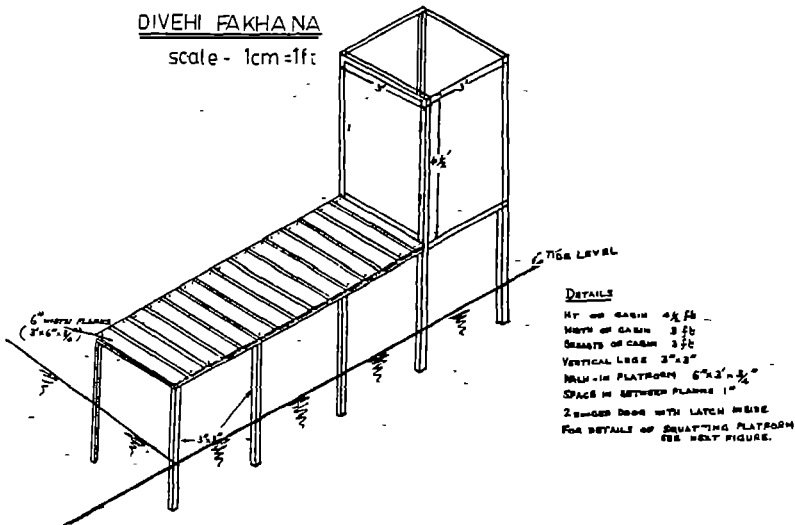
Even the crudely built structures which the survey team found on Kadholhudhoo, with their sacking or cardboard walls, were well used by the owners and their neighbours, especially the men and boys.

When the subject of an improved version of the Divehi Fakhana was raised at group meetings on two islands (Kadholhudhoo and Thuladhoo), it was very well received. Both men and women saw great merit in the simplicity of construction - the complete structure can be built in one or two days, and will last for two years. And the proximity to the friendly ocean had great appeal.

Spurred on by the obvious excitement of the villagers, the team devised new versions of the Divehi Fakhana, including a more permanent structure on a concrete pier. From the responses obtained, it is clear that there would be no adverse reaction to a programme based on the Divehi Fakhana. Noone suggested that it was not a "modern" solution, although in the past people in Kadholhudhoo have been quite disparaging about the Maldives Ash Latrine, which they identify as a "refugee toilet".

In the final recommendations, the team see scope for building quite a few of the improved design toilets on islands which lack space for enough community toilets, and also the possibility of putting together a combination of each type to suit the wishes of the islanders and the funds available.

As with the toilet blocks, Divehi Fakhanas would be separately designated for men or women. They would be built on wood or concrete jetties, either singly or with a platform big enough to support three or four cubicles, each with a lockable door. A sliding door or window on the sea side would offer a



choice of breeze and view or increased privacy. Walls should be of water-resistant plywood and about 1.3m high. There is no need for a roof, but, if the villagers want one, a raised thatch roof could be added, leaving a 300mm gap between wall and roof for light and air.

The improved Divehi Fakhana overcomes most of the problems associated with the previous community toilet programme. It can be built entirely by local labour and with local materials (unless the concrete version is chosen, when cement will have to be provided); water is immediately to hand and cleaning is straightforward; privacy should be guaranteed; direct discharge overcomes pipe and pollution problems; it overcomes the serious problem of land shortage; and the costs would be so low that toilets could be made available at many more locations.

## 2. Health Implications

Diarrhoea is the major health problem in the Maldives. It assumes epidemic proportions and is recurrent. Some 200 people died in the 1982 epidemic, which affected 13,000 people on half of the inhabited islands. A lesser epidemic followed in 1983.

It is especially disturbing then to discover that, during diarrhoea, people make more use of inappropriate sanitation facilities than they do when they are healthy. The reason is simple enough: the debilitating effects of the disease make the walk to the beach or community toilet unpleasant, if not impossible, and the house compound or gifili, where the risk of spreading disease is greatest, becomes the only option for those without private toilets.

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*      ".during diarrhoea, people make more use
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*      of inappropriate sanitation facilities
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*      than they do when they are healthy."
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People were more concerned to bury waste during diarrhoea, but in the gifili that does not really make the situation any better. Given the soil structure and the shallowness of the water table, contamination of drinking water supplies becomes a near certainty.

Improved community toilets, accompanied by health education would encourage more hygienic disposal of dangerous waste, and have a big impact on the spread of disease. If the building of appropriate private facilities can be promoted, the impact would be even greater. This is particularly true where children are concerned. Presently, children are positively discouraged - even forbidden - from using the community toilets at any time!



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### 3. Recommended Actions

The greatest health improvements will be achieved if people can be encouraged, and supported financially, to construct their own private toilets. In the long term, therefore, the strategy should be to promote private sanitation. But not yet!

First it is essential to select household toilets which are technically and socially acceptable, and which do not contaminate the groundwater. The desire for sewerage sanitation cannot be acceded to in the Maldives, where water is both scarce and vulnerable. MWSA is already pursuing research and development work on dry toilets, which is vitally important.

In the immediate future, community toilets located on the beach or above the sea are the only way of improving sanitation facilities. A limited amount can be done to improve the existing toilets, by making water containers and cleaning materials available and using better doors, but new facilities should be based on alternative designs offering more privacy and access to water in the cubicle.

The enthusiasm shown for the two designs featured in this report - the Maldives CW4 and the Improved Divehi Fakhana - gives good grounds for confidence that, with the right approach, villagers will be willing both to build the new toilets and to use them when they are built. The most important lesson of this case study is that, in the Maldives, water must be available in the cubicle and privacy must be assured if the full benefit is to be obtained from investments in community toilet programmes.

The key to successful implementation is going to be proper community participation and education right from the start. Group meetings organized by the Island Development Committee (IDC) and the Women's Committee are the place to start. The important thing is that the community should be fully informed of the implications of the choices being made, but that the villagers themselves make those choices.

The "problem-solving" approach is an effective way of stimulating discussion and motivating people to maintain an interest throughout the project.

Typically, the villagers should be invited to participate in discussions in a structured way so that before construction starts they have convinced themselves of the benefits to come from the project and know what their own commitments are. A possible item-by-item agenda for this problem-solving approach is set out below.

The education element is just as important. Decisions taken by the discussion groups must be based on sound technical and health criteria. That means that trained communicators must spell out the implications of various options, though leaving the final decisions to the villagers.

#### DISCUSSION AGENDA

1. Does the island need community toilets? Why?
2. Advantages and disadvantages of the beach and gifili.
3. Advantages and disadvantages of flush toilets.
4. Problems with a central sewer.
5. Focus on the groundwater situation.
6. Designs for community toilets - advantages, disadvantages (use models).
7. Cleanliness problems of different designs, institutional arrangements by the people to keep toilets clean, cleaning supplies.
8. Maintenance responsibilities.
9. Construction of toilets - how, who, voluntary, paid, how much?
10. Time framework for construction.
11. Mutually agreeable written contract.

## 1. Background

The Republic of Maldives, a group of 200 inhabited and 1,000 uninhabited islands in the Indian Ocean south-west of Sri Lanka, has a population (1980) of 153,000, of which about 20% live in the one urban centre, the capital Male

For administrative purposes, the islands are grouped into 19 atolls, each with an atoll chief in the atoll capital. Each island has at least one island chief. Atoll and island officials link with the Ministry of Atolls Administration (MAA) in Male. The republic has a presidential form of government, with the Citizens' Majlis of 52 members serving as the legislative body.

Maldives is an Islamic Republic, and Islam is the religion of all the people.

Government policy is to provide an adequate distribution of essential health services through the Primary Health Care (PHC) approach by the year 2000. A primary target is the reduction of diarrhoea epidemics through the provision of safe drinking water and adequate sanitation facilities. Community participation is emphasized.

### Water Supply and Sanitation

Main sources of drinking water on the islands are fresh-water lenses derived from accumulated rainfall, floating on seawater and contained within the confines of the islands. The ground-water varies from 0.5 to 2 metres below the surface, and its thickness varies from island to island, depending on rainfall, island size, withdrawal rates, and sand permeability. The water is more saline at the edges of the islands, and salinity increases during periods without rain.

Water comes from shallow wells dug in house compounds and is lifted out using a Dhani - a two litre container attached to the end of a short pole. Public wells at the mosque offer an alternative supply, generally chlorinated, and on some islands public and private rainwater tanks are in use.

The Islamic religion instils a high regard for personal cleanliness, but the porosity of the sand means that groundwater is easily polluted, and diarrhoea spreads rapidly after heavy rains.

The most common system of human waste disposal is defecation on the beach, the waste being carried away by tidal action. Many islands designate particular beaches for defecation, with separate areas for men and women.

People also use the special section of the house compound known as the gifili for sanitation purposes, generally making a hole in the ground with a stick and burying the waste. With the porous sand and shallow water table, this is a clear health hazard.

A small percentage of households have flush toilets with sewers, soakaways or pipes connected to the sea. On the flat islands, pipes have shallow gradients, which together with low use means frequent blockages, digging up of pipes and consequent contamination of groundwater.

## **2. Maldives Water and Sanitation Authority**

The Maldives Water and Sanitation Authority (MWSA), a department of the Ministry of Health (MOH), was created in 1973, to coordinate and implement all water and sanitation activities in the Maldives.

Most of the staff were trained through WHO fellowships in civil and mechanical engineering, accountancy, and water analysis, but many of those trained are now working in other government departments, or have left government service altogether.

MWSA's main duties are:

- (a) Implementation of drinking water supply and sanitation projects;
- (b) Operation and maintenance of public water supplies and public toilets;

- 
- (c) Distribution of rainwater for drinking;
  - (d) Chlorination and monitoring of public drinking water wells;
  - (e) Implementation of chlorination programmes for all wells during epidemics; and
  - (f) Control over installation of private sewers.

With UNICEF assistance, water and sanitation programmes got underway in 1974. Lack of supplies delayed the installation of rainwater tanks and 100 toilet seats, and a second plan of action was concluded by the government and UNICEF for 1978-82. Some \$ 205,000 was allocated to build 60 tanks and 46 toilets (5 seats each) on 18 islands.

An extra \$ 750,000 grant from UNCDF in 1980 funded a programme which included 3 community toilets in Male and 80 (430 seats total) in 30 other islands. That meant that MWSA's total commitment was to complete 126 community toilets on 48 islands by 1982-83.

### The Community Toilet Programme

Construction of community toilets began in the mid 1970s. The standard design, recommended by a WHO consultant, was a block of five pour-flush squatting toilets built close to the beach, with a pipe discharging the waste directly to the sea.

Maximum use was made of local materials and coral and lime masonry. Flushing water comes from a well at one end of the block. Imported materials such as pipes, seats, and roofing materials were given to the island. There was a clear intention that the community would be responsible for construction.

To ease implementation and monitoring, the MAA, the atoll chiefs and the MWSA decided to build the first few toilets on nearby crowded islands. By 1982, just 16 community toilets had been built on 8 islands.

It was obvious that the programme had problems. Progress had been dependent on a variety of cash incentives, which in themselves created difficulties because there was no consistent policy. MWSA field visits revealed that many of the toilets had broken down, had unacceptable levels of cleanliness, and were not being used. MWSA decided to call a halt, to evaluate the programme.

In mid 1983, agreement was reached between the Government of the Maldives (GOM) and UNDP's IDWSS Decade Advisory Services Project implemented by SEARO. The evaluation project was entitled **Case Study on Community Attitudes Towards Public and Private Toilets, Maldives**, and began on 1 February 1984.

Objectives of the study were:

1. To document community attitudes towards public and private toilets constructed in selected locations by the UNCDF, UNICEF, the Government and individuals.
2. To develop guidelines, criteria and procedures for implementation of public and private toilet programmes.

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## 1. Terms of Reference

Under the agreement among the Ministry of Health, UNDP and WHO, the aim of the evaluation was to enable decision makers within government to:

1. understand fully the attitudes of villagers towards the use of public and private toilets;
2. consider a range of alternatives for the implementation of public and private toilet programmes; and
3. make decisions regarding future toilet programmes based upon guidelines provided in the report.

## 2. Methodology

At the very start of the study, meetings were held with officials from all the ministries and organizations who might have views on the toilets problems. Those involved were from: Ministry of Health (MOH), Department of Public Health (DPH), Allied Health Services Training Centre (AHSTC), Ministry of Planning and Development (MPD), Ministry of Atolls Administration (MAA), Ministry of Education (MOE), Maldives Water and Sanitation Authority (MWSA), and WHO.

It was immediately clear that the success or failure of the toilet programme was going to depend not just on technological, organizational and financial factors, but also on cultural, social and ecological influences in the Maldives. The investigation techniques adopted had to take account of this complex inter-linking of variables. In all, six methods of data collection were used: interviews with 228 adults, using a standard questionnaire; group meetings with committees; demonstrations and discussions using models of toilets with interchangeable parts; more interviews with "key informants"; observations of toilets to determine usage and physical conditions; and informal household visits.

A computer in the New Delhi Regional Office of WHO was used to assist with data analysis.

## 2.1 Sample size

The community toilets programme has extended to eight islands. Kaaf Hura, which is close to Male, was used for pre-testing of interview forms, etc. Guraidhoo was left out because the presence of a large mental health and leprosy facility makes it unrepresentative. Six islands were, therefore, selected for the survey, but Kaaf Dhiffushi was treated differently from the others when it was discovered that construction of the community toilets had not been completed.

That left five islands from which to make up a sample - Kaaf Thulusdoo, Lhaviyani Naifaruru, Lhaviyani Hinnavaruru, Raa Kadholhudhoo, and Baa Tuladhoo. Island registers list all houses with name, age and sex of household members. Houses were selected at random to make up a total sample of 15-25% of the households. Individuals were then selected from within each household, the aim being to obtain an equal number of men and women, and equal representation in three age categories: 15-24; 25-40; and 41-60. The only difficulty arose in obtaining enough interviews with the younger men, many of whom are away fishing for most of the day. Where possible, they were interviewed at night, but, in the end, it was necessary to settle for a slight imbalance, by involving more men from the top age-group. Altogether, 238 interviews were completed from the five islands. Ten were dropped to balance out the age and sex distribution, leaving 228 for analysis.

## 2.2 Survey Staff

Household interviews were conducted by a total of six people - a female trainee nurse, three community health workers (two males and a female), a female family health worker and a male family health worker, later replaced by a non-government male. The staff received intensive training in interview techniques until a consistently high success rate was achieved.

Other members of the survey team included the chief investigator, a female trainee nurse who acted as her interpreter, and a MWSA civil engineer, who was involved in observation of the toilets and in collecting data on the water situation, but not in interviews or group discussions.



Table 2 Distribution of Households Interviewed

Island	Total No of Houses	Houses without toilets	Total No selected	Percentage selected
Thulusdoo	121	113	30	24.8
Naifaru	412	370	62	15
Hinnavaru	351	307	54	15.4
Kadhohudhoo	305	264	48	15.7
Tuladhoo	217	170	36	16.6

### 2.3 Interviews

Interviews were based on a lengthy questionnaire, modified after pre-survey tests on Hura. Standard procedures of translation and back-translation were used. The average interview took 50 minutes, with women interviewing women, and men interviewing men, always in privacy. A full copy of the interview form is included as **Appendix 1**.

Opinions on preferences for the beach, gifili, private toilet, or community toilet were sought before any specific questions were asked about the toilets themselves. Questions were included for gauging awareness of health-related issues and drinking water practices.

### 2.4 Key Informants

A second set of questions was developed to guide conversational interviews with community leaders and others in influential positions who might throw extra light on social or administrative matters.

Two meetings were held on each island with the island chiefs. At the first, the aim was to gain an overview of the island, functioning of groups and level of community participation. The second meeting focused on community toilets. It was held after completion of the household interviews, so that information gathered from individuals was unbiased.

Other individuals interviewed included family and community health workers, school principals or teachers, and any community leaders identified during the survey. All the interviews were carried out in private by the chief investigator, using an interpreter. Important information was cross-checked.

### 2.5 Group Meetings

Island chiefs readily agreed that group meetings could be organized separately with the women's committees during the day, with no island officials present, and with the men's committees at night. The chief himself was not present, lest discussion should be inhibited.

The sessions were held at the end of the survey, when the investigator had ideas about the problems involved in the community toilet programme on the island concerned. Meetings were lively, particularly with the men, and lots of ideas were exchanged. It was after an especially stormy session in Kadholhudhoo, for instance, that the men produced drawings overnight of an improved Divehi Fakhana, so as to show them to the survey team, which was due to depart next morning.

### 2.6 Use of Toilet Models

Two wood models with interchangeable parts were used during the group meetings - one representing the existing 5-seat community toilets, and the other the new central-well design produced by the WHO sanitary engineer. Both models could be changed to show different types of roofs and doors, alternative positions of toilet seats, etc.

Usually introduced towards the end of group meetings, the models were very successful, both in generating discussion and

in providing feedback on design suggestions. Men and women spontaneously came forward, altered the models, and explained their ideas.

It was as a direct result of these exchanges that the Maldives CW4 Toilet developed into the design illustrated on page 9.

## **2.7 Toilet Observations**

The physical conditions of the toilets and the extent to which they were used were recorded from direct observations. Both the chief investigator and the MWSA engineer assessed the state of the toilets, with close agreement on the condition of the compound, the walls, well, individual cubicles, floors and pipes. Only when it came to the doors was there less accord, the male rater having more success in pulling open sticking doors than the female one!

Early morning is the time when the community toilets are most frequently used, so observers (trying to be unobtrusive and often pretending to be artists) monitored use of the toilets and the nearby beach around 6am. Records were made of the sex and approximate age of the users, which cubicles were used, number of trips to fetch water, and time taken.

In a second visit at around 7am, the researchers talked informally to people who had walked past the toilets to use the beach (they were interviewed when returning!). This helped to build up a picture of the psychology of non-users and some of the problems with the community toilets.

## **2.8 Informal House Visits**

After all other information had been collected, the team conducted informal interviews, starting with the house closest to the toilet block and gradually moving further away. Generally, these discussions were about the use of the toilets, the cleanliness and maintenance problems, the smell nuisance, and the time of heaviest use.

As the distance from the toilets increased, the internal divisions of the islands into wards or sections became apparent, with people indicating a marked reluctance to use facilities in another ward.

Households with private toilets, rainwater tanks and gifilis were visited, for information about space and design criteria, and those who had built Divehi Fakhanas or were letting friends and neighbours use private toilets also provided valuable information. New ideas came up during these informal interviews, and discussions from the group meetings were also reviewed. Examples include the possibility of building public toilets on private land on islands like Tuladhoo, where lack of land is an acute problem.

## 1. The Sample

The full sample included 114 men and 114 women from the five islands. The aim of achieving equal numbers in the three age categories proved impossible, because of the absence of younger men on their fishing boats from early morning to late evening. The final age-group breakdown was 15-24 years - 71 people; 25-40 years - 75; and 41-60 years - 82.

Some 98% of the group (223 people) could read and write Divehi, and 94% (214) had been to Male at least once (though for more than half such visits were extremely rare).

Average household size was 8.3, with a range by island from 7.2 (Kadhohudhoo) to 9.6 (Naifaru). Though there were more adult men (2.63) than adult women (2.23) per household, half of the sample reported at least one man away for most of each day, and 39% had one or more family members living elsewhere, the majority of them men.

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This brought the male population during the day down to 1.38 per household. The relative absence of men from island communities has important implications for community participation projects like community toilets. For the heavier type of construction work, younger men must be employed, which means that they must be motivated to perform the community work rather than their fishing trips on some days. Motivation may come from cash incentives, from health education programmes, or both. Rota systems work well on other projects.

## 2. Sanitation Practices

Table 1 on page 2 summarizes the sanitation habits of the sample group, who were asked to indicate the facilities that they themselves used most frequently for urination and for defecation.

Generally, people are inclined to use the nearest available place (often the gifili) for urination, but willing to travel further to what they regard as more appropriate places for defecation. The comparatively low use of the community toilets even for defecation (only 16% of the sample regard it as first choice) is discussed in more detail later, but relates more to the availability of toilets and their unclean condition than to social attitudes.

A highly significant finding from the health point of view is the different pattern of use during diarrhoea.

**Table 3. Facilities Used During Diarrhoea**

Location	Percentage	Number
House compound	0.5	1
House compound + bury waste	6	11
Gifili + bury waste	23	46
Beach	20	39
Beach + bury waste	35	69
Private toilet	7	14
Sea	9	18
TOTAL	100	198

There is clearly an appreciation that human waste helps to spread disease; many interviewees stressed that waste is buried during diarrhoea, though this point was not made in reply to the general question about use of sanitation facilities. Separate categories have been included in Table 3, to indicate the numbers who referred to burying the waste.

The table is based on facilities used during frequent diarrhoea, when the person is still capable of movement - at the most severe stage, almost everyone said that containers would be used and washed in the sea or gifili. Some 30 people did not answer this question, claiming that they had never had diarrhoea.

Not one person mentioned using the community toilets during diarrhoea, and there was a compensating increase in the use of other, more hazardous facilities. Though no-one used the house compound normally, 6% buried human waste there during diarrhoea. Similarly, though the gifili is avoided under normal circumstances (only 11% using it), during diarrhoea 23% of the respondents defecate there.

Given the soil structure and the high water table, use of gifilis and the house compound during diarrhoea almost certainly leads to contamination of the water and rapid spread of the disease. Health educators must stress the need to use safe disposal methods during diarrhoea. That is when effective community toilets are at their most valuable, but the beach (with waste burial), private toilets, or containers with sea disposal, are all preferable to the gifili.

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If we presume that a major objective of future toilet programmes will be to reduce diarrhoea epidemics, two important conclusions may be drawn:

- (a) Community toilets must be as close as possible to houses; and
- (b) A private toilet programme with the right technology will have the greatest impact.

### 3. Attitudes to Sanitation Options

Once people's existing preferences for sanitation facilities had been determined, they were asked to indicate specific reasons why they liked or disliked each of the options. This type of evidence, it was felt, might make it possible to design toilets which provide psychologically satisfying alternatives to the beach or gifili.

Questions were deliberately open-ended. Villagers were not asked to choose from a list of possible advantages and disadvantages of each facility, but were allowed to offer as many comments as they liked. Where more than one comment was given, the interviewee was also asked to identify the most important.

#### 3.1 The Beach

Historically, Maldivian people have used the beach or sea for defecation. It has been said that community toilets have not and will not be successful because of people's strong in-built preference for the beach.

The survey suggests that tradition is a less important factor than convenience. Of the 228 people questioned, 36 (16%) felt that there was no advantage at all in using the beach for defecation. The remaining 192 listed a total of 312 advantages, which are analysed in Table 4.

Only 19% of the perceived advantages relate to habit, while another 15% are linked to the aesthetic experience of the sea and the breeze.



Table 4. Advantages of Using the Beach

No	Comment	All Advantages		Most Important Advantage	
		%	number	%	number
1	Habit	19	59	15	24
2	Easy anal cleansing	19	58	24	37
3	Beauty, cool, enjoyable	15	46	11	17
4	Clean healthy habit	5	15	4	7
5	No maintenance	11	35	10	15
6	Always available	2	7	3	5
7	Good if properly used	2	7	4	6
8	Multiple use for bathing, washing utensils, etc	5	15	10	16
9	No alternative	22	70	19	29
TOTALS		100	312	100	156

On the other hand, 22% say that they use the beach because there is no satisfactory alternative. All of which suggests that there is much less of a commitment to using the beach for defecation than is generally believed. The most important single advantage given was the ease of washing, because of the nearness of the sea.

People appreciate the fact that the beach needs no maintenance, compared with the regular cleaning needed where community or private toilets or gifilis are used. Surprisingly few (5%) thought it worth noting the benefit of multiple use.

Table 5. Disadvantages of Using the Beach

No	Comment	All Disadvantages		Most Important Disadvantage	
		%	number	%	number
1	No privacy	48	171	66	135
2	Beach too small, lack of space	17	62	14	29
3	Breakwater, rocks difficult to use	5	19	3	6
4	Difficult to wash	3	12	3	5
5	Spreads disease	6	20	2	5
6	Dirty beach, smell	14	51	9	19
7	Too far, takes too much time	4	13	2	4
8	Others - no desig- nated place, spoils beach for other uses	3	10	1	1
TOTALS		100	361	100	204

When it came to listing disadvantages, only 18 people saw no problems; the rest came up with a total of 361. Table 5 has the details. Topping the list by a long way was lack of privacy - 66% making it the most important disadvantage of the beach. All the sample islands are comparatively crowded, and lack of space was noted as a big problem by 14%.

How do these findings affect possible future toilet design? Five points are worth highlighting:

- (a) **Toilets should offer privacy, including during washing and cleaning;**

- 
- (b) Maintenance must be quick and easy;
  - (c) As much as possible, toilets should emulate the feelings of light, space and breeze offered by the beach;
  - (d) Education campaigns must stress that using community toilets is safe, clean and healthy;
  - (e) Facilities should be close enough to people's homes to compete with the beach, and there should be enough cubicles to avoid waiting.

Recognizing that people will continue to use the beach for many years yet - indeed it is probably the most appropriate method on more sparsely populated islands - the team stressed that more education is needed to encourage people to bury waste and to wash their hands after defecation.

### 3.2 Gifilis

All but 7% of the households in the survey had at least one gifili, and several had more than one. Altogether, 195 respondents listed 391 advantages of using a gifili for defecation, leaving 33 who did not see any advantage.

There were 303 disadvantages noted by 157 people, which suggests that 71 people detected no disadvantage. Tables 6 and 7 overleaf show the breakdown of responses.

The main use of gifilis is for bathing and for washing clothes and dishes. They are also used as a place to store firewood, grow plants, and produce fertilizer. About a third of the interviewees quoted this multiple use of the gifili as the most important advantage, though even more saw the resulting dirt, mess and smell as the prime disadvantage of using it for defecation.

Privacy and convenience stand out as the big incentives, becoming even more important during sickness or diarrhoea, during menstruation, and at night. The gifili is also seen as safer than the beach for pregnant women and for children.

Table 6 Advantages of Gifilis

No	Comment	All Advantages		Most Important Advantage	
		%	number	%	number
1	Use for bathing, washing dishes, access to water	31	122	36	66
2	Privacy	21	83	23	42
3	Convenient, no need to go elsewhere	13	48	12	22
4	Grow plants, store firewood, make fertilizer	13	52	6	12
5	Convenient in sickness, diarrhoea, menstruation, night	9	33	9	16
6	Always available	6	25	8	14
7	Healthy, prevents disease	3	12	2	5
8	Fresh water on hand for washing	3	11	3	6
9	Safe for pregnant women and children	1	5	1	2
TOTALS		100	391	100	185

Most gifilis are small, so that it is not surprising that people find them impossible to keep clean and with the permanent hazard of digging up faeces. It is significant that 29% of the problems identified relate to health risks (water pollution and spread of disease). People's general attitudes to gifilis are important. It was very obvious that if people had a choice they would avoid using the gifili for defecation.

Table 7. Disadvantages of Using Gifilis

No	Comment	All Disadvantages		Most Important Disadvantage	
		%	number	%	number
1	Small space, dirty, messy, smelly	37	113	49	76
2	Too small for so many people, may dig up faeces	13	37	6	9
3	Water pollution	17	50	8	13
4	Unhealthy, spreads disease	12	35	8	12
5	Not always available	12	37	15	23
6	No privacy	2	8	3	5
7	No toilet seat	3	10	5	7
8	Others - difficult to dig holes, wash clothes, etc	4	13	6	9
TOTALS		100	303	100	154

Asked about washing procedures when a gifili is used for defecation, some 62% said that they came to the well to wash. The others said that they washed away from the well. The same dhani is used for drawing water before and after defecation and for bathing, which must make contamination of the well water highly likely.

The main conclusion on gifilis has to be that people would welcome a satisfactory alternative. But, that alternative must offer privacy and convenience, particularly in those disease situations when the gifili is both most expedient and most harmful.

### 3.3 Private Toilets

The sample included 35 households (15%) with private toilets. The whole 228 sample said that it was important to have a toilet at home.

Any belief that toilets are wanted only as a symbol of "modernity" was dispelled by the 368 reasons listed by the group. Only four referred to toilets as the "good" or "modern" method.

**Table 8. Reasons for Wanting a Toilet at Home**

No	Reason	Percentage	Number
1	Easy, convenient, available	27	100
2	Don't have to use beach	13	49
3	Gifili won't get dirty, no faeces lying around	8	28
4	No space in gifili, no need to throw away faeces	2	9
5	Not enough beach	4	14
6	Don't have to go to other people's homes, more private	8	29
7	Safer	3	12
8	Easy to maintain and clean	21	75
9	Healthier, prevents disease	13	47
10	Not enough public toilets	0	1
11	Good, modern	1	4
TOTALS		100	368

Convenience and easy maintenance stand out as the main reasons for wanting a private toilet, with the knowledge that using toilets was a healthy way of disposal also accounting for 13% of the responses. Otherwise, people generally referred to the advantage over other options.

Why then do so few people have private toilets? The survey showed that everyone would be interested in building private toilets, but 76% said that they could not afford it. Most (78%) said that they would prefer to have a family member trained to build the toilet rather than hiring someone.

So far as future programmes are concerned, the Maldivian people will undoubtedly respond enthusiastically to any move to increase the number of private toilets, providing only that it is accompanied by financial subsidies.

Once an appropriate private toilet design is available, such a programme should be a top priority, if the money can be found.

### **3.4 Community Toilets**

Does the enthusiasm shown for private toilets apply also to public ones? The general question "Is it better to use toilets, whether public or private, than the beach or gifili?" produced a 97% "Yes" response. The seven people who said "No" preferred the beach because public toilets were too dirty.

More detailed questioning, specifically related to public toilets, made it clear that there was no psychological or cultural objection. Low usage related entirely to physical aspects of the existing toilets, their convenience, and, more than anything else, their upkeep.

All five islands have two blocks of community toilets, though their designation varies from island to island. In Thulusdoo, both blocks are for men and women; Tuladhoo has one block for each; In Naifaruu and Hinnavaruu, both blocks are for women (in Hinnavaruu the toilets have no seats and no pipes); while in Kadholhudhoo both blocks are for men, the women's block having been lost in a storm during construction.

Table 9. Advantages of Community Toilets

No	Comment	All Advantages		Most Important Advantage	
		%	number	%	number
1	Privacy	24	96	26	51
2	Convenience - no beach	6	24	5	10
3	Convenience - no gifili	2	8	1	1
4	Convenience - no private toilet	5	20	4	7
5	Convenience because everyone can use	11	43	13	26
6	Cleaner beach/island	13	53	15	29
7	Gifili cleaner	1	5	0	0
8	Clean facility	10	42	9	18
9	Easier to use and safer than beach	9	40	11	21
10	Prevents disease, safe from flies	14	58	12	24
11	Proper disposal of faeces	4	16	4	7
12	Modern	1	3	0	0
TOTALS		100	408	100	194

Though only 16% of the sample group used public toilets regularly, few had any difficulty in pointing out their advantages. In the final list of 408, privacy again emerged as the most important. Generally, the reasons mirrored those for favouring private toilets, and confirmed that most people appreciate the value and importance of community toilets.



Table 10. Disadvantages of Community Toilets

No	Comment	All Disadvantages		Most Important Disadvantage	
		%	number	%	number
1	Too few toilets	24	39	29	28
2	Not clean, people leave faeces	25	40	33	32
3	No buckets, broken buckets	21	34	18	18
4	No Dhani to carry water	7	11	4	4
5	Difficult to carry cleaning water	3	5	2	2
6	Too far	5	8	3	3
7	Health hazard	3	5	3	3
8	Doors broken, no door	3	5	4	4
9	Children throw things	3	5	1	1
10	Too dark	3	4	1	2
11	No cleaning supplies	3	4	2	2
TOTALS		100	160	100	98

Table 10 makes it clear why, despite this appreciation of the benefits of public facilities, usage has been disappointing. There are three major problems: cleanliness; number of toilets available; and access to water.

Given these reservations, which observations confirm are fully justified, the fact that 16% specify the public toilets as their most frequently used facility is surely encouraging.

#### 4. Use of Toilets

In fact, 29% (66 people) said that they used the toilets, though the frequency of use varied. Daily users totalled 42, or 18% of the sample; others reported using the toilets once a week (14) or less. More men than women claimed to be users, although there are more toilets available for women.

##### 4.1 Observations

Though half of the users said that they used the community toilets in the morning, early morning observations suggested otherwise. Before 7am, most people walked past the toilets and used the beach, whereas later in the day, when the sun was hot and the beach more crowded, toilets were being used.

The pattern varied considerably from island to island. In Thulusdoo, where the toilets had been broken down for several months and repaired only two days before the survey, just one man used one block between 5.00 and 6.20am; all the others walked past to use the beach. In Kadholhudhoo, on the other hand, 22 men used the toilets between 6.00 and 7.30, all but five bringing their own buckets to carry water from the well.

##### 4.2 Villagers' Views

Users and non-users were asked different series of questions designed to identify what changes would make the toilets better used. Responses from the two categories were strikingly different. Whereas users wanted more buckets and dhanis to carry water, non-users were concerned that there were too few toilets and that they were too remote. The non-users also complained more about the unclean state of the toilets and the fact that there was no water available inside the cubicles.

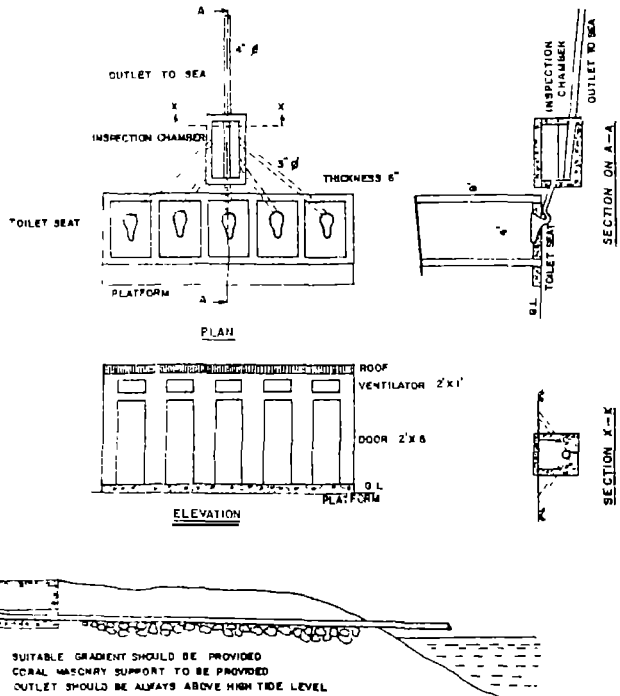
Considering the actual state of the toilets, it is perhaps surprising that 27% of the users said that no change was needed. The 20% of non-users who also felt that no change was necessary seem to be suggesting that they would not use public toilets anyway (this group includes those who have

their own private toilets, and is also probably influenced by those who live on islands where the toilet blocks are for one sex only).

The separate responses from users and non-users serve to confirm the conclusions from the more general questions discussed earlier. People want:

- (a) More toilets;**
- (b) Cleaner toilets;**
- (c) Toilets with water; and**
- (d) More spacious toilets.**

TYPE DESIGN FOR FIVE SEAT COMMUNITY LATRINE



The present toilet design is a block of five cubicles in line. The cubicles are small and dark, and have only a small ventilator. Waste discharges to a common inspection chamber and then through a single pipe to the sea.

## 1. Toilet Design

Both from the questionnaires and from the group discussions, it was clear that improvements to the latrine design would encourage more island people to use the facilities. The vital issue of cleanliness will get better only if shortcomings in water availability and cubicle layout can be overcome; and the socio-cultural attitudes of the people point to the need for other changes.

### 1.1 Existing Toilets

The toilet block design used for the community toilet programmes is illustrated opposite. The cubicles are small and dark, with little ventilation. Water comes from a well outside, usually at one end of the block. Without a dhani to draw water from the well and buckets to carry it to the cubicle, it is impossible to use the toilets.

People dislike the public walk to and from the cubicle for water, and many will actually walk past the vacant toilets to use the beach in preference.

Discharge arrangements have also proved a problem. Pipes connect each cubicle to a common inspection chamber, from which an outfall sewer discharges into the sea. Gradients are shallow and construction skills minimal, so that the hydraulics of the system leave a lot to be desired. Blockages and breakages lead to beach pollution and filthy conditions in the cubicles themselves. Apart from the aesthetic objection to such conditions, there is a significant health risk.

The tin doors corrode and rapidly deteriorate. Many jam, others are missing. Plastic toilet seats become stained, develop cracks, and in some instances have broken completely. Because of construction inadequacies, seats and cubicle floors do not drain properly, making cleaning even more difficult. The use of cheaper materials has been a false economy; sturdier and more attractive materials would have caused fewer problems and, above all, be easier to clean, operate and maintain.

## 1.2 The Maldives CW4 Toilet

In considering alternatives to the present five-in-line community toilet layout, all the criticisms highlighted by the survey, discussions and observations came under review. Merging the needs for cleanliness, privacy, water, light and air, yielded the structure illustrated on page 9 and labelled the Maldives CW4 Toilet (Central Well with 4 compartments). It was designed by the WHO sanitary engineer.

Wooden models of the CW4 design, together with a model of the existing toilets, were used during group discussions and led to lively debate. Island people were encouraged to adjust wall layouts, door positions, seat locations, etc, and to explain what they were seeking to achieve. Roofing options were considered too, with the overwhelming consensus in favour of maximum light and air, with enough cover to provide shade from the sun and to shelter the seat. Everyone wanted the roof to have an overhang to prevent mischief makers from climbing up. Opinions were about equally divided in favour of a roof in two strips (covering the seats but leaving the rest of the cubicle exposed) and the alternative of a large central hole above the well.

The idea of a central well was very well received. Excited comments like "If we can have a community toilet like this one we will use it" came regularly. Only the men in Hinnavaru disagreed, preferring modifications to the present toilet design. Their point was that the large well would be difficult to clean: "In our island, the children get up to mischief and they will be able to dump things in without anyone seeing them".

There has been a high breakage and disappearance rate with buckets and dhanis provided by MWSA for use at the toilet blocks, outstripping the supply of extra containers to the island offices. A possible option for future programmes would be to adopt a practice already in use by some householders. They use a cut-off buoy as a dhani container, getting long service from the hardened PVC. Two island chiefs volunteered to organize a competition to design the best logo to be stamped on such containers to identify them as belonging to the community latrines.

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Only in Naifaru did the committees say that they did not want doors (the men have developed a system of overlapping walls to give some privacy in the existing toilet blocks where doors have proved ineffective in Naifaru). Even there, individual conversations with the women revealed that they would very much prefer effective doors. The CW4 model uses the overlapping wall concept, so that even should a good door design not emerge a degree of privacy would be assured. Nevertheless, on all islands except Naifaru, everyone insisted that there should be lockable doors.

Cleanliness dominated the discussions about types of flooring. The option of leaving a sand floor was rejected, as it would be easily soiled and difficult to clean. A cement floor with a drainage slope was regarded as adequate, with the extra possibility of tiling seen as a worthwhile incentive to keep the place clean.

There was virtually complete agreement that seats should be located in the corner furthest from the door but on the same side, and that they should face the well (making it easier to draw water). The favoured seat geometry was a raised cement platform (175mm) sloped towards the seat itself, with a foot plinth 40mm high on each side.

The consensus was that partition walls should be simply high enough to ensure privacy, not full height - again with spaciousness as the objective.

While the island people were generally consistent in their likes and dislikes, it is important to recognize that different islands might have other ideas. The CW4 toilet design has the great advantage that the layout can be modified without harming the basic concept, so that full advantage can be taken of community participation in programme planning and implementation.

One potential drawback is the difficulty of drawing water inside the cubicle when the water table is low. A long dhani would be inconvenient. Buckets and ropes are possible but would have to be suitable for children to operate easily.

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Another possibility is to cover the well (so combating vandalism too) and fitting it with one of the simple PVC handpumps used on the Maldivian fishing boats. The handpump solution, though attractive, would call for a well-organized maintenance arrangement. It should only be considered where the community is fully committed to the idea and will, therefore, be willing to be responsible for maintenance.

The very positive response to the Maldives CW4 Toilet design leads to the conclusion that a programme based on this revised model would overcome many of the inhibitions preventing island people from using the present community facilities.

### 1.3 Improved Divehi Fakhana

It was quite late in the survey that the concept of the traditional Maldives toilet arose. Previously, the beach was seen as the traditional facility. On Kadholhudhoo, however, individuals close to the beach had built for themselves structures which were referred to as Divehi Fakhana (Maldivian toilets), and which were highly popular among their neighbours, particularly the men and boys.

The log jetties jutting out about 1.5-2m over the sea contained the simplest toilet facility of all - a hole in the wooden floor directly over the sea. Surrounded by waist-high walls, the platform provided enough privacy for the men and boys. A tin container on a rope was all that was needed to obtain washing water from the sea. Villagers said that the crude structures took a day or two to make and lasted for two years.

Maintenance and dirt free, the Divehi Fakhana also provide the much-appreciated benefits of breeze, light and no smell.

Aware that in the past the island people had been disparaging about the Maldives Ash Latrine, which they refer to as a "refugee toilet", the team were reluctant to discuss the idea of an improved Divehi Fakhana. They need not have worried.



Smiles and nods all round greeted the suggestion when it was put to the women's committee on Kadholhudhoo. Spontaneous approving comments generated a mood of excitement and the women all said that the improved Divehi Fakhana was the solution which overcame all the existing problems - cleanliness; privacy; space; discharge pipes; water; maintenance; and building costs.

The men too were enthusiastic, to such an extent that they immediately began designs for the 1984 version, including an up-market model with concrete piers which would last much longer.

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After about 100 interviews with people individually or in groups, not a single person said that the idea of an improved Divehi Fakhana was bad. The women wanted higher walls and separate cubicles designated for them. And adults commented that the facilities could be safely used by ten-year-old children.

After Kadholhudhoo, the idea was discussed on Thuladoo, with similar results. The men there felt that two cubicles could be built at the ends of each of the island's roads, making the facilities very convenient to use. The savings of scarce land by building over the sea were an important extra bonus.

Because the concept has proved so appealing, design improvements should be sensitive to the attractions of the Divehi Fakhana, retaining the sense of familiarity with the ocean and the friendliness of the breeze and the view.

The final design favoured by the people consists of a jetty in wood or concrete with a platform big enough for three or four cubicles. Each cubicle has a lockable door on the land side and a sliding door/window on the other side, giving the choice of breeze and view or increased privacy.

The new design is illustrated on page 11. It has 1.3m high walls and may or may not be roofed. If a roof is built, it should be supported at least 300mm above the walls, to retain the vital element of light and air.

Because it is so cheap and easy to build, and does not take up precious land space, the improved Divehi Fakhana opens up the possibility of providing many more toilets per island, which the survey showed would be an important factor in increasing usage.

## **2. Convenience and Maintenance**

Whatever toilet design is chosen, the island people have made it very obvious that they will only use community facilities regularly if they are conveniently located and if they are kept clean.. These two criteria are closely linked, as the survey showed that toilets closest to houses were more likely to be properly looked after.

### **2.1 Siting of Toilets**

Until a satisfactory dry toilet is developed and widely used, the only feasible way of disposing of human waste on the islands is into the sea. This means that community toilets must be sited close to the sea and where prevailing currents ensure that the waste is removed rather than returned.

Accepting that restriction and the fact that available land is very limited, programmes must be designed to make sanitation facilities available as close to people's homes as possible and in such numbers that there is never a need to wait. Land reclamation projects must take account of this basic need for convenient toilets, and the choice of facilities (toilet blocks and/or Divehi Fakhanas) should take convenience as a prime criterion.

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*       the improved Divehi Fakhana opens up
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*       the possibility of providing many more
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*           toilets per island ..."
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## 2.2 Cleaning Arrangements

The community toilets have no paid attendants and the island authorities insist that they have no budget to pay anyone for cleaning the toilets, even occasionally. In some cases, requests from island people for cleaning materials have been turned down.

If this situation cannot be changed, reliance will have to be placed on users to keep the facilities clean. There is every reason to believe that most people will look after toilets which are easy to clean and do not deteriorate rapidly. The best maintained of the existing toilets are women's blocks on Naifaru, Thuladhoo and Hinnavaru. In each case, the toilet blocks are located close to houses. People with homes close to the toilets have either taken the initiative themselves or been approached by the island chief and agreed to look after the facilities.

The system is that 4-6 women, helped by children, take charge of the facilities for a month, cleaning them perhaps once a week. The presence of local houses also seems to discourage people from leaving without flushing the toilets.

This does seem to be a useful model for future upkeep of toilets, though it would be much better if cleaning materials were made available on a regular basis. As the community is almost certainly going to be responsible for maintaining the community toilets, the issue should be discussed in detail before the toilets are built.

### 3. Programme Implementation

Given MWSA's limited resources, the UNICEF and UNCDF programmes envisaging a total of 126 toilets on 48 islands by the end of 1983 were ambitious. Nevertheless, the actual achievement - 16 toilets on 8 islands - is disappointing.

The implementation sequence adopted involved MWSA staff making an initial visit to a selected island to choose the sites for the toilets with the island office. This was followed, sometimes quickly, often slowly, by delivery of plans and materials. As work progressed, up to 15 visits might be made to check progress. Half way through, voluntary labour usually had to be changed to paid labour, though the sums actually paid to the island people varied from island to island.

Generally, persuading islands to complete work on the community toilets proved a real headache for MWSA. The exception was Naifaru, which was not part of MWSA's original schedule but was added because the islanders showed strong interest. There, the island chief held public meetings and influential islanders mobilized labour and contributions.

The island committee adjusted MWSA's design to suit the views of the villagers, and the work was carried through quickly without any payment for labour on the first two blocks. The island office provided money for food and tea for the workers. No work supervision was carried out by MWSA but one needs to bear in mind here that Naifaru has a larger pool of skilled labour than other islands.

Elsewhere, problems hinged on delays over delivery of materials, varying payments from MWSA to encourage the island people to construct the facilities, lack of supervision leading to faulty construction, and a general waning of interest when other projects came along.

The financial element seems important. MWSA had no fixed guidelines about payments to toilet block construction workers and introduced an ad hoc system as work flagged on each island. The result was that islands began to hold out for more, knowing what had been paid elsewhere.

### 3.1 Selection of Islands

Before any community toilet construction programme is implemented, there must be a firm expression of interest from the island people themselves. First, the community must be informed, which means that MWSA must disseminate information about the programme.

To control the pace of the programme in line with available resources, islands should be categorized so that priority in the dissemination of information can be given to those islands, big or small, which are crowded and which have little or no safe beach area left for defecation.

Once toilets have been built successfully on some islands, there will be a spread effect, with others requesting assistance.

### 3.2 Community Participation

The atolls have a history of active community participation in construction projects. Mosques, jetties, schools and sometimes island offices have been built through a community effort. More recently, rainwater tanks have been constructed in the same way. Traditionally, the men carry out the building work while the women gather coral and sand and provide drinks and snacks.

Over the years, a system has evolved whereby one man from each fishing Dhoni stays behind to work on community projects, creating a pool of labour.

So far, the community toilet construction programme has not been as successful as mosques or island schools in attracting the island people's interest and commitment. However, the survey has shown that the islanders do have the will to improve their sanitation facilities, so that there is considerable hope for a future programme based on the right technology and a different approach. A critical aspect is that the community should participate right from the start, rather than being brought in simply to provide free labour when all the key decisions have already been made.

The community toilets project seeks to introduce a new technology, to change people's habits, and to have a marked impact on health. All these elements must be discussed in advance, so that people know what benefits they can expect to come from the efforts that they are being asked to make.

Education is part of the process and early group sessions must include trained communicators, capable of conveying the health dangers of present sanitation practices and the merits of the alternatives. Even so, change should not be imposed; if the community selects an improvement different from the one favoured by MWSA, there will usually be sound reasons for adopting it.

Experience has shown that a "problem-solving" approach is an effective way of stimulating community involvement and a sample agenda has been compiled (see page 14), which might form the basis of initial discussions with island committees.

The idea is plain: the community should convince itself of each step in the process, including the commitments such a step implies for construction and maintenance. Finally, discussions should produce a timetable based on realistic targets both for the island people themselves and for MWSA.

Once the project begins, MWSA staff need to spend time in the field, encouraging and assisting villagers, and making sure that key construction aspects like seat positioning and pipe-laying are properly carried out.

### **3.3 Financial Arrangements**

Island people are very aware of what is happening on other islands, so it is essential that MWSA should adopt a consistent policy on payment for community work. Past efforts to encourage islands to complete work in a more timely manner have included random payments and have not worked. MWSA should set a firm price to be paid to the island office for each block of community toilets to be constructed. The decision on how such money should be allocated would be left to the office, though MWSA should be informed of the intentions and incorporate them in the contract.

The critical thing is that the sum should not vary, so that communities will know in advance what they are working for. On Raa Atoll, the International Human Assistance Programme (IHAP) has successfully used a contract system for building schools, which could form a model for the community toilets construction programme.

#### **4. Implications for MWSA and MOH**

Implementation of a new community toilets programme has important personnel and institutional implications at both island and national level. If the recommendations outlined in this document are followed, there will be a broader-based programme and greater involvement of MWSA personnel in community participation activities including site selection, design choice, construction supervision, and organization of community toilet cleaning and maintenance.

##### **4.1 Staffing**

At present, MWSA's Atolls Water and Sanitation Section consists of a civil engineer, a project officer, a clerk, two construction supervisors, and a boat crew. The authority has proposed an expanded organization structure, in which the Atolls Section would have an engineer and a construction crew of four supervisors, four craftsmen and two trainees. It would also have two boats instead of the present one.

A link with the Public Health Administrator would give contact with field-based staff - community and family health workers.

Even now, MWSA staff turnover is high and many lower level positions are not filled. With the difficulty of finding and attracting qualified staff, personnel needs for implementing an expanded community toilets programme should be kept modest. It seems that the proposed long-term staffing of the Atolls Section should be enough, though this would have to be reviewed if other commitments, such as building of rainwater tanks, which will call for similar technical and supervisory assistance, also get moving.

#### 4.2 Training

All MWSA senior staff and engineers would benefit from training in implementation of a broad-based community participation and education (CPE) programme. This aspect is so crucial to the success of the community toilets programme that it must be seen as a top priority, to the extent that it would be unwise to initiate the programme until suitably trained staff are available. MWSA and the Ministry of Health will probably need to combine activities to ensure the right mixture of advice and assistance in CPE programmes.

Existing and new construction supervisors need training in construction of the various types of toilets, and should also be sensitized to the CPE philosophy. Community health workers are based in the atoll capitals, so cannot be directly involved in toilet programmes. It will however be helpful to keep these workers aware of the programme content and benefits, to strengthen their sanitation education role. Family health workers will be more directly involved and could play a crucial role in developing community interest. Courses and in-service training are needed to make these workers more effective in promoting the benefits of community toilets.

On the islands, individuals showing a keen interest in the project will be encouraged even further if offered support and training by MWSA staff. This could be done at the atoll level, and would have a considerable strengthening effect without demanding extra staff within MWSA.

#### 4.3 Institutional Arrangements

With such a scarcity of human and financial resources, cooperation between MWSA and other government departments and private organizations should be encouraged.

The Department of Public Health can provide training and field support, simply by incorporating the community toilets programme in scheduled activities. DPH can also help with health education materials and by strengthening its own sanitation message. Such cooperation would lessen the burden on MWSA staff and make best use of available skills.



The community toilets programme would fit nicely into the activities of the Ministry of Health's AHSTC Department. This department trains family and community health workers, giving them practical experience in the atolls, where community toilet projects could make excellent training material.

The Education Development Centre has channels for disseminating information on the islands and could use its newsletters to spread word of the community toilets programme and other sanitation education matters.

A workshop organized by the Ministry of Atolls Administration could be a useful way of making other organizations aware of the community toilets programme. MAA itself can play an important part in project monitoring and promotion, as its officials make regular visits to the islands.

MWSA already has very useful links with private organizations such as IHAP and Redd Berna and both are conducting highly relevant trials which could have a big impact, particularly on any future private toilet programme.

Once activities are contemplated on any particular island, the Island Development Committee and the Women's Committee have key roles. Education materials should be made available for use by these committees, and MWSA needs to be able to respond quickly to any requests for advice or assistance in the committee's activities in support of the community toilets programme.



1. To take full advantage of the island people's desire for private toilets and their willingness to build them if technical and financial support is offered, development of suitable dry toilets should be given high priority. However, until such toilets are developed, construction of private toilets based on technologies which have been shown to create health problems on the Maldives is to be discouraged.
2. Immediate health impact will be obtained from a community toilets programme based on modified latrine designs. Two designs have been well received by villagers:

The Maldives CW4 Toilet - A four-compartment block around a central well, with water available in each cubicle. This would supersede the present five-in-line design, which island people dislike and do not use.

The Improved Divehi Fakhana - An economic development of a simple wooden jetty extending a short distance over the sea. This offers the possibility of constructing many more toilets for the same cost.

3. Health education programmes need to strengthen the islanders' recognition that use of the beach or gifili for defecation is a serious health risk, particularly during diarrhoea, when use of these options is greatest.
4. The community toilets programme should be implemented using a community participation and education (CPE) approach specifically developed to meet the needs of the project - a specimen agenda has been produced (page 14).
5. Financial arrangements for toilet construction should be consistent from island to island. A fixed sum paid to the island office for each block constructed seems a simple and equitable arrangement.
6. MWSA staff need to spend more time in the field, laying the groundwork for successful completion and supervising critical construction phases such as seat location and pipe-laying.

7. MWSA's proposed restructuring will be sufficient to cope with a successful community toilets programme, unless other commitments grow. Links with other organizations are recommended, to make best use of scarce resources (see page 52).
8. A priority list of islands most in need of community toilet programmes should start with the most crowded islands, big or small. From the list, once information about the benefits of the programme has been made available, islands should be selected according to the degree of interest shown. Successful projects will soon bring further requests, but success has been shown to depend on commitment from the community.
9. Special efforts need to be made to ensure that women's needs, preferences and views are taken into account and that they are actively involved in each stage of the project. Otherwise, women will continue to be low users of community facilities.
10. As many blocks as possible should be built on any one island. The alternative of spreading resources widely by building just two blocks on an island will not work, and will destroy the impact of the programme. Convenience has been shown to be a vital consideration, particularly during diarrhoea, when the use of community toilets is most important.
11. Separate facilities must be provided for men and women. Both sexes expressed unwillingness to use shared toilets.
12. In the past, young children have been discouraged (even forbidden) from using community toilets. If the maximum benefit is to come from future programmes, children must be encouraged to use the facilities provided. This is a challenge to adult health educators and schools.
13. Trained staff should be available before the programme begins. MWSA must be able to respond promptly to requests for advice or assistance, and must ensure that projects are not interrupted through lack of materials or other support.







