
Chapter 4

COUNTRY PAPERS ON SANITATION

4.1 Afghanistan

4.1.1 Background

4.1.1.1 General situation in Afghanistan

Afghanistan has just come through 23 years of political turbulence and strife. Virtually the whole country is in desperate need of reconstruction.

The country has a population of 23 million people with 80% or about 18 million people living in the rural areas. During the years of conflicts nearly 5 million refugees were living abroad. Many of these refugees are now returning home to villages where the basic infrastructure has been destroyed. This post- conflict situation makes it necessary for Government to prioritise the most vulnerable groups on an emergency basis. Lack of basic water supply and adequate sanitation has been one of the very serious issues encountered in the villages as life is slowly returning to normal. The very poor health situation as a result of water and sanitation related diseases has now been realised and its time to remedy this situation.

Sanitation has hardly reached the prioritised agenda at all yet. Some demonstration facilities have been constructed but very limited resources have been allocated for sanitation. However, hygiene education has been promoted by very many NGO's and by Government on an emergency basis. Some of the most urgent needs such as basic shelter, drought, malnutrition and lack of water has been addressed and focus is now moving towards issues like food production, health, roads, and education so it is now very timely to bring the issue of sanitation and hygiene education to the forefront.



Figure 4.1 : A Map of Afghanistan

4.1.1.2 Status of sanitation coverage and health related issues in Afghanistan:

The National Development Framework (NDF) 2002 of Afghanistan recognises the fact that there is low coverage in urban sewerage and rural sanitation throughout the country and accepts the mammoth task ahead to redress these problems.

Currently in Afghanistan sanitary means of excreta disposal is scarce throughout the country. Until recently it was estimated that 23% of the urban and a meager 8% of the rural population had access to improved facilities. However a recent MICS¹ survey undertaken throughout the entire country indicated that <1% of rural households use any form of improved sanitation facilities, while access to improved sanitation facilities in Urban areas is 15%. These figures show that despite the joint efforts of the Government of Afghanistan and other partners, the provision of adequate sanitation facilities have not reached the vast majority of the population, especially the rural poor where less than one in one hundred households use safe forms of excreta disposal.

The impact of water and sanitation related diseases cannot be overstated. Afghanistan has the fourth highest rate of child mortality in the world (257/1000) with over 25% of all children born dying before they reach the age of 5 years. Surveillance studies undertaken by the Ministry of Health and the Centre for Disease Control (CDC) indicate that the main causes of death for children under 5 years are Watery Diarrhoea 27.2% and bloody diarrhoea 26.5%. Therefore of the national under-five mortality rate (257/1000), about 54% of the deaths are attributed to diarrhoeal diseases in other words for every 1000 children born in Afghanistan 139 will die of diarrhoea before they reach the age of five.

General situation for Water Supply and Sanitation Coverage:

- In rural areas 81% of the households use unprotected water sources, while 41% of urban households use unprotected sources for drinking water. Coverage levels vary greatly between regions from 7 to 67%.
- For Sanitation <1% of rural households use any form of improved sanitation facilities while access to improved sanitation facilities in urban areas is 15%.
- Hand-washing after defecation is common but 61% in Urban and 85% in rural areas use only water for hand-washing.
- In both urban and rural areas over 48% of households stated that they had no fixed place for the disposal of children's faeces.
- 30% of households reported that children in the households had diarrhoea in the previous 10 days.

The lack of sanitary facilities is also posing a problem in the communities to where the former refugees are returning. To date over 2.8 million people have returned from Pakistan and Iran, with nearly 1 million resettling in Kabul alone. Between May and September 2003 over 100,000 cases of Acute Watery Diarrhoea² were recorded in Kabul 60% were in children under 5 years. While 90% of all cases reported were in children under 15 years of age.

There are no sewerage systems in the major cities and wastewater and sewerage go untreated to the open canals and rivers. However, MICS also indicated that the use of traditional latrines is quite common with 76% in urban and 49% in rural areas stating that they use traditional latrines. But the potentially dangerous practice of night soil collection and usage as fertilizer is still common around

¹ Multiple Indicator Cluster Survey (MICS) GoA/UNICEF September 2003

² Acute Watery Diarrhoea – three or more episodes of diarrhea in 24 Hours. Surveillance undertaken in 18 health facilities in Kabul city.

the country and this practice needs to be built into all future projects so as to ensure safe use of the night soil.

The National Development Framework (NDF) identifies water and sanitation as one of the key components necessary for the physical reconstruction and the provision of social protection in Afghanistan. The NDF clearly articulates the overall vision for the Water sector and identifies key issues, strategies and constraints which need to be addressed. However, for sanitation although stated that there is an urgent need to address the situation there is a failure to articulate how this should be done. The issues of hygiene education or promotion are not articulated in the current NDF which needs to be addressed.

The new RUWATSAN policy being developed by GoA will hopefully address this situation. With over 80% of the Afghan population living in rural areas the need for a specific policy on rural water and sanitation is now most urgent and is being actively developed by Government.

4.1.2 Objectives

4.1.2.1 Government long-term objectives

- Every household should have a basic hygienic sanitary facility.
- Hygienic sanitary solutions should be sustainable at household and community levels.
- Everybody should be knowledgeable about the link between health and poor sanitation and hygiene practices.
- Deaths from preventable water and sanitation related diseases should be reduced
- All communities should have implemented a community environmental sanitation plan, which protects their health and local environment.

4.1.2.2 Development targets:

The 2-year, 5-year and 10-year development targets of Afghanistan are shown in Table 4.1

Table 4.1 : Development Targets of Afghanistan

	Rural	Urban areas
2 year	<ul style="list-style-type: none"> • Visit all rural households with hygiene messages • Conduct social marketing of sanitation • Provide sanitation facilities at all schools • Capacity Building and training for hygiene education and sanitation • Revise and publish hygiene training material 	
5 year	<ul style="list-style-type: none"> • Increase coverage of hygienic sanitation facilities to 50% (construction of 1 million household latrines) • Have institutionalised hygiene education at health centre and village levels • Provide sanitary latrines at all schools and important public places 	<ul style="list-style-type: none"> • Increase coverage of hygienic sanitation facilities to 75% (Upgrading/improvement of 300,000 household latrines) • Have institutionalised hygiene education at to MoH clinics. • Provide sanitary latrines at all schools and important public places
10 year	<ul style="list-style-type: none"> • Increase coverage of hygienic sanitation facilities to 95% 	<ul style="list-style-type: none"> • Increase coverage of hygienic sanitation facilities to 95% • All town centres should have functional drainage systems
	<ul style="list-style-type: none"> • Improved hygienic behaviour adapted by 85% of the population 	

4.1.2.3 Strategies for development of the sanitation programme:

The strategies for achieving the policy objectives the following principles will be used:

- All sector development activities shall be planned, co-ordinated and monitored on the basis of the sector policy framework defined for the water supply and sanitation sector in Afghanistan.
- The sanitation system shall be self sufficient and self- sustaining
- Participation of the users in planning, development, operation and maintenance is essential.
- Sanitation development will based on the demand driven approach
- Social marketing, sanitation promotion and hygiene education will be the key tools for generating a user demand. Publicity campaigns and motivational activities using mass media among other means will be used to ensure behavioural change in sanitation and hygiene.
- Advocacy will be used for sanitation with focus on politicians, senior government officials and other key senior stakeholders including donors and community leaders.
- Government will be involved in policy development and implementation, co-ordination, fund raising and monitoring of activities. The private sector and NGO's will undertake the implementation of the activities such as social marketing, hygiene education and latrine construction, etc.
- Local capacities will be developed to sustain sanitation activities.
- Activities will be organised so as to develop the private sector to get involved in latrine construction and hygiene education.
- Developing appropriate and cost effective solutions for Afghanistan including sanitation issues like upgrading of improving traditional latrines, effective and hygienic emptying methods for latrines and safe use of human excreta as fertiliser, development of localised hygiene education messages and use of alternative mass communication techniques.

4.1.2.4 Policy Principles

The basic focus from government is to reach all people with basic services as fast and efficiently as possible. This necessitates the following approach for Afghanistan:

- Equitable support throughout the country.
- A Sanitary latrine in each household will be the basic service level
- All operation and maintenance costs will be carried by the users in full
- The basic service level for sanitation should first be achieved before government will consider support to higher service levels
- Priority will be given to areas with high user demand and areas with high incidence of water and sanitation related diseases.
- Development of improved sanitation facilities will be based on an agreed cost sharing strategy.
- Government will promote, facilitate, co-ordinate, finance and monitor sanitation and hygiene activities.
- The implementation of hygiene education, social mobilisation, and latrine construction will be the role of the private sector and NGO's.

4.1.2.5 Policy Framework:

In general, the urban and rural sanitation issues are very similar but they differ mainly in institutional aspects and to some degree on technology choice. The key policy issues are outlined below:

- Local governments and communities shall be the focus for sanitation activities. All stakeholders including the private sector and NGO's shall provide inputs within the developed government policy framework so as to assure that one programme or project does not impair the success of another project.
- The users shall be responsible for operation and maintenance of sanitation facilities and bear the total cost.
- Development of sanitation facilities shall always be accompanied by effective hygiene education.
- Behavioural development and changes in user communities shall be brought about through social mobilisation and hygiene education in co-ordination with Ministries of Public Health, Rural Rehabilitation and Development, Education, Urban Development, Women's Affairs, Religious Affairs and Municipalities.
- All NGO's and Government agencies involved in sector development should inform the respective co-ordination ministry so as to assist government in monitoring progress.
- Women will be encouraged to actively participate in decision making during planning, implementation and operation and maintenance.
- The rural sanitation programme activities will promote a basic minimum standard latrine. (See definition) The minimum standard for a hygienic latrine would a facility, which safely contains human excreta while at the same time can be kept clean and hygienic.

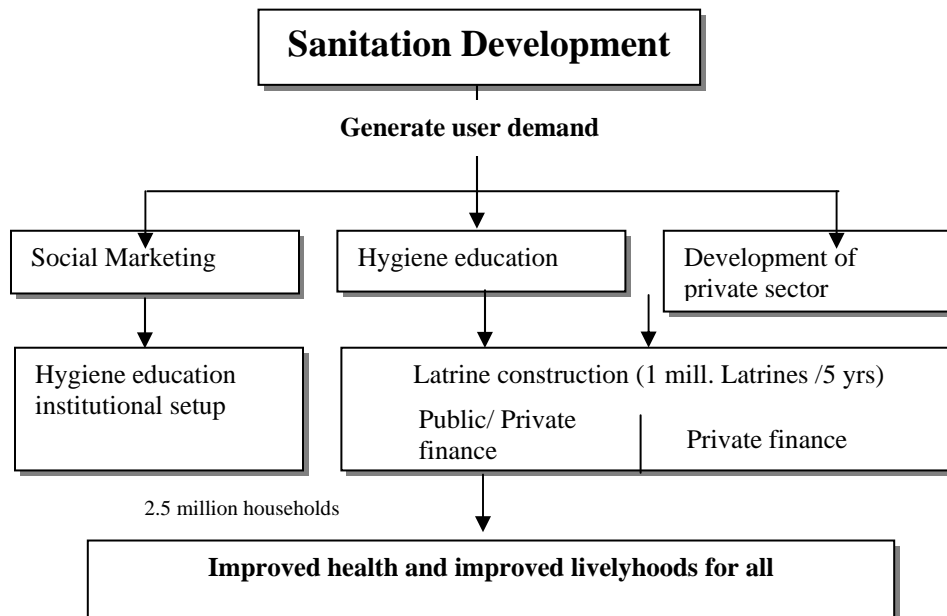


Figure 4.2 : Sanitation Development Framework in Afghanistan

Therefore the key issues and challenges, which need to be address by the sector over the next two years, could be summarised as follows:

- The need to strengthen and build planning and management capacities at all levels
- The need to increase access to water and sanitation facilities
- The need to improve hygiene behaviour and practices
- The need to improve and increase knowledge on hygiene, water and sanitation
- The need to strengthen the skills base within the sector
- The need to be prepared for emergency situations
- The need to strengthen and develop community capacities

4.1.2.6 Policy implementation

Sanitation covers issues related to health, environmental health, household sanitation, sanitation, and technical issues involving planning, implementation, operation and maintenance of facilities. The implementation of policies will be slightly different for rural and urban areas and as such these areas are described separately.

Rural Sanitation

MRRD - Ministry of Rural Rehabilitation and Development:

MRRD will be responsible for promotion and development of water supply and sanitation activities in the rural areas. This means policy development, planning, promotion and co-ordination of programmes and projects. The ministry will also be executing water supply and sanitation activities through the private sector and NGO's and supervise activities, while monitoring sector developments and promoting hygiene education

MoH – Ministry of Health:

Responsible for health issues in rural areas including hygiene education. MoH will work in close corporation with MRRD and the private sector and NGO's to ensure that programmes and implemented is in accordance with approved policy. MoH will ensure that sanitation promotion and hygiene education is harmonised in the MoH basic health service and as such institutionalised. MoH is the professional ministry responsible for policy issues focussing on health.

MIWE – Ministry of Irrigation, Water and Environment:

Ministry of Irrigation, Water and Environment will be responsible for policy formulation with an environmental focus.

Households:

The household is responsible for operation and maintenance of its sanitary facility including arranging the timely emptying of household latrines.

Private sector and NGO's:

The private sector is responsible for planing, training, construction, and providing services including the emptying of household facilities.

Urban Sanitation

Urban sanitation differs from rural sanitation in the form of technology options, service levels and organisation arrangements.

Ministry of Urban Development (MUD):

MUD is responsible for policy formulation for water supply and sanitation in urban areas. For operationalization of larger piped schemes, under MUD, the Central Authority for Water Supply and Sewerage (CAWSS) implements and operates larger schemes throughout the country as a government utility board.

Municipalities:

For the larger cities the Municipality is responsible for area planning, by-laws and regulation of private dwellings in the urban areas. As such, each dwelling should have its plans approved by the Municipality before implementation. In most of the towns and cities, the Municipalities will be responsible for household sanitation, as this is implemented in accordance with development regulations. If there are unacceptable environmental sanitation issues as a result of inappropriate use of facilities, the Municipality is responsible for the appropriate action.

MoH – Ministry of Health:

Responsible for health issues in urban areas including hygiene education. MoH will work in close corporation with MUD and the private sector and NGO's to ensure that programmes and implemented is in accordance with approved policy. MoH will ensure that sanitation promotion and hygiene education is harmonised in the MoH basic health service and as such institutionalised. MoH is the professional ministry responsible for policy issues focussing on health.

Households:

The household is responsible for operation and maintenance of its sanitary facility including arranging the timely emptying of household latrines.

Private sector:

The private sector is responsible for planning, training, construction, and providing services including the emptying of household facilities.

Table 4.2 : Summary Table showing Roles and Responsibilities

Activity	MRRD	MoH	MWDE	MUD/ CAWS	Municipality	UN agencies	NGO/	private sector	User
Policy formulation	X	X	X	X					
Policy implementation.	X	X							
By- laws					X				
Rural Sanit. Coordination	X					X			
Urban Sanit. Coordination					X	X	x		
Health inspection		X			x				
Hygiene promotion	x	X				X	X		
Hygiene education.		X			x	X	X	X	
Sanitation construction				X			X	X	X
O&M:									
Off site systems				X				X	
Onsite systems								X	X

X = main actor, x= minor actor

4.1.2.7 General implementation framework

Development of sanitation will be based on user demand for large-scale implementation. User demand is also essential because the government will have to follow a cost-sharing arrangement whereby the users will have to provide most of the costs of resources.

User demand is also essential for maximum health benefit. Without the necessary motivation, the facilities could be used for different purposes and thus have minimal impact.

General approach

Sanitation promotion:

- National advocacy for sanitation aimed at senior decision makers and politicians
- National sanitation promotion campaign.

Hygiene education:

- Implement a nation wide hygiene education programme whereby all the 2.5 million households are visited and explained the need for improved sanitation and household hygiene.
- The hygiene education will be implemented through engaging the private sector and NGO's for development of training materials, training of trainers and promoters. There are an estimated 2.5 million households in the rural areas and around 700,000 households in the urban areas. Furthermore, there are about 40,000 villages, which have to be visited. The approach is that a promoter will be identified in each village to implement hygiene education. This is a huge task. If each promoter can visit 3 households per day, then we need about 1 million person days or 5000 man-years just to visit all the households. In addition, requirements will be necessary to cover training of trainers, promoter's etc. It is planned to stretch the initial campaign over three years, focussing on Community Health Workers and involving MoH health facilities for hygiene promotion.

Private sector development:

- Train latrine builders nation wide
- Training of trainers for hygiene promotion
- Inform and promote the retailing of materials for latrine construction and latrine upgrading in shops nation wide.

Sanitation: Latrine construction

The sanitation activity will focus on construction on a household latrine or toilet for all households.

In Afghanistan, there is a tradition of using human excreta as fertiliser. This has influenced the design of the latrines used as shown in the diagram above. Both the rural and urban areas use the vault latrine design. In limited cases pit latrines are used.

For the rural areas the sanitation development would focus on new household latrines to be developed for every household without any facilities. For the households having traditional latrines, upgrading facilities will be promoted at a lesser cost.

4.1.3 Plan of Action

- Capacity building (intense for next three years, followed by continued support)
- Sanitation promotion, hygiene education: nation-wide and extensive over next three years
- Latrine construction programme: Aim at 1 million household latrines within 5 years, and well as cover all schools and health facilities
- Develop private sector to develop and sustain planned activities

The plan of action for sanitation in Afghanistan is shown in Table 4.3. The challenge is to obtain sufficient resources to implement a nation-wide sanitation and hygiene education program which will improve public health for all through general behavioural change. Furthermore, the aim is to generate demand for improved sanitation facilities so as to reduce the intolerably high mortality rates in Afghanistan caused by preventable communicable diseases.

4.1.3.1 Description of Activities in Afghanistan in the near future

Nation-wide sanitation promotion and social marketing campaign

It is planned to implement a nation wide sanitation promotion campaign. At national and provincial levels this will be focussed on Advocacy for political and budgetary purposes, while at district and village levels the campaign will promote and sensitise all people to the need for safe and adequate sanitation and to make people aware of its importance from a health perspective. The programme will be executed by MRRD with in close co-operation with MOH, UNICEF and implemented by NGOs and private sector. Control of Communicable Diseases (CDD) will be in focus in this campaign. Mass media and community based approaches will be extensively used.

Activity objective: to make all stakeholders aware and supportive of the need for safe and hygienic sanitary facilities in all households.

Duration: One year. Repetition after 3 to 5 years envisaged.

Updating Hygiene Education Material:

Reviewing and localising existing training material to make it more effective for use in Afghanistan. The Hygiene Working Group will be leading the technical guidance of specialist NGO/consultant to handle the execution of the work. MRRD and MOH will jointly supervise the project. Key messages shall be identified and appropriate materials developed or adapted.

Activity objective: To simplify messages and increase understanding

Duration: Complete within one year

Finalise Standard latrine designs

The Sanitation Working Group will finalise the drawing to be used as approved designs for public programmes. Alternative designs will be proposed so that people from different settlement areas and regions can choose the design of their choice.

Activity objective: To assure health impact is attained using cost effective solutions, which are appropriate and hygienic.

Duration: Complete within one year

Table 4.3 : Plan of Action for Sanitation in Bangladesh						
Activity	Target	Implementa- tion Period	Implementing Agency(s)	Focal Agency/ Person	Funding Organization / Source	Remarks
Sanitation Promotion, social marketing, with CDD focus	Nation-wide	2004	NGOs	MOH, Eng. Waheed MRRD, Dr Maarij UNICEF	Diff.donor countries	Extremely essential
Updating Hygiene education material	Produce 15000 training packages	2004	NGOs/ Private sector	Hygiene Education Working Group/	Diff.donor countries	
Finalise Standard latrine designs		2004	NGOs/ UNICEF/WHO	Sanitation Working Group, /MRRD	NGOs/Gov.	
Hygiene Education for all 3.2 million households (hh)	Visit 1/3 all hh in 2004	2004-2007	NGOs/ Private sector	MOH, Eng. Waheed MRRD, Dr Maarij,	Donors/UNICEF	Essential for generating demand for improved sanitation
Construction of latrines for households	50,000 for 2004, 2 million over 10 years.	2004- 2014	NGOs/ Private sector	MOH, Eng. Waheed MRRD, Dr Maarij,	Diff.donor countries	A challenge since open defecation is common in rural areas.
Provide sanitation facilities in all schools and health facilities	2000 schools in 2004 and 520 health facilities	Before end of 2004	NGOs, / private sector	MRRD/ UNICEF	UNICEF	Most schools already covered, by UNICEF. Complete rest
Public latrines	One per district, 100 per year	Before end of 2006	NGOs, / private sector	MRRD/ Municipalities	/	O&M framework to be decided
Training of NGOs & private sector,	Latrine construction masons: 3000 in 2004, 12000 over 3 yrs.	2004-2007	NGOs/ private sector	MRRD	Diff.donor countries	
	Training of 12,500 hygiene promoters,	2004-2007	NGOs/ private sector	MRRD/ MOH	Diff.donor countries	
	Training of 150 trainers of trainers	2004	MRRD/ MOH	NGOs	Diff.donor countries	
Develop and establish monitoring and evaluation system	M & E system established 32 provinces	2004-2005	MRRD/MOH, NGOs	MRRD	Govt.	

MRRD= Ministry of Rural Rehabilitation and Development, MOH= Ministry of Health

Hygiene Education Visits to all households (hh)

For the next three years, health promoters will visit all 3.2 million households in rural and urban areas. This means training about 12,500 hygiene promoters covering 4 households per day. For cultural reasons, there will have to be equal numbers of male and female promoters. In addition, it is necessary to engage a Maharam for escorting most of the female promoters unless alternative arrangements can be made as demanded by local tradition.

- Activity objective:* To use control of communicable diseases as an entry point to change hygiene behaviours so that health improvements can be realized and increase knowledge and awareness so that all households demand for sanitary household toilets, and that all open defecation cease.
- Duration:* Three year to visit all 32000 villages nation-wide (to cover about one third each of the three years).

Construction of latrines for households

The overall objective is to do develop 1 million sanitary household toilet facilities within 5 years and thus provide 50% coverage. The current implementation capacity is only 15000 units per year in public and NGO implemented programmes. Thus in order to achieve the target there is a need to construct about 200,000 units per year. For next year its proposed to construct 50,000 latrines, thus tripling annual output

- Activity objective:* To provide 50% household coverage within 5 years and 100% coverage within 10 years.
- Duration:* Continuous

Construction of latrines for schools and health facilities

All schools and health facilities will be provided with sanitation facilities. Most schools have already been covered, but some remain, and 2000 is planned for next year and 1000 thereafter and 500 the third year. for Health facilities, about 520 facilities remain without any sanitation facility. These will be developed in 2004.

- Activity objective:* To provide adequate sanitation facilities at all schools and all health facilities in the country within 3 years
- Duration:* Three years for full coverage.

Construction of public latrines

Construction of public toilets will be developed for ALL important public places over the next 5 years. For the next three year, it is proposed to construct one public toilet in each district totaling 320.

- Activity objective:* To provide service and to demonstrate sanitation facilities
- Duration:* 5 years, but starting with construction of 100 units annually

Capacity building for public and private sector

- *Latrine construction masons:*
There is a need for about 10,000-12000 latrine construction masons nation-wide, assuming that one mason can construct a maximum of 25 facilities per year. For year 2003, we hope to train

3000 latrine construction masons to meet the household latrine demand. It is anticipated that sanitation promotion and an effective hygiene education programme will generate demand.

Activity objective: Train 12,000 latrine construction masons.
Duration: Equal activity over 3 years (1/3 each year)

- Training of hygiene promoters

As indicated, about 12,500 hygiene promoters will need to be trained annually over the next three years. This means an average 400 annually in each province (total 32 provinces) Thus training of promoters will take place at provincial levels, running on average 14 courses with 30 promoters in each three day course. The hygiene promoters will to the extent possible be recruited within the villages and the framework of the extended basic health services under development by MOH.

Activity objective: To train 37,500 hygiene promoters for conveying health messages to every household for improved health through behavioural change
Duration: Equal activity over 3 years (1/3 each year)

- Training of Trainers for Hygiene education

For the training of 12,500 hygiene promoters, about 150 trainer will to be trained. For each province 4 or more hygiene trainers will have to be trained, equal number of male and female trainers. The trainers will be recruited individuals from the local communities specifically for the training exercise.

Activity objective: Develop capacity to convey hygiene messages
Duration: One year duration

Develop and establish monitoring and evaluation system

The ministry of Rural Development and Rehabilitation will establish a monitoring and evaluation system to assess progress on sanitation and hygiene education.

4.1.3.2 Useful definitions

Basic hygienic sanitation facility: This means a household latrine, which safely contains human excreta, and thus protect users and the environment from adverse effects. Furthermore, the facility should be cleanable. For Afghanistan, this means that the floor surface should be washable. Mud floor would thus not qualify as adequate in this respect by using this criteria, most traditional latrines would have to be improved.

Sanitation: In the context of this paper this means, household sanitation including latrines, personal and household hygiene.

Environmental Sanitation: This covers sanitation in a larger aspect than the household such as communities and local settlements. It covers hygiene/cleanliness, management of wastes including human and household wastes. While also covering local environmental issues such as pollution of water, air and ground.

Sanitation promotion: Marketing of sanitation facilities without providing in depth health knowledge as to why sanitation is important.

Hygiene education: Providing knowledge and information about personal, household and environmental hygiene and why this is important for improved health and improved well-being by all.

4.2 Bangladesh

4.2.1 Introduction

Safe, adequate and accessible supplies of water, together with proper sanitation, are basic needs and essential components of primary health care. Inadequate provision of safe drinking water and sanitation are directly and indirectly related to the communicable diseases, health risk, poor health and environmental pollution. The direct benefits of water supply and sanitation can be exemplified by the reduced incidences of waterborne and water-related diseases. Sanitation is particularly effective in protecting water and soil and controlling worm infections. The indirect benefits include improvement of hygienic conditions and promotion of a state of well-being conducive to social development. Economic benefits result from good health, low incidence of diseases and increased life expectancy.

Access to water supply and sanitation is a fundamental need and a human right. The Agenda 21, firmly established that water and sanitation are critical to human and economic development. The Global Water Supply and Sanitation Assessment by World Health Organization (WHO), United Nations Children Fund (UNICEF), Water Supply and Sanitation Collaborative Council (WSSCC) revealed that at the beginning in 2000 two-fifths (2.4 billion) of the world's population was without access to improved sanitation. Approximately 4 billion cases of diarrhoea each year causing 2.2 million deaths, mostly among children under the age of five and intestinal worm infect affecting about 10% of the population in developing world are major public health threats. (WHO, UNICEF and WSSCC, 2000). The World Summit on Sustainable Development in Johannesburg, South Africa, in September 2002, greatly emphasized on safe water and sanitation and urged that the population without sanitation in developing countries be reduced to half by the year 2015.

The most serious surface water contamination problem in Bangladesh is the fecal pollution originated from indiscriminate defecation and inadequate sanitation facilities. The annual diarrhoeal mortality of children under the age of 5, as reported by Bangladesh Bureau of Statistics and UNICEF, decreased from 260,000 in 1991 to 110,000 in 1996 (BBS/UNICEF, 2000). Although the rate of diarrhoeal mortality has decreased significantly, the incidence of diarrhoea still remains high. It is estimated that 84% of the rural people use contaminated surface water for household purposes, which along with unhygienic practices make people vulnerable to mild to moderate diarrhoea.

In water and sanitation sector, drinking water supply received greater attention as compared to sanitation during the last few decade. As a result, the population coverage by proper sanitation remains low. The efforts of providing safe water without adequate sanitation could not create expected health impact in Bangladesh. This is primarily because of inadequate and unhygienic sanitation and poor hygiene practice, which can cause continued transmission of disease through many routes even after supplying of safe drinking water.

4.2.2. Sanitation Situation in Bangladesh

4.2.2.1 Development of Sanitation in Bangladesh

The progress in sanitation is much slower as compared to water supply in Bangladesh. The Department of Public Health Engineering (DPHE) undertook an action research program in collaboration with WHO in 1954 to develop low-cost option for controlling Cholera epidemic

through introduction of safe disposal of human excreta. In 1962, DPHE-UNICEF collaboration introduced water-sealed latrines free of cost to the community in selected areas. A study in 1973 showed that only 30% of these latrines were in use with water seal broken. In 1975, water-sealed latrine with concrete slab were sold at highly subsidised price and 60% of the latrines were found in use. The program of selling water-sealed latrines gradually expanded through production centers in Upazilas. The concrete slab of the water-sealed latrine suffered heavy damage during transportation in rural conditions. In 1979, BUET and UNICEF collaborated on an action research to develop a durable robust slab for water-sealed latrine and ferro-cement slab was introduced in 1980.

Greater emphasis on water and sanitation was put during International Drinking Water Supply and Sanitation Decade (IDWSSD) during 1980-1990. The subsidy on latrine components was reduced from 68% in 1975 to 34% in 1985. Subsequently, conditionality was introduced that the beneficiaries consisting of 10 families must have sanitary latrine installed to make them eligible for a government tubewell. By the end of 80s, latrine shops selling water-sealed latrines and concrete rings had began to appear in bazaars and towns. Despite a lot of efforts by DPHE and UNICEF, the sanitation coverage could not reach more than 16% at the end of the decade in 1990.

In 1991, a 10-year national sanitation strategy was formulated and the country-wide sanitation program moved into a much higher gear. The social mobilization approach known as SOCMOB was launched in 1993 and sanitation week was introduced at the national level down to the union level, which was later discontinued in 1998. School Sanitation Program was also launched in phases in 44 districts during 1992-2000 to promote sanitation involving school management committee with technical support from DPHE and UNICEF. The home-made pit latrine was also promoted under latrine building campaign.

4.2.2.2 Population Coverage

According to WHO/UNICEF/WSSCC Global Assessments of Water Supply and Sanitation the urban, rural and total sanitation coverages were 82%, 44% and 53% respectively in 2000 (WHO/UNICEF/WSSCC, 2000). But according to BBS/UNICEF Multiple Indicator Cluster

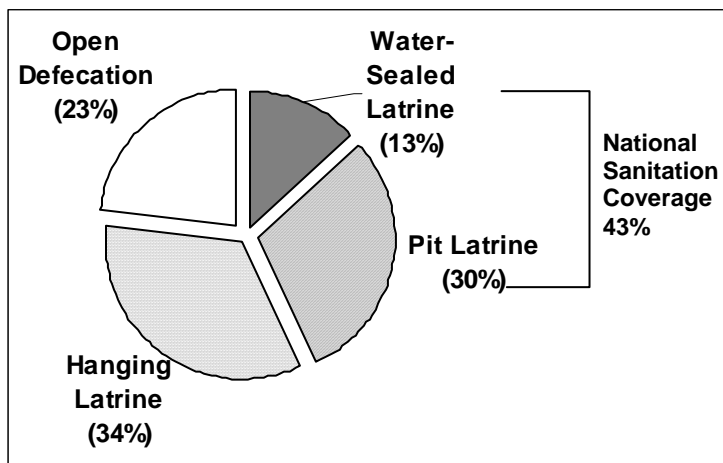


Figure 4.3 : Sanitation Situation in Bangladesh in 2000

Survey, the corresponding figures, which include simple pit latrines were 61.2%, 41.3% and 43.4% respectively in 2000. When pit latrines are taken into account, the sanitation coverage in Bangladesh as shown in Figure 4.3 remained 43% in 2000. This survey also reported that 43% urban and 10% rural households had water-sealed latrines (BBS/UNICEF, 2000). The subsequent increase is assumed to be very low during the years 2000 to 2002.

The government of Bangladesh conducted a countrywide extensive survey of existing sanitation situation throughout the country under National Sanitation Campaign engaging Local Government Institutions (LGIs). It is a commendable work completed by the Local Government Division to acquire baseline data for area-wise planning of sanitation programs to achieve the National target. The results of baseline survey of 21.08 million household in 64 districts, 278 Paurasavas (Municipalities) and 6 City Corporations show only 32% of households uses sanitary latrines, 25% uses unhygienic latrines and 43% uses no latrines (Figure 4.4). It has also been found that 31% of the households cannot construct latrine for financial inability, about 5% do not have any land to construct latrines (GOB 2003).

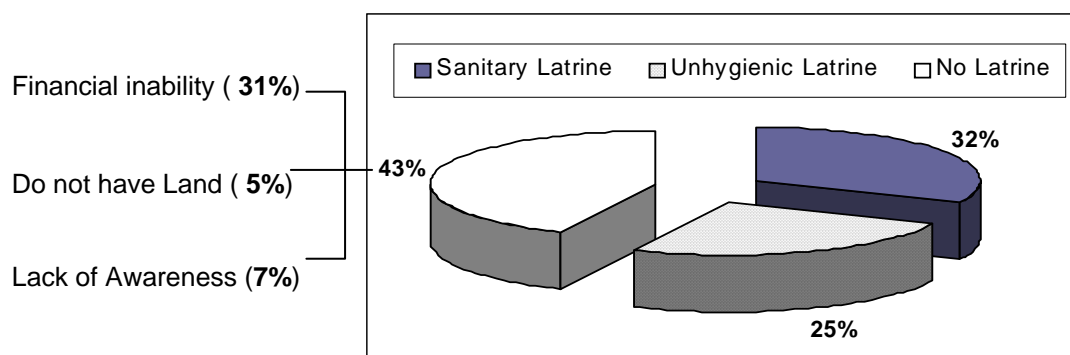


Figure 4.4 : Present Sanitation Situation in Bangladesh (GOB, 2003 Baseline Survey)

It appears from Figure 4.4 that the present sanitation coverage as compared to 2000 situation (Figure 4.5) has decreased. It may be due to the fact that some facilities build earlier have deteriorated to the extent that they can no longer be considered as sanitary latrine and/or some pit latrines for valid reasons have been excluded from the list of sanitary latrine in the base line survey carried out in 2003 (GOB, 2003). The baseline survey revealed that about 31% of the households may need subsidy or some short of financial help and about 5% of the population will need community latrines to bring those under sanitation coverage. Simple awareness and motivation will bring 25 % household with unhygienic latrines and remaining 7% without any latrine into sanitation coverage.

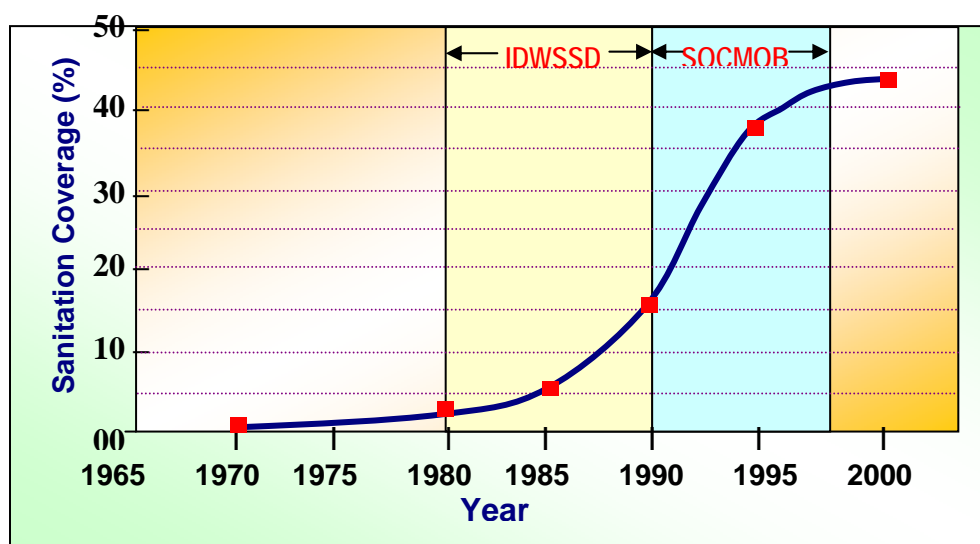


Figure 4.5: The progress in Sanitation Coverage in Bangladesh during last 3 decades.

The increase in population coverage by sanitation during last three decades is as shown in Figure 4.5. It may be observed that a sharp increase in sanitation coverage occurred during the decade (IDWSSD) and beyond while social mobilization (SOCMOB) program was active and then showed a lower rate of increase in the late 90s. There is no increase in sanitation coverage after discontinuation of SOCMOB in 1998. It appears from the baseline survey that sanitation coverage has in fact decreased after discontinuation of social mobilization program.

The sanitation coverage in City Corporations, and Paurasavas (Municipalities) are comparatively better than rural sanitation coverage in Bangladesh (Figure 4.6). Sanitation coverage decreases from city corporations to small towns and to rural areas, while households without latrine increases from urban to rural areas.

The population growth in urban centre is out of pace with the infrastructure development causing unhygienic environment in the densely populated urban slums. Sewage from this unserved urban areas finally reaches the water bodies in and around urban centres to cause severe water pollution. The water sources of rivers, lakes and ditches around urban centers are 3 to 10 times more contaminated than the those away from urban centers and an estimate indicates that 50% of this contamination is contributed by untreated sewage.

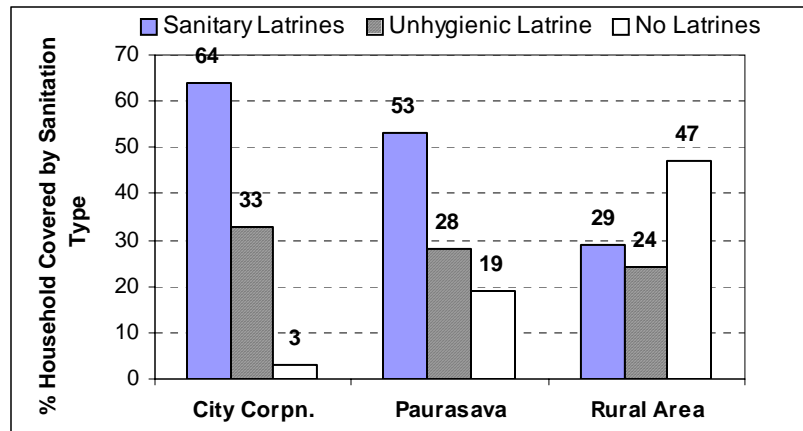


Figure 4.6 : Rural and Urban Sanitation Coverage by Types of Latrine

The population coverage by sanitation is much lower than the coverage by water supply in all Asian countries. Water supply and sanitation in protection of population and component of the environment are shown in Figure 4.7.

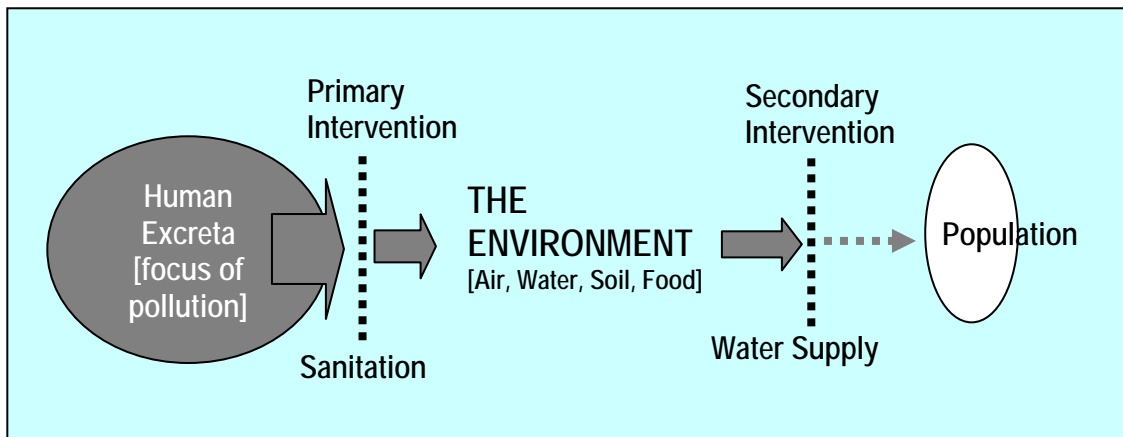


Figure 4.7 : Water Supply and Sanitation in Protection of Environment and Population

Sanitation is the primary intervention, which protects the water, air, soil and food from contamination. While water supply is the secondary intervention that protects population from ingestion of large number of pathogens. Higher population coverage by water supply indicates that people give preference to protect themselves over protection of the Environment. However, the reasons for low population coverage by sanitation can be cited as below:

- Lack of awareness;
- Lower priority;
- Financial inability (affordability)
- Low prestige and recognition;
- Disparity in fund allocation and utilization;
- Inadequate promotion;
- Inappropriate approaches;
- Neglect consumer preference in technology selection, etc.

The national Annual Development Program (ADP) in Bangladesh allocated about 2.9% of the total development fund to water and sanitation sector in 2002-2003 (ADP, 2002). Water supply and sanitation is not a full sector, rather a sub-sector in the ADP document. Allocation of funds within the sector deprives water and sanitation sub-sector. Again water supply always receive priority over sanitation in respect of resources allocation at the project level.

It is understood that health benefits are not ensured without the combined protective cover of safe water, hygienic latrine, cleanliness and health consciousness. An integrated approach is highly essential to get the benefit from the increased coverage of water supply and sanitation.

The successes attained in the sanitation sector during 1990-98 in Bangladesh may be attributed to the collective efforts of government and non-government organizations (NGOs) and to the integration of social mobilization and hygiene education in the sanitation program. The present trend of sanitation sector shown in Figure 3 suggests that a renewed and intensive campaign is required for further increase in sanitation coverage.

4.2.2.3 Sanitation Practice in Bangladesh

There are different sanitation practices in Bangladesh. These are discussed below:

Indiscriminate Defecation

The recent baseline survey shows that 43% of the rural and urban population in Bangladesh do not have latrines. This vast multitude of rural and urban poor practice indiscriminate defecation. The absence of any latrine means that people defecate at different places, in open fields or ditches or road sides.

Hanging Latrine

A Hanging latrine consists of a small fenced room or shed with a hole in the bottom through which faeces fall on the ground or into the water. The latrine consists of a platform with a squat hole built over a body of water, and a superstructure which provides privacy. This type of latrines is used where streams, canals, rivers and other water bodies are used for excreta disposal. Major health problem results from the hanging latrine system. The water receiving the wastes becomes

heavily polluted, and the person who use the water downstream for washing, drinking or cooking are exposed to the pathogens in the water.

Conventional Pit Latrine

One of the commonly used options for rural sanitation in Bangladesh is the conventional Pit Latrine. It consists of a pit in soil covered with a slab that contains a hole through which the feces enter into the pit. Sometimes no cover is provided on the pit. The solid waste will remain within the pit, the liquid waste will percolate into the sub-soil via the permeable walls of the pit. The slab is housed within a superstructure. This latrine is suitable for rural areas where population density is low. Rural people install this type of latrine because of many reasons such as low construction and operating cost, ease of construction and no water required for operation. Since, the faecal matters in most pit remains accessible to flies, the health benefit of these type of latrines is questionable.

Service Latrines

Service latrines still exist in some urban centres specially in old urban areas as remainder of old practices. These latrines are not considered hygienic and are being gradually replaced by alternative types of sanitary latrines.

Pour-Flush Latrines

Pour-flush latrine is identical to a pit latrine but contain a pan with a water seal through which faeces reaches the pit. For rural sanitation, DPHE has developed a low-cost pour-flush direct pit-latrine that was being sold at subsidized prices to the rural people. These are manufactured in the Village Sanitation Centre (VSC). Pour-flush latrine is gradually becoming popular in urban areas as well. For densely populated areas, a twin-pit off-set latrine has been developed. This latrine has a permanent structure with a squatting slab and a water seal pan from which the night soil is piped to two pits alternatively by a dividing box.

Miscellaneous Pit Latrines

NGOs and other development partners have developed various types of pit latrines based on conventional and pour-flush pit latrines to suit the socio-economic and socio-cultural situations in the area. These latrines are gaining acceptance in local level as local conditions have been given priority in the design and installation of these latrines.

Septic Tank

Septic tank with soak well is the sanitation option for high and medium income household in the urban and rural areas. This option is suitable for low-density area and the cost of construction and operation is relatively high. In the urban area of Bangladesh, it is a popular option of sewage disposal. In this system, the solid part of sewage is retained in the septic tank for decomposition while the liquid part is discharged in the soak well with an inverted filter for infiltration into soil.

Small Bore Sewerage System

This system is not very common sanitation option in Bangladesh although the system has several advantages and cheaper in comparison to the conventional sewerage system. Dhaka Water Supply and Sewerage Authority (DWASA) has completed such a project in Mirpur area in Dhaka for a small community under Dhaka Urban Infrastructure Improvement Project (DUIIP) and the Local

Government Engineering Department (LGED) has installed another small bore sewer system in Khalishpur in Khulna. This sanitation option is becoming more popular in Bangladesh particularly, in densely populated areas where septic tanks exist.

Conventional Sewerage System

Dhaka is the only urban area in the country having water-borne sewage disposal system. The sanitation facilities of Dhaka city that are connected with the sewerage system covers only 35% of the population of Dhaka city. Sewage is collected from these areas through a sewer network and lift pumping stations and transported to the sewage treatment plant at Pagla. After treatment of raw sewage, the treated effluent is discharged into the river Buriganga.

According to WHO, UNICEF and WSSCC (2000) the improved sanitation options are connection to public sewer, connection to septic tank/soak well, pour-flush latrine, ventilated improved pit latrine and simple pit latrine. In Bangladesh, pour-flush water-sealed direct pit latrines are being promoted for rural areas, while pour-flush twin off-set pit latrines and septic tanks with soak well are the preferred options in urban and peri-urban areas.

4.2.2.4 Components for Latrine Construction

The Department of Public Health Engineering first established Village Sanitation Centres (VSC) in each upazila to manufacture latrine components such as concrete ring and slab with a water-seal for sale at subsidized rate to promote installation of sanitary latrines under rural sanitation program in the seventies. The private sector become involved in the manufacture of latrine components in the mid-eighties, when the demand for latrine component increased during IDWSSD. The VSC of DPHE increased to about 900 by 1990. The NGOs, along with other activities, have also established about 2,200 latrine production centres in Bangladesh. The private producers were successful, despite competition from subsidized public and NGO production centres and the number of private produces have grown to more than 4,500. The success of the private producers lies in its type, quality of products, prices and services. The private producers offer a wider variety of products, construction services, flexible, simpler and cheaper latrine design and allow payment in installment. Figure 4.8 shows the variety of products available in private production centres. The common components of products are reinforced or plain concrete slab, ring, pan, pipe, pillars, ventilator, Chari, bailla, tob etc. The components for the construction of sanitary latrines are now available throughout the country at private, public or NGO production centres.



Figure 4.8 : Variety of Products in a Private Sale Centre (ITN Newsletter, No.17)

4.2.2.5 Sanitation Issues

Inadequate allocation of funds to Water Supply and Sanitation sub-sector in the Annual Development Program and disparity in allocation between water supply and sanitation and between urban and rural water supply and sanitation are some of the problems for imbalance growth of sanitation in Bangladesh.

A major fraction of sewage produced in all urban slums escapes any sorts of treatment and safe disposal, which ultimately reaches and contaminates the water bodies in and around all urban centers.

Poor coverage by sanitation and unhygienic sanitary practices in rural areas are the causes of contamination of water and soil and degradation of rural environment. Lack of hygiene education and knowledge about consequences of unhygienic practices is a barrier against promotion of sanitation in rural areas.

Flooding, high water table, excessive rainfall and adverse soil condition are the causes of overflow and collapse of pit latrines. Affordability and other priorities of the hardcore poor (estimated 35 million) are problems to achieve total sanitation coverage in rural population.

4.2.3. Sustainability of Sanitation System

4.2.3.1 Definition

The achievement of sanitation coverage is not enough, it must be sustainable to gain the benefit from total sanitation coverage. World Commission for Environment and Development (WCED) has defined sustainable development as “development that meets the needs of the present without compromising the ability of the future generation to meet their own needs”. Sanitation improves environment and hence sustainability refers mainly to *functional sustainability* and to some extent to *environmental sustainability*.

4.2.3.2 Functional Sustainability

Improvement in sanitation is a change in practice and needs people’s acceptance and urge to build and sustain. In case of sanitation, proper operation/use and maintenance are most important for sustainability of the system. There are examples in which 100% sanitation coverage achieved in an area or in a pilot project gradually collapsed to disuse. The functional sustainability of sanitation facilities are shown in Figure 4.9.

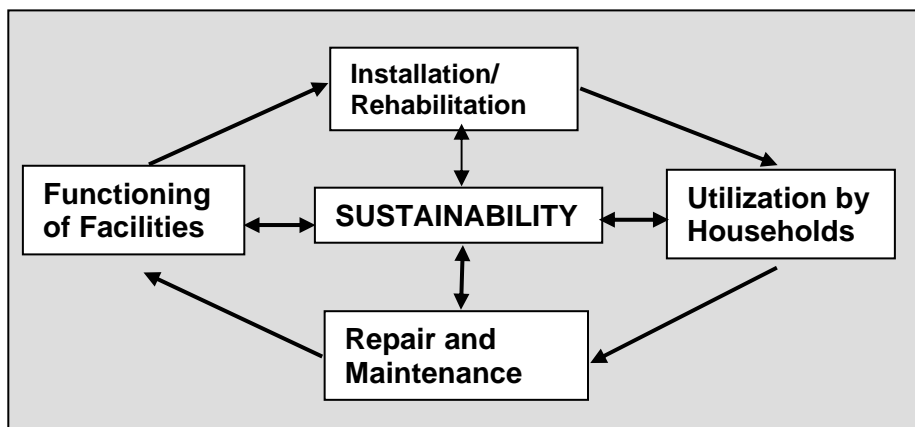


Figure 4.9 : Functional Sustainability of Sanitation Facilities

The Key issues of functional sustainability are :

- Installation and replacement of components, when needed
- Proper use of facilities
- Repair and timely maintenance
- Keep the system functional

4.2.3.3 Environmental Sustainability

The provision of sanitation is intended to improve environment and quality of life. Hence, there is less possibility that the service provisions cause degradation of the environment. However, improper design and maintenance of sanitation facilities can cause environmental pollution. Some of the possible negative impacts of sanitation facilities include:

- Damage/degradation of natural resources by poorly managed facilities
- Groundwater pollution from pit latrines /soak well etc.
- Pollution from disposal of sludge from treatment of water and wastewater
- Pollution from disposal of effluent from treatment plant/ facilities

4.2.4. Program for Total Sanitation in Bangladesh

4.2.4.1 The Past Achievement and Target

The Government of the People's Republic of Bangladesh has set a target to achieve "*Total Sanitation by 2010*" shortening the initial target of "*Total sanitation by 2015*". The target was rescheduled observing enthusiastic response to renewed 'National Sanitation Campaign' launched in the country. The month of October has been declared as *Sanitation Month* in Bangladesh. The government, NGOs and development partners have joined hands to bring the entire country under sanitation coverage. The past achievement in sanitation and the future target and the growth rate to achieve total sanitation by 2010 is shown in Figure 4.10.

In order to achieve this target, the population coverage by sanitation has to be increased to about 9 % per annum as compared to 2.5% increase envisaged to achieve the global target. The increase in sanitation coverage at a rate 3.5 times higher than the global rate of achievement is a challenging task but not impossible to achieve. There is an indication of success in past achievements in Bangladesh. The target can be achieved, if the annual increase in sanitation coverage as achieved in early phase of the social mobilization as shown in Figure 8 can be maintained throughout the remaining period of 7 years. This will require a massive sanitation campaign from national to village levels.

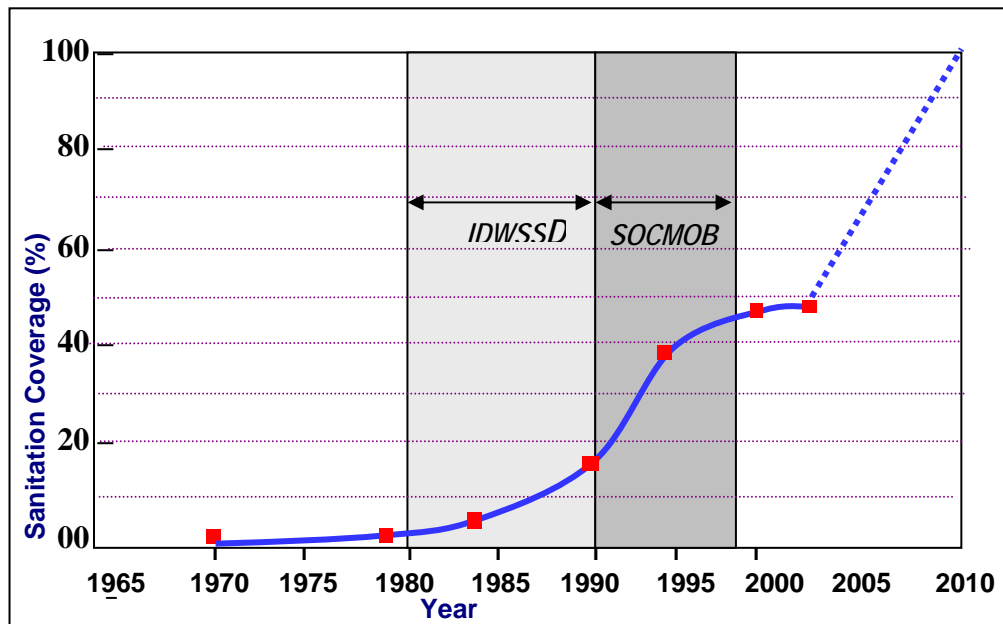


Figure 4.10 : Sanitation Coverage Achieved and Future Target in Bangladesh

4.2.4.2 Sanitation Strategy

To address the present situation, new strategic approach supported by adequate financial resources is required to achieve the goal of total sanitation coverage by the year 2010. Total Sanitation needs complete elimination of open defecation, conversion of hanging latrines and promotion of hygiene practices and safe disposal of solid waste and wastewater. The successes attained in the sanitation sector in late 80s and early 90s may be attributed to the collective efforts of government and non-government organisations (NGOs) and to the integration of social mobilisation and hygiene education in the sanitation program. The present trend of sanitation sector suggest that a renewed and intensive campaign involving the following elements is required to achieve the ultimate goal of total sanitation coverage.

Integrated Approach

An integrated approach combining, sanitation and hygiene education is needed for achieving overall success in the improvement of general health, the quality of life and the environment. Provision of improved sanitation facilities with health education can ensure proper use and maintenance.

Awareness Campaign and Motivation

Motivation is required to reverse unhygienic sanitation practices. Often social status, cleanliness for religion and privacy factors predominate over health and hygiene factors where people do not have adequate knowledge on health and sanitation. These issues can be applied strategically in motivating people to accept an improved option of sanitation. The acceptance of any improved sanitation option by the community is a key factor of successful sanitation program. Motivation is very important for the acceptability of an improved sanitation option.

Community Participation

Community-type latrine may be considered where individual household latrine is not affordable or the households do not have a land of their own to construct latrines. In each step community participation is essential for the success of such program. Contribution in cash or kind will ensure community's ownership of the facilities, which is also very important for up-keeping it. Active participation is required for smooth operation and maintenance of the facilities.

Promotion of Private Sectors

CBOs, NGOs and private sectors should be involved effectively in sanitation program and they should be promoted in the production and sale of sanitary latrines by providing soft loans or grants. Private sector should be encouraged and supported to establish sanitation production centre at the critical problem areas (remote village, high-water table and flood-prone areas) for effective coverage.

Improved Understanding and Capacity building

The level of knowledge on health and sanitation of the people of rural Bangladesh is very low. As the impacts of improved sanitation on health is not direct, people are reluctant in improving their sanitation facilities. People should have a clear understanding of the adverse impacts of improper sanitation and the benefit of improved sanitation. Improved understanding of sanitation is the pre-requisite for a successful sanitation program. Once the people realise the bad consequences of improper sanitation, and the benefit of improved sanitation, they would spontaneously be interested to participate in any sanitation program.

Sanitation facilities should be improved through formulating appropriate policies and undertaking programs in this area. Capacity building of the individuals, local authority as well as the CBOs towards the sustainable development of overall sanitation program should be strengthened.

Technological Options

After having the knowledge on health and sanitation, people should know the ways and means to face the sanitation problems. Specially, the concerned groups of people including members of local authorities, VSC, NGOs and CBOs should know the technology of low cost sanitation options suitable for their areas. Conventional sanitary latrines are not suitable for the high-water table and flood-prone areas. Also there is a need for technological innovation to convert existing unhygienic latrine to hygienic one specially conversion of hanging latrine to a sanitary latrine.

Provision of extensive training program and demonstration to the concerned local groups as well as individuals is needed. The sanitation option should be based on local technologies. It should also be acceptable and affordable to the users. Trained people can also supervise the latrine construction work to minimise the construction defects. Multiple options to suit the needs and affordability of households should be made available.

Cost of Sanitation

Cost of sanitation facilities is an important factor to be considered in planning a successful sanitation program. It should be affordable to the people, otherwise, they will not be interested in taking a sanitation option. Providing sanitation facilities to the poor at free of charge and tax concession to the well to do people are good strategies to increase sanitation coverage. However, people's contribution in any other form should be ensured which is crucial issue for operation and maintenance.

Subsidy

The National Water Supply and Sanitation Policy, 1998 calls for water and sanitation services to be based on user demand and cost sharing (GOB, 1998). However, a provision of partial and full subsidy may be needed for hardcore poors.

4.2.4.3 Major Considerations for Sanitation in Bangladesh

The major considerations for the provision of improved sanitation and its sustainability can be grouped into technical, institutional and socio-economic groups.

Technical Considerations:

- Technology appropriate to local condition;
- Innovative technologies are required for conversion of hanging latrine to sanitary latrines and appropriate options for high-water table and flood-prone areas and areas with impermeable soils;
- Assured quality of services under all conditions; and
- Availability of different sanitation options to make choices based on affordability.

Institutional Considerations:

- Adequate institutional frameworks involving government departments, Local Government Institutions, NGOs and CBOs;
- Promotion of private sector in production of latrine components along with government production centers to make latrine components easily available in all areas;
- Inter-sectoral collaboration and cooperation

Socio-economic Considerations:

- Social mobilization and political commitment;
- Participation in construction, operation, maintenance and repairing with due considerations to gender issues;
- Promotion of hygiene education and capacity building at local level;
- Subsidy is generally discouraged but partial to full subsidy would be required for hard-core poors to increase population coverage;
- User preference in selection of technologies; and
- Sanitation options affordable to users.

Water Supply Sanitation Collaborative Council, Bangladesh Chapter (WSSC-B, 2002) identified the following areas requiring attention in water supply and sanitation in Bangladesh:

- The poorest segments of the population having least access to safe water supply and sanitation should receive the most support from government and development partner agencies.

- Total sanitation and hygiene promotion campaign should be mounted to achieve the real benefit.
- Water supply and sanitation services should reach the urban low-income communities through public-private partnership.
- Local government should be strengthened to work with communities in creating awareness and ensuring equitable service delivery.
- The resources for the water and sanitation sector should be increased and investment should be rationalized taking into account the existing poor-rich and rural-urban inequities.
- Attempt should be taken to remove gender-based inequalities in access, resources and responsibilities.

4.2.4.4 Total Sanitation Experiences in Bangladesh

Total sanitation means safe disposal of human excreta, solid wastes and wastewater and hygiene practice by all in a geographical area or community. Total sanitation is important to gain maximum health benefit from sanitation. It is heartening to note that there are large numbers of examples of total sanitation of communities and villages implemented by government and non-government organizations in different parts of the country. The basic steps adopted by different organizations include baseline survey, mobilization of community, preparation of action plan and implementation of the plan and monitoring of the process. The most important activities of the process are health and hygiene education campaigns (Sessions) to enhance awareness and knowledge base, change attitude towards sanitation and promote hygiene practice followed by construction and installation of hygienic latrines and monitoring of progress of installation of latrines and behavioral change. The chairman and members of the Union Parishad, influential member of the community, imams of the mosques, health workers and Watsan Committees, cultural and children groups formed for the campaign played the key roles in achieving total sanitation. The GOs and NGOs, worked as facilitators in the process to achieving total sanitation.

While the successful pilots are proof that it is possible to attain total sanitation, the big challenge remains how to scale up the examples to national level. A national strategy is needed to transform the small-scale successes into national level achievements. The experience in Bangladesh shows that when the people are fully aware of the ill effects of poor sanitation and convinced for the change, they make the change themselves. It was interesting to note that even the poor were supported by the well-off people in the community to achieve total sanitation. The formulation of such strategy requires consensus and participation of all concerned agencies to ensure coordination and cooperation in implementing this huge task. No single agency can tackle this alone.

A recent joint assessment conducted by sanitation stakeholders including the Government, NGOs, Micro Finance Institutions, and Development Partners has confirmed that there are now over 1000 villages with total environmental sanitation. Physical investigation during field visits indicates that these villages have completely eradicated open defecation, are very clean, and there is no foul smell from excreta or other waste. Signboards in many of these villages proclaim, “nobody defecates in the open in this village”. Mothers and children describe with pride and honour that their village is sanitised. More importantly, the impact of total sanitation on maternal and child health is very clear.

These disparate efforts, however successful they might be, will have insignificant impact on the country's waterborne disease, water resources and ultimately on the quality of life, unless scaled up nation-wide. The experiences of the total Sanitation in the village scale show that the national program should include the following guiding principles:

- A target for total (100%) environmental sanitation in every Union Parishad;
- A demand based sanitation through awareness and hygiene education;
- No fixation on technology, provision of options and choice based on affordability;
- Minimum requirement is to effectively confine the excreta, and adopt an incremental improvement of technology over time;
- Villagers should plan, implement and monitor under direct leadership of the Union Parishad/local government;
- NGOs should acts as facilitators, including orientation of UPs, mobilization of communities;
- The Department of Public Health Engineering (DPHE) as the lead agency should provide technical oversight and coordinate the national program;

The above principles should be incorporated into a National Sanitation Program, however, in order to ensure a sound approach for scaling up nation-wide, the initial program should have a process of learning, adaptation, and refinement. Figure 4.11 illustrates the cycle of events leading to the development, testing, refinement, and scaling up of the National Total Sanitation Program.

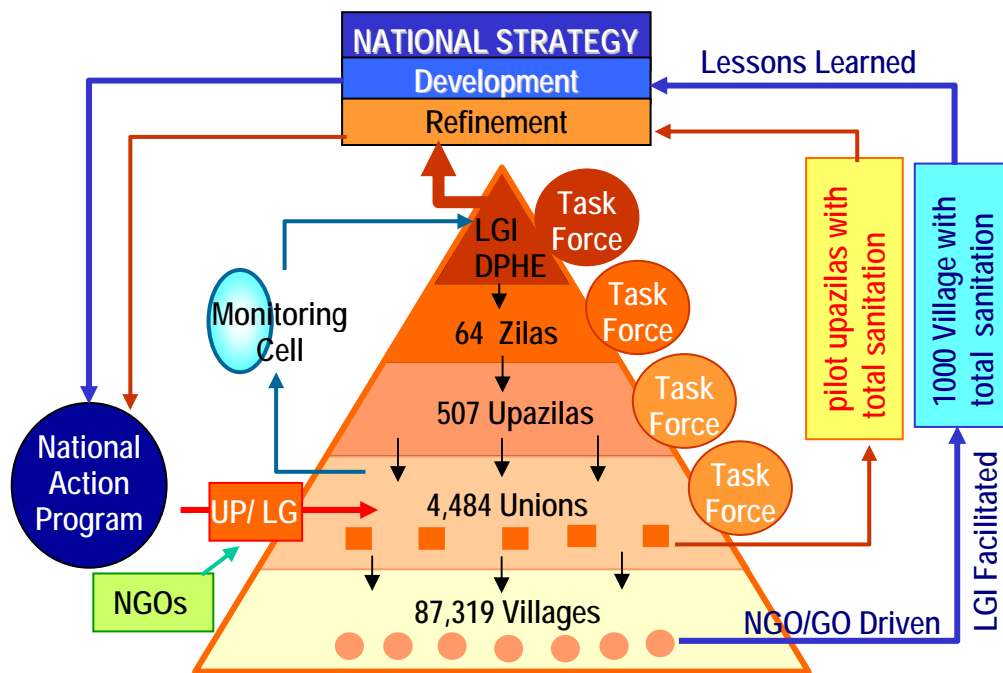


Figure 4.11 : The National Sanitation Program to Achieve Total Sanitation in Bangladesh

Based on current lessons at village level where NGOs provided direct support to the community organizations and successfully motivated the community to eradicate open defecation from the entire village, made provisions for cheap and yet functional fixed place defecation for all, thereby significantly improving the community sanitation environment. The Government of Bangladesh

(GOB) during the National Sanitation Campaign in October 2003 adopted this Total Sanitation as the Bangladesh Model for its National Sanitation Program. At the apex level the GOB has formed a core team to internalize the lessons from the field and prepare a demonstration program to apply lessons on a large scale with an adaptive and structured learning mechanism through the establishment of a Monitoring and Learning Cell. The demonstration program will adopt a decentralized service delivery structure with the Union Parishads responsible for implementing the Total Sanitation. The ministry will closely monitor the activities of 20/30 pilot Upazilas, where the NGOs will partner with the UPs to implement Total Sanitation. To have a representative sample of villages and Unions the spread of the Upazilas/Unions should be based on geographical and other socio-economic consideration. Lessons from the these 20/30 Upazilas will be systematically analyzed and the GOB apex group will review lessons from the field and refine the strategy accordingly for nationwide application.

4.2.4.5 Government Initiatives to Achieve Total Sanitation by 2010

- (1) The government of Bangladesh has taken up an extensive program of “National Sanitation Campaign” in order to ensure construction of sanitary latrines, its use and personal hygiene practice by 100% of the population by the year 2010. The aims of this campaign are to:
 - Change the attitude and practice of population towards use of sanitary latrine by creating awareness through cooperation and collaboration of the Government, and Non-Government Organizations, Development Partners and better-off people of the society with full political commitment at all level;
 - Encourage setting out targets by Local Government Institutes (LGIs) and NGOs in three phases for the years 2005, 2008 and 2010 to achieve the goal of 100% sanitation coverage;
 - Discourage open defecation;
 - Create social mobilization for the use of sanitary latrines and hand washing by all members of the family after defecation; and
 - Provide importance to maintenance of personal hygiene and capacity building of the population.
- (2) Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives has allocated 20% of its budget for sanitation.
- (3) Observance of “Sanitation Month” in each year as part of National Sanitation Campaign.
- (4) Task Forces/Watsan Committees with definite terms of reference have formed in the National, City Corporation, District, Hill District, Municipality, Upazila, and Union levels to implement objectives of the national sanitation program.
- (5) Government of Bangladesh has completed the nation-wide baseline sanitation survey and acquired relevant information to prepare a comprehensive plan to achieve the goal.

4.2.5. Conclusions

Government of Bangladesh based on the response of the renewed sanitation campaign in the country has set the target to achieve the total sanitation by 2010, far ahead of international development goal of achieving sanitation for all in the year 2025. Total

sanitation is the most desirable approach to maximize health benefits but achievement of total sanitation by 2010 for all rural areas and sustainability of achieved coverage are big challenges for Bangladesh. The target can be achieved, if the progress in sanitation coverage attained in the early part of the first sanitation campaign in the nineties can be maintained during next 7 years. Government of the Peoples Republic of Bangladesh has, therefore, launched intensive 'National Sanitation Campaign' from central to village levels involving Development Partners, NGOs, CBOs, Local Government Institutions, village leaders and is committed to sustain the campaign until the target is achieved. The baseline sanitation situation has been established through a nation-wide survey involving the local government machineries. The government of Bangladesh is in the process of development of a comprehensive action plan in consultation with the stakeholders in the sector to achieve total sanitation by 2010.

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4.3 Bhutan

4.3.1 Background

4.3.1.1 Bhutan at a glance

Bhutan is a small, land-locked kingdom in the eastern Himalayas, bordered by India to the west, south and east, and by China (Tibet) to the north. The country measures 46,500 sq. km and is almost entirely mountainous, with 65-70% covered by forest. Within a distance of less than 175 km, the altitude drops from approximately 7,500 m to about 200 m above sea level. The climate varies strongly in relation to the altitude. About 80% of the population live in rural areas, most of whom are involved in subsistence farming. However, less than 10% of the land is suitable for cultivation and most of this is already being farmed. Increasing urbanisation is recognised as a threat, the government estimates that at current rates of growth, almost one half of the total population will be living in urban areas by the year 2020.

Bhutan became a nation state in 1907, when its first King, Ugyen Wangchuk consolidated the autonomous factions ruling the land. Today's monarchy, led by the 4th King, Jigme Singye Wangchuk as head of state, has evolved to a representative system of government with a well-developed system of local representation from village level up to the National Assembly, Bhutan's legislative body. In 1998 the King devolved his powers to a Council of Ministers, who are now elected by the 154-member National Assembly. Government is led on a rotating basis by one of the country's 10 ministers. At the sub-national level, the country is governed by administrative systems within 20 districts and 201 sub-district blocks.

Planned socio-economic development in Bhutan commenced only in 1961. Before which there was no national currency, only a few modern schools or hospitals, no roads or motor vehicles, telephones or postal services. Mortality and morbidity were high and life expectancy was low.

The concept of health in Bhutan is seen in the context of the overall development strategy, which defines development as the preservation of spiritual and emotional, as well as economic, well-being. The central development concept is that of Gross National Happiness. The word 'development' is less concerned with material prosperity than with 'enlightenment', which is seen as the attainment of the individual liberty and freedom necessary for happiness. Social welfare is seen as an important part of the State's role in supporting the happiness of its peoples. As such, government spent 12.9 and 9.2 percent of its 2000 budget on education and health services respectively.

Except for some minor non-necessary medical procedures, health services are entirely publicly funded. In spite of the challenging physical and logistical barriers faced in Bhutan, the health sector's overarching goal is to extend access to health services throughout the country. This has been a formidable task. Despite Bhutan's achievement of having the highest health centre coverage in South Asia (less than 4000 people on average served by each centre), we can only claim that 89% of the rural population are within three hours walk from the nearest health service centre. Still a significant indication of Bhutan's success in achieving universally accessible health services can be seen in the rise of the Human Development Index from 0.310 in 1984 to 0.511 in 2003, during which time life expectancy increased from 48 to more than 66 years.

4.3.1.2 Institutional support for sanitation

Bhutan views investment in better health as an end in itself, not merely as a means to economic development. Bhutan adopted the Primary Health Care approach to health care long before the Alma-Ata conference in 1978 and is strongly committed to continuing it. Access to basic health care and education has expanded dramatically over the last decade and significant improvements in health status have been realized. The health sector is supported by government revenues in conjunction with significant support from the governments of Denmark and India, and from UN affiliated organizations. Much of the government's resources come from the development of Bhutan's vast hydroelectric power generation potential.

At present, government services still dominate the health sector. Civil society in Bhutan has yet to evolve to where it plays a major role in the provision of social services. As with many developing countries, communicable disease still dominates rural morbidity patterns. Water and sanitation related infectious diseases account for almost 30% of those reported from rural areas.

The rural water supply and sanitation programme was initiated in 1974 with UNICEF cooperation. The overall achievement of the water and sanitation sectors as of 2000 is largely accredited to the coordinated efforts of UNICEF and its bilateral partners along with the commitment of the Royal Government to universal fulfilment of basic human needs.

At its early stages, the rural water supply and sanitation programme was implemented under the Public Works Division of the Ministry of Communication. The programme was moved to the Ministry of Health and Education in 1998 because of the close relation it has with rural health and well-being. The programme is now supported by an extensive health extension cadre at the grass roots level that integrates rural water and sanitation within a comprehensive set of community health issues. The Ministry of Health and Education has also been able to mobilise extensive funding for rural water supply and sanitation programmes.

Government health sector programmes at local and district levels undertake sanitation promotion, with programme and coordination support from the Public Health Engineering Division (PHED) of the Ministry of Health's Department of Public Health. PHED is the national lead agency for rural water supply and sanitation development. PHED coordinates policy and planning formulation, technical design, secures funding and human resource support, and facilitates technical training related to rural water supply and sanitation systems.

The Department of Urban Development and Housing (DUDH) has the overall responsibility of urban development. Part of this responsibility includes planning and implementation of urban water supply and sanitation. DUDH's role in facilitating the development and effective use of sanitation infrastructure will become more pronounced as Bhutan's population distribution becomes more urban.

4.3.2 Sanitation Policy and Programming

4.3.2.1 Sanitation achievements over the last decade

Government efforts at promoting rural sanitation have evolved over the years. A major impetus to household sanitation came with a joint EEC / UNICEF funded programme implemented from 1989 to 1993 under which more than 4,810 household latrines were constructed. The programme investigated various sanitation technologies that ranged from pour-flush types to simple ventilated improved pit latrines. The programme

provided material subsidies for ferro-cement slabs and vent pipes for standard design pit latrines. In 1992, reflecting His Majesty the King's concern over high levels of sanitation related disease, a Royal Decree was issued that urged every household to construct, maintain and use a sanitary latrine. By the end of 1994, it was estimated that through these and other efforts, 70% of Bhutan's population had access to sanitation.

1993 marked the end of government subsidies for rural household latrine construction. Subsidies were withdrawn in view of long term sustainability. Later analyses would show that rural dwellers were often reluctant to construct sanitary latrines, citing that the formerly supplied material subsidies were a necessary precondition for construction. These subsidies had done much to increase sanitation coverage and for many people, make latrine use a social norm. However, this was not the case with all people. Insufficient demand for sanitation hindered the achievement of universal and effective use of sanitation facilities, even in places where such facilities existed.

Up until the late 1990s, urban sanitation coverage had always outpaced rural coverage. However, while rural coverage had expanded from 50 percent in 1990 to 88 percent in 2002, it is estimated that urban coverage dropped from 80 percent to 77 percent over the same period. This is testament to the increases in urban population Bhutan, a trend experienced by many countries with similar development features.

4.3.2.2 Current sanitation policy

Current policy on sanitation is directed at two main groups of sanitation users: individual household users and government sponsored educational, health and religious institutions that provide social services to the general public.

Among rural households the sanitation policy emphasises hygiene and sanitation education. Educational programmes are implemented by health extension staff and village level health volunteers. Educational and religious leaders are also targeted by hygiene and sanitation educational campaigns, thereby creating social norms that promote sustainable sanitation and hygiene behaviours. Increases in rural sanitation coverage since the end of subsidies have in large part been due to health education approaches by Bhutan's extensive cadre of professional health extension staff based at rural Basic Health Units (BHU) throughout the country. They are supported with health education materials produced by the Information and Communication Bureau of the Ministry of Health. There are no subsidies for household-level sanitation. Although appropriate sanitation designs are promoted, household-level latrines typically reflect local conditions and material availability.

Institutional sanitation receives direct planning and implementation support from the government. UNICEF currently supports a programme implemented jointly by PHED and the Department of Education that targets the implementation of water, sanitation and hygiene promotion projects within government sponsored institutions. These institutions include rural schools, monastic institutions, rural health centres and other rural-based government supported institutions.

4.3.2.3 Sanitation and Health

It is tempting to allow indicators of increasing sanitation coverage to convey an adequate measure of success in sanitation policy and programming. And rightly so. Our studies show that districts with higher sanitation coverage have lower incidences of diarrhoea and dysentery morbidity. However, it is dangerous to assume too strong a link between coverage and reduced disease. The danger comes in placing too strong an emphasis on sanitation coverage as the key element in combating disease.

4.3.2.4 Impacts of sanitation programming

This became readily apparent as a result of a recent knowledge, attitude and practice study of water and sanitation behaviours within one of our districts. As Figure 4.12 clearly shows, coverage of sanitary facilities gives an incomplete picture about sanitation behaviour. An undue focus on coverage makes for an inefficient application of resources if those facilities are not effectively used.

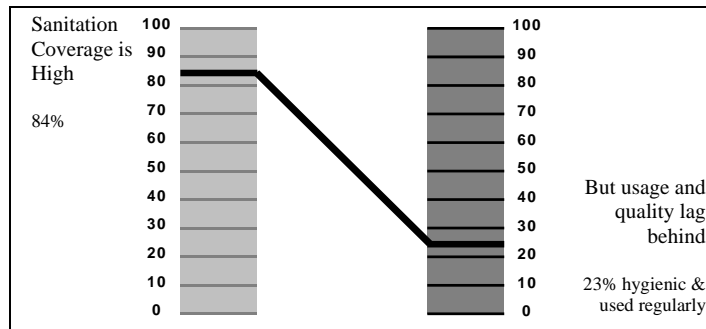


Figure 4.12 : Sanitation Coverage vs. Reality

This information is reinforced by rural morbidity patterns. While infant mortality and maternal mortality rates have declined substantially during the decade, they are still considered high. Among the leading causes of morbidity under 5 years, the most notable is respiratory infection. This is followed by diarrhoea and dysentery, skin infections, and parasitic infections, diseases primarily related to unhygienic environmental and behavioural conditions. The role of safe drinking water supply and sanitation programmes have a direct link to the improvement in these areas of concern. Figure 4.13 shows that even though there are trends in the decline of infectious diseases related to water and sanitation, progress when compared to infrastructural achievement with regard water and sanitation coverage is not satisfactory.

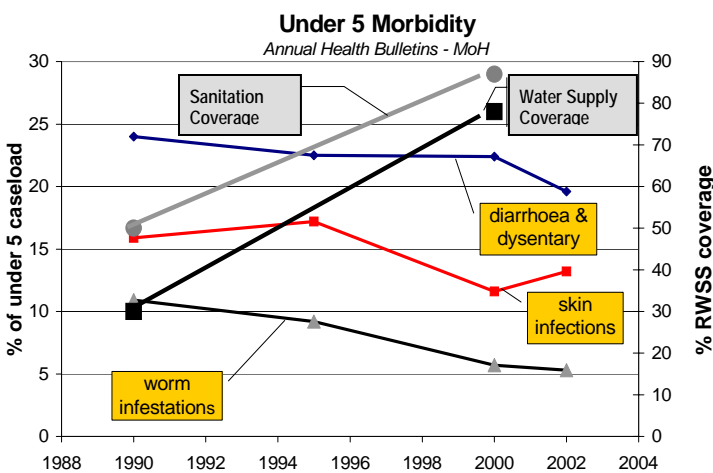


Figure 4.13: Water and Sanitation Related Morbidity

While it is difficult to prove a direct linkage between the existence of sanitation facilities and improved water supplies and decreased incidence of water borne and sanitation related disease, it is generally acknowledged that the linkage exists. The persistence of water and sanitation related disease has caused us to reconsider the appropriateness of our past approaches toward improving both rural sanitation coverage and sanitation and hygiene behaviours.

4.3.3 Evolving Strategies for Sanitation

No single type of intervention has greater overall impact on national development and public health than the provision of safe drinking water and education in proper sanitation practices. Studies have shown that in general, among all possible interventions related to water supply and sanitation, the existence and effective use of hygienic sanitation facilities has a greater impact on reducing diarrhoeal disease than interventions related to the provision of clean water. However, our emphasis can no longer rest with the expansion of sanitation infrastructure. Figures 4.13 and 4.14 clearly indicate the significance of human behaviour in ensuring that infrastructure yields its intended benefits. The construction of facilities is not enough for achieving health benefits. Sanitation systems must reduce the risk of infections, and people must use and maintain these systems.

It is well known that any health promotional approach not based upon demand responsiveness will suffer from reduced impact and sustainability. Unfortunately, health education alone is not guaranteed to build sufficient levels of demand responsiveness that will ensure sustainable action. There exist pockets of low demand for rural sanitation among the rural population that education alone has not yet been able to overcome. People compelled to make latrines for which demand had not been developed often do not use them effectively, universally, or may not use them at all.

In order for our sanitation systems to more than simply exist, for them to be maintained and effectively used to ensure their hygienic functions, there must be a perceived need for them. That need must translate into demand that households and communities can and will act upon. Health education on disease transmission and the benefits of hygienic sanitation are certainly required. However, transforming knowledge into health behaviours requires a more thoughtful approach.

4.3.4 Community Development for Health

The Public Health Engineering Division, under the guidance of the Department of Public Health, has developed an innovative integrated health promotion initiative that seeks to generate demand for improved health environments and social normative pressures for improved health behaviours. The programme is named Community Development for Health (CDH) and consists of a 2-day participatory research and action programme at the community level facilitated by trained health extension staff. The CDH makes no prescriptions about which health issues a community should prioritise. Community self-prioritisation of health problems and opportunities is an essential element of building community commitment to intervene without external support. These priorities have included many diverse issues, although sanitation and water supply remain among the leaders.

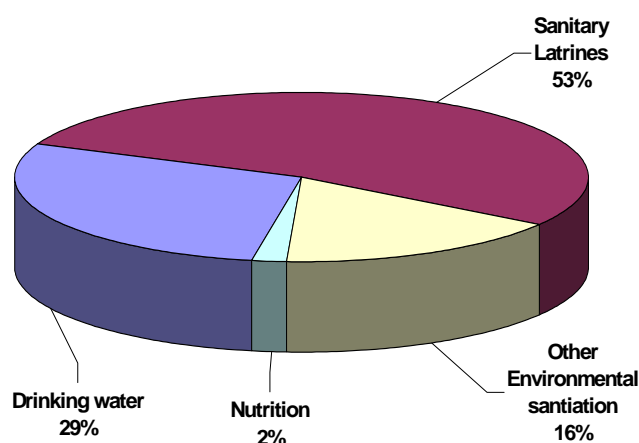


Figure 4.14 : Health Priorities: Rural Households from 4 Districts

The Community Development for Health approach has been implemented in almost 1/3 of the country's villages. Interestingly, of all the villages in which the CDH has been held, improved sanitation has been the most frequently cited priority for development (Figure 4.15). Once a community has prioritised a health issue, it is up to them to decide which actions, if any, are to be taken to address it. The CDH process provides simple planning guidelines for communities to plan specific actions without any outside influence. Initial assessments of the approach indicate that not only are individuals and communities implementing these plans (in the case of sanitation this may include construction or improvement of sanitation facilities and using them regularly and effectively), they are changing social normative behaviours.

This process minimises health education by health staff. Due to the wide-ranging health information campaigns run by health extension agents, there is little shortage of health knowledge in Bhutan's rural villages. In the instances in which it is lacking, there are typically stores of relevant information elsewhere in the same community. What is often lacking however, is the ability to take pre-existing knowledge and transform it into consistent and sustainable behaviours. The CDH creates opportunities for communities to analyse their health and development priorities, to make detailed plans about how to alleviate them, and to make psychological commitments to implement them.

Unlike many health behaviours that have only individual or household level impacts, sanitation behaviour affects the broader community. A significant step in changing individual sanitation behaviour is in developing social norms with regard to sanitation. The strength of social normative pressures relies on the cohesion and level of organisation of the community.

The CDH demands no organisational prescriptions for community organisation with regard to health systems. Bhutan has a wealth of diverse indigenous community organisation that has long supported community development. Bhutan's decentralisation policy seeks to tap into this to fulfil a vision of a governance system representing each and every household. The CDH seeks to explore these indigenous systems of community organisation, and to strengthen their role in creating social norms for health behaviour as well as to meet the growing needs of increasingly decentralised community decision-making.

4.3.5 Challenges for the Future

Considerable strides have been made by way of bringing of water supply and sanitation to Bhutan's population during the past three and a half decades, yet much remains to be done in terms of disease transmission and prevention. Children and women still face many risks to their health. Even today the severity and incidence of diarrhoea and dysentery morbidity remain high. While water supply and sanitation coverage may be high, more focus is required on initiating community-led dialogue on recurring health problems (of which sanitation related diseases typically feature). Stimulating this dialogue and supporting community action to alleviate their self-prioritised problems is a step in the right direction as it builds individual and community commitment to initiate change.

It is clear that if sanitation programming is to have its intended impact on health, it must be demand-driven, tapping community priorities that will ensure sustained action. Participatory research and action processes can enable such priorities to emerge. It also stimulates community action with minimal external intervention. The ownership thus generated and the social norms thus created are the forces that transform health knowledge into sustained health behaviours.

Another challenge faced by all lesser developed countries is programme financing. Bhutan has devoted a large share of its limited resources to health. Still, it faces constraints in human resources and funding. Co-operation with our development partners remains an important element in our efforts to meet the development priorities leading to the general welfare of our people. However, in view of the growing uncertainties of external funding and in the spirit of self-reliance, the national emphasis should be to generate more of the sector resources on its own. A community level demand-driven and self-implemented approach to environmental and behavioural sanitation is a step in that direction.

4.4 India

4.4.1 Introduction

4.4.1.1 Overview

This paper is broadly divided into three sections. An introduction briefly outlines the importance of sanitation, and provides a summary of the sanitation situation in India. The second section traces the evolution of India's sanitation program, the lessons learnt and policy reforms initiated in the rural sanitation sector. This section also outlines what is being done, both in terms of the processes and strategies, to counter the problems arising from inadequate coverage. The third and final section outlines the future Plan of Action as envisaged by the GoI.

4.4.1.2 Why sanitation and hygiene?

A direct relationship exists between water, sanitation, health, nutrition, and human well being. Consumption of contaminated drinking water, improper disposal of human excreta, lack of personal and food hygiene, and improper disposal of solid and liquid waste have been the major causes of many diseases in developing countries like India. Persisting high Infant Mortality Rate (national average: 69 per thousand) and high levels of malnutrition (national average 41 percent) are attributed to the vicious cycle of poor sanitation leading to disease morbidity, which in turn results in poor health indices. Increasingly, sanitation is being seen as a major issue in environmental protection.

Lack of or inadequate sanitation impacts the local economy by adversely affecting for instance productivity loss due to sickness and the overall quality of life. The economic effect on tourism assumes special dimensions in the case of India, with its immense size, pluralistic diversity and almost limitless tourism potential – a vastly improved sanitation scenario implies vastly improved tourist volumes and tourism revenue inflows, robust contribution to increment in employment and opportunities for private entrepreneurship in the service sector. Historically, sanitation was a part of town planning even as far back as 3000 BC. Well laid out drainage and sanitation system during Indus Valley Civilization became diluted over the ages and by the 20th century; disposal of human and animal excreta was left to nature in rural areas. In urban areas, sanitation was earlier limited to disposal of human excreta by cesspools, open ditches, pit latrines, bucket system etc., including the dehumanising practice of removal of 'nightsoil' by human hands. Today it connotes a comprehensive concept, the lack of which impedes human development. More importantly, young children bear a huge part of the burden of disease resulting from the lack of hygiene. India, for example, still loses an estimated 0.4 to 0.5 million children below five years of age due to diarrhoea annually – a colossal avoidable loss of young lives.

“Why should our cities and villages be unclean and unhygienic? Can this not be changed visibly by changing the habits and mindset of each one of us? Shouldn't citizens themselves initiate a drive for water conservation, energy conservation, and conservation of our precious cultural heritage?”

-Atal Behari Vajpayee

Prime Minister of India

4.4.1.3 Where do we currently stand?

Coverage performance (as measured by individual household toilets) at the rural level has until recently been slow, growing at approximately one percent annually over the last decade. This has been due to a multiplicity of factors including low awareness of the potential health benefits (and therefore, economic benefits) of better hygiene practices, perception of the household toilet costs as being very high and in most cases unaffordable, the sheer convenience (at least for men) of open defecation (vis-à-vis an enclosed space), and inadequate promotion of awareness.

Even where toilets were in use, generally only women used them regularly. Men-folk and children continued with open defecation. The aspect of preventive health and environmental pollution were never perceived as social issues of importance and an agenda to be addressed by the local government. Highlighting the health hazards of open defecation continued to be the main plank of communication and Information, Education and Communication (IEC). As it is difficult to demonstrate health benefits in the short run, it is important that the various other advantages of having a toilet are equally emphasized; dignity of women; safety of children; prestige of family; reducing pollution in the community; national pride etc. This has not been the primary focus of communication. Efforts to reach information to community leaders and families, offering design and price options, ready access to subsidy as support to those below the poverty line, access to institutional finances, loans, and trained masons remained unorganised and intermittent, with no specific strategy or institutional mechanism to provide systematic support services.

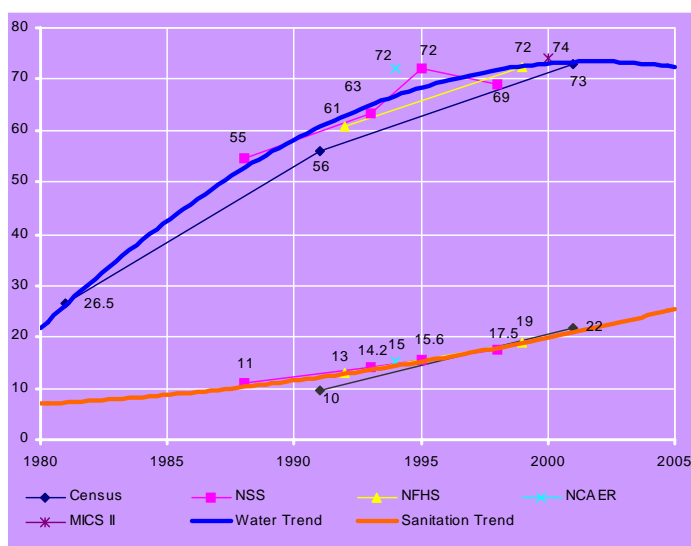


Figure 4.15: Trends in Rural Water Supply and Sanitation Usage

The sanitation coverage in terms of individual household latrines during the country's 9th Five Year Plan (1997-2001) was 16-20 percent of total rural households. *The National Sample Survey (NSS), 54th Round Report*, published in July 1999 (Drinking Water, Sanitation and Hygiene in India) indicated that 17.5 percent of the rural population were using toilets. By the end of the 9th Plan, household data from the 2001 Census showed that 22 percent of rural household use sanitary facilities.

At the same time, growth in rural sanitation coverage has not been keeping pace with that of rural drinking water (Figure 4.15). This is attributed largely to the fact that until

recently in India, as elsewhere, focus had been more on providing infrastructure for drinking water (for which there is a natural demand) rather than on sanitation.

Disparities across states exist. An analysis of rural home toilet use based on household data from the 2001 Census for major Indian states shows the level of disparity (Figure 4.16). Figures range from as high as 81 percent in *Kerala* and 60 percent in *Assam* to as low as nine percent in *Madhya Pradesh* and eight percent in *Orissa*.

It is noteworthy that focus is now on usage data. In water supply although more than 95% habitations in India are covered with a source of drinking water, when it comes to use about 75% families are regularly taking drinking water from a protected source.

The question of redressing inequities in sanitation has been at the forefront of policy makers and various mechanisms of targeting subsidies have been devised. It has been observed that the landless and marginal proportionately have less individual toilets requiring policy responses and mechanisms to reach them.

Some factors that have stood in the way of effective implementation of a rural sanitation programme include very low priority accorded to sanitation as a social and community issue. Inadequate emphasis on IEC and lack of infrastructure and systems to reach all rural households, inclination to promote a single model i.e., twin-pit pour-flush toilets (which are costly and therefore out of reach of many rural households), heavy reliance on subsidy, lack of motivation among implementers, technology support inconsistent with needs, insufficient involvement of NGOs and CBOs and the private sector, and importantly, scarcity of water.

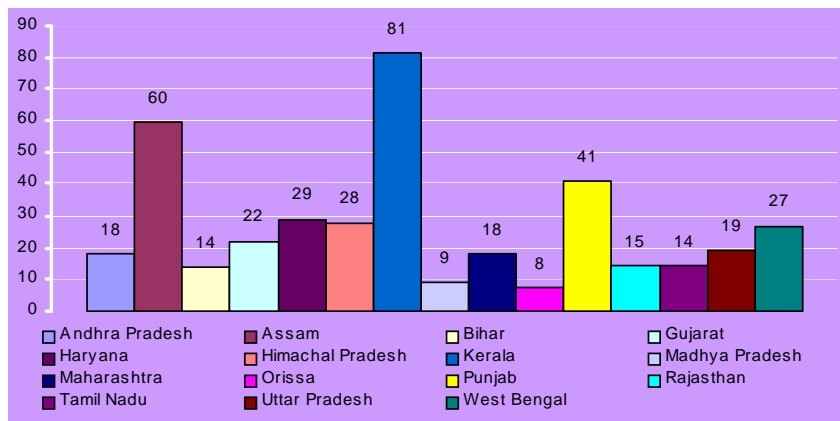


Figure 4.16: Interstate Disparities in Rural Home Toilet Use

The Total Sanitation Campaign (TSC) launched in 1999, as a component of the sector reforms process, has helped overcome some of these obstacles. Of the 138.2 million rural households in India, (2001) nearly 3.3 million have constructed household toilets with support from the TSC. Of these, nearly 2 million constructed in 2002-2003, reached in a single year five percent of poor rural households. Likewise, over 1,700 women's complexes, 41,000 school toilets have been built, apart from other support facilities such as *Rural Sanitary Marts (RSMs)*, at a total cost of just over Rs. 2.92 billion (approximately US \$ 62 million). The financial break-up below reflects the pattern of sharing resources. Significantly, the community has invested US\$ 11 million so far.

The total financial outlay under the TSC is Rs. 33,780 million (over US \$ 718 million) as follows:

Table 4.4: Financial Outlay for TSC

Share	Rs. Millions	US\$ Millions
Central	20,190.00	429.57
State	7,380.00	157.02
Community	6,210.00	132.13
Total	33,780.00	718.72

Table 4.5: Expenditure on the TSC (up to 30 September 2003)

Share	Rs. Millions	US\$ Millions
Central	1,746.00	37.15
State	651.00	13.85
Community	517.00	11.00
Total	2,915.00	62.00

4.4.1.4 Millennium Development Goal (MDG)

In the Johannesburg conference in 2002, challenging MDG and targets were set to reach the unreachable. India accepted the MDG targets and has since then evolved its policies and instruments to in fact go beyond them. For instance, it plans to cover all the habitations and give the population access to better water and sanitation hardware as well as knowledge-ware well before 2015.

4.4.2 Evolution of India's Sanitation Programme

India's 10th Five Year Plan was formally approved and adopted by the National Development Council (NDC) on 21st December 2002. The NDC endorsed the ambitious growth target of eight percent on an average per year, for the economy as a whole. Notably the 10th Plan recognizes that economic growth is not the only objective of national planning and therefore over the years development objectives have been defined not just in terms of increases in *Gross Domestic Product* (GDP) or per capita income but on a broader base including the enhancement of human well being. Thus among the fourteen objectives of the 10th Plan, the role of sanitation and hygiene are intrinsically linked to the objectives of reducing *Infant Mortality Ratio (IMR)*; *Maternal Mortality Ratio (MMR)*; ensuring completion of five years of schooling for all children by 2007; providing potable drinking water in all villages; cleaning of major polluted river stretches and although indirectly yet significantly to providing "*shelter for all*" by the end of the 10th Plan.

Water supply and sanitation were added to the national agenda during the country's *first five-year plan* (1951-56). In 1954, when the first national water supply programme was launched as part of the government's health plan, sanitation was mentioned as a part of the section on water supply. It was only in the early eighties with the thrust of the *International Water and Sanitation Decade* that the GoI started fostering alliances with the United Nations (UN) and other external support agencies to focus on improving sanitation in the country. This effort crystallized into India's first nationwide programme for sanitation, the *Central Rural Sanitation Programme (CRSP)* in 1986 in the Ministry of Rural Development.

4.4.2.1 Low priority

Sanitation was never perceived as a priority especially in rural areas where open space is readily available until today albeit the growth of population and urbanization. Nor was it seen as a development programme – more often relegated to lower levels in the priority ladder and left unmonitored. The CRSP, which hinged on substantial subsidy as a means for "creating demand" for household toilets was soon found to be strategically weak; constructing toilets was a dynamics of need, an understanding of its importance, financial capability and availability of hardware and skilled masons. Of the sanitary pour-flush toilets constructed in the decade of the eighties and nineties, less than fifty percent were found in use. Studies further showed that factors other than subsidy had far greater appeal; this was later borne out in United Nations Children's Fund (UNICEF) assisted integrated water and sanitation projects.

4.4.2.2 Indian Initiatives in Local Self Government

Panchayats (Local Self Government) have existed from time immemorial, which lost their significance during the colonial era. After independence it found its place in the Constitution to fulfil Gandhiji's idea of "*Village Swaraj*". The First Five year plan which initiated the process of planned development of the country and the community development programme, envisaged coordinated efforts for the reconstruction of the nation building activities through the development of *Village Panchayats*. In spite of achieving success in implementing programme the devolution of functions has been slow and *Panchayati Raj System* suffered due to various reasons. The 73rd

and 74th Constitutional Amendments were passed to further strengthen decentralisation. These have set up a three-tier system of local government with significant powers and responsibilities for them to manage their own affairs.

4.4.2.3 The Water and Sanitation Decade – a good beginning

At the launch of the *International Drinking Water and Sanitation Decade* in 1981, an attempt to estimate the coverage of sanitation, pegged the coverage (by individual sanitary household latrines) at an astoundingly low of 1 and 27 percent for rural and urban India respectively. Since then a variety of surveys (census, NSS, and demographic surveys) have tried to capture the coverage situation leading to some apprehensions with regard to consistency in progression. The most recently available data from the 2001 census suggest 22 percent of rural households in India have toilets (see Figure 4.5). The figures continue to be alarming in that it underscores the fact that 78 percent of rural households continue to contribute to the hazards of open defecation and transmission of disease. The more alarming realization is that approximately 24 percent urban households living in big cities and small towns either have no access or choose to pollute the environment and make it more conducive for the spread of communicable diseases including polio that has been long targeted for eradication.

- SRP & Swajaldhara Principles
- Demand driven
- Cost sharing / Cost Recovery
- Community Based
- Focus on IEC
- Integration with Sanitation
- O&M – 100% by community
- Water Quality Management
- Sustainability – Sources to System

4.4.2.4 Policy Reforms

Water Sector Reforms

The Government of India and State Governments have invested more than Rs 40,000 crores in providing water supply to villages. It has been realized that investments alone are not enough, as systems are failing to be sustained.

From various studies, it has become clear that it is necessary that the local community is involved, not only in the operation and maintenance of the systems created, but also in planning, technology selection, and implementation of the project. The rural water supply programme has so far been driven by a lop-sided top-to-bottom approach, entirely managed by the Government or its agencies in the form of purely engineering based solutions. A productive and pro-active involvement of user community and other stakeholders in resource mobilization and community participation in the implementation as well as the operation and management of the systems has become imperative. In order to achieve the desired goal, the government of India has brought about policy changes by introducing reforms in the rural drinking water supply in the year 1999 sector. A paradigm shift has been evolved in the rural water supply sector, where the emphasis is on demand responsive approaches, empowerment of local communities and ensuring their participation in the implementation and operation of drinking water supply schemes.

To operationalise the reform, 67 pilot projects had been selected for the implementation of sector reform pilot projects. Based on the experiences gained in implementation of Sector Reform Projects, *Swajaldhara* has been launched by GOI scaling up the reform initiatives in water sector.

Sanitation sector reforms

With the emergence of the above findings and the realisation that high subsidies were not promoting “real demand” for sanitation facilities, the TSC was launched in April 1999, advocating shift from a high subsidy to a low subsidy regime, a greater household involvement, demand responsiveness, and providing for the promotion of a range of toilet options to promote increased affordability.

It also included strong emphasis on IEC and social marketing, providing for stronger back up systems such as trained masons and building materials through rural sanitary marts and production centres and including a thrust on school sanitation as an entry point for encouraging wider acceptance of sanitation by rural masses as key strategies. The RSMs serving as outreach institutions disseminated information, stimulated demand through motivators and solicited “orders” from households for sanitary toilets.

GoI’s reforms in sanitation along with water supply thus started to gain in strength from middle of 1999 onwards. While the low subsidy policy met with initial resistance, gradually, there was growing acceptance among implementers and local communities.

The main objectives of the TSC are:

- *Bring about an improvement in the general quality of life in rural areas*
- *Accelerate sanitation coverage*
- *Generate demand through awareness and health education*
- *Cover all schools and Anganwadis in rural areas with sanitation facilities and promote hygiene behaviour among students and teachers*
- *Encourage cost effective and appropriate technology development and application*
- *Endeavour to reduce water and sanitation related diseases.*

Communication for behaviour change

Another aspect of both management and structural reforms has been reorganization of support structures at the state level to provide support and integrate field experiences into strategy reforms. While separate Human Resource Development (HRD) and IEC cells had been set-up in the mid-nineties in various states, these were not very effective, and there was a felt need for an integrated agency at state level that could combine these functions and have the ability to source sector expertise from the market. As a result, Communication and Capacity Development Units (CCDUs) are proposed to be set up in state nodal departments to provide specialist inputs into HRD, communication planning and monitoring of progress.

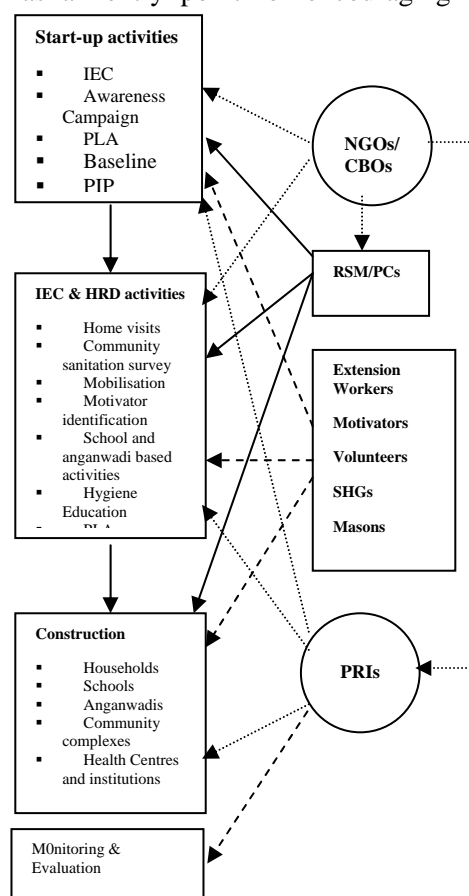


Figure 4.17 : TSC Delivery Structure

It is envisaged that under TSC, state units with professional and technical expertise will become functional by middle of 2004. Successful development communication or IEC for sanitation and hygiene requires a tested and proven delivery mechanism, which can ensure contacts with households on a regular basis. It is necessary to create enabling environment by involving every inhabitant of village and changing their mind set towards relevant hygiene behaviour. This requires the presence of motivators, mobilizers, or hygiene educators who reside in those communities. Respected individuals with credibility setting examples have proven to be good motivators; young women and men with ability to establish good rapport have been successful communicators in India's Guineaworm Eradication effort. A vast network of such communicators, with tools for interpersonal and group communication and creative methods need to be supported by block, district and state units that respond with matching supply and service inputs i.e. household toilet hardware, waste disposal designs and hardware, trained masons, school and anganwadi toilet arrangements, baseline and repeat surveys, microplanning and monitoring, holding of workshops and public meetings. The TSC has outlay provision of an average of Rs. 12.5 million (approximately US\$ 266,000) for each district towards IEC and another Rs.4.0 million for start-up activities.

Low to no subsidy

One of the key aspects of the reform agenda was reduction of central and state subsidy levels for household sanitary toilet construction from as high as Rs. 2000 (around US\$ 42) Rs. 500 (around US\$ 10.5) for rural households below the poverty line and zero subsidy for those above the poverty line. Even among the poor the subsidy was reduced for people opting for high cost technology options. This met with initial scepticism and resistance from many quarters but over a period of time the rationale has been realised by majority of states and country is fast moving in this direction.

School Sanitation and Hygiene Education (SSHE)

The TSC has progressed further with the realization that to sustain change, young minds need to be

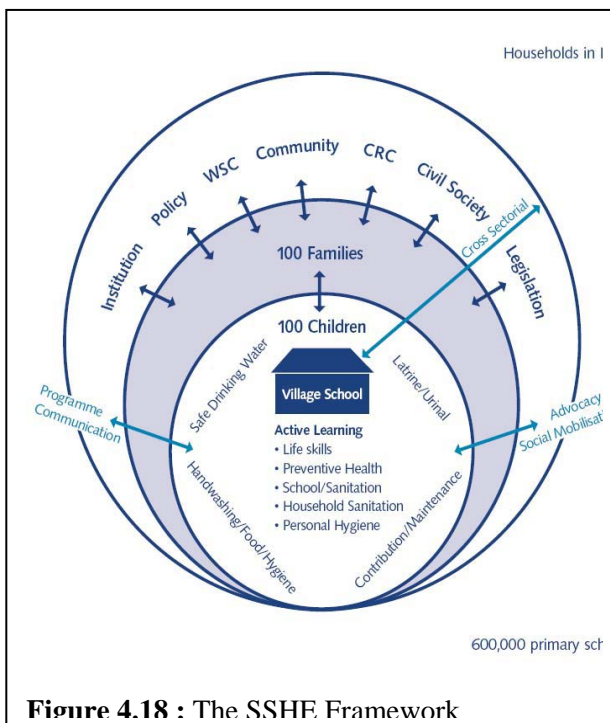


Figure 4.18 : The SSHE Framework

School Sanitation – The Mysore Experience

The novel idea of a special sanitation programme for schools, under the support of UNICEF, began in Mysore district in 1992, with 20 schools. The SSHE Project continued to grow and today covers 1474 schools in Mysore, Tumkur, Chitradurga, Mandya, Raichur, Bangalore (U), and Bangalore (R) districts.

The strategic focus of the project was to combine technology with human resource development and develop a sustainable approach that had children's participation at the core. Emphasis was placed on transformation that brought a visible change, thereby enthusing and galvanizing children, teachers, parents, communities, and local authorities into further action. Also central to the project was the development of quality standards that would enable sustained replication and the build-up of enduring infrastructure.

influenced in the formative years.

Further, if the national goals have to be realized then there is a need for meaningful intersectoral coordination; therefore addressing the young and most vulnerable has become significantly a key objective of the national sanitation strategy. The GoI through its Ministry of Human Resource Development is implementing the DPEP and Sarva Siksha Abhiyan (SSA) aiming at universalisation of primary education. The government has been striving to achieve the objective of providing safe drinking water, sanitation and hygiene facilities in schools but until today, huge gaps and disparities exist (see the nationwide gap and plan for coverage in the box).

Safe water and sanitation for India's 638,738 primary schools is now a priority within both the Rural Development and Education Departments of GoI. The TSC (currently covering 350 of India's 594 districts) aims to cover all primary and upper primary schools with safe water, child-friendly toilets, and hygiene education that empower children to lead healthy lives and has a potential for a deeper generational change.

School Sanitation -- Estimate of nationwide backlog:

- 345,000 primary & upper primary schools without drinking water facilities
- 573,000 primary & upper primary schools without toilet facilities

Plans for covering by end of 10th Plan:

☐ Coverage through Department of Elementary Education resources:

- Drinking Water: 120,000 schools
- Toilets: 220,000 schools

☐ Coverage through Department of Drinking Water Supply resources:

- Drinking Water: 225,000 schools
- Toilets: 353,000 schools

Source: RGNDWM notifications and circulars

School Sanitation – Alwar experience

The School Management Committee (SMC) has 12 members from the community in Alwar's 2,272 schools to be covered by the School Hygiene and Sanitation Project (SHSP)

Examples of SSHE results:

*Better personal hygiene among children;
Sanitation around hand pumps get attention;
Soakage pits, vegetable patch, school yards and classrooms cleaner;
Garbage pits in schools;
Visible increase in Hand Washing practice;
Use of latrines and urinals;
Improved practices of handling drinking water;
Children want to buy soap to wash their hands at home;
Teachers take interest and monitor practices;
Funds are saved for O&M*

Source: Case Studies on SSHE initiatives (IRC – November 2002)

Additionally, TSC will attempt to cover village based early childhood *development centres for under five children known as anganwadi centres also with safe water and baby-friendly toilets.*

Rural Sanitary Marts/Production Centres

The recognition of the need to not just generate demand for sanitation, but to also have in place supply chain mechanisms that could cater to the increased demand by providing the necessary hardware and ancillary services was essential. Thus, TSC funding also provides for setting up and operation of RSMs and PCs at sub-district level for fabricating sanitary hardware components to feed the growing demand for construction. NGOs with suitable experience or panchayats are eligible for funding.

The RSM is typically a retail outlet that produces and/or sells hardware for sanitation and drinking water and related components for maintenance. Pans and traps, pit lining rings, etc are locally manufactured in PCs. Long handled ladles for drinking water pots, brooms, and brushes soaps and other items related to sanitation and personal hygiene are also sold.

In areas with arsenic or fluoride problems, the more enterprising RSMs also sell drinking water purification filters for domestic use in varying price ranges. One RSM typically covers about 25,000 families. The annual sales of successful RSMs are around 1500 pans annually as for instance in West Bengal. Monitoring sales of RSMs is a good proxy indicator of the level of real demand. RSMs receiving a funding support have to make themselves commercially viable as the funds are in the form of a revolving fund, to be returned in due course.

Incentives and awards – Nirmal Gram Puraskar

In June 2003, GoI initiated an incentive scheme for fully sanitised and open- defecation-free Gram Panchayats, Blocks, and Districts, called the '*Nirmal Gram Puraskar*'. Eligible Gram Panchayats, Blocks, and Districts will be those that achieve (a) 100% sanitation coverage of individual households, (b) 100% school sanitation coverage, (c) free from open defecation and (d) clean environment maintenance. Individuals and organisations, who have been the driving force for achieving full sanitation coverage are also eligible. The incentive pattern is based on population criteria as follows:

Table 4.6: Incentive Pattern under Nirmal Gram Puraskar (in Rs. lakh)

Particulars	Gram Panchayat		Block		District	
	Up to 5000	5001 and above	Up to 50000	50001 and above	Up to 10 lakh	Above 10 lakh
Cash Incentive	2.0	4.0	10.0	20.0	30.0	50.0
Incentive to Individuals	0.10		0.20		0.30	
Incentive to Organisation/s other than PRIs	0.20		0.35		0.50	

Partnerships

The TSC aims to make sanitation and hygiene a people's agenda through a management structure that makes the gram panchayat the prime mover, motivator and monitor of the programme. The challenge before the nation is to facilitate a process of providing resources for decentralized capacity, institutional support systems, hardware, and software outreach and technical inputs for technology and design choices for nurturing the movement for sanitation and hygiene in every community. NGO and private sector participation with entrepreneurs in marketing household, school, and anganwadi toilets will be an integral part of the national strategy. The RGNDWM will also continue to foster partnerships with key external support agencies such as DANIDA, WSP-SA, UNICEF, World Bank and WHO.

Success stories

Experience showed that districts which had faith and confidence in the TSC principles made significant progress, and many panchayats and blocks have been able to eliminate the practice of open defecation. There are several such success stories from across India. Some of these, such as

East Medinipur in West Bengal, Borban in Maharashtra, Ramanathapuram in Tamil Nadu, and South Tripura in Tripura uniformly reflect strong commitment to achieve results with a range of innovations that have brought the leaders and managers closer to the people. The techniques have been inherently participatory and inclusive. Some of these are outlined in the boxes below. Innovations are being reported from various places in the country and are worthy of documentation.

Total Sanitation Campaign - Ramanathapuram

The TSC project in Ramanathapuram District, Tamil Nadu, Southern India was sanctioned in June 2002. Within one year's time, it has managed to construct 15,123 individual household toilets, 247 school toilets with functional water supply, and 391 Balwadi toilets catering to a total population of 0.1 million (as per 2001 census).

The credit for this remarkable success goes to the community whose synergistic efforts made the achievements possible', says one of the Field Monitors of Ramanathapuram. The prompt funding support from GoI and State to the district project and subsequent recruitment of committed and hardworking team with quality training and proper orientation inputs were the first step that laid the foundation of such achievements. The extensive and creative use of IEC components, Incorporation of PLA methods, various technological options in hardware components to end-users and strategic planning made the entire project efforts acceptable to community involved in the project.

Convergence of efforts of different agencies working at district level such as District Administration, District Coordinating Agency, UNICEF, SHG Animators, Panchayats, NGOs, AWW, etc also paved way for faster implementation of projects within the context of TSC guidelines. A leader in sanitation drive, Ramanathapuram District, is in the making.

Borban – A 'Hagandari Mukh Gaon'

Borban is a small community of about 185 families in Sangamner Taluka of Ahmednagar district in Maharashtra.

Today the villagers have an air of achievement and confidence about them as all households have constructed individual household toilets. This transformation started with the village actively taking part in the Sant Gadge Baba sanitation campaign and ranked second at the district level competition. However, the practice of open defecation made the village lose valuable points.

The village therefore decided to adopt the challenge of ending open defecation in their village. Each household decided to construct a household toilet. Since it was the lean period, the people had no financial resources available to buy even the material required for a low cost toilet. The Sarpanch of the village immediately agreed to stand guarantee for supply of construction material thus making it possible for the people to purchase on credit from the local market. The district administration exposed them to low cost technology toilets so that everyone can construct toilets according to their paying capacity. The lack of any prescriptive technologies had led to different types of toilets being constructed of varying costs.

In fact the village now imposes a fine if anyone is seen to continue the traditional practice. The community solidarity and status has become a model for the entire district.

Saturation in Nandigram II

The last sixteen years of the national programme has shown uneven progress. The most remarkable is the fact that in the state of West Bengal Nandigram II block (East Medinipur District) has achieved the distinction of being the first block in the country to have saturated all rural households with sanitary toilets. The key to success has been the close coordination of District and Block Panchayat and Ram Krishna Mission Lok Siksha Parishad, facilitated by UNICEF with technical inputs for capacity development and IEC. This was supported by State level policies, timely fund allocation, close monitoring and coordinated by the State Sanitation Cell. Above all strong political commitment paved the way for overcoming obstacles.

The Ram Krishna Mission Lok Siksha Parishad supports RSMs at the block level with the help of youth clubs who promote the concept of hygienic sanitation in their areas. RSMs produce and supply the necessary materials and motivators from the RSM work at village level to encourage adoption and use of home toilets. With Nandigram II showing the way there are now about nine blocks in the district, which claim one hundred percent achievement. It is estimated that West Bengal has achieved coverage of an estimated 40 percent against the national average of 20 percent although there are disparities across the districts.

Total Sanitation Campaign - South Tripura

TSC was launched in South Tripura District, Tripura, Northeastern India in December 2001 to ensure reduction in mortality and other diseases. TSC started functioning with a goal of achieving 100 percent sanitation coverage all over the District by the end of September 2003 for improving the quality of life of the tribal people and to provide privacy and dignity to women.

Out of total targeted 1,03,273 BPL families, 83,541 families have been covered with sanitary toilets and out of total targeted 44,116 APL families, 21,087 number of families have been covered with sanitary toilets. Out of total targeted 597 schools, 236 schools have been covered with sanitary toilets. Different models have been designed for different locations, cost, availability of water, flood prone areas using local materials. Rajibnagar and Ratanmani are the two Gram Panchayats Satchand Block and West Jalefa and Bankul Mahamani GPs jointly under Satcand and Rupaicharri block to achieve full coverage of sanitation. The first three GPs in the District making 100% coverage of targeted families were also given awards (by the Chief Minister) consisting of additional allocation of development fund to the block as well as the Gram Panchayats. This really acted on the morale and boosted the enthusiasm of the implementing agencies of RD programmes in the district.

Key issues and lessons Learnt

The policy reform experience in India has highlighted several key issues -- lessons that must be considered while scaling up the implementation throughout the country and also contemplating a future National Sanitation Policy. Some of these are briefly discussed below.

Technology choices

Scant attention has been hitherto paid to availability of water for flushing and washing. Lack of water has been a natural deterrent in acceptance and therefore dry improved pit toilets and ecological sanitation needs far more attention than has been given. Related designs of good quality and skills for construction are essential at all outreach locations (RSMs and PCs) and needs to be integrated in the communication/IEC plans. Increased emphasis on technologies that consume less water and building awareness to appropriate designs for superstructures for toilets, etc are also important.

Supply chains

No amount of communications and demand generation will be successful unless easy access to sanitation supplies and ancillary services such as trained masons, etc are available. As such, the importance of supply chain mechanisms such as RSMs and PCs (ideally, one per block) are vital to the success of any sanitation programme. This becomes even more important considering that the TSC is scaling up to cover the whole country.

SHGs as partners

Insufficient attention has been paid to women's and youth groups, in building their capacity to be agents of change. Emerging experiences show that Self-Help-Groups (SHGs) can be a powerful local institution to manage sanitation

and hygiene delivery. This has been amply borne out by experiences from Ramanathapuram and Trichy in Tamil Nadu, South Tripura in Tripura and elsewhere.

Gender in communication

Communication targets have largely tended to focus on women as homemakers and caregivers of children, the sick and elderly, and this has yielded considerable success. In general, women in India are more acutely aware of the need for improved sanitation and hygiene behaviour, and use existing facilities. However, this gender specific focus results in the communication not targeting males as responsible members of families and communities. This assumes significance as open defecation is more popular among male members owning household toilets. It is also important that communication studies aim to develop behaviour that needs to be accepted universally e.g. all members of a family must practice hand washing with understanding of its value, before any significant impact can be seen.

Facilities in work places

Another key learning has been that even where 100 percent saturation of home toilets has been achieved, many still are forced to resort to open defecation, as it is impractical for them to return to their homes from work places such as agricultural fields to use toilets. This then also means that saturation with home toilets is not enough to eliminate open defecation – mechanisms for suitable institutional public toilets in carefully chosen locations will also be necessary.

Public education on environmental pollution

The damage that is caused to fresh water bodies through indiscriminate open defecation and disposal of waste including bio-medical is still not widely disseminated to the general public and elected representatives. Concerted efforts to elevate this critical issue on the local development agenda and regular monitoring are imperative to protect the earth and children who will inherit it from the present generation.

Stakeholder participation

Any future sanitation policies must be developed and formulated with the involvement and participation of the stakeholders including political leaders, government officials, donor representatives, the private sector, and the public in general to facilitate informed decision-making. The health impacts of sanitation and the associated economic implications for national and household economies are a primary reason for developing sanitation policies.

Coordinated and holistic approach

Although decisions may be made based on service levels, convenience, costs or regulatory factors, the health (and therefore, economic) consequences of sanitation provision should be the key rationale for formulation of policies. Taking into account sanitation-related health concerns, such as prevalence of diarrhoea, outbreak of gastroenteritis and other sanitation and hygiene related morbidity for instance worm loads among school children, other skin and helminth infections, and finally infant mortality, will necessitate proactive collaboration between the water and sanitation, health, education and local government authorities.

Each of these elements, if well addressed in policies, will help define an enabling policy environment for sanitation improvements.

4.4.3 The Way Forward -- Towards Total Sanitation And Hygiene**4.4.3.1 Continuous assessment of existing policies and their impact/effectiveness**

One of the key steps towards total sanitation and hygiene will be ongoing assessments of the situation, documentation of key lessons and determination of what needs to be addressed. Such

assessments will include analyses of statistics, periodic updating of the India Assessment 2002 report, financial data relating to program and project costs, sources of investment funds their performance aspects and impacts.

4.4.3.2 Building political will

Central to the plans will be sustained advocacy to encourage state governments to adopt low to no subsidy regimes. In addition, policies related to sanitation need to reside in multiple sectors, for example, apart from the nodal Ministries of Rural and Urban Development, the Ministry of Health and Family Welfare and the Ministry of Education, are key stakeholders. Although awareness and expressions of interest in sanitation by influential individuals are necessary components of political will, they are not sufficient. To be effective, political will for sanitation must embrace understanding of people's needs and priorities for sanitation especially those of women and young girls, the sick, elderly and people with special needs. There must be will to allocate government resources and private sector investments. The best and creative minds need to be attracted to accelerate implementation and improve services, with a commitment to reach the underserved.

A beginning has already been made in this direction with the development of understanding between the Departments of Drinking Water Supply and Education on the need to collaborate for effective implementation of school sanitation in India and to eliminate overlaps.

Similar collaborative arrangements will be developed, with the Department of Health and Family Welfare, for the development and implementation of sanitation and hygiene promotion programmes in India. These efforts will be complemented by local governments, public utilities, donor agencies, private sector, NGOs, and the public in general.

4.4.3.3 Thrust to the TSC

Extra efforts to reach the poor and marginalised, and women and children will be made. Strategies are required for various groups, and diverse terrain. Women have a particularly important role to play in sanitation decisions since they are often the primary collectors, transporters, of domestic water and promoters of domestic sanitary activities. Strategies envisaged include:

- *Building political will;*
- *Greater involvement of PRIs and SHGs*
- *Developing social marketing strategies and promoting alternate delivery systems in order to accelerate sanitation coverage;*
- *Developing schools and anganwadis as vehicles for expanding the outreach of the programme and for spearheading hygiene behaviour development;*
- *Empowering women with knowledge and management skills;*
- *Expanding the scope of the programme to include both rural and urban areas (with emphasis on peri-urban);*
- *Undertaking research and development on technology, design, and maintenance;*
- *Building and institutionalising human resource capital;*
- *Developing total sanitation approaches to achieve visible results; and*
- *Coordinating monitoring and evaluation with health, education and other sectors to measure benefits and impact on quality of life.*

Plans also include extension of the TSC to cover all 594 districts in India, develop water and sanitation facilities (incorporating child and baby friendly designs and technologies) in all rural primary schools and anganwadi centres, building adequate capacities by developing a network of resource centres at national, regional, state, and district level, developing and putting in place efficient monitoring mechanisms at all levels.

4.4.3.4 Determining appropriate levels of service

The delivery of rural sanitation services may range from pour-flush toilets to simple pit latrines located some distance from the house. In most cases, the level of service is determined by service costs, the economic status of communities and households, and the willingness of users to pay or otherwise contribute to the installation of a sanitation system. In many areas, such as remote tribal areas of India, household toilets may not necessarily be the most appropriate option. The availability of water -- as a transporting agent, a cleaning agent, or a personal hygiene agent—also affects the level of service that can be provided. Efforts will be made to develop and target appropriate levels of service leading to protection of health and contributing to the welfare of the community, taking into account issues of affordability, willingness to pay, etc., and to provide adequate information to enable consumers to make informed decisions.

4.4.3.5 Developing intersectoral linkages

Developing the health interface

The health impacts of sanitation will be one of the primary reasons to develop a National sanitation Policy. The policy process will address identified sanitation-related health concerns, such as diarrhoeal rates, infant mortality, helminth infections, and cholera epidemics, to ensure that the general public become aware of the problems that arise from poor sanitation and understand the role that proper sanitation services can play to address these problems, and the economic benefits out of reduced disability adjusted life-years (DALYs). In this regard, the Ministry of Health and Family Welfare will play a crucial role in supporting the formulation and implementation of effective sanitation policies. Efforts will be made to ensure that a balance is established by the Ministry of Health and Family Welfare between providing preventative and primary health care services versus curatives services.

Building on the education interface

As mentioned earlier, the RGNDWM has taken steps to co-ordinate school sanitation related activities with the Education Department to ensure synergy and eliminate duplication of efforts. This initiative will be taken further to develop and issue policy guidelines for effective implementation with quality outputs and quality assurance of both hardware and software components in school sanitation. Sharing programme documentation of best practices will be a key element to ensure adequate capacity building to sustain the program.

Incorporating environmental considerations

Increasingly, sanitation is being seen as a major issue in environmental protection. Improper disposal of human wastes can pollute water bodies, groundwater, and land surfaces, causing great risks to health and impacting the local, regional and national economy. Such practices can adversely affect general aesthetics and the overall quality of life for those living in the vicinity and exacerbate health risks in situations such as natural disasters, especially floods. As such, efforts

will be made to make environment concerns explicit in the policy process and to develop a clear understanding of the magnitude of the sanitation-related environmental problems.

Formulating financial mechanisms

The financial issues related to the TSC and related policies include the capital costs required for sanitation infrastructure and facilities, and recurrent costs required to operate and maintain the facilities through a decentralised process. Additional program costs include training, institutional development, community organization, and hygiene education.

Since the level of service, capital costs, and recurrent costs are inextricably linked, efforts will be made to ensure that levels of service take into account not only the availability of funds (from household, government, and other sources) for capital costs, but also the ability to recover recurrent costs over the long term and household willingness-to-pay for improving and upgrading sanitation.

Assessing the magnitude of the overall national need for sanitation will be an essential first step in formulating relevant policies to ensure that meeting these needs is expressed in monetary terms, such as total capital investments plus annual recurrent costs, or in resource terms, such as required increases in annual budgets or personnel requirements. Efforts will also be made to increase availability of capital funds for sanitation, especially household access to capital for improved sanitation, for example, through micro credit programs. The current policy of reduced subsidies will continue to be advocated for acceptance by all State Governments. GoI will be giving full priority to sanitation programme and required funds will be made available to the programme. If need arises, additional allocation will be made or external funding may also be sought for.

Efforts will also be made to develop mechanisms by which stakeholders, especially households are fully aware of the recurrent costs associated with sanitation systems including the maintenance, repair, and general upkeep of their facilities to be able to fully realise the benefits of improved sanitation. This is based on global experience that shows that the more clearly the recurrent costs of sanitation services are recognized, accepted, and supported by the users, the greater are the prospects for sustainability. These will be on-going processes.

4.4.3.5 A shared vision for change

Recognising the need for cross-sectoral approaches to sanitation and hygiene, the policy process will support an accelerated programme and involve clear delineation of roles and responsibilities of all involved institutions at various levels towards a common goal.

4.4.3.6 A National Sanitation and Hygiene Policy

Sanitation policies are critical to creating an enabling environment to encourage increased access to sanitation services. National policies can serve as a key stimulus for local action. Such policies serve to set priorities and provide the basis for translating needs into action, creating conditions and regulatory frameworks in which sanitation can continue to grow with related supply and service inputs. More importantly, a national sanitation policy can provide the trigger for increased private sector involvement and for fostering public-private partnerships. While India has made a radical policy shift from a target driven approach to a more demand driven approach to water supply and sanitation with the introduction of Sector Reforms for the drinking water sector and the TSC for the Sanitation Sector in 1999, it does not yet have a codified National Sanitation and Hygiene Policy. The need for this is becoming increasingly apparent, and India will take the necessary steps towards formulation of a new National Sanitation and Hygiene Policy.

4.5 Maldives

4.5.1 Background

4.5.1.1 Maldives' geography and water resources

The Republic of Maldives is a chain of nearly 1900 tiny coral islands, which are grouped into 26 geographic atolls that together form a chain 820 km in length and 130 km at its widest point set in an area of more than 90,000km² of the Indian Ocean. However, the total land area is less than 300km². The island archipelago is located approximately 500km southwest of India. Amongst these only 200 islands are inhabited, 87 islands are used as resorts, a few are used for industrial/agricultural purposes and the rest are uninhabited. The elevation of the highest point in most islands is less than 2m above sea level. The 26 geographic atolls are grouped into 20 administrative 'atolls'. These are labeled in Figure 4.19 In the top right corner is a map showing Maldives position in relation to India and Sri Lanka.

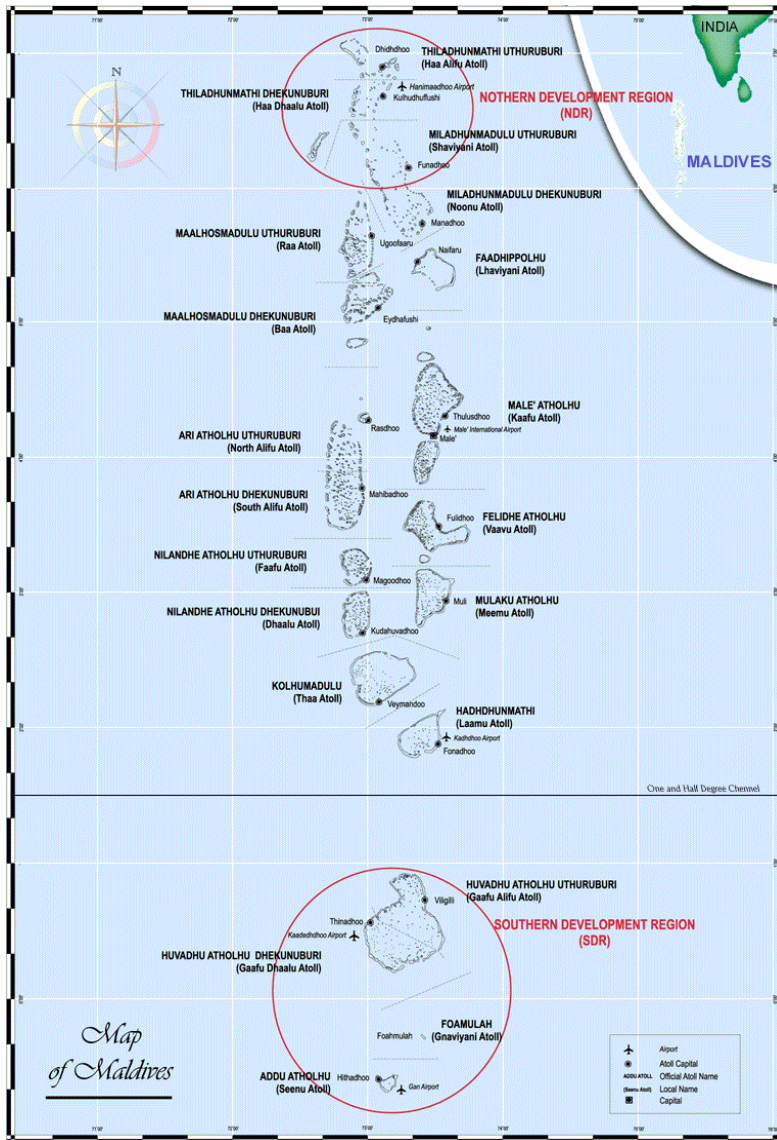


Figure 4.19: Map of Maldives

However, the total land area is less than 300km². The island archipelago is located approximately 500km southwest of India. Amongst these only 200 islands are inhabited, 87 islands are used as resorts, a few are used for industrial/agricultural purposes and the rest are uninhabited. The elevation of the highest point in most islands is less than 2m above sea level. The 26 geographic atolls are grouped into 20 administrative 'atolls'. These are labeled in Figure 4.19 In the top right corner is a map showing Maldives position in relation to India and Sri Lanka.

The population of the Maldives is about 270,101 (Census 2000). About a quarter of the population live in the capital island of Male' which has a population of 74,069 and the remaining population is scattered over 199 other islands. In addition to its permanent population, Male' also has a floating

population of several thousand who arrive from the outer islands mainly for commercial, education and medical purposes. Maldives' population is growing at an annual rate of 1.9% (Census 2000).

The climate is tropical, warm and humid all year round with a mean annual temperature of 28.0 C and an average relative humidity of 80%. The mean annual rainfall in Malé is approximately

1980mm. Rainfall is evenly distributed throughout the year, except between January and April when dry periods of two months are common. Open water evaporation and transpiration from vegetation are very high.

There are no rivers or streams in any of the islands of Maldives, and only a few wetlands or freshwater lakes. The country's freshwater resources exist as groundwater in basal aquifers, generally unconfined in nature and extending below sea level in the form of a thin fresh water lens. They are vulnerable to saline intrusion owing to the freshwater-seawater interaction and need to be carefully managed to avoid over-exploitation.

Maldivians depend mainly on rainwater for drinking and groundwater for most other domestic needs. Rainwater is tapped from roofs and collected and stored in various types of tanks. All the islands have individual household as well as community tanks. However, the situation is different in the capital island Male' where the whole population has access to desalinated water distributed through a piped network. In Male' it is common for people to use desalinated water for drinking as well as for domestic purposes due to high contamination of groundwater. As in the capital island Male', many islands are now facing groundwater problems caused by human activities such as over abstraction and sewage pollution.

The Government of Maldives recognises that access to safe water and adequate sanitation are an important part of the basic societal infrastructure. Thus the Health Master Plan 1996–2005 and the Government 5 year National Development Plans, the policy documents which addresses water supply and sanitation sector have set targets for the provision of safe water and sanitation to the population of Maldives. The national target to achieve water supply and sanitation coverage of 100% for Male' by 1999 was met during the fifth National Development Plan period (1996 – 2000). The target of providing 10 litres of freshwater per capita per day for the rural population is yet to be achieved. According to the fifth National Development Plan, more than 90 percent of the freshwater requirement of the rural population was met by shallow groundwater aquifers.

The target of providing 100% sanitation coverage for Male' had been achieved with the completion of a comprehensive sewerage system with all households connected to the system. In the rural areas, access to improved means of excreta disposal reached 40% during the fifth National Development Plan period, from a baseline level of 22% in 1990.

In the Maldives the majority of water borne diseases can be attributed directly or indirectly to water through lack of safe water and appropriate sanitation facilities. Improvement of sanitary services and provision of a reliable water supply system to the urban population have reduced the cases of reported waterborne disease. Similar decrease of trend is observed in the rural population.

The access to safe water and improved sanitary means of excreta disposal are universal needs and important for the sustainable development of the Maldives. The Maldives has made a firm commitment to the achievement of the goals of safe water for the entire population and strategies are aimed towards the complete and equitable provision of safe water and safe sanitation to the population of the Maldives. The Vision 2020 strategies are the foundation upon which the future national priorities for water resources management and development will be developed. The focus will be on improving the accessibility, affordability, and quality of water to meet the increasing demand for water resources by the rapidly growing population in line with their social and economic uplift.

Maldives Water and Sanitation Authority (MWSA) is the Government Authority under the Ministry of Health responsible for planning and implementation of water and sanitation

programmes as well as regulating the services in Maldives. It has been given a mandate to provide the population with access to safe water and sanitation services as well as protection of groundwater resources.

As such Maldives Water and Sanitation Authority has been working along these lines since its establishment in 1973. Lot of progress has been made to date and MWSA emphasises the importance that provides effective management accounting for the involvement of the community in the decision making process regarding the management of water resources and sanitation in the islands. To guide this process MWSA has taken steps in integrated water resources management and sanitation through a community participative process.

The privatization of Male' water and sewerage services in 1995 has been very successful and since then responsibility of providing and maintaining the water supply and sewerage services for one fourth of the total population of the country lies with the Male Water and Sewerage Company. However, Government still maintains 70 percent of shares in this joint venture company and is regulated by MWSA.

4.5.1.2 Protecting Groundwater Resources

Protecting the ground water resources is critical for the islands of the Maldives. The Maldives has few surface water resources, in the form of freshwater lakes known as *kulhis*, the vast majority of the country's water resources are stored as groundwater.

The country's islands are very low-lying – there is no point in the country higher than 2m above sea level – and the water table is found at very shallow depths - usually no more than 2m below the ground surface. In addition, the freshwater lens on each island is usually very thin. The thickness of this lens depends upon the rate at which it is replenished by rainfall, the size of the island, the soil permeability, rates of abstraction and changes in sea level. In Figure 4.20 (which shows the approximate relationship between island width and freshwater lens thickness for the 11 islands in the Northern Development Region) we can see that the freshwater lens is rarely more than 12m in depth.

The 11 islands in the Northern Development Region are fairly typical of Maldives' 200 populated islands. The island of Gan in Addu Atoll (one of five islands in the Southern Development Region) has a freshwater lens which is around 20m deep. As Gan is one of the Maldives' largest islands, this is possibly one of the thickest freshwater lenses in the country. On the vast majority of islands, the freshwater lens is less than 12m in thickness. In fact, in populated islands groundwater is often used at a rate which exceeds the sustainable yield. As a result, lenses have reduced to less than 2m in thickness, as is the case in 7 of the 18 boreholes measured in the Northern Development Region and plotted in Figure 4.20.

Maldives' groundwater resources are therefore vulnerable in a number of ways. Because the water table is found at such shallow depths, they are particularly prone to pollution from the human activities that take place on the surface. In addition, because the lens is often of very limited thickness, the groundwater resources are prone to increased salinity as a result of over-extraction.

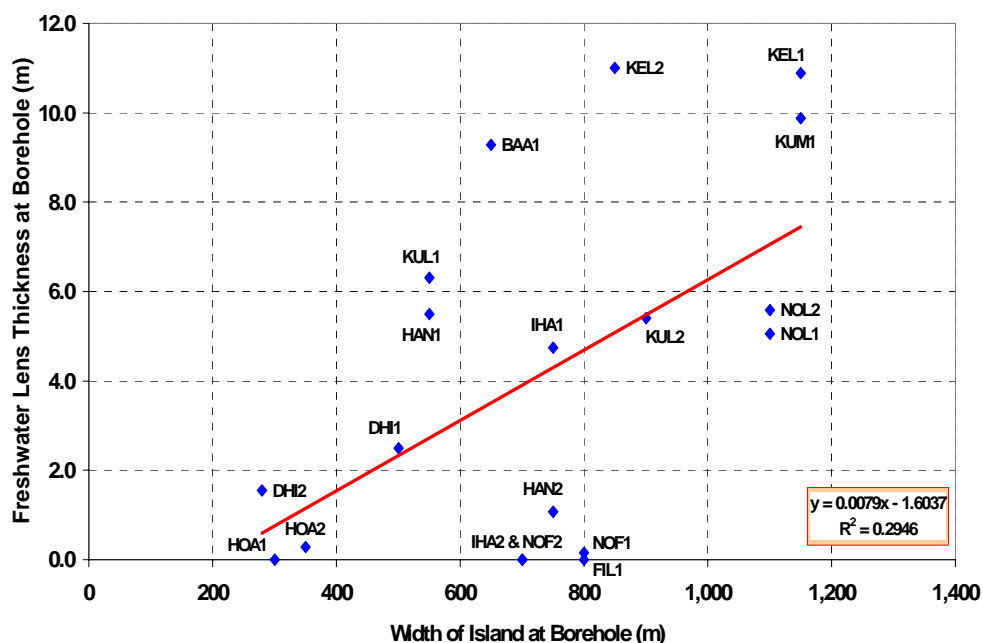


Figure 4.20: A graph showing the relationship between island width and freshwater zone thickness illustrates the relatively thin freshwater lenses in Maldives' islands (from Falkland, 2001a)

4.5.1.3 Groundwater pollution from poor sanitation

Maldives' groundwater resources are especially vulnerable to pollution from human activities that are taking place above them. Fortunately, there are relatively few heavy industries in Maldives and intensive agriculture occurs in only a couple of islands. Hence the major source of groundwater pollution is poor household sanitation and waste disposal.

Outside the capital, Male', the majority of households have septic tanks and soakaways. The tanks are often poorly built, inadequately sized or have suffered from hydrogen sulphide corrosion and are prone to leakage. In addition, tanks are desludged infrequently. As a result, tanks are often full or nearly full of sludge and have very short retention times. Soakaways are usually deep pits, not shallow trenches. Rather than use the unsaturated soil above the water table to remove at least some of the pollutants from the septic tank effluent, they effectively create a shortcut for septic tank effluent to reach the groundwater below.

These factors combine to cause the contamination of groundwater resources by septic tank effluent. This effluent still has relatively high suspended solids and nutrient concentrations, and contains large numbers of pathogens.

4.5.1.4 Highly permeable soils encourage pollutant transport

The soils of Maldives' islands are formed in the most part from very permeable coral deposits. Although in vegetated areas the upper parts of the soil profile contain organic material, the areas in which people live and in which poor sanitation systems affect the groundwater have usually been cleared of vegetation. As a result, the soil is a fairly uniform sand, with a very high permeability.

In these conditions groundwater movement can be quite rapid, and so pollutants can be transported over large distances.

Each household has its own well. Well water is generally used for bathing but during the dry season, where rainwater storage is insufficient, well water is sometimes used for cooking and drinking too. Where groundwater is commonly found to be polluted by pathogens, this can obviously have a significant impact upon health.

To try and alleviate this problem Government has given lot of importance in providing safe sanitation systems in the most densely populated islands where pollution problems are more critical and pose health hazards. Some island communities have built their own sewerage systems.

4.5.1.5 Problems exacerbated by high population densities

The problems of pollution and over-extraction described are exacerbated by the high population densities found on some islands. A rough calculation of the population density which can be supported by a typical freshwater lens in the Maldives is set out below. Assume that:

Rainfall is approximately 1,980mm annually

Average recharge is approximately 40% of rainfall

Sustainable yield, say 30% of average recharge = 238mm per year

Sustainable yield per hectare = $0.238 \times 10,000 = 2,380 \text{ m}^3$ (=2,380,000 litres) annually

If consumption is assumed to be 95 L/p/d (= 34, 675 litres per person annually), then the average island can support a population density of up to 69 persons/ha.

Table 4.7 : The ten most densely populated islands of the Maldives

Island	Area (hectares)	Population (2000 census)	Population density (persons/hectare)
R. Kadholhudhoo	4.40	2650	602
Lh. Hinnavaru	7.24	3156	436
K. Male'	187.00	70278	376
B. Thulhaadhoo	4.97	1822	367
Sh. Komandoo	5.96	1526	256
Lh. Naifaru	14.27	3570	250
M. Dhiggaru	4.61	872	189
M. Maduvvari	3.10	455	147
K. Gulhi	5.50	613	111
B. Eydhafushi	22.20	2379	107

The 10 islands set out in Table 4.7 have population densities exceeding 100 persons/hectare. Unsurprisingly, these islands have experienced problems with the salinity of their groundwater resources as a result of over-extraction. They have also experienced severe problems with pollution of their groundwater resources from poor sanitation.

A recent study on the island of Naifaru in Lhaviyani Atoll to the north of Male, the most densely populated island not to have a sewerage system, found 80% of the household wells tested to contain faecal coliforms. The majority contained more than 100 faecal coliforms per 100ml. This situation is common in the more densely populated islands. Nutrients and coliforms are still found in the less densely populated islands, both indicating pollution from sewage.

4.5.2 Sanitation in the Maldives

In the past the Government of Maldives has built sewerage systems on several of the most densely populated islands to try and alleviate this problem. Some island communities have built their own sewerage systems. Although these systems have improved the situation, the majority of Maldives' households are still using groundwater polluted by pathogens due to poor construction and maintenance.

4.5.2.1 Services provided to Male' and other Densely Populated Islands

In 1972 the population of Male'- the capital was 15,279. Because of the rapid development of Male', with respect to other islands, people from other islands started migrating to the capital resulting in an unnatural population boom. The quantity of water drawn from Male's aquifer increased tremendously, and also with more sewage being disposed off into the ground made it more susceptible to groundwater pollution. Water borne diseases such as diarrhoea, cholera, shigella and typhoid started spreading due to poor sanitary conditions.

In response to this problem, a special office, Maldives Water and Sanitation Authority was established in 1973. By then the population of Male' had increased from 15,279 in 1972 to 29,500 in 1974. About 1.3 million litres of water were being used from the aquifer daily, the thickness of the fresh water lens was reduced to about 12m and there was rapid deterioration of the groundwater quality due to this increased population and poor sanitary conditions. Outbreaks of cholera in 1978 and shigella in 1982 claimed many lives. As a result, the Male' Water Supply and Sewerage project was conceived in 1985. Under the Male' sewerage project, sewage is collected to pump stations and discharged, untreated, into the sea via sea outfall for deep sea disposal. At present, there is no sewage treatment facility available in any of the inhabited islands of the Maldives. However pilot studies are underway in 2 of the islands to find an appropriate method for treatment.

The population of Male' continued to grow and increasing pressure was placed upon the island's freshwater lens. Though the new sewerage scheme helped to alleviate the pollution of the lens by septic tanks and soakaways, it contributed to another problem. The increased volumes of groundwater being used to flush toilets were no longer returning to the aquifer but were being discharged to the sea. The salinity of the aquifer increased sharply as a result, limiting its usefulness as a resource. Because the available roof catchment area and the space available for rainwater storage was too limited to provide for Male's increasing population, desalination became one of the few options available for providing sufficient safe water for Male'.

Sanitation facilities are fully maintained in Male'- the capital, where a sewage disposal system has been provided to almost all of the 5600 households. This brings the accessibility to proper sanitation facilities to 100% in Male'.

To ease the burden of operating and maintaining the water and sewerage system the Governments decision of privatization of Male' water and sewerage services in 1995 has been very successful. Since then responsibility of providing and maintaining the water supply and sewerage services for one fourth of the total population of the country lies with the Male Water and Sewerage Company.

Outside of Male the government has provided low cost sewer systems to seven densely populated islands (six of them are the most densely populated as indicated in table 1) The best way to protect the shallow groundwater in these areas seems to be to build sewers which carry the effluent away from households via septic tanks. The fundamental principle behind the design of these small bore sewerage systems is that they should carry 'settled' sewage. That is, the effluent from household

septic tanks which is free of solids and which is partially treated by the anaerobic processes described. Because the sewage is free of solids, sewers can be laid at shallow gradients without increasing the risk of blockages occurring. This makes them particularly suitable for Maldives where there are only very small differences in height within islands. It means that sewerage systems can be built which operate under gravity, without the need for any mechanical pumping and the attendant costs and problems with maintenance and spare parts. Sewerage systems have been installed in some selected islands which either carry settled or unsettled sewage which is disposed into the lagoon close to the shore. Government since then recognised some problems with these systems such as the design and construction faults, poor maintenance and blockages and near shore pollution and decided to carry out further research to improve or find appropriate solutions before new systems are built. In this regard with technical assistance from external agencies, MWSA focused on carrying out assessments and research during the last 3 to 4 years to find available options. For the rest of the islands, although safe systems are encouraged, there is presently no policy as to the type of sewage disposal method that maybe adopted by different islands, as long as the effluent is not discharged into the ground without proper treatment.

4.5.2.2 The Rural Islands

Sanitation is a major problem in the island communities, on the rural islands several types of sanitation facilities are used from use of traditional practices of beach and gifilis, to pour flush and tank flush systems.

Traditionally, many Maldivians used “bush or the beach” for human excreta disposal. A designated area in the household backyard for shallow burial of faeces (*gifili*) has also been common practice in the past. These practices, especially the defecation in the *gifili*, are known to damage the environment through contamination of groundwater aquifers which were directly used (especially during dry period) for potable purposes.

In the *gifili* (a compound with a well in the centre) system, a hole is dug in the ground and people defecate into this hole. With the rain, the faeces leach into the ground water, leading to bacteriological contamination. Also children defecate onto the ground and this may be left without being covered, thereby providing a perfect ground for flies to breed. Traditionally, *gifili* also serves as a home garden where chilli plants and fruit trees are grown.

The next progression after the *gifili* is use of water borne sewage disposal with the pour flush toilet or standard flush toilet with septic tanks and soakaway pit. The pour flush toilet is a low volume squatting cistern that is flushed using a small container filled with water. In both systems the sewage is transported through a short line to a septic tank then the effluent is discharged through a soakaway pit into the ground water where the water table is usually only 2m below ground level. The septic tanks are not standardized and often poorly constructed and maintained, thus not providing adequate treatment and thus polluting the ground water and the near by wells. This type of sanitation treatment still endangers the ground water resource used by the community thus producing a health hazard. The government is encouraging the communities to develop safer sanitation systems like the small bore sewerage system or septic tanks constructed and maintained properly.

4.5.3 Present Sanitation Policy Implementation

The Government of the Maldives is committed to provide adequate water supply, sanitation, safe and environmentally sound management of sewage disposal to all islands. Accordingly it has produced policies relating to sanitation in the 6th National Development Plan, Health Master Plan

and the National Nutrition Plan. The following commitments outline the strategies to implement the policies.

6th National Development Plan 2001-2005

- Formulate a plan to provide safe water, and sanitation to all islands.
- Encourage and facilitate private sector to become more involved in providing sanitation services.
- Promote the inclusion of sanitation issues not only in planning health services but also in education, infrastructure development and construction activities. Include land use planning to protect freshwater aquifers.
- Continue to raise awareness regarding personal hygiene and good sanitary practices.
- Identify, and promote sustainable systems for water supply and sanitation that are appropriate for small islands.
- Develop and enforce guidelines and operational procedures for sewerage projects.

Health Master Plan 1996-2005

- Integrated water resources development and management.
- Developing appropriate technologies for sanitation and waste water management.
- Develop and implement water and sanitation regulations.
- Encourage community participation on environmental health and create awareness.

National Nutrition Plan 2001-2006

- Promote safe drinking water, environmental hygiene and sanitation practices in homes, schools and communities through IEC.

Furthermore the government agency responsible for sanitation, MWSA has a mandate to ensure environmental sanitation, by means of safe and appropriate disposal of sewage. Preserve all water resources and protect the aquifer.

To implement the policy MWSA has adapted a more integrated approach to the planning implementation of its sanitation policy. The new direction not only incorporates the development of infrastructure but looks beyond infrastructure to regulation, community participation and hygiene practices. There is an initiative to develop sanitation policy with the communities that is community driven. A bottom up approach ensures that the policy is realistic, understood and more sustainable.

4.5.4 New infrastructure

Several studies and assessments have been conducted over the last few years with external assistance by UNICEF,WHO, IDB and ADB to find appropriate solutions for water and sanitation that will be sustainable in the islands of the Maldives. Consultants have proposed different options after detailed studies of selected focus islands and some activities have already been implemented under the Regional Development Project Phase 1, and the second phase studies are ongoing at the moment. Presently plans are underway to construct new sewerage systems on some islands that were studied with the help of assistance by ADB and IDB.

4.5.4.1 Regulations and Guidelines

As previously stated the protection of the ground water is critical since it is the major source of non-potable water used in the rural islands. In some of the island the ground water is still being used during the dry period for potable purposes if there is no rain water available. MWSA is in the process of providing guidance on calculating sufficient rainwater storage capacity and rainwater collection, this will reduce reliance on ground water for drinking purposes. Geographical factors such as particularly high water tables or a particularly narrow width can make an island's groundwater resources more vulnerable. These are factors other than population density that influence the vulnerability and degradation of groundwater resources. Economic factors such as those which limit the ability of communities to build good sanitation facilities or which make solid waste difficult to dispose of can also result in the degradation in quality of an island's groundwater. MWSA has drafted groundwater protection guidelines. These guidelines will eventually regulate construction dewatering, industrial discharge into the groundwater and groundwater extraction from small industries.

On Site Septic Tank Systems

On the islands where proper water and sanitation facilities are lacking, diarrhoeal diseases and worm infestations are high. Correctly built and maintained septic tank systems can reduce the risk to the public's health and prevent ground water pollution. A lack of coordinated approach, knowledge and information has resulted in poorly operating designs in some instances. Poorly built or maintained systems can leak or discharge untreated waste. This causes pollution to ground water, contamination of wells and poses a public health risk. MWSA had produced standardized septic tank guidelines and training materials to every island to ensure the information is available for communities to design, build and maintain systems appropriately.

4.5.4.2 Coordinating with other Government Agencies

The Maldives Water and Sanitation Authority is the office working under the Ministry of Health responsible for the regulation of potable water, sanitation services and the protection of the ground water resources. Lack of communication between the MWSA and other government agencies has allowed new construction damaging existing sanitation infrastructure, sewage systems being overburden with new housing development and a reliance on ground water resources on reclaimed areas before the fresh water lens has been allowed to develop. Consequently further emphasis has been placed on continuing intergovernmental communication whereby MWSA staff are shared with other government agencies to encourage sanitation and groundwater protection remain at the forefront of considerations during planning and construction.

4.5.5 Hygiene

Since 2002 MWSA has commenced incorporating a hygiene education component within its programmes to enable it to better achieve its mandate to control water and sanitation disease in the population of the Maldives. The emphasis has been to move from information giving and IEC based atoll workshops to methods that foster participation, target interventions, provide better access to technical information, bring about behaviour change and enable communities to better manage their water and sanitation facilities – from information to effective communication. It was in an acknowledgement that water and sanitation facilities alone do not bring about reduced diarrhoea and improved health – it would take hygiene education also.

Hygiene education was introduced into MWSA's work with the following strategies / principles:

- Hygiene Education is valued as an equal partner to Water and Sanitation if WES programmes are to achieve maximum health benefits.
- Importance of fostering community participation, action and capacity building at an island level.
- Plan with improved understanding of diarrhoea incidence trends at a national and island level and focus on those groups most susceptible in communities.
- Improving access to quality information at the island level for Island Offices, Health Professionals and communities.

4.5.6 The Participative Process

The PHAST Initiative (Participatory Hygiene and Sanitation Transformation) is developed by WHO/UNDP as a best practice approach to the participatory control of diarrhoeal diseases in communities. Its objectives are to:

1. Improve hygiene behaviours,
2. Prevent diarrhoeal diseases and
3. Encourage community management of water and sanitation facilities

MWSA has initiated the PHAST approach on 9 target islands this year. It incorporated the School Sanitation and Hygiene Education component, community drinking water monitoring and hand washing initiatives and training in appropriate water and sanitation technologies.

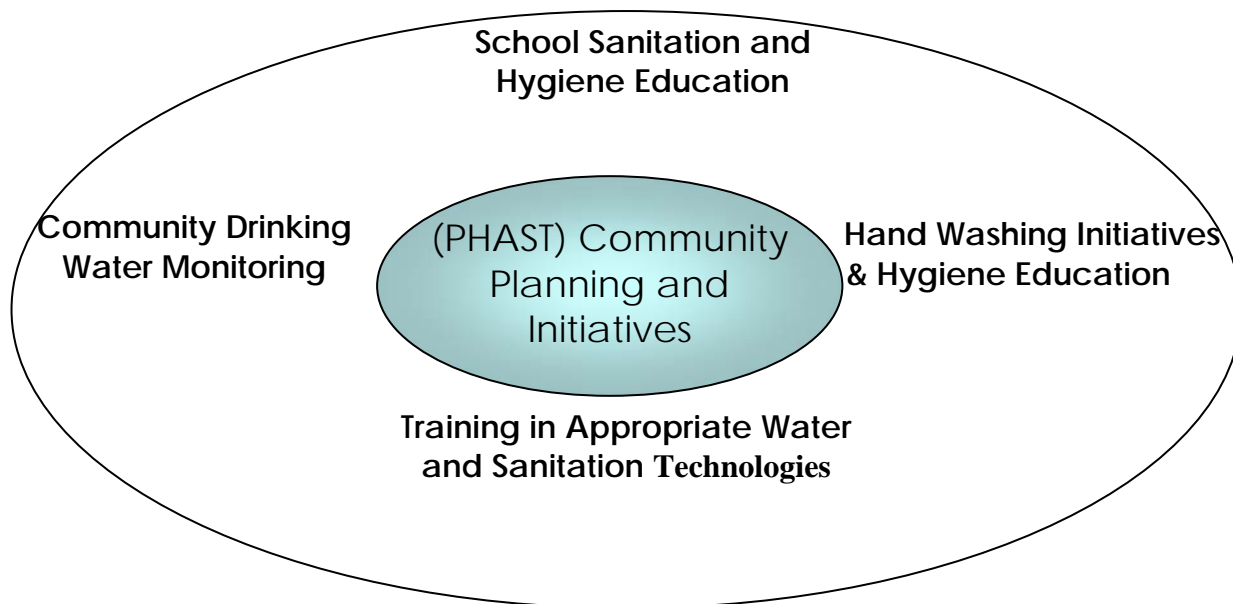


Figure 4.21: Hygiene Initiative

4.5.7 Health Indicators

In the past water borne diseases such as diarrhoea, cholera, shigella were a major problem throughout the Maldives with epidemics claiming many lives. With improvements to the health services, water and sanitation systems and awareness the situation has improved.

The diarrhoea situation has been quiescent throughout the 90's, with no major epidemics anywhere in the archipelago. The endemicity of diarrhoea had started declining since 1995, although there had been fluctuating trends. Incidence rates had continued at a steady level during the early 90's at around 65 per 1000 population. Thereafter it started declining and stood at 30 per 1000 in 2000. The same rate has prevailed in the year 2001. Surveillance was strengthened and case reporting has been improved during the last 2-3 years. This is reflected in the rates of trends. The number of diarrhoeal deaths declined steadily and case fatality rate of diarrhoea had been below 1 since the year 1992. However, the diarrhoea incidence rates still remains high and more specific interventions need to be carried out to lower this figure.

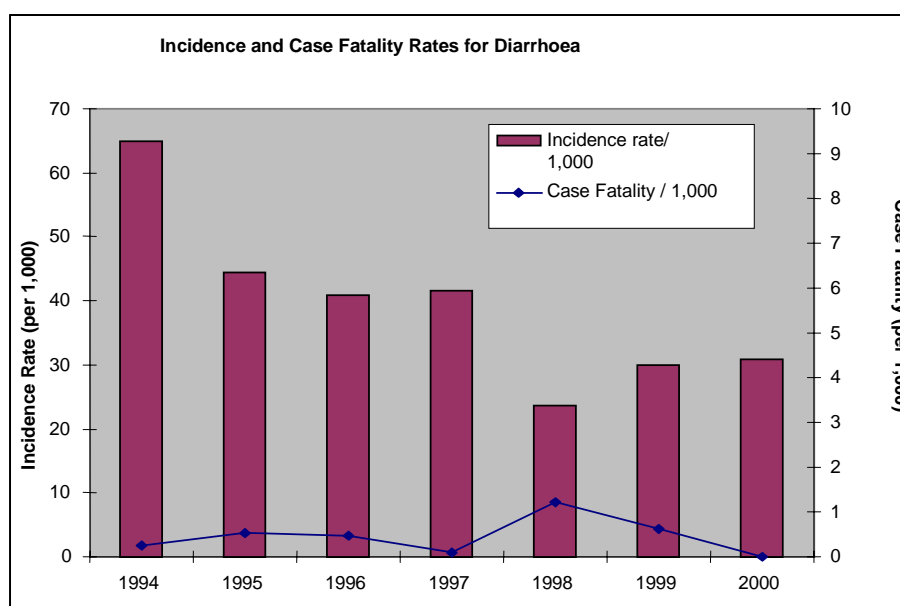


Figure 4.22: Incidence of Diarrhoea (Source: Health Report, 2001)

Considerable achievements have been made in the provision of safe sanitation to the people of the Maldives. According to VPA (1998), 42.5 % of the rural population had access to improved sanitation services in the islands. These include access to toilet facilities which are either connected to a septic tank or a small bore sewerage system. In 1988 the use of *Gifili* and *Athirimathi* (beach) as a means of sanitation service is pronounced in the rural population. It was estimated that 33% and 26% of the rural population uses *Gifili* and *Athirimathi* respectively (VPA, 1998).

Since then the population has moved away from “gifili” and beach practices to water borne systems. According to the 2001 MICS survey 55% and 23% of the population use flush to pit or flush to sewer systems respectively see figure 4.23. Only 3% and 19% of the population use “gifili” and beach practices. In total 78% of the population has improved sanitation services (flush systems).

Distribution of Types of Sanitation Facilities

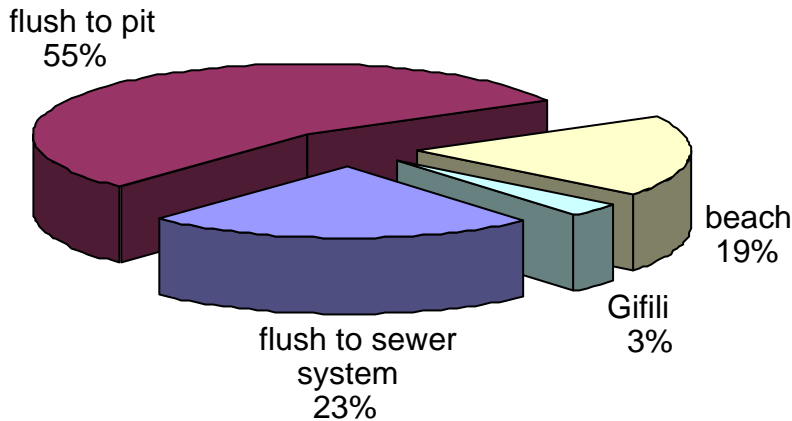


Figure 4.23: Distribution of Types of Sanitation Facilities (MICS Survey 2001)

The Maldives continues to have water borne health related problems, however a marked improvement has occurred. Diarrhoea is quite common in Maldives. In fact, despite the increase in the number of rainwater tanks constructed in the atolls, and the provision of safe water in Male', there has not been a significant decrease in the morbidity situation with respect to diarrhoea in the past few years. Diarrhoea is on the increase usually during the rainy season, as rainwater washes faecal material into the soil. Typhoid is endemic throughout the country and there have been minor outbreaks within the last few years, in different parts of the country. It is observed that incidence of typhoid increases during the rainy seasons, when pathogens leach into the soil, with the rain, thus contaminating the ground water. Worm infestations are quite common in Maldives. About 50%-75% of children below 5 years of age are affected by intestinal parasites (MOH2001). A cholera epidemic occurred in 1978, affecting both children and adults. Since then, no further epidemics of cholera have occurred. Shigella epidemics occurred in 1982, affecting children and adults. Since 1982, there has not been an outbreak of either cholera or shilgella

4.5.8 The Direction of Future Plans

NaSSeR

The concept is best described as Neighbourhood Settled Sewerage, Reed-Bed and Recharge (NaSSeR). The NaSSeR concept is described which can be arrived at through a series of sequential improvements. It has been designed with a view to it being replicated throughout the country on a gradual basis - as populations increase (either naturally or as a result of the population consolidation policy) and as and when funds become available. This seems the wisest approach to take whilst the plan and timeline describing how the population consolidation policy will be carried out is still under discussion. NaSSeR may be appropriate for an island now or some time in the future, depending on its population density (as well as other factors). Existing soakwells or septic tanks can first be upgraded gradually on a house-by-house basis to septic tanks and soakaway trenches

These septic tanks and soakaways can then be incorporated into NaSSeR systems as the population density increases. Though sewage treatment is often considered an extravagance which many low-income communities around the world cannot afford, it is a necessity in Maldives because of the very limited fresh groundwater resources available. If wastewater is discharged to sea the freshwater lens is rapidly depleted and the groundwater becomes too saline to be used for most purposes. Treatment of septic tank effluent can be carried out to acceptable levels by reed beds. Once treated, the effluent from the reed bed can be discharged through a soakaway trench to recharge the groundwater resources. Provided soakaway trenches are as far as possible from the nearest household wells, the health risk should be acceptable. Greywater, meanwhile, is separated at the household and returned directly to the ground through soakaway trenches. As such, septic tanks and sewers can be designed for lower flows.

4.5.9 Challenges

Despite the improvements in policy and implementation, the development of sanitation in the Maldives continues to have challenges due to its, geography and fragile ecosystem. Financial and policy considerations have been placed on sanitation in the Maldives, the government has included sanitation in the development plans such as the National Development Plan. However, there still continues to be challenges.

- The long history of inadequate financing in the sanitation sector including lack of facilities and proper institutional set up in most islands.
- The extreme high capital development costs coupled with the prospect of poor economic returns for sanitation systems make it difficult to construct community sanitation systems, especially the low- income communities.
- Since the Maldives has a small population geographically dispersed over a large area, there is high cost of providing facilities to small scattered communities.
- Because of the hydrogeology of the islands of the Maldives, many islands have inadequate water resources and there is a high cost of providing alternative supplies like desalination.
- The difficulty of finding qualified personnel.
- Inadequate funding resources for research, application and implementation of successful projects elsewhere in the country.
- Small land area with fragile ground water resources and increasing population density.
- Lack of information and research on similar island situations.

4.5.10 Summary and Conclusion

The Maldives is particularly vulnerable to the effects of poor sanitation. It has a very fragile ground water resource due to small thin and vulnerable island fresh water lenses, poor sanitation pollution controls, high population densities and the highly permeable soils found in the islands. The policy documents such as the National Development Plans, The Health Master Plan set targets in water and sanitation. The Maldives has made a firm commitment to the achievement of the goals of safe water and sanitation for the entire population and strategies are aimed towards the complete and equitable provision of safe water and sanitation to the population of Maldives. The key guiding principles include improving the accessibility, affordability, sustainability and quality of these services. To make the policies and strategies more relevant to island communities and to ensure implementation and sustainability, participatory approaches need to be increasingly used for decision making.

The Government of the Maldives is now developing a more integrated approach to sanitation. Though development of infrastructure continues. MWSA is developing regulations for the protection of ground water. Furthermore MWSA has developed guidelines for septic tanks to aid in their proper construction and use. MWSA continues to develop and maintain with other government agencies to facilitate further communication and keep sanitation at the forefront. There has been a new emphasis toward hygiene education to, foster community participation in planning with improved understanding of diarrhoea incidence and improving access to quality information. By using PHAST participative approach the needs of the community are identified by the community and will generate more support and sustainability for new schemes. The results have been positive; the number of diarrhoea cases have dropped from 65 during early 90's to 30 per 1000 population in 2000. Presently 78% of the population has access to improved sanitation facilities. The future of the sanitation direction includes developing a staged sanitation system whereby the sanitation system grows with the communities progressively protecting the ground water as the pressure on the freshwater lens increases. The final stage is a sewer discharging into a reed bed to treat the effluent before replenishing the ground water reserves.

Despite strong policy directed toward sanitation, the Maldives continues to face challenges in supplying sanitation to its whole population. These include lack of resources, the high cost of infrastructure dispersed in a large area for small communities and the hydrogeology of small islands and lack of funding for research, application and implementation.

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4.6 Myanmar

4.6.1 Introduction

Safe and adequate water supply, proper disposal of human excreta and systematic use of sanitary latrines and sound practices of personal hygiene are all interlinked and complementary to each other for the promotion of health and socio-economic well-being.

Low coverage of safe drinking water supply, coupled with low coverage of sanitation and poor personal hygiene practices call for intensive and extensive efforts in all these three areas, but more specifically in sanitation and personal hygiene promotion.

In Myanmar, to meet these challenges the conventional longstanding strategy of top-down supply driven approach was replaced by community-based, self-help financing, demand driven and participatory approach using social mobilization process to bring together all feasible, potential and practical allies from multisectorial organizations, to create the awareness of people, motivate them and for their positive behavior changes and to create demand for these facilities. This also helps to mobilize community's recourses and strengthen community participation for promoting sense of ownership and responsibility for long-term sustainability, fostering the spirit of self-reliance.

Recent experiences in the promotion of sanitation and hygiene in Myanmar provide good examples of how people can be motivated to construct sanitary latrines and adopt hygienic practices. These activities have contributed to a significant increase in access to sanitary means of excreta disposal, from 45% in 1997 to 67% in 2001. Handwashing with soap and water after defecation has also increased from 18% in 1996 to 43% in 2001. Success is attributable to high level political commitment, state and divisional level action and community mobilization by village health authorities. Multilevel efforts have raised greater awareness of sanitation and hygienic issues and led to construction of latrines on self-help basis. Community participation with their strong dedication in self reliance and self-help financing system, further facilitated by easy access to locally produced materials such as pans, pipes and pumps produced by the private sector, lead to accelerated programme performance achieving appreciable increase in coverage percentage.

The progress made in Water supply and Sanitation Sector also has considerable effect on reducing the rate of incidence of water and excreta related diseases and consequently reducing infant and child mortality rates.

4.6.2 Country Profile

4.6.2.1 Geography, Climate and Demography

The Union of Myanmar was located in South –East Asia, has an area of 676,578 square kilometers. Thailand and Laos in the east, China bound it in the north and northeast, India in the northwest and Bangladesh in the west. The coastline is 1760 miles long and is bordered on the west by the Bay of Bengal and on the south by the Andaman Sea.

It lies between 9'H32'N and 28'H 31'N latitudes and 92'H 10'E and 101'H 11'E longitude. Myanmar enjoys a tropical climate with three distinct seasons, the rainy, the cold and the hot season. The hot season runs from mid-February to mid-May, the rainy season from mid-May to

mid-October and it coincides with the southwest monsoon. Then the cold season follows from mid-October to mid-February.

The country can be divided into four geographical regions, hilly, coastal, central plain and deltaic area. Administratively the country is divided into 14 States and Divisions, and 3 additional amounting to 17 administrative regions. Within these 17 administrative regions there are 63 districts, 324 townships, 13762 village tracts and 65235 villages.

The estimated population is 51.12 million in 2001. More than 70% of the population resides in rural areas. The remaining 30% are urban dwellers. The annual population growth rate is 2.02%. The population is diverse with more than 135 ethnic groups speaking a variety of languages. The main ethnic groups are Kachin, Kayah, Kayah, Chin, Mon, Bamar, Rakhine and Shan.

The sex ratio of male per 100 female is 98.63. A review of the age distribution of the population shows that 33.3% or 16.02 million of the population belong to less than 15 years age group, 59.05% or 28.4 million are in the age group of 15-59 years and the rest 7.65% or 3.68 million are in the age group of 60 years and above.

4.6.3 Background of Myanmar's Sanitation Programme

Many countries began their national sanitation programmes with the global launching of the International Drinking Water Supply and Sanitation Decade (IDWSSD) in 1980 which set its target on a global 100% coverage in water supply and sanitation by the year 1990. This motivated all member countries of United Nations to set its own target in pursuing the goals of IDWSSD for providing safe water supply and adequate sanitation services to the community. Donors and banking agencies also helped in assisting countries to achieve these respective goals in water supply and sanitation coverage.

Although programmes were carefully drawn and implemented with available appropriate technology best suited to each country's situation according to its financial status, material and manpower resources, the achievement fell short of its targets not only country-wise but also region-wise and globally as well. The high rate of population growth was said to be one of the factors that impeded the attainment of the targets in many countries. The theme "Sanitation for All by the Year 2000" was not materialized at all.

Myanmar's National Sanitation Programme gained an impetus fully at the launching of IDWSSD in 1980. The country set a national target in line with the Decade Programme. Consideration was duly given to the existing situation of coverage, level of service, institutional infrastructure and manpower resources that could be viable for the implementation of the country's Decade Programme in attaining targets.

Keeping the level of service in sight and the policy of narrowing the gap of disparity between the urban and the rural, a realistic target of equal coverage of 50% for water supply and sanitation was set forth for both the rural and urban areas which was to be achieved by 1990. Venturing further, a 100% coverage for both water supply and sanitation in both urban and rural areas was aimed at by the end of century, the year 2000. A nation wide effort was made to meet the target.

However, the achievement fell short of the target set. The percentage attained in sanitation was (40.04%) for the urban areas and only (34.71%) for the rural areas in 1990. In 1995, the coverage was (56%) for the urban and (36%) for the rural areas.

Due to low coverage in sanitation, the impact of the adverse effect in health was fully felt. A high incidence of excreta related diseases has been recorded for several years. The adverse effect on health due to low sanitation coverage and poor personal hygiene practices were reflected in high incidence of excreta related diseases, especially that of diarrhea, causing about 150,000 episodes annually and accounting for about (65%) of the total water and excreta related diseases for several years. Other diseases such as dysentery, viral hepatitis and enteric fever were also prevalent as a result of poor personal hygiene practices and low coverage of sanitation.

However, during the period of 1995 and 2000, a great improvement in sanitation coverage was made because of great efforts taken during the end of the decade. The sanitation coverage for urban area and rural areas were markedly increased to (83.6%) and (56.5%) respectively. This was mainly attributed to the changes in strategy and high political commitment.

4.6.3.1 Sanitation Coverage and Personal Hygiene Practices

In 1980, base-line data for water supply and sanitation were collected under the WHO Sector-Digest Programme. Subsequent Sector Digest Up-dates were also made in 1983, 1985, 1988, 1990 and 1995. Under the Joint Monitoring Programme (JMP), UNICEF and WHO jointly carried out the monitoring process starting with JMP (90) followed by JMP(91), JMP(92), JMP (93) JMP(94) and JMP(99). These were carried out by collecting and compiling the data submitted by local staff of the respective government departments through regular reports and returns. These data could be classified as “Provider –based data”.

In 1995, 1997, 2000 and 2003, Department of Health Planning under the Ministry of Health conducted the “Multiple Indicator Cluster Survey (MICS)”. Trained interviewers and enumerators were involved in the field surveys covering all the States and Divisions in the country. Since MICS surveys were carried out by actual field observations, direct personal interviews using questionnaire forms and then data checking and clearing through computerized system, the MICS could be classified as “Consumer-based data collection system”.

According to MICS data, considerable achievements have been gained in sanitation and water supply during the last decade of the 20th century and consequently there was a marked increase in the coverage. (Table 4.8 and 4.9). Nevertheless there was still much room for improvement in the rural areas and in personal hygiene practices. A need for a change in behavior and personal hygiene has been identified also.

Table 4.8: Percentage of population with access to sanitary excreta disposal (MICS)

Year	1995	1997	2000
Urban	56.0%	72.1%	83.6%
Rural	36.0%	52.9%	56.5%
National	43.0%	45.0%	63.1%

Table 4.9: Percentage of household residents with access to safe and convenient drinking water supply (MICS)

Year	1995	1997	2000
Urban	78.1	87.9	59.7
Rural	49.6	59.9	66.0
National	65.8	65.8	71.5

4.6.3.2 Policy, Commitments and Shift in Strategy

General National Policy set guidelines to expand safe drinking water supply and adequate sanitation facilities in order to fulfill the basic needs of the people with priority attached to the rural areas to narrow the gap of disparity of social and economic development between the urban and rural areas.

National Health Policy emphasizes intensification and expansion of environmental health activities including prevention and control of air and water pollution.

National Health Committee has also accorded its commitments by passing a resolution mandating the Ministry of Health (MOH) and Ministry for the Progress of Border Areas and National Races and Developmental Affairs to coordinate and implement systematic construction and use of fly-proof sanitary latrines by all households throughout the country, both urban and rural areas by the end of 20th century. This resolution was made with the aim of meeting the goal, Sanitation for All by the Year 2000.

Due to the political commitment made by the National Health Committee, the over all sanitation strategy came into scrutiny and the strategy was reviewed and duly evaluated in 1996. It was found that the community had become too much dependent upon the free supply of plastic pans and pipes for construction of latrines from donor agencies, not taking any appreciable initiatives in sanitation programme. Their participation in sanitation programme was obligatory.

Therefore the government and the donor agencies decided to change the conventional, cost-sharing, supply-driven, top-down approach to self-help and self-reliance, need-based driven community participatory approach using "social mobilization" process.

This new strategy consisted of the following process:

1. Extensive advocacy campaign to raise awareness on good sanitation and its vital role in public health.
2. Motivate stronger community participation by promoting sense of ownership.
3. Mobilize all possible and potential resources for achieving sustainable goals.
4. Alliance building between community, government and non-governmental organizations for better interaction aimed at achieving satisfactory and sustainable result.
5. Promotion of behavioral changes and personal hygiene practices with focus on the grass root community.

6. Last but not the least, to seek high political commitment for sanitation programme as public health policy priority.

4.6.3.3 Organization, Cooperation and Collaboration

Many different agencies including International NGOs such as Save the Children (UK), BAJ, AMI, World Vision etc, are involved in the development of the country water supply and sanitation system. Among them, National Sanitation Programme of the Ministry of Health, Water Supply Programme, Environmental Sanitation and Hygiene Programme, (UNICEF), Community Water Supply and Sanitation Programme (HDI-UNDP) and Rural Community Water Supply Programme (Department of Development Affairs) are the most prominent programmes.

Cooperation and coordination exists among the UN agencies and other International Organizations. Strong cooperation from local NGOs like Myanmar Red Cross Society, Auxiliary Fire Brigade, Myanmar Maternal and Child Welfare Association, etc have also received at all levels. Collaboration efforts among the government agencies like Education, Information, Communication and Culture are also being made through school network, newspaper, television, and radio network and public shows, traditional dances and dramas. Private sector collaboration is also received through video spots shown in private video parlors, which are very popular among the rural community.

In order to give guidance and over all supervision of the programme, a "Central Supervisory Committee" was formed with the Director General, Department of Health as the Chairman and responsible persons from various departments and non-governmental organization as members. Similarly, supervisory committees were formed at state/divisional, district and township and village levels and their terms and references were clearly defined.

4.6.3.4 National Sanitation Weeks

The first National Sanitation Week (NSW) was launched in May 1998. This was a turning point in the history of Myanmar's sanitation programme whereby high political commitment was accorded and placed on high priority in the health policy.

Processes encompassed in the new strategy were fully utilized and implemented in this NSW and was launched with the goal of constructing one million new sanitary, fly proof latrines on self-help basis throughout the country. The goal was duly achieved, giving a big boost for national sanitation programme by achieving remarkable coverage within a short period. Evidence of good coverage has been found in NSW campaign. This programme has been implemented with basic health staff, health volunteers, local NGOs and the community. Encourage by the success of the first NSW, the second, third, fourth fifth and sixth NSWs were successfully launched in 1999, 2000, 2001, 2002 and 2003 respectively with good results.

Findings of a survey conducted in 2001 by Myanmar Marketing Research and Development Services (MMRD) confirm earlier findings from MICS that National Sanitation Weeks National Sanitation Week activities and Social Mobilization strategy have led to an 18% increase in household access to sanitary latrines from 45.0% in 1997 (one year before National Sanitation Week) to 63.1% in 2000 (2 years after the first National Sanitation Week). The 2001 level of access to sanitary latrine according to the MMRD survey is 67%. The trend is significant, especially in light of only a 2% increase from 1995 to 1997.

The successful impact is also evident from the chronology of latrine construction. There was a rapid increase after 1998 in the construction of latrines, including both sanitary and unsanitary types, in all four hydro-geological areas of the country.

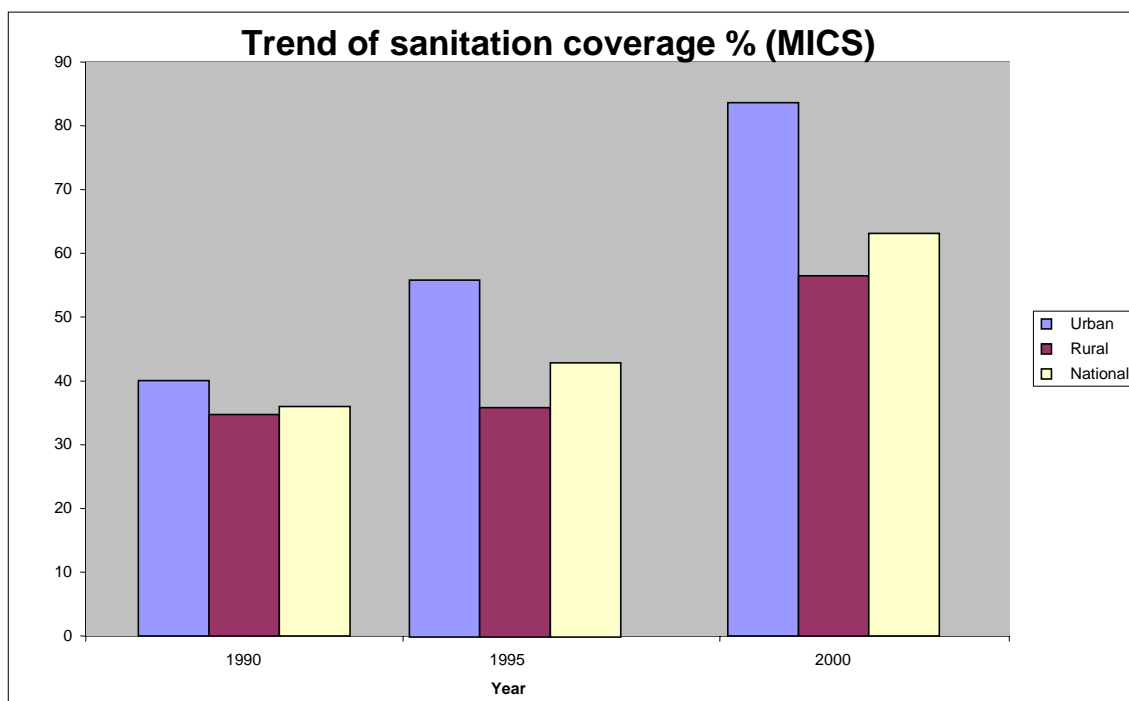


Figure 4.24: Year-wise Population Coverage of Sanitation (MICS)

4.6.3.5 Social Mobilization for Four Cleans

Social mobilization project started in 1986 with UNICEF support. It started as community based health education project for WATSAN, focused on active community participation in project areas with provided facilities and hygienic behaviour related to WATSAN. Central Health Education Bureau of the Ministry of Health had supported ESD Project since 1981. In 1995, this project was renamed as Social Mobilization for WATSAN and the strategy changed from community based to training of trainers and advocacy for broader areas to mobilize for self-help latrine construction.

Social mobilization includes the intensive advocacy campaigns, awareness promotion through various communicable activities comprising of newspaper, television and radio network, the distribution of IEC materials, hygiene education using various media and channels of communication to reach the grass root level. The activity also includes the introducing of school network, training of mobilizers, alliance building and mobilizing all possible resources as well as seeking wider partnership. In the communities the project was well known as Three Cleans Project (clean toilet, clean water and clean hands). Clean food was added to the project and changed the project as four cleans.

Community resources are mobilized to strengthen participation to a wider degree for fostering the spirit of self-reliance and self-help. Enhancing community participation and capacity building also empowers the community to take appropriate and compatible actions not only on sanitation but

also on other health activities. Such activities include development, production and distribution of IEC materials comprising video presentations on sanitation and personal hygiene, self-help latrine construction, flip chart for training, posters and monitoring forms. Social mobilization also helps the community to become aware of environmental and health problems connected with poor and inadequate sanitation. During 1987 to 2003, more than 60,000 mobilizers had been trained and project implemented in more than 60% of Myanmar townships.

Evaluation of the project was done by MMRD group with impressive outcome. New strategy was developed in 2001 and implemented in 2002. Three in One strategy integrates Social Mobilization, National Sanitation Week and School Based Sanitation and Hygiene Education. Although percentage of handwashing after defecation remained at about the same level for at 5 years (46% in 1996 and 48% in 2001), a dramatic improvement was notable in terms of soap use for handwashing: (43%) in 2001 compared with (18%) in 1996, more than a two-fold increase in 5 years. The survey findings reported mutual relationship between latrine ownership and handwashing habits.

The positive developments in sanitation and hygienic behaviour are particularly encouraging. Three types of activities under National Sanitation Week Programme and Social Mobilization Project contributed to positive results:

- (a) Use of mass media such as television, radio and printed IEC materials including posters.
- (b) Participation in training, orientation, planning workshops at various levels, all grouped together as “information sessions”.
- (c) House to house visits by village authorities, basic health staff and others to motivate people to change their behavioral practices.

4.6.4 Water Supply

Myanmar has committed to provision of universal access to safe drinking water and sanitation with the leadership role taken by government ministries with the collaboration of UN agencies, NGOs and community. The main strategy is use of simple and appropriate technologies to improve access to safe drinking water.

Water supply projects were initiated and implemented in the mid fifties. For the rural populace, shallow tube wells filled with hand pumps and constructed brick lined dug wells were built under the social welfare programme. In the late 70s, as external financing became available from World Bank, ADB, UNICEF, ADAB and other bilateral governments, the rural water supply improved to a greater extent.

Urban water supply has gained considerable progress and to mention a few, these include Phugyi Reservoir Project for Yangon City water supply financed by ADB and OPEC totaling US\$ 58 million, Mandalay City water supply implemented with ADB and OPEC loan of US \$ 22 million supplemented by government contribution of US\$ 46 million equivalent, Mudon Town water supply financed by World Bank etc. In 1985 only 65 townships (excluding Yangon and Mandalay cities) had own Town Water Supply systems. As of end 2000, the number of towns with own water supply systems increased to 170 showing remarkable increase in urban water supply. Due to these activities, population coverage of water supply raised from 36% in 1980 to 89% in 2000.

Rural water supply programmes are financed by UNICEF, ADAB, UNDP (through HDI programme) and also by INGOs such as Care (Australia), Save the Children (UK), Bridge Asia, Japan, ACF, World Vision etc. Water Resources Utilization Department (WRUD) carried out rural

water supply until late 2000 when the Department terminated its water supply activities and gave priority to agricultural water supply. For rural water supply, Township Development Committees implement and allocate (3) to (15%) of their total revenue. Although UNICEF and other agencies provide hardware for rural water supply the resource is limited. The local community provides for other expenses including operation and maintenance costs.

The Ministry of Health is responsible for drinking water quality analysis, surveillance and monitoring. A nation wide water quality testing was conducted in (10) States and Divisions for 12 parameters including Arsenic. Blanket testing for Arsenic testing was done in (25) townships and health personnel trained.

Table 4.10: Population coverage for water supply (1980-2000)

Year	1980	1990	1995	2000
Urban	36%	38%	78%	89%
Rural	14%	30%	50%	66%

According to MICS 2000, percentage of residential households with access to safe and convenient drinking water was (72%) for total population, (89.2%) for urban population and 65.8% for rural population. Safe drinking water sources include protected dug-well, pond, spring (34%), tube-well/borehole with pump (24%), piped water to households (7%) and public standpipe/tap (7%).

4.6.5 Issues Encountered

Although achievements attained were satisfactory and encouraging during the period between (1995-2003) there are still some areas of issues, which need to be addressed in pursuing the goal of universal coverage. These are as follows:

- Gap still remaining between urban and rural areas.
- Specific problems such as difficulty in digging pits because of hydro-geological conditions, lack of suitable space for construction of latrines, inability of the poorest for the cost of constructing latrines on self-help basis, traditional beliefs and culture unwilling to use latrines.
- Limited resources and very little Overseas Development Assistance compared to other developing countries.
- Need to improve data quality for planning and monitoring purposes.

4.6.6 Future Action Plan

With the identification of issues in implementation of sanitation programme, the following future plan and actions are recommended at the National Workshop on the Development of 5 year Strategic Plan for Water Supply and Sanitation held on June (10-12), 2003.

Myanmar has committed itself to providing safe water supply and adequate sanitation by initiating water and sanitation programme to attain the goal of universal coverage by the year 2010. In other words, both safe water supply and sanitation coverage are targeted to reach 100% by the year 2010. Upgrading of unsanitary latrines and promoting of new latrines will be carried with emphasis on hand-washing with soap after latrine.

The following action plan is to be implemented for improvement of future plan:

1. Capacity building of institutional infrastructure and human resources.
2. Need to promote application of suitable and appropriate technology for water and sanitation.
3. Promotion of health and hygiene education through social mobilization and behavior change communication. Special attention will be paid to (73) townships with sanitation coverage less than (50%).
4. Improvement of intersectoral and interorganizational coordination.
5. Standardization of data by a central information system.
6. Financial assistance to the disadvantaged community
7. Increase government investment in water and sanitation.
8. To increase community involvement on self-help basis.
9. To link with Rural Development Plan.

COUNTRY: MYANMAR
SANITATION WORKPLAN: NOVEMBER 2003 TO OCTOBER 2004

Challenge/ Objectives: To reduce the burden of disease through safe water supply, sanitation and hygienic behaviour						
S/N	Activity	Target area	Implementing period	Implementing Agency	Focal Agency/ Person	Funding Organization / Source
1.	Preparation for launching of 7 th National Sanitation Week	Central	November to December 2003	DOH, DHP	ESD, CHEB	Government
2.	Launching of 7 th National Sanitation Week at central and state and divisional level.	Central and (17) states and divisions	January 2004	DOH, DHP	ESD, CHEB	UNICEF
3.	Launching of 7 th National Sanitation Week activities at areas with less than 70% sanitation coverage.	(75) Townships	January 2004	Township Committee	TMO	UNICEF
4.	Advocacy for 7 th NSW and Training of Trainers workshops at state and divisional and township levels.	(17) State/ divisional level and (75) tps	December 2003	Central Committee	ESD/CHEB	UNICEF
5.	Multiplier orientation at community level.	(360) Rural Health Centers	January 2004	Township Committee	TMO	Township Committee Funds
6.	Awareness promotion campaigns	All (324) Townships	December 2003 and January 2004	DHP, DOH	CHEB	UNICEF, Government
7.	Self-help latrine construction	All (324) Townships	January 2004 to October 2004	Community	TMO	Community self-help
8.	Monitoring and supervision with follow-up action	All (324) townships	January 2004 to October 2004	Communities at different level	DOH	Government-UNICEF
9.	Reporting	All (324) townships	January 2004 to September 2004	DOH	State and Divisional Directors and TMOS	Government
10.	Finalizing of Five Year Strategic Planning on Water supply, sanitation and health	Central	January 2004	DOH/WHO	ESD	WHO
11.	Evaluation workshop for sanitation activities at townships with low sanitation coverage	(15) Townships	January 2004 to October 2004	DOH	ESD	WHO
12.	Country assessment of water supply and sanitation	Central	July 2004	DOH	ESD	WHO
13.	Assessment of trends of water and excreta-related diseases for ten years.	Central	April to October 2004	DOH	ESD	WHO
14.	Fellowships		February to October 2004	DOH	ESD	WHO
15.	Behaviour change communication	(73) Townships	February to October 2004	DHP	CHEB	UNICEF
16.	Social Mobilization on 4 Cleans Project	(24) Townships	December 2003 to March 2004	DHP	CHEB	UNICEF
17.	Communication for Arsenic Mitigation Project	(8) Townships		DHP	CHEB/OH	UNICEF

Challenge/ Objectives: To reduce the burden of disease through safe water supply, sanitation and hygienic behaviour						
S/N	Activity	Target area	Implementing period	Implementing Agency	Focal Agency/ Person	Funding Organization / Source
18.	WASH Campaign	(2) Townships	December 2003 to December 2004	DHP	CHEB	WSSCC
19.	Radio Listeners' Groups Project	(19) Townships	Yangon 2004 to December 2004	DHP	CHEB	UNICEF

MOH : Ministry of Health

DOH : Department of Health

DHP : Department of Health Planning

ESD : Environmental Sanitation Department

CHEB : Central Health Education Bureau

UNICEF: United Nations Children's Fund

WHO : World Health Organization

TMO : Township Medical Officer

OH : Occupational Health Division

4.7 Nepal

4.7.1 Background

Situated on the southern slopes of the Himalayas, Nepal is a land-locked country surrounded by Tibet Autonomous Region of People's Republic of China on the north and by India on the south, east and west. The country covers a land area of 147,181 sq. km. [Central Bureau of Statistics (CBS), 2000]. With density of population of 165 persons per sq. km, the country's total population is 23.6 million [World Bank (WB), 2003]. The country is predominantly agricultural with over 80% of the population are directly or indirectly involved in agricultural activities (WECS, 2003). The adult illiteracy rate as a percentage of the population 5 years and above is 58. The average annual growth of GDP between 1990 and 2001 was 4.9%. Per capita income of the population in 2001 was US\$ 250 (WB, 2003).

Over the years the Nepal government has initiated a program in sanitation and hygiene in collaboration with NGOs, INGOs, donors and private sector agencies ensuring a community centred approach. The National Sanitation Policy 2002, in process of being approved by the government, has adopted a holistic approach toward sector activities. In addition to promoting latrine construction, a package of activities and services related to personal, household and environmental hygiene to facilitate behavioural change for improving the quality of life has been integrated as part of the programme. (DWSS/ESS, 2002)

The Department of Water Supply and Sewerage (DWSS) under the Ministry of Physical Planning and Works (MoPPW) has been assigned lead agency for water and sanitation and is responsible for achieving the target of an additional 25% latrine coverage by 2007. The Steering Committee for National Sanitation Action (SCNSA) was formed at the central level under the chairmanship of Director General of DWSS with members from various governmental organisations, donor agencies, NGOs/INGOs and local authorities to plan, implement and monitor sanitation program with the joint effort of the stakeholders. Some of the major contributing stakeholders involved in water supply and sanitation activities include DWSS, UNICEF, WHO, World Bank, Asian Development Bank (ADB), Rural Water Supply and Sanitation Fund Development Board (RWSSFDB), Water Aid, Plan Nepal, HELVETAS, NEWAH, CARE Nepal, CECI, Nepal Red Cross Society (NRCS) and Rural Water Supply and Sanitation Support Program (RWSSSP/Finland). In addition to the role of these agencies at the central level, the District Water Supply and Sanitation Co-ordination Committees (DWSSCC) with the participation of local stakeholders have been established for the purpose of mobilising communities in all 75 districts as per the decentralisation policy of the government.

4.7.2 Efforts for Improving Sanitation

No system of recording activities and achievements in sanitation existed in the country before 1980, though a few latrines, both modern and traditional types, existed mainly concentrated in the urban areas. The era of UN's initiative in the sanitation sector started with the launching of Drinking Water and Sanitation Decade in 1980. In 1987 responsibility for the Community Water Supply and Sanitation (CWSS) Program was transferred from the Ministry of Local Development (MoLD) to the Ministry of Housing and Physical Planning (MoHP), now the Ministry of Housing, Physical Planning and Works (MoPPW). In 1987 a number of measures to promote water supply and sanitation were announced under the Basic Needs Program. After the reorganization of DWSS

in 1987, major focus was given to people's participation in various water and sanitation program activities. In 1991 in the Drinking Water Sanitation Sector Review Report of the DWSS, the need for integration of water and sanitation on the one hand and increased role of the NGOs and the private sector in implementation on the other was envisaged. As a result of some of these measures, the sanitation coverage increased from around 2% in 1980 to 6% at the end of the Seventh Plan in 1990. The following additional provisions were made in the Eighth Plan (1992-97), Ninth Plan (1997-2002) and the Tenth Plan (2002-2007) to increase the sanitation coverage in the country vigorously: -

- Establishment of Environmental Sanitation Section (ESS) in DWSS in 1992
- Development and approval of National Sanitation Policy in 1994
- Formation of national and district level Water Supply and Sanitation Co-ordination Committees in 1995
- Formation of Steering Committee for National Sanitation Action in 1998
- Development and implementation of Basic Sanitation Package in 1999
- Development and approval of Five Year Action Plan on Environmental Sanitation Promotion in 1999
- Development of Sanitation Indicators in 1999
- Launching of National Sanitation Action Week (2000, 2001, 2002 & 2003)
- Development and Implementation of School Sanitation and Hygiene Education (SSHE) Program Guideline in 2000
- Publication of Nepal State of Sanitation Report 2000
- Development of Draft on National Sanitation Policy 2002
- Initiation of water, sanitation and hygiene (WASH) campaign 2003

4.7.3 State of Sanitation

The national sanitation policy now enjoys wide support in Nepal and numerous agencies are actively working to improve the situation. Except for information on the number of latrines constructed, there is paucity of data on other components of sanitation facilities. Information on hygiene and sanitation behavior at the national, district and VDC levels is largely lacking. In this section, different aspects of the state of sanitation have been presented, including access to latrines, reasons for not having a latrine, sanitation and hygiene behavior.

4.7.3.1 Access to Latrines

Information on the latrine availability and use indicates the great need for improving sanitation both in the urban and rural areas of Nepal due to pollution and open defecation. Inadequate sanitation is a problem in most of the public places such as offices, restaurants, religious places, tourist spots, bus parks, streets/roads etc. There has been significant improvement in the sanitation sector in the last decade or so. Overall coverage of sanitation accounted for only 6% in 1990, increasing spectacularly to 25% in 2001 (Table 4.11).

Table No.4.11 Access to Latrine (In Percentage)

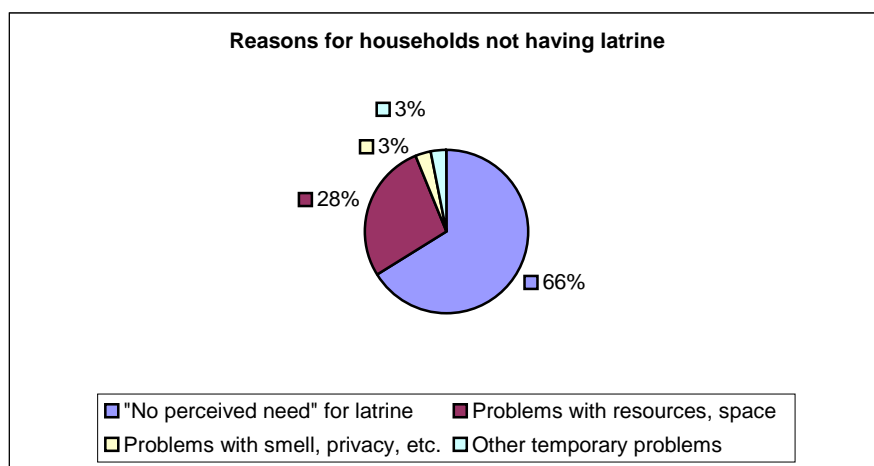
Year	Urban	Rural	Total
1990 ¹	34	3	6
2001 ²	53	21	25
2007 ³	83	43	50 (planned)

Source: ¹Nepal State of Sanitation Report 1999-2000 ² Population Census 2001 ³The Tenth Plan (2002-2007)

The Tenth Plan set the target to achieve latrine coverage of 50% by the end of the plan in 2007, a challenging goal indeed. Increased awareness about sanitation and hygiene, growing willingness of the households to spend on health care and provision of drinking water and sanitation are some of the major factors responsible for increased level of sanitation coverage, which, if maintained, could help exceed the target of 50% latrine coverage by the end of the Tenth Plan.

4.7.3.2 Reasons for not having a latrine

As indicated in the Nepal Multiple Indicator Surveillance (NMIS) survey, a number of factors are responsible for the lack of latrines. In this regard, Figure 4.25 indicates that 66% of the households do not have latrines, as they do not perceive the need. Another 28% of the households lack latrines, as they have problems of resources and space. Other reasons for non-existence of latrines are associated with odor, privacy and other social problems.



Source: Five-Year Action Plan 1999

Figure 4.25: Reasons for households for not having latrines

4.7.3.3 Sanitation and Hygiene Behaviour

Sanitation and hygiene behaviour are related to a number of factors like poverty, literacy, culture and ethnicity (UNICEF, 2003). Between Census Household Information, Monitoring and Evaluation System (BCHIMES, 2001) brings out some interesting facts on the behavioural aspect of sanitation and hygiene. Nearly two-thirds (67%) of the total population go for open-air defecation with one-third (33%) having access to a latrine. Of those people who go for open-air defecation, 54% opt for the forest area followed by 28% choosing open fields and 18% using the area near their homes (Figure 4.26). Moreover, of the population having access to latrines, only 17% use and maintain them properly.

BCHIMES study also found that only 12% of the people in the rural areas wash their hands with soap and water after defecation and 37% wash their hands with water only after defecation. The study indicates that only 17% of the school children wash their hands with soap and water after defecation against 83% of the children who wash their hands with water only after this activity. It is also found that only 6% of the adults and 3% of the children wash their hands with soap/ash before meals.

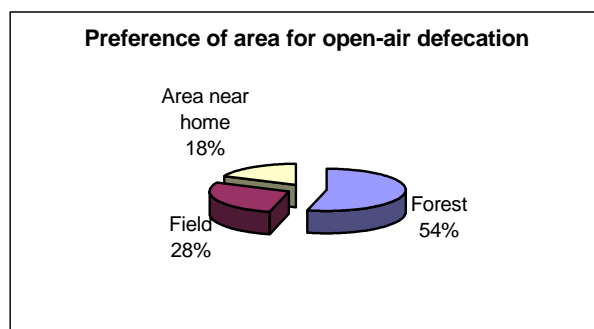


Figure 4.26: Preference Area for open-air defecation

Over 80% of all illness can be attributed to inadequate access to quality water supplies and the poor environmental sanitation and hygiene situation in Nepal, including the death of 28,000 children each year. Sanitation related diseases also occur in the form of skin infections, trachoma, worm infestation, dysentery and other intestinal infections. Improved sanitation and hygiene behaviour can reduce the infant mortality rate and contribute to the reduction in diarrhoea cases particularly among children (SCNSA, 2000). Although improvements in sanitation and hygiene have a positive impact on the life of both men and the women, women benefit most, as children become healthier and need less special attention and care.

A recent UNICEF report confirms that safe water supply reduces mortality by 15% while the use of latrine alone reduces mortality by 35%. Similarly, hand-washing practices reduce morbidity and mortality by 43% and 33% respectively. Diarrhoea deaths between 1996 and 1999 declined from 44,000 to 33,000 as a result of the improvement in drinking water and sanitation (UNICEF, 2003). Moreover, the basic health determinant factors, which include infant mortality rate, child mortality rate and average life expectancy, show that the infant mortality rate declined and is likely to decline further. (Table 4.12)

Table 4.12: Health Determinants in Nepal

Categories	1996/97	Achievements of Ninth Plan (1997-2002)	Target for 20 Years (1997-2017)
Infant Mortality Rate/1000	74.7	64.2	34.4
Child Mortality Rate/1000	118	91	62.5
<i>Average Life Expectancy/years</i>	56.1	61.9	68.7

Source: The Ninth Plan (1997-2002) & The Tenth Plan (2002-2007)

In addition to the health implications, improvement of sanitary facilities at schools is considered a factor in increasing girls' enrolment and their attendance at school. Also, income of the lower economic, disadvantaged and high-risk groups tends to increase with an improvement in sanitation and hygiene. Similarly, improved sanitation tends to increase production and productivity of different sectors of the economy including agriculture and industry, due to reduced morbidity of the working class (NSSR, 2000). Various factors are associated with such developments, yet the role of the improvement in sanitation and hygiene cannot be ruled out.

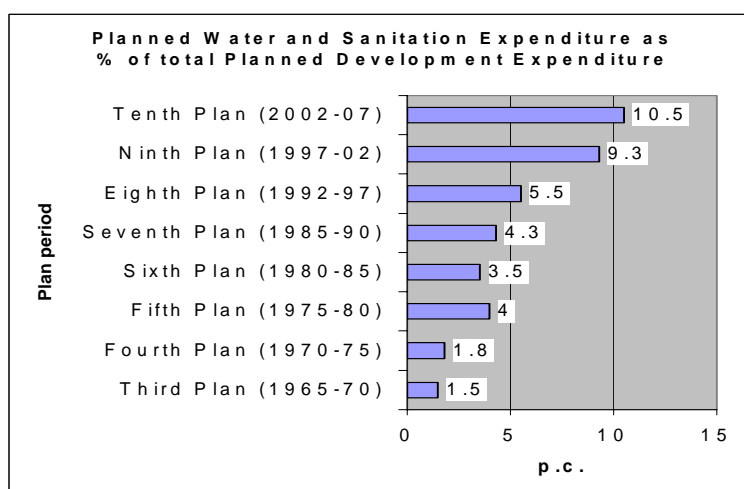
4.7.3.4 Economic Costs of Inadequate Sanitation

Table 4.13 shows that the economic cost of the increased morbidity and mortality of water and sanitation-related diseases varies between Rs. 1.50 billion and Rs. 6.0 billion and the increased health expenditure on water and sanitation-related diseases varies between Rs. 2.20 billion and Rs. 3.60 billion. The economic cost of inadequate sanitation results in productivity loss equivalent to Rs. 10 billion a year. The overall economic cost of inadequate sanitation accounts for 1.60 to 4.10% of the GDP of the country.

Table 4.13: Valuation of Economic Costs due to Inadequate Sanitation

Area of Health Impact	Nature of Impact	Estimated Annual Cost (in bn NRs.)	Estimated Annual Cost (in bn NRs.)
		Low Est.	High Est.
Health Impacts	• Increased morbidity and mortality of water and sanitation-related diseases	1.50	6.00
	• Increased health expenditure on water and sanitation related diseases	2.20	3.60
Health Expenditure	• Loss of time for income earning opportunities due to care of under 5 children suffering from diarrhoea (partially estimated)	0.06	0.06
Value of Time Saved Tourism	Reduction in tourism-related revenues due to environmental degradation and perceived high health risks	3.96	10.40
	• Total Cost	1.60	4.10
	• As a percent of GDP (%)	187.50	476.30
	• Total cost per capita (NRs.)	1,041.60	2,646.00
	• Total cost per household (NRs.)		

Source: Nepal State of Sanitation Report 1999-2000



Source: Nepal State of Sanitation Report 1999-2000 & The Tenth Plan (2002-07)

Figure 4.28 Planned Water and Sanitation Expenditure as compared to total Planned Development Expenditure

4.7.3.5 Expenditure on Sanitation

As the expenditure on water and sanitation has not been separated, it is difficult to assess the share of the budget of sanitation as a total of the water and sanitation budget. However, the allocation of budget for sanitation is estimated to be less than 5% of the total budget of water and sanitation. Yet there has been an upward growth in the planned water and sanitation expenditure as compared to the total development expenditure (Figure 4.27).

4.7.3.6 Legislative Measures

Devolution of responsibility and authority for local development, as enacted in the Local Self-Governance Act 1999, is ongoing as part of the government's effort to decentralize. Within this act local bodies are to assume responsibility and authority for pollution control and improvement in the sanitary conditions. In addition, the government has enacted other legislation to control and monitor environmental hygiene through the Solid Waste Management and Resource Mobilization Act 1992, the Environmental Protection Act, 1996 and the Water Resources Act, 1992 (DWSS/ESS, 2002). But there is the absence of necessary bylaws and building codes to penalize offenders, to enforce construction of appropriate sanitation facilities and to ensure municipal building permits and completion certificates are not issued unless construction includes proper toilet and other sanitary facilities. Even though some laws do exist to control wastes disposal and ensures environmental cleanliness, law enforcement is weak in Nepal and proper regulatory bodies do not exist.

4.7.3.7 Causes of Inadequate Sanitation

The state of sanitation, though improving, is still far below expectation. The major causes of inadequate sanitation are:

- Inadequate allocation of resources
- Poor institutional framework
- Neglect of consumer preferences
- Non-demand driven as it does not provide tangible benefit to the community
- Variation in approaches/modalities
- Preference to short-term over long-term objectives
- Priority for urban over rural needs
- Limited technological options
- Ignoring critical issues of socio-cultural behavioural practices
- Low involvement of children and women in planning and decision making
- Lack of commitment at policy and political level
- No perceived need among beneficiaries
- Inadequate monitoring and supervision

4.7.4 Approaches and Process

For over two decades, the government has been developing and executing various activities to improve conditions in the sanitation and hygiene sector. In this context, the sanitation policy was drafted in 1994 and re-drafted in 2002 to incorporate necessary changes. A number of packages like the Basic Sanitation Package (BSP), School Sanitation and Hygiene Education (SSHE), and

National Sanitation Action Week (NSAW) were developed and implemented using the participatory tools such as SARAR (Self-Esteem, Associative Strengths, Resourcefulness, Action Planning and Responsibility), PHAST (Participatory Hygiene and Sanitation Transformation), Triple A (Assessment, Analysis and Action), RRA (Rapid Rural Appraisal) and PRA (Participatory Rural Appraisal) based on the strategies of the national sanitation policy.

4.7.4.1 National Sanitation Policy

In its policy statement the government confirms the right every citizen in Nepal to have access to knowledge and information on proper sanitation and personal hygiene practices and to acquire adequate sanitation facilities. It has, therefore, made commitment to protect the environment, improve the environmental sanitation and control all such activities that affect the health and productive life of the people. The policy defines sanitation as "a package of activities and services related to personal, household and environmental hygiene and sanitary practices in rural as well as urban areas, which improve and sustain the quality of life" (DWSS/ESS, 2002). It includes altogether nine components: (a) awareness creation on behavioural change, (b) safe disposal of human excreta, (c) protection of food and water and proper hand-washing, (d) water source protection, (e) effective and efficient solid and liquid waste collection and disposal, (f) effective and efficient drainage of storm and waste water disposal, (g) effective animal waste disposal, (h) minimising indoor air pollution, and (i) effective and adequate hazardous (hospital and industrial) waste disposal. To meet its commitment, the government has adopted the following strategies:

- Sanitation to be treated as a package of activities
- Priority and commitment made to implement programs at various levels
- Awareness raising and advocacy by using participatory social marketing approach
- Resource mobilisation through joint efforts
- Provision of soft loan/revolving fund
- Adoption of gender sensitive plan
- Implementation of SSHE, BSP, NSAW
- Action research and development
- Institutional arrangements for strengthening of public/private partnership
- Development of effective co-ordination
- Effective implementation of legislation and regulation

4.7.4.2 Decentralization and Implementation of Schemes

Under the Local Self-Governance Act 1999, the responsibility for water supply and sanitation has been transferred from the MoPPW to the Ministry of Local Development (MoLD). As per the Act, the local bodies such as Village Development Committees (VDCs), Municipalities, and District Development Committees (DDCs) are expected to provide all essential services related to water supply and sanitation to the public. Under the decentralization policy of the government, the local bodies are being given the power and the mandate to run these essential services. The District Infrastructure Development Office (DIDO), under the Local Self-Governance Act, is responsible for implementing water and sanitation projects for the population less than 1000 at the district level. However, DIDO and other local bodies like VDCs/Municipalities/DDCs lack the required level of technical competence on software and mind-ware to plan, implement and monitor the water and sanitation projects.

4.7.4.3 Basic Sanitation Package (BSP)

The BSP was designed as a guideline especially for the implementation of hygiene and sanitation program to ensure minimum facilities in the community. The package intends to bring about uniformity and standardisation in fixing the target and in developing a process to implement the program activities effectively and efficiently in participatory way. The BSP intends to reduce the number of incidences of diarrhoea and other sanitation and health hygiene-related communicable diseases and improve the status of community sanitation based on the nine components of the policy. There are six major steps of implementation of BSP such as assessment of situation, rapport building, capacity building, campaign for awareness raising, promotional activities and follow-up programme for the post-implementation phase.

4.7.4.4 School Sanitation and Hygiene Education (SSHE)

The SSHE aims at creating a good environment in school for maintaining the health of the students on the basis of life skill-based hygiene and sanitation education. This programme was introduced to create awareness among the school children and the community and revolves around activities planned for and by the children through child club. It has adopted the concept of child as a role model, child-to-child, child-to-parents and child-to-community approach in promoting sanitation. The programme activities include environment and personal cleanliness; compound and classroom cleaning; construction and maintenance of toilets, garbage-pits and soak-pits; installation of convenient hand-washing facilities; and provision of safe drinking water. SSHE programme contributes to quality education in a child-friendly environment.

4.7.4.5 National Sanitation Week

A plan for an annual National Sanitation Campaign was formulated and the launched on World Water Day, 22 March 2000. On this occasion, it was decided that NSAW activities should be organized as an annual event in collaboration with all concerned stakeholders throughout the country. The campaign was designed to create awareness and seek commitment from the concerned institutions for improving the status of sanitation in Nepal. NSAW has been organized annually from 2000. The program proved useful both at the national, regional, district and Village Development Committee (VDC)/community levels in creating awareness and promoting installation of latrines. All possible channels, including the print and electronic media, were used to convey sanitation messages to the people. Sanitation messages have reached virtually every part of the country and several thousand latrines have been constructed as a result of the campaign activities..

4.7.4.6 Other Initiatives

Hand-washing Initiative through Public Private Partnership

To this day the majority of the Nepalese population, particularly in the rural and remote areas, do not wash their hands properly even at the most critical times – before cooking and preparing food, before eating and feeding children and after cleaning the baby or after defecation. Behavioural change in hand-washing practice requires a concerted social marketing communication over a long period of time. In Nepal hand washing with soap could reduce diarrhoeal episodes from 600,000 a month to nearly 250,000 (DWSS/UNICEF/WB/USAID, 2003). In view of its importance hand washing with soap is included as one of the major thrusts of NSAW. The concept of "Public Private Partnership (PPP) on Hand-Washing with Soap" has been endorsed and actively supported

by the government and stakeholders to improve hand-washing practices. PPP initiative will gain ground and become effective if the private soap companies enthusiastically support the initiative and ensure their products are affordable and reach the most remote areas of Nepal.

Ecological Sanitation

Ecosan, although an apparently new concept, has, in fact, been widely practiced by the farmers in certain parts of Nepal. Human excreta are used as fertilizer as well as for animal food, though it is treated as waste in most other parts of the country. In Kathmandu Valley, the Jyapus, an agriculture caste, use animal and human excreta to fertilize their crops and increase production. Thus, the cycle of carrying the stomach wastes to the field and the field products to the stomach (*Pet to Khet and Khet to Pet*) is maintained. A few pilot projects on ecological sanitation have been designed and implemented through community participation. In economic terms the value of the nutrients produced from urine and excreta of the 23.1 million people of Nepal is estimated at Rs. 7.1 billion, equivalent to 50% of the total fertilizer imported each year (Mishra, 2003). The stakeholders should adopt this program considering the health and economic value that it deserves.

WASH Initiatives

A Nepal WASH group with members from each of the key sector organizations was established in December 2002. The group is managing a WASH campaign with the objective of providing opportunities for Nepalese civil society to be informed about, understand and provide feedback to policy makers on national sanitation policies and targets.

PHAST/SARAR/Triple "A"

Different participatory approaches/tools are piloted and used in WATSAN Sector for the promotion of water supply, sanitation and hygiene. PHAST approach is piloted in one district and plan is developed for its expansion in other districts too. SARAR tools has been used in Nepal since last one decade. Similarly, Triple "A" is also adopted in community planing process.

Technical Options

The communities are able to make choices and identify different technical options on latrine construction. Design, drawing and estimation of different latrine options for households and public institutions (School) have been prepared and used as per ecological condition. This creates freedom to the community for the option selection as per their demand and affordability. So, the poor and disadvantaged groups are benefited from the low cost technical options of different types of latrine designs.

Linkage of Sanitation Livelihood Program

Mobilizing operation and maintenance (O & M) fund of water supply and sanitation user groups and fund of women's saving and credit groups further linking them with other Income Generating Program (IGP) provided opportunity to uplift their livelihood. This has shown positive impact in sustaining and improving sanitation and hygiene promotional activities.

Shared latrines

The concept of "shared latrines" was developed to provide an option for economically disadvantaged groups to have access to latrine facilities. The residents living in slums and squatter communities as well as low-income renters have been encouraged to install these community facilities. Six to seven families construct twin blocks of toilets for use. The responsibility to clean, maintain and operate these blocks is shared on a rotational basis. The weekly rotation chart is placed between the two units on the front and a monthly fee is raised from each household for maintaining these latrines.

Sanitation Marts

Awareness alone may not ensure the installation of latrines. Materials and information required for the construction of the latrines such as pans, pipe, fittings, cement, etc., are usually not available everywhere. It has been observed that if these materials are made available in local shops or markets, local people are encouraged to construct latrines. Sani-mart is introduced by some of the organizations in Nepal to provide support to the local communities.

Concept of Total Sanitation

The concept of total sanitation particularly no open-air defecation and no subsidy are going to be launched as an action research in some rural communities.

Low Cost Sewers

This technology is an internationally proven method of reducing the capital costs of sewers by using interception chambers and small bore pipes. Use in other countries shows capital cost reductions of 40-60% over conventional sewerage systems. The first example in Nepal was built in Kadgabadrakali in Kathmandu in 2001. Systems are currently being designed for Kapileswor in Janakpur and for a few squatter communities in Kathmandu valley.

Reed Beds Waste Water Treatment

Constructed wetlands (CW) are effective in treating mixed wastewater from institutions. Recycling grey water using constructed wetlands can save a significant amount of water. Because CW uses simple, locally available materials, it is inexpensive to construct and operate. The simple operating procedure allows the system to be operated by one unskilled person. Because of its simplicity, it is relatively simple to explain this technology to local people and decision-makers. There are 11 reed bed treatment system units in operation in Nepal that are treating wastewater from homes, hospitals and institutions, and faecal sludge from septic tanks.

Sanitation Revolving Loan Fund (SRLF)

SRLF, which uses grant money to construct standard latrines, will be promoted with a view to improving the sanitation situation of a community. It is an effective way to construct latrines providing loan/indirect support at the community level as it provides low cost technical option on latrine construction for the benefit of the poor and disadvantaged groups (DAG).

4.7.5 Lessons Learned

The government of Nepal with the joint efforts of stakeholders has been executing sanitation and hygiene related programmes through a participatory approach. The major lessons learned during this period have been:

- Joint efforts should be initiated among the countries in South Asia for sharing experiences.
- Sanitation must be given top priority, as it plays an important role in development.
- Convincing people to change sanitation and hygiene habits and also to impress upon them that the development of the country will slow down in case the sanitation coverage does not pick up.
- Making leaders at all levels role models in setting good examples in sanitation and hygiene.
- Financial reallocation must be made to ensure larger investment in the sanitation sector to save the country from huge losses.
- Adoption of people-centred approach to make people responsible.

- Mobilisation of media is required to disseminate key messages on hygiene and sanitation to raise awareness of its importance and facilitate behavioural change.
- Focus on shifting from curative to preventive health care to reduce the loss of productive lives, workers' absence and loss of productive time and resources.
- Open defecation to be discouraged totally for the betterment of community health.

4.7.6 Future Plan

The goal of the Tenth Plan is to ensure sanitation (latrine) coverage of 50% of the population by the end of 2007 (NPC, 2002). This plan envisages greater co-ordination and mobilisation of the stakeholders working in water supply and sanitation sectors. In this respect, Nepal has the privilege in benefiting from regional co-operation in South Asian by sharing information and experiences under the framework of Millennium Development Goals (MDG). Significantly, of the eight MDGs, three are linked to sanitation and includes such issues as reducing child mortality, combating disease, and ensuring environmental sustainability. The sanitation coverage in Nepal (25%) is lower than the average coverage in South Asia and therefore the challenge for Nepal is not only to catch up but also to increase the rate of sanitation coverage to that sustained by other countries of the region. To accelerate the progress toward achieving the MDG and increase coverage in sanitation, the South Asian Conference on Sanitation (SACOSAN) may prove to be a milestone.

4.7.6.1. Resource Mobilisation

Coverage and Cost Estimate

The estimated cost of meeting the MDG is based on costs developed for implementation of the Basic Sanitation Package (BSP). Under this package Rs. 1000/household is allocated which includes 50% for capacity development, health and hygiene education and the remaining 50% for revolving fund/promotional activities. The goal is to increase the sanitation coverage from 25% at present to 63% of the projected population (31.5 million) in 2015. However, given the current trends in sanitation coverage in Nepal, achieving coverage of 70% appears to be possible. Thus, the total cost of facilitating the installation of an additional 2.9 million latrines (Rs. 1000/latrine) is Rs. 2.9 billion in the next 12 years. However, the cost calculation is based on promotional costs under the BSP and does not include private investment needed for installation of sanitary facilities. The sanitation programme will consider the following:

- Each household should have a toilet based on a design to match the householder's own ecological and socio-economic situation. Options will include on-site disposal facilities such as Simple Pit Latrine, Ventilated Improved Pit Latrine, Offset, Dry Latrine, Pour-flush Latrines (Single/Double Pits) with soak pits, Septic Tanks, Eco-san Latrine, Biogas Plant Connected Latrine; and Sewerage Systems with treatment facilities.
- Hand-washing Facility, Wastewater Drains and Cleaning Platforms will be promoted.
- Entire communities will be targeted with particular focus on high-risk and Disadvantaged Groups (DAG).
- Communities with and without water supply facilities will be considered for sanitation promotional activities.
- Sanitation activities will be promoted by co-ordinating and communicating with other development and Government Agencies, such as Department of Education, Department of Health and Department of Housing, etc.
- A special package with incentives to promote sanitation among the poorest of the poor/DAG will also be designed.

Financial Resources

The costs involved to improve sanitation will be shared among all stakeholders, such as community, government, donors, I/NGOs, private sector, VDCs/District Development Committees (DDCs)/Municipalities, development fund of the Member of Parliament (MP) and Users' Committees.

Human Resource Development

Development organizations and government will provide all necessary training for improvements to sanitation/hygiene and the community will be placed at the center of all these activities. Different types of training, workshop and orientation, awareness and capacity building, and technology transfer would be determined according to the different packages presently used by the stakeholders.

4.7.7 Approaches for Program Intervention

Community-based sanitation and hygiene programs, which include six components of BSP and the participatory tools like SARAR, PHAST, RRA, PRA, etc., will be implemented linking with livelihood. This package will also include nine components of draft Sanitation Policy 2002.

4.7.7.1 Increasing Access to Sanitation Facilities

- Water supply coverage will be increased to facilitate behavioural change in sanitation and hygiene.
- Sanitation access will be increased by promoting safe disposal of excreta and also through proper use and maintenance of latrines like in offices, schools, health facilities, public places, etc.
- Indigenous technologies and materials will be used.
- Provision of sanitation program will be made mandatory in water supply projects with the separate estimate and budget.

4.7.7.2 Hygiene Promotion

- Community participation and mobilisation
 - Improving gender and caste equity in access to resources and in decision-making.
 - Sustainable development of community managed infrastructure and hygiene components.
 - Use of participatory tools adopted for use in Nepal, like SARAR (Self-Esteem, Associative Strengths, Resourcefulness, Action Planning and Responsibility), PHAST (Participatory Hygiene and Sanitation Transformation), and Triple A (Assessment, Analysis and Action). These tools are very useful in community managed programs in helping the community to identify and prioritise their needs, design water supply and sanitation system, initiate self-monitoring and develop Community Action Plans.
- Social marketing to increase hand washing with soap for health benefits.
- Education/training of frontline workers in the use of PHAST
- Use of IEC Materials developed by the stakeholders

4.7.7.3 School Based Sanitation and Hygiene

The SSHE with six major components will be implemented in which focus will be given to the following:

- Provision of sanitation and safe water facilities will be encouraged by constructing sanitary school latrines, water tap stands and garbage pits through the participation of School Management Committee (SMC), Child Clubs, School, VDC and support agencies
- Participatory assessment/monitoring will be promoted by involving child clubs, students, teachers and Steering Committee members in activities showing co-relationship between unhygienic practices and spread of diseases in schools and communities
- Life skills-based sanitation and hygiene education with child-friendly concept will focus on acquiring knowledge, attitude and skills that support behavioural change
- Orientation and training to local leaders, teachers and parents will be encouraged to get their support and commitment
- School-based de-worming will be launched through awareness raising activities showing correlation between poor hygienic behaviour and intestinal infections and other related aspects.

4.7.7.4 National Level Sanitation and Hygiene Promotion

- National Sanitation and Hygiene Campaign will be continued with aims to mobilise and win support from different groups like policy makers, planners, communities, civil society and families through advocacy and social mobilisation techniques for the promotion of sanitation.
- Approving National Sanitation Policy 2002 and accelerating the program through joint efforts will carry out policy improvement.
- Institutional strengthening programmes for the stakeholders will be given further boost by enhancing the capacity of the staff, conducting different training/orientation and bringing about effective co-ordination among the stakeholders.
- Private-Public Partnership to promote sanitation in general and hand-washing in particular for health will be encouraged by mobilising the support of Nepal-based soap manufacturing companies to produce soaps at the cheapest possible price so that people of low socio-economic status could afford it. For this purpose, the government will be recommended to make rebate in excise duty, custom duty and income tax considering soap as a life-saving medicine.
- User-financed sanitary facilities like the community revolving fund and the like will be mobilised.

4.7.8 Agenda for Action

As compared to water, sanitation improvement in Nepal could not get adequate importance from the concerned national and international organisations. This is one of the reasons why the gap in access to sanitation is so large. Overlooking this issue might invite multiple negative effects. Experience shows that isolated investment in water supply at the cost of sanitation improvement does not bring about desirable change in terms of health improvement. Immediate attention, therefore, will be given to the following aspects of sanitation and hygiene promotion.

- Emphasis will be given to raise the awareness for the promotion of software and mind-ware focussing on social and cultural aspects.

- Effective measures will be adopted to improve the sanitation coverage of the high-risk communities and DAG.
- DWSS and other stakeholders will improve the technical and managerial capacity of the local level CBOs, NGOs, VDCs and municipalities to enable them to carry out activities to meet the MDG.
- Revision and approval of draft National Sanitation Policy 2002 will be done by incorporating issues like Public-Private Partnership, and other innovations like ECOSAN.
- Development approval of detailed Master Plan of Action on environmental sanitation will be done based on MDG.
- Commitment for the budget for sanitation will be sought as per the Master Plan.
- Advocacy for ensuring the high political commitment.
- Awareness building at national and grassroots levels will be encouraged.
- Empowered enforcement machinery will be established at different levels for the execution of sanitation related Acts/Rules/Regulations and also to regulate appropriate sanitation facilities and penalize the polluters.
- SCNSA will be involved in timely monitoring, evaluation and follow-up of the program activities at different levels and in developing and implementing revised multi-year annual plan.
- Action research and development activities for different aspects like sustainability, behavioural change, and child/women friendly sanitation facilities will be given priority.
- Effective co-ordination and communication mechanism at national, district, VDC/Municipality levels will be strengthened.
- Plans and programs will be implemented with joint effort of stakeholders keeping gender perspectives in mind and also for bringing about uniformity and standardization in the approaches.
- Sanitation facilities will be made mandatory in public institutions (offices, schools, VDCs, health facilities, Community Based Organizations (CBOs), etc. and emphasis will be given for their proper use and maintenance.
- Rewarding practices will be considered as an effective means motivating the communities for the promotion of total sanitation approach.
- Resource Centers will be established in different levels for information sharing in the field of WATSAN.

The following Plan of Action is prepared based on Future Plan and Agenda for Action:

Plan of Action

S.N.	Activities	Timeframe	Responsible Organizations	Process/Remarks
1.	Reviewing the National Sanitation Policy and Strategy	Feb. 2004	DWSS/UNICEF	Review by Partners
2.	Formalization of the National Sanitation Policy and Strategy	June 2004	MoPPW	Approval from the Government
3.	Development of Master Plan for Sanitation and Hygiene.	August 2004	DWSS	SCNSA in consultation with the Partners.
4.	Preparation of Annual Work Plan	April 2004 and Annually	DWSS	All concerned partners.
5.	Coordination, Communication and Commitment for Uniformity and Standardization	Dec. 2004	MoPPW/DWSS/ All concerned Partners	Part of Strategy/ Policy/ Master Plan
6.	Monitoring and Follow-up of Plan of Action by Task Force	Every month till Sept. 2004	SCNSA/Task Force	Monthly Review Meeting of Task Force

Note: Task Force Members-DWSS/UNICEF/WHO/RWSSFDB/NEWAH/NRCS/FINNIDA

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4.8 Pakistan

4.8.1 Introduction

4.8.1.1 Context

The South Asian Conference on Sanitation (SACOSAN) was held at Dhaka, Bangladesh from October 21 to 23, 2003 to discuss the issues arising from inadequate sanitation coverage in the countries of the region. Its purpose was to promote national plans of action that are prepared with the participation of all concerned agencies and based on consensus. To this end, situation reports of the prevailing levels of sanitation coverage and its health impacts, as well as reviews of legislative and planning measures, and of innovative approaches to deal with problems arising out of inadequate coverage were compiled as country papers. SACOSAN recommended national consultation workshops to raise the profile of sanitation and hygiene, and to ensure that the paper represented the views and activities of all key stakeholders.

In response, the Ministry of Health, Government of Pakistan (GOP), in association with UNICEF, convened a National Preparatory Workshop on 09 October 2003 at Islamabad. It was attended by 55 representatives and subject experts from the Federal, provincial and district governments, national and regional NGOs, the private sector, and some donor agencies active in water and sanitation sectors. The working groups identified key hurdles and opportunities at the implementation and policy levels, and made recommendations for improving interactive communication among the policy makers, programme implementers, service providers and people. Some strategic plans were outlined.

While the proposals have been vetted at several levels of the Ministry of Health, they have yet to be officially circulated to the counterpart departments of the provincial and local governments for their comments. It is only after obtaining that feedback that a final shape would be given to the proposed national action plan for the approval of the Federal Government that will be required for policy validation. While awaiting such authorisation, this paper is being circulated to concerned audiences as an experience-sharing exercise, with a view to soliciting views and opinions. In no way does it constitute any endorsement by the Government or of any of its departments.

Along with this context, Section 1 provides Pakistan's country profile. Section 2 of the paper briefly surveys the extent of the problem of inadequate sanitation coverage across the provinces, and rural and urban areas of Pakistan. It presents some of the reasons for low coverage based on the findings of national surveys. Section 3 reviews the problems associated with diseases that spread with inadequate sanitation, and also its linkages with poverty and gender. Section 4 summarizes the prevailing official policies and responsibilities for sanitation under the new system of local government. Section 5 provides examples of leading best practices both in the public and civil society sectors. Section 6 outlines the proposed plan of action based on the priorities established at the National Preparatory Workshop. Section 7 is a concluding call for action by Federal, provincial, and local leadership. The urgency and importance of the task ahead is amplified by Pakistan choosing to take up the responsibilities for hosting the 2nd SACOSAN in 2005.

4.8.1.2 Country Profile

The Islamic Republic of Pakistan is located in a strategic position at the crossroads of South Asia, Central Asia and the Middle East. Pakistan shares an eastern border with India and a northeastern

border with China. Iran makes up the country's southwest border, and Afghanistan runs along its western and northern edge. The Arabian Sea is Pakistan's southern boundary with 1,064 km of coastline. The country has a land area of 880,000 sq. km. It is an agricultural country with a tropical climate for most of the country, though the mountainous north has snow-bound winters. There are three to four distinct growing seasons for most parts of the country. The land is of a diverse terrain, consisting of high mountains, plateaus, plains and deserts.

Pakistan is a federation of four provinces namely, Punjab, Sindh, North West Frontier Province (NWFP), Balochistan. In addition, there are three federally administered territories namely, the Federally Administrated Northern and Tribal Areas, the Islamabad Capital Territory and the State of Azad Jammu and Kashmir. According to the 1998 Census the population was 131.51 Million. The current growth rate is 2.28% with a crude birthrate of 32.7 and crude death rate of 9.1 per 1000 population. The overall fertility rate is 5.1 (Pakistan Population Census Organization, 1998). At the current growth rate the estimated doubling time for the population of Pakistan is 25 years. The life expectancy at birth is 63 years both for males and females (Economic Survey of Pakistan, 2000). Internal migration has had a significant impact on Pakistan's demography. It is particularly noticeable in the faster rate of growth of the larger cities as compared to the smaller ones.

4.8.2 Inadequate Sanitation Coverage

4.8.2.1 National Trends

The most basic requirement for proper sanitation is safe disposal of excreta away from the dwelling unit, by using a sanitary latrine¹. Table 4.14 shows the overall national availability of sanitary latrines within houses over the last decade, as given in the various household surveys and the 1998 Census. Despite adjustments to correct for definitional variations, owing to differences in the interview methods used during the surveys and the Census, it is cautioned that only a broad comparison of the results is justified.

Table 4.14: Trends in Sanitary Latrine Coverage (%)

Year	Total	Urban	Rural
1991 ²	47	94	27
1995 ³	-	91	42
1996 ⁴	51	92	34
1997 ⁵	56	93	39
1998 ⁶	49	89	31
1999 ⁷	53	94	37
2002 ⁸	57	94	41

Source: UNICEF: Safe Drinking Water Supply, Sanitary Latrine Coverage and Waste Management in Pakistan, 2002.

¹ Defined as private or shared (but not public) connected to public sewer or septic system, or pour-flush latrine, simple pit latrine, ventilated improved pit latrine, but not bucket, open or uncovered pit latrine.

² Pakistan Demographic Health Survey, 1990/91, National Institute of Population Studies, Islamabad

³ Multiple Indicators Cluster Survey of Pakistan, 1995, Ministry of Health, GoP

⁴ Pakistan Integrated Household Survey, Round 1, 1995-96, Federal Bureau of Statistics, GoP

⁵ Pakistan Integrated Household Survey, Round 2, 1996-97, Federal Bureau of Statistics, GoP

⁶ Population and Housing Census of Pakistan, 1998

⁷ Pakistan Integrated Household Survey, Round 3, 1998-99, Federal Bureau of Statistics, GoP

⁸ Pakistan Integrated Household Survey, Round 4, 2001-02, Federal Bureau of Statistics, GoP

Salient findings from the Table are:

Most urban dwelling units have internal latrines. However, there was no improvement in urban latrine coverage during the last decade. It would appear that 5 to 10 percent of poorest urban households cannot afford latrines or are resident in temporary dwelling units, where neither owner nor dweller finds it worthwhile to install latrines;

Only 30-40 percent of rural dwellings have internal latrines. There is no significant trend towards improving rural coverage either, partially because the open fields continue to serve the purpose.

Coverage by Provinces and Urban & Rural Areas

Apart from the obvious differences between urban and rural areas, there is also a great variation in latrine coverage between provinces. Urban Sindh has the best coverage followed by urban NWFP. The residents of seven percent of households in the cities and towns of Balochistan and Punjab 'go out somewhere' to relieve themselves⁹.

Defecation out in the open is the norm in the rural areas of the country. Only one-third of the dwellings in rural Punjab have internal latrines. There are more restrictions on the mobility of women outside the house in NWFP. Yet only two-thirds of the rural dwellings of the province have internal sanitary latrines.

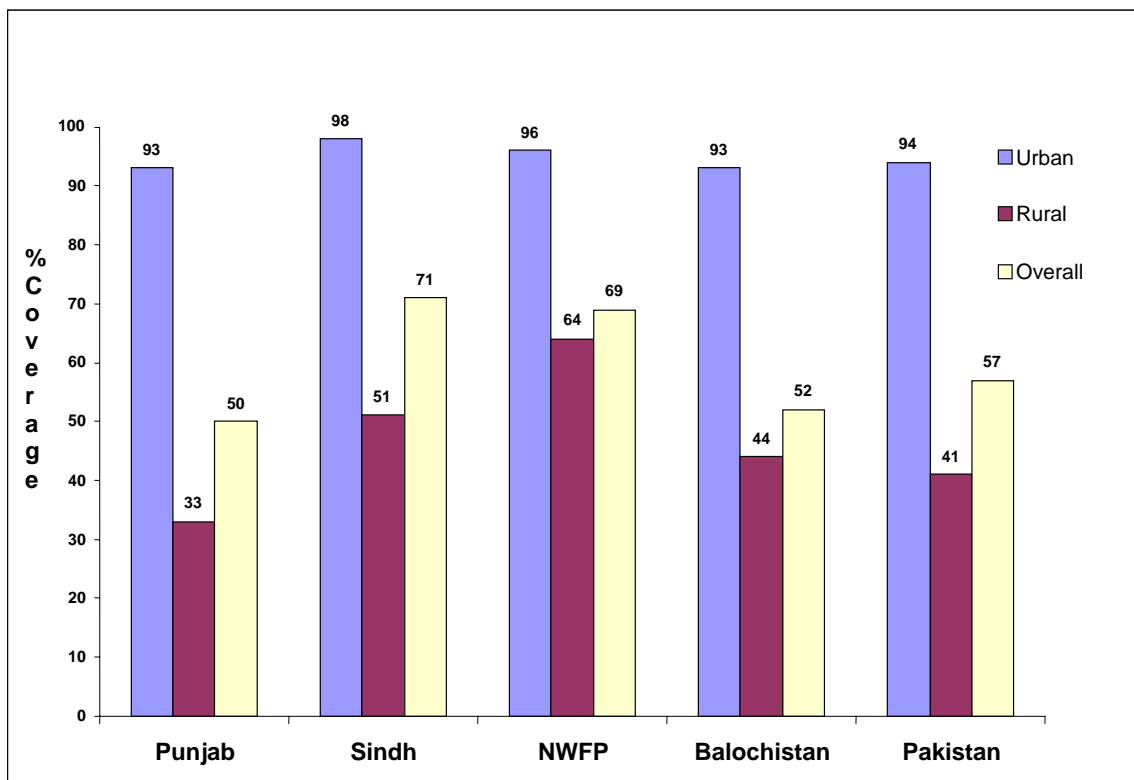


Figure 4.29: Sanitary Latrines in Provinces

⁹ Pakistan Integrated Household Survey, Round 4, 2001-02, Federal Bureau of Statistics, GoP

Cities

In densely built-up areas, sanitation infrastructure has to extend beyond the dwelling unit to protect people from diseases. Half the wastewater in the urban areas of Pakistan is disposed off through underground or covered drains¹⁰; the remainder is disposed off through open drains or directly on to the roadside, or into waterways, or into sites where solid waste is dumped. In the katchi abadis (informal settlements of the poor), practically all the wastewater is disposed off through open unlined drains to the nearest open space, where most likely the household poultry and other animals also feed. Thus, disease-laden filth from streets, drains, and ponds enters the food chain through many ways – irrigation of garden crops by contaminated sewage water, air-borne dust, cross contamination of water mains because of leakages and broken pipes. Or diseases can be picked up by children playing in the dirt of the streets, and so on.

Sewage treatment plants exist only in Karachi, Islamabad and a few military cantonments, and most of them operate only intermittently. Much of the untreated sewage goes into irrigation systems, where the wastewater is reused and then discharged into streams and rivers. Vegetables grown from wastewater have serious bacteriological contamination¹¹. Flow volumes, particularly during the dry season, determine the assimilative capacity of rivers. A study by the Institute of Public Health Engineering Research along ten reaches of the five major rivers of Pakistan shows that the River Ravi below Shahdara is already loaded far beyond its assimilative capacity¹². The situation will get worse unless the domestic and industrial effluents are treated prior to discharge. The River Indus below Sukkur is also receiving waste volumes larger than its assimilative capacity at low flows. Most of the other river stretches still have some capacity to absorb raw effluent.

The analysis of assimilative capacity of rivers makes it possible to develop a programme for a prioritised sewage treatment plan to be implemented by specific cities round the year. Unfortunately, even the few sewage treatment plants that do exist in the country have not been upgraded during the past two decades. Their treatment capacity has remained static and given the current rise in wastewater discharges has also become increasingly inadequate. The major hurdles are both finances and management.

Sanitation Coverage of Karachi and Financing of KWSB

Karachi Water and Sewerage Board (KWSB) does not reach out to the informal settlements that comprise 60 percent of the city's population. Sewage disposal is managed by other agencies in about half of the formal area. As distinct from its mandate under KWSB Act 1996, the agency serves only 20 percent of the area of Karachi Division. Of its revenues of Rs.1.6 billion in 1998-99, around Rs.1.5 billion was generated from water charges, Rs.120 million from conservancy charges and Rs.30 million from other sources. Its budgeted expenditure of Rs.2.1 billion could only be partially met with a help of a subsidy of Rs.375 million from metropolitan government. KWSB allocated Rs.483 million to its Sewage Maintenance Wing that included Rs.200 million earmarked for maintenance and improvement of sewerage system. The financing shortfall meant that only 30 percent of the amount could be disbursed. In fact, its customers received back in faulty services just half the amount they paid in the shape of conservancy charges.

¹⁰ Pakistan Integrated Household Survey, 1998-99, Federal Bureau of Statistics, GoP

¹¹ Pakistan National Conservation Strategy, 1992, GoP, EUAD/IUCN, page xvii

¹² Tariq, M.N and Waris Ali, 1988. Discharges exceeding assimilative capacity. Institute of Public Health Engineering Research, University of Engineering and Technology, Lahore

Cultural diversity across rural landscapes

Villages in the densely settled irrigated tracts, remote uplands, and water scarce rangelands of Pakistan have distinct cultural practices and related sanitation issues. The field-based knowledge of sanitation practitioners is helpful in understanding the variations that result from cultural practices, as summarised below.

The people of Hunza, Nagar and Baltistan (in the Northern Areas) give importance to human excreta and animal dung as a source of fertilizer. A local form of latrine is common in these areas. It is a raised platform type with ground level storage that is vacated when full. Dried excreta and dung are mixed with straw to form manure. But across the Shandur Pass, open defecation is common in the equally mountainous Chitral district.

Women in Azad Jammu and Kashmir have to fetch water from distances of 2-3 kilometres, yet people generally prefer pour-flush latrines.

Where water is scarce, such as in Balochistan and Tharparkar (Sindh), the dry-pit latrine is the only feasible option.

In rural Punjab, women generally go out to the fields for defecation at night. In many areas of the NWFP, even this is not permitted. A small pan is used for defecation. Children pick up and dump the night soil outside the compound.

4.8.2.2 Reasons for low coverage – the results of national KAP study

A national survey by Gallup/BRB of the knowledge levels, attitudes towards and practices for sanitation and hygiene revealed that the majority of Pakistanis do not have a clear understanding of the relationship between unsafe excreta disposal and diarrhoea¹³. There was not much difference in the frequency of diarrhoeal episodes between households having latrines and those without latrines, indicating that latrines alone do not have an impact unless the behavioural patterns associated with sound hygiene practices are also ensured. There is also a misconception about the costs of latrines (as contrasted with the money spent on medicines in case of resultant illnesses). The majority of respondents felt that latrine construction was expensive (about twice the actual cost) and they were unable to afford it. Social status is the major reason for construction of latrines by the respondents, and privacy is perceived to be the major advantage. (Reference Tables A.1, A.2, and A.3 attached at Annex 1).

4.8.2.3 Access as Function of Income

The access to adequate sanitation is also a function of household income. A question of some interest to policy makers is how the distribution of underground sewerage compares to those of other services. Table 4.15 compares the availability of utilities and environmental services to the richest 20 percent and poorest 20 percent of households.

Electricity and piped water are the more commonly available services both in the urban and in the rural areas of Pakistan. Only the upper income groups can afford their own telephones. However, public call offices (PCOs) that can be found even on the remote Karakorum highway provide an easy access to telephone services for low-income groups. Underground sewerage emerges as the second most restricted-to-the-rich service, after gas supplies in rural areas.

¹³ GALLUP/BRB. 2001. National KAP Study on Sanitation and Hygiene Practices. UNICEF, Pakistan

Table 4.15: Inequality in Access to Utilities and Environmental Services

(Highest to Lowest Ratio – Per Capita Income Quintiles)					
	Electricity	Gas	Telephone	Piped Water	Underground Sewerage
Pakistan	1.64	3.86	5.83	2.00	3.41
Urban	1.37	2.39	6.01	1.67	2.94
Rural	1.91	5.34	5.65	2.33	4.37

Source: SPDC, 2001. Social Development in Pakistan, from PIHS (1998-99)

4.8.3 Key Health and Socio-economic Implications

Solid and liquid excreta are the major source of water pollution in the country and the cause of widespread water-borne diseases. Ill health in turn is a major cause for the poor remaining stuck in poverty. The lack of safe and clean sanitary facilities imposes constraints on the mobility of women and thus contributes to their dis-empowerment.

4.8.3.1 Environmental Health

The total burden of disease in Pakistan is estimated at 47.5 million disability-adjusted life years (DALYs), or 36,400 DALYs per 100,000 people.¹⁴ This is about three times the level of industrialized countries.¹⁵ Environmental risks account for more than one-fifth of the burden of disease. Among them, water-related health risks impose the most significant burden - 12.5 percent of the total burden of disease. The commonly encountered infectious and non-infectious waterborne diseases are diarrhoea, dysentery, cholera, helminthiasis, enteric fever, and pneumonia. Data from the World Health Organization (WHO) indicate that Pakistan ranks second among 31 Asian countries in annual diarrhoeal disease incidence among young children. Exposure to waterborne diseases is an important contributing factor to infant mortality in Pakistan, which remains high despite recent improvements in indicators. Of the 700,000 under-five deaths each year, 228,000 are owing to diarrhoea alone.

4.8.3.2 Illness as Perpetuator of Household Poverty

Poor people are more prone to adverse health impact because of their inadequate nutrition, unhygienic living conditions, lack of access to health facilities, and greater exposure to polluted water. In many rural areas, the poor rely on ponds and irrigation channels for household water supply, but these exposed sources are also used for waste disposal.

Illnesses and the associated cost of medical treatment that low-income groups have to face are major contributing factors to persistent poverty. Savings and borrowings diverted to medical costs on account of serious illnesses leave many households either destitute or indebted. Among respondents that delayed the paying back of installments of a micro-credit scheme, illness in the household was by far the most common single reason for delinquency, and not just a culturally appropriate excuse; the claims were independently verified and 95 percent were confirmed.

¹⁴ Khan, K.S. 1995. "Setting Health Care Priorities in Pakistan". *Journal of Pakistan Medical Association* 45 (8, August)

¹⁵ Spohr, M. 1997. "Pakistan Burden of Disease" Social Action Program Draft Background Document World Bank, Washington, D.C. Processed.

4.8.3.3 Women and sanitary facilities

Women and girls are the worst sufferers on account of the lack of adequate and hygienic sanitation. In cities and towns, public toilets are rare and most are in a state of filthy neglect. Few offices and schools have clean well-maintained toilets. Public transportation does not cater to any such facility for its women passengers. Nor do recreational settings provide for such a facility. Women are most inconvenienced by the lack of sanitation facilities.

4.8.4 Key Steps towards Legislative and Financial Attention

4.8.4.1 International Commitments and Obligations

Pakistan is a signatory to the Millennium Development Goals (MDG) and is committed to their implementation at the highest level. The Government is also committed to implement programmes to meet the targets set at the World Summit on Sustainable Development (WSSD). These include the halving of the population, which is without access to adequate sanitation, by 2015.

4.8.4.2 National policy and targets

The Ten Year Perspective Development Plan (TYPDP 2001-11) provides the national-level macro-economic framework policy, public sector development programming and sector strategies. The National Economic Council approved the TYPDP in June 2001. The TYPDP has explicitly addressed sanitation strategies and linked its related programmes with funding sources. These programmes and strategies are summarized in the Table 4.16.

Table 4.16: Sanitation Issues, Strategies and Programmes in the TYPDP

Issues	Strategies	Programmes/(Funding)
Low sanitation coverage	Enhance sanitation coverage;	Collection, conduction and disposal of waste water to extend sanitation facilities to 63% of total population (PSDP);
Low recoveries of user charges	Promote self-sustaining water supply and sanitation systems by rationalising user charges and metering;	Installation of water meters and privatisation of water distribution in selected zones of Karachi, Lahore, Islamabad (non-PSDP);
Disposal of untreated sewage in water bodies	Treatment of wastewater/sewage in urban areas	Construction of sewage treatment plants in all major cities (PSDP)

The TYPDP calls for a continuation of a uniform policy for rural water supply and sanitation programmes, with the participation of the beneficiary community in all stages of development planning and designing of such programmes, as well as in their implementation and management.

4.8.4.3 Poverty Reduction Strategy Paper - PRSP (2003)

The draft Poverty Reduction Strategy Paper (summarized version issued in May 2003), circulated at the Pakistan Development Forum, is the most recent basic policy document of the Government as a framework for a national-level PRSP. It mentions sanitation issues and programmes at seven places. The lack of access to sanitation is described as a dimension of poverty and as a component

of the Environment-Poverty nexus and as one of the key infrastructure sub-sectors that has not been adequately funded in the past. Sanitation is identified as a key component of the Government-launched Khushal Pakistan Programme. Sanitation is also a line item in the PRSP expenditure budget along with water supply; and an intermediate indicator of PRSP implementation.

There is scope for further conceptual integration of sanitation in the PRSP, for example in its sections on Education, Health, Gender and Local Government. In view of the prevalence of water-borne diseases in Pakistan, the 100,000 Lady Health Visitors employed under the PRSP should be given training to accord priority to the promotion of practical sanitation and hygiene. The general lack of clean public latrines is an impediment to women's mobility. The provision of sanitation services by the Tehsil Municipal Administration (TMA) has not yet commenced in the form envisaged in the Local Government Ordinance (LGO), 2001. Devolution and sanitation need to be looked at together in the pro-poor context.

4.8.4.4 Local Government Ordinance, 2001

Under the Local Government Ordinance 2001, Pakistan has embarked upon the creation of a new system of local government. A range of federal, provincial, and local services and resources have been rationalized. Three tiers of local government have been established: District, Tehsil and Union. Municipal functions including water and sanitation have been devolved to the newly created Tehsils, with the status of a corporate body. The earlier urban and rural local councils have been merged under the Tehsil, which has helped remove the urban-rural administrative divide in the provision of services and amenities. The staff of the departments previously responsible for water supply and sanitation, such as Public Health Engineering Department (PHED), Local Government and Rural Development (LGRD), Physical Planning and Housing (PP&H), and Urban Local Councils (ULC) have been transferred to the new Tehsil Municipal Administration (TMA). The transfer of capital, human, and financial resources is planned to accompany the devolution of responsibilities. As expected, challenges have emerged during the transition phase of this complex reform.

4.8.4.5 Post-devolution structure of PHED in provinces

The devolution of municipal services to the TMA level was intended to break the long chain of hierarchical approvals related to the administrative and technical aspects of the water supply and sanitation schemes. The LGO 2001 envisages that provincial department responsible for municipal-level service delivery (LGRD, PHED, PP&H) would eventually be abolished, with the human and financial resources, assets and liabilities transferred to the Tehsil level. It is envisaged that the TMAs would be able to independently conceive, plan, design, implement, manage and operate municipal services. Technical staff drawn from the defunct departments would help elected representatives identify and implement feasible schemes. This has not happened to date. Swayed by political compulsions, the devolution of PHED has followed different trajectories in the provinces.

In Balochistan, the PHED remains fully functional. Parallel structures have emerged at provincial, district and tehsil levels, without formal linkages with each other. In NWFP, three departments were consolidated at the apex level, but subsequently, the provincial government has established six circles headed by the Superintending Engineer of the Works and Services Department, with a jurisdiction over 4-5 districts each. Sindh has kept a technical tier for meeting technical support functions. After an initial effective implementation of the LGO, Punjab has started re-centralising local government powers by establishing four regional offices. The half-hearted and incomplete devolution is resulting in duplication of municipal services in some cases. Their adverse fallout in

development schemes is evident. Clear vision and direction is required to avoid a lasting decline in capacities to provide water supply and sanitation services.¹⁶

4.8.5 Actions to Counter the Problems Arising from Inadequate Coverage

Examples of the best practices in low-cost sanitation can be found in Pakistan. They are located both in the Government and in the civil society. Owing to the quality and integrity of some these programmes, they have been observed and followed across the developing world for replication of their technical and social lessons. For example, the Orangi, Karachi experiences in urban low-cost sanitation are being replicated as far away as Southern Africa.

4.8.5.1 Approaches and Processes

The sub-sections below provide some examples of mainstream province-wide approaches that are people-centred and based on awareness-raising. Also described are innovative and emerging programmes that are, in addition, subsidy-free relying on processes that are facilitative, demand-response and participatory.

4.8.5.2 Programmes of LGRDDs

Provincial Local Government and Rural Development Departments (LGRDDs) have been implementing a sanitation acceleration programme since the 2001. The programme is run in collaboration with provincial directorates of health, population welfare, public relations and information, social welfare and elementary education. The media, private sector and community change agents have also been involved. The two objectives of the sanitation acceleration programme are to raise awareness and inculcate a sanitation culture, and to facilitate the construction of household latrines on a non-subsidized basis.

4.8.5.3 Orangi Pilot Project and its replication

The Orangi Pilot Project (OPP) is a leading non-governmental organisation working since 1980 to support peoples' efforts in upgrading the Orangi township, a large katchi abadi (low-income informal settlement) of over a million persons in Karachi. The OPP model of sanitation comprises of two components. The internal development component consists of a house latrine connected to a lane sewer and collector sewer at neighbourhood level. The OPP has demonstrated that communities can finance, manage and maintain the internal development component. The external development component consisting of a trunk sewer, treatment plants and outfalls remains the responsibility of the government.

In Orangi, people have invested \$1.5 million on internal development, constructed 1.5 million running feet of sewerage lines and sanitary pour-flush latrines in 90,000 houses. If a government contractor had done the same work, it would have cost six to ten times more, and if it had been done through a foreign aided loan project, it would have cost even more.¹⁷ The OPP model has been replicated in 42 settlements in Karachi and in seven cities across Pakistan with varying degrees of success. The outstanding issue in most situations is convincing local governments to provide the external development component.

¹⁶ WESNews. August 2003. "Impacts of Devolution on Municipal Service Delivery – Are we any better off after two year of Devolution" WESNet Newsletter Issue # 6, Peshawar. www.wes-net.org

¹⁷ Orangi Pilot Project, (1988). Proposal for a Sewage Disposal System for Karachi, City Press, Karachi

4.8.5.4 School Sanitation Programme – the UNICEF Experience

Nearly two-thirds of the government primary schools are without latrines, according to the data reported in the Education Management Information System (EMIS).¹⁸ UNICEF initiated a primary environmental care programme in 1992 with a focus on hygiene education, and a provision for hand pumps and latrine construction in selected schools. The programme was undertaken in partnership with the Education and Local Government Departments, and national and regional NGOs. A recent assessment has generated some lessons as indicated below and guidelines have been developed for scaling up the programme.¹⁹

Some lessons of UNICEF school sanitation programme

- Cleaning of the school toilet is often a problem;
- Children find cleaning inconvenient unless water supply is close by;
- Dry (Ventilated Improved Pit) latrines may be more appropriate in arid areas;
- Latrines are particularly convenient for older girls, who may otherwise drop out of school;
- Nazims and councillors should be oriented first to the need for school hand pumps and latrines;
- Awareness raising should be based on quality materials, using the child to child approach, theatre and other participatory approaches;
- Community planned, financed and implemented projects succeed better than those based on subsidy.

4.8.5.5 Processes (facilitative, demand-responsive, participatory)

Emerging WES Networks and Community Organisations

There has been a rapid growth of NGOs in Pakistan during the last decade, from around 8,000 in 1988 to more than 50,000 at present. A sub-set of these NGOs focuses on community mobilisation for self-help development and environmental management, including low-cost sanitation. What is particularly notable is the emergence of a Water, Environment and Sanitation Network (WESNets) in NWFP, with the objective of providing forums for sector coordination, dialogue, lateral learning and advocacy.

Community organisations exist all over Pakistan. However, the main function of most is to lobby government agencies and politicians for development schemes and funding. Development projects are handed out as patronage and without any proper planning. Implementation is often substandard and inadequate. More often than not, the intended benefit does not materialise, or there are no capacities with which to maintain the projects. Some communities have lost faith in the lobbying approach and are looking for alternatives.

Public, Private and Community Partnerships in North Karachi

When the Town Nazim, North Nazimabad, Karachi took charge of the town under the LGO, he was faced with a solid waste management crisis. Half the sanitary staffs were ghost workers and the town had no funds with which to buy machinery. He solicited proposals for garbage collection from private parties, allowing them to charge a collection fee. The private parties were required to

¹⁸ Ahmad Masroor et al. n.d. "School Sanitation – UNICEF's experiences in Pakistan".

¹⁹ Innovative Development Consultants. 2002. Guidelines for School Sanitation in Pakistan. UNICEF

reimburse the town Committee 30 percent of their revenues from the sale of recycled waste. The results are a clean township and a garden belt with fresh vegetables grown with composted waste. Enterprises have been invited to contribute to fountains in the green park areas in front of their establishments. Asking the elder residents to mark the attendance of the workers has solved the problem of the ghost workers.

4.8.6. Future Plan of Action

This section is based on the structured deliberations of some of the more knowledgeable and experienced persons in the sanitation and hygiene sectors in Pakistan. These resource persons representing the Ministries of Health and of Environment, provincial and district governments, national and regional NGOs, the private sector and international development assistance agencies met in Islamabad on October 09, 2003. Four working groups prioritised the hurdles faced and opportunities available for implementing sanitation programmes and for strengthening institutions. The importance of the issues was discussed during plenary discussions. Subsequently, issue-specific working groups identified specific measures for improving interaction and communication among policy makers, programme implementers, service providers and the people. Finally, strategic action plans were outlined.

4.8.6.1 Clarifying national sanitation policy

Pakistan's sanitation policy should be more explicit and made more consistent. The present policy should be communicated more clearly to service providers and to the people of Pakistan, and responses sought for its improvement. There are hard questions to be addressed. What is the primary purpose of sanitation, the protection of human health or the drainage of waste water? Is sanitation a basic human right or is it a service? If it is a basic human right, which segment of the population should be subsidized? There are difficulties of coordination in this sector, where the apex Government makes international commitments but which the lowest tier is required to implement. An agreed and well-understood policy with wide ownership can help bridge the problems of collaboration across the wide range of stakeholders.

4.8.6.2 Awareness raising based on religious values, science and artwork

Sanitation is not the top priority for the poor, and given their other deprivations they are not pushed regarding its profound consequences for human health. Households and communities are not accurately informed about how to build low-cost effective latrines. They presume latrines to be costly and difficult to construct and therefore do not build any. Hygienic practices are not widespread for both lack of water and of education. Anal cleaning followed by hand washing with soap, after defecation and before meals, is not systematically taught to children. Excreta disposal is considered a menial task to be done by the minority communities. Where taboos exist such as in tribal areas, the subject of sanitation cannot even be broached and with whom?

Behavioural Change Communication (BCC) should be the leading component of an enabling approach to better sanitation and hygiene, but is mainly treated as something to be added to structures rather than to changes in thinking. The outreach of the promotion of sanitation programmes is limited to project areas. The message-content is seldom tailored to the widespread illiteracy or to the diversity of cultural practices across Pakistan.

Islam attaches great importance to personal hygiene. Clear guidance is available from both the Quranic ayaats and the sayings and practice of Prophet Mohammad (PBUH). Pakistan is a devoutly religious society. BCC should be grounded in our religious values.

There are also opportunities for disseminating sanitation knowledge through scientific demonstration, artwork, and child-to-child (CtC) communication. The School Health Intervention Programme (SHIP) of the AKPBS Pakistan has identified an action-oriented CtC approach for behavioural change. Children listen to hygiene messages, undertake independent research as homework, discuss findings collectively, implement their ideas, evaluate results, and make indicators to monitor their own performance. In addition to a positive impact on their health, other benefits include more confidence amongst the children, more expression of their creativity, and development of skills for data collection and analysis. Teachers also learn alternate methods of engaging children in the learning process.²⁰

4.8.6.3 Ensuring participation of stakeholders

Apart from a few innovative pilot projects, target communities are not involved in most government-induced programmes for sanitation except as beneficiaries. Some programmes require community contribution of labour during implementation and for the maintenance of the local components afterwards. There is need to move from such negligible, minimal and partial approach to a full participation of the beneficiary community, by involving them in all stages of development, planning, designing, implementation, and management (as recognized in the TYPDP). Participatory Action Planning is the principal instrument for achieving full participation.

4.8.6.4 Generating resources (locally and nationally)

Public sector investment has declined in recent years and there are competing demands for government resources. Nevertheless, a subsidy-driven hardware delivery approach remains the hallmark of most provincial and local government sanitation programmes. Furthermore, the current procedures for resource allocation are complicated. The Tameer-e-Watan programme, allocating Federal resources to local governments, does not include a sanitation component. Few sanitation projects are selected under the Khushal Pakistan Programme. Delays in the release of lapsable funds also undermine stable planning and implementation at the local level.

There is a need to broaden public access to information on available resources under various programmes and projects. There is also a need to make the procedures for resource allocation more transparent.

4.8.6.5 Improving monitoring, planning and coordination

Monitoring is a stipulated action but is generally not in place for most government programmes and projects. There is a limited conception of monitoring. It is seen as a physical audit activity. There is need to give more priority to monitoring as a management tool, and to train a dedicated cadre for this purpose.

Devolution was designed to break the long chain of administrative and technical approvals that resulted in projects not consistent with changing ground realities. One of the improvements associated with Devolution was the enhanced capacity to accurately identify and quickly solve water supply and sanitation problems at local level. The emergence of parallel implementation agencies at Tehsil and Circle levels during the transition phase has meant duplication of

²⁰ Alibhai, K. and T. Ahmad. 2001. Promotion of healthier behaviour through school children. 27th WEDC Conference, Lusaka, Zambia

investment, and of infrastructure in some cases. There is an urgent need to review and rationalise these transitional arrangements, and to establish sound mechanisms for coordination between levels.

4.8.6.6 Guiding appropriate technical choices

In the past, frequently technical options were selected that were unfeasible, such as constructing trunk sewers without sanitation outfalls. Citywide projects with deep trunk sewers and huge pumping requirements were chosen in lieu of the more appropriate zone-scale schemes, with shallow small-bore sewers and grit interception. There is thus a great need for policymakers and programme implementers to learn from the successful model projects based on appropriate technology, as well as to share their knowledge and ideas with all stakeholders, so as to encourage a widespread thinking on cost-effective methodologies.

4.8.6.7 Establishing public-private-civil society collaborative arrangements

A public-private-civil society partnership for sanitation is a new idea and an opportunity. The TYPDP envisages a phased privatisation of water distribution networks in selected zones of Karachi, Lahore and Islamabad, in terms of proper operations, management, billing and recovery. As a next step, the Government may consider privatising conservancy charges collection in these zones. Simultaneously, a supervisory agency may be established with civil society representation.

Soap, pumps and hardware manufacturers may be engaged through their industry associations in the collective promotion of sanitation and hygiene products and practices. Good health may well prove to be a strong selling point.

4.8.6.8 Building implementation capacities at Tehsil and Union Council levels

It is indeed a debatable issue whether or not some changes are needed in the LGO to allow for Circle level projects that may enjoy economies of scale beyond the jurisdictions of Union Councils or even a TMA. It is clear that capacities have to be built up at the Tehsil and Union Council levels for water supply and sanitation projects. Technical assistance and backstopping arrangements have to be put in place.

4.8.7 The Way Forward – A Call for Action

The implementation of plans depends on the quality of leadership and political will. This paper is a wake-up call for action by the national, provincial and local-level leadership in Pakistan, to take steady but firm and measured steps to translate Millennium Development Goals into a reality for Pakistan. In particular the 700 days, between now and the 2nd SACOSAN for which Pakistan is the host country, should be used to deepen our knowledge and improve our sanitation hygiene situation.

Annex 1:

FINDINGS OF NATIONAL KAP STUDY ON SANITATION AND HYGIENE PRACTICES

Table A.1: Reasons for not having a latrine in the house (n = 5,027).

Description	All Pakistan	Location		Province-wise				AJK	NA	Latrine ownership	
		Urban	Rural	Punjab	Sindh	NWFP	Balochistan			Owner	Non-Owner
Lack of money	64	60	65	73	57	38	59	77	87	60	67
Lack of awareness	24	28	23	20	26	47	19	11	2	27	21
Lack of space	4	5	4	3	6	4	0	5	0	5	3
Unavailability of material	2	2	2	1	3	1	15	1	0	3	2
Lack of expertise	1	2	1	1	1	1	4	4	0	2	0
No response	1	0	1	1	0	1	2	1	10	0	2

Table A.2: Perceived Cost of Latrine Vs Actual Cost (Pakistani Rupees)

Latrine type	With Superstructure			Without Superstructure		
	Perceived Cost	Actual Cost	Difference	Perceived Cost	Actual Cost	Difference
Flush	16513	9266	+78%	6522	3000	+117%
Pour Flush	11854	6559	+81%	5164	2397	+115%
Pit Latrine	12841	4773	+169%	5485	2024	+171%

*1 US\$ = 60 rupees.

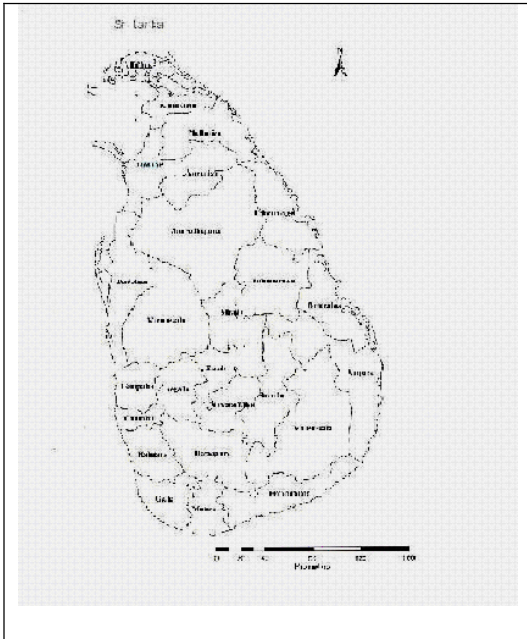
Table A3: Advantages of having a latrine (n = 5027).

Description	All Pakistan	Location		Province-wise				AJK	NA	Latrine ownership	
		Urban	Rural	Punjab	Sindh	NWFP	Balochistan			Owner	Non-Owner
Privacy	58	47	64	62	51	68	43	59	59	55	63
Convenience	16	20	13	15	14	17	23	25	11	17	13
Cleanliness	13	17	11	13	17	8	10	3	11	13	13
Time Saving	7	7	6	6	8	5	10	4	2	7	6
Health	5	7	4	3	9	1	9	3	13	5	4
No response	1	2	1	1	2	0	5	6	3	2	1

4.9 Sri Lanka

4.9.1 Background

Sri Lanka is an island in Southern Asia in the Indian Ocean about 50 kms away from the southern most point of India with a total area of 65,610 sq km.



The great civilisation was known in the island since late 6th century B.C. Buddhism was introduced beginning in about the mid - third century B.C. and different kingdoms were developed around the city centres of Anuradhapura, Polonnaruwa, Kandy, Jayawardenapura etc. from time to time. Some parts of this island were occupied by Portuguese and Dutch, while, British conquered the whole island in 1815. In 1948, it regained independence. The country formally known as ‘Ceylon’ was renamed as ‘Sri Lanka’ with the introduction of new constitution in 1972.

Sri Lanka has two main landscape features. Coastal low lands encircle the island, blending in land with plains in the north, south and east and a section of highlands cover much of the southwestern and central areas. Highest point of Pidurutalagala is 2,524 meters above sea level.

The country has a tropical climate with temperatures that remain between 60^oF and 90^oF throughout the year. Sri Lanka has a total population of around 19 million with a sex ratio of 49:51 male /female. Population growth rate in mid 2002 was estimated to be 1.5%. Life expectancy at birth is 71.83 years and the literacy rate of 90.1% was recorded in 1994.¹

Sri Lanka has different ethnic groups consisting of 74% of Sinhalese, 18% of Tamils, 7% of Moor, and 1% of Burgher, Malay and Indigenous people.

Sri Lanka adapted open market and export -oriented trade policies since 1977. The economy recorded a steady growth and achieved an average growth rate of 5.3% during the period 1997 – 2000. But in 2001 it recorded a negative growth rate of 1.5%. However, it rebounded in year 2002 to record an impressive rate of 4% in real terms.

In 1995² 45.4% of the population earned less than US\$ 2 a day while 6.6% of the population received less than US\$ 1 a day. Inflation was recorded as 9.6% in 2002 with unemployment of 8% in the same year. Looking at the sector contribution to GDP, the Agriculture sector has contributed 20% of the GDP, while Industrial sector 26% and Services sector has contributed 54%.

¹ Please refer to updated version of socio economic profile of Sri Lanka in <http://w.w.w.cia.gov/cia/publications/factbook/geos/ce.html>

² Central Bank of Sri Lanka – Annual Report 2002

4.9.2 Status of Global Sanitation

Poor sanitation conditions prevailing in most developing countries are badly affecting not only the human lives but also the socio economic development.

According to WHO estimates, nearly 3.3 million people, including 2.5 million children die of diarrhoeal diseases annually. Similarly, 1.5 billion people suffer at any given time from parasitic worm infections stemming from human excreta and solid wastes in the environment. In addition to diarrhoea, cholera, typhoid and other infectious diseases are also affecting thousands of millions of people.

Further, millions more suffer nutritional, educational and economic losses due to diarrhoeal diseases. These losses could have been prevented by safe disposal of human excreta and proper sanitation.

4.9.3. Sanitation Situation in Asia

More importantly, in the Asian Region, 1.9 Billion people or 52% of the population is without access to improved sanitation facilities. When studying the Asian plight, it appears that the global situation is remarkably influenced by the Asian conditions.

Apart from these alarming health hazards, an enormous amount of resources are invested annually in this sector for sanitation and health activities. But the results are limited and health benefits received so far are far below the expected levels.

The irony is that the majority of people who are badly affected live in Asian and African Regions. More than three quarters of persons, who lack these services in Asia, live in rural areas.

The Asian situation is not at all satisfactory as these figures even include the results of at least last two decades of concerted efforts, investments and publicity to improve the water supply and sanitation coverage.

4.9.4 History of Water Supply and Sanitation in Sri Lanka

Sri Lanka's hydrological civilization goes beyond 250 B.C. and its reminiscences are still visible. This amply demonstrates the special commitment and the dedication of the ancient Sri Lankan Kings had towards provision of water to the people. Sri Lankans were one of the first nations to introduce the irrigation and irrigation management systems to the present world. The archaeological evidences also clearly demonstrate the advanced sanitation systems engineered by the ancient rulers. These are clear indications of the importance that our ancestors paid to the disposal of excreta.

4.9.5 Sanitation Status in Sri Lanka

Sri Lanka has gained somewhat a commendable water supply and sanitation coverage, both in urban and rural areas, compared to other countries in the region.

However, data collection has not been consistent in some areas where unrest prevailed. But the average trend on improved sanitation facilities had been satisfactory. Nevertheless, the position

with regard to sanitation facilities in remote areas where mostly the poor people live is far below the reported average.

Out of the common water borne diseases, diarrhoea and shigellosis have severe effect particularly on rural population. However, there had been a remarkable improvement during the past decades amidst outbreaks experienced during 1990s.

Table 4.17: Sanitation coverage in Sri Lanka*

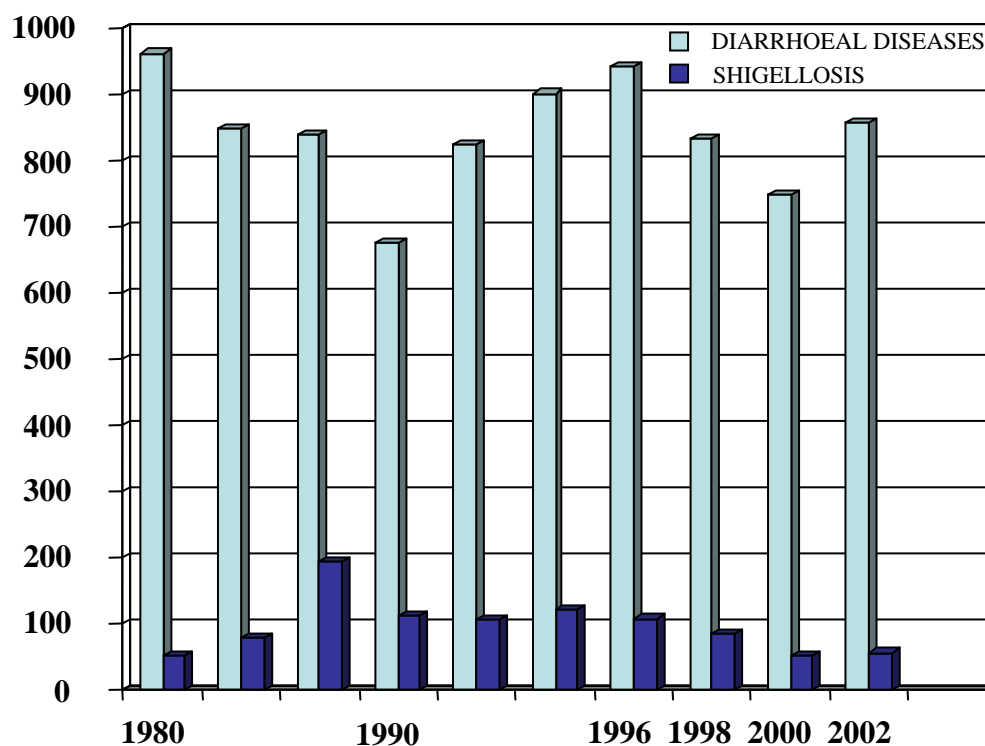
Source	Sanitation coverage %		
	Year	Urban	Rural
The International Drinking Water Supply and sanitation Decade (Review of National Progress)	1988	74	44
The International Drinking Water Supply and sanitation Decade (End of Decade Review)	1990	68	45
Water Supply and Sanitation Sector Monitoring Report	1991	73	56
Water Supply and Sanitation Sector Monitoring Report	1994	83	58
Global Water Supply and Sanitation Assessment 2000. Water Supply and Sanitation Sector Questionnaire	1999	91	80

*Source: WHO/UNICEF, 2001

Table 4.18 Availability of Sanitation facilities by type in Sri Lanka*

Source	Year	Type of sanitation facilities %		
		Type	Urban	Rural
Sri Lanka Demographic and Health Survey	1980	Water seal	41.90	12.10
		Pit	18.30	44.40
		Bucket	19.40	1.00
		No facilities	20.40	42.50
		Total	100.00	100.00
Sri Lanka Demographic and Health Survey 1987	1987	Water seal	80.14	37.40
		Pit	12.73	41.44
		Bucket	1.16	0.27
		No facilities	5.97	20.89
		Total	100.00	100.00
Sri Lanka Demographic and Health Survey 2000	2000	Water seal	95.00	77.70
		Pit	2.40	15.20
		Bucket	0.20	0
		No facilities	2.40	7.10
		Total	100.00	100.00

*Source: WHO/UNICEF, 2001



**Source: Department of Health – Medical statistician*

Figure 4.30 Morbidity – Rate per 100,000 population

4.9.10 Important Programs of Rural Water Supply and Sanitation in Sri Lanka

Sri Lankan Governments have given high priority for water supply and sanitation continuously for over the years. As a result, presently Sri Lanka has been able to secure a comparatively higher position among the Asian countries. In harnessing the healthy environment created by the governments, the internal and external inputs have been diverted to the sector resulting in the implementation of many prominent water supply and sanitation programs and projects over long years. Although, these programs had both the water supply and sanitation, findings submitted here are mostly limited to sanitation interventions.

Some of the important programs were as follows.

- World Bank assisted programs
- Asian Development Bank assisted programs
- Non Governmental Organizations (NGOs) assisted programs
- Government assisted programs

4.9.10.1 World Bank assisted programs

During the First Community Water Supply and Sanitation (Pilot) Project (CWSSP -I), which was jointly funded by the World Bank and the Government of Sri Lanka, a novel approach was introduced in promoting “Revolving Fund Mechanism” for the construction of latrines. A grant at

the rate of Rs. 3000 (US\$30) per household was provided to the Community Based Organization³ (CBOs) by the project to accommodate a limited number of families within a Grama Niladari Division⁴ (GND). The CBOs were expected to provide 75% of this grant in the form of a loan to the beneficiary families and were responsible for the collection of monthly loan instalments from particular families and provide loans to other members of the CBO. This mechanism was piloted in isolation while all other government and non-governmental organizations were providing outright grants. As a result, this attempt was unsuccessful and we had no other alternative but to revert to the “Grant Mechanism”. It was highly successful in the context of constructing vast number of toilets exceeding the original targets of the project (CWSSP I) by almost 150%.

Under the CWSSP II, which was funded by the Government of Sri Lanka, CBOs were entrusted with the responsibility of the selection of beneficiaries and management of the sanitation activities by themselves. Health Ministry Officials, and the Non Governmental Organisations (NGOs) selected as Partner Organisations (POs) were expected to provide the necessary technical assistance. Project has contributed Rs. 3000 per household as an outright grant to a limited number of families. This system also has worked well and we were able to construct more than the targeted number of toilets.

Under both CWSSP–I&II, although the construction of toilets exceeded the project targets, it could not cover the totals requirement of the communities.

The 2nd CWSSP, which is the first step of a national program to be implemented based on the ‘tested methodology’ through the implementation of the CWSSP–I, which was rated as the ‘best practice’ and ‘well managed’ project by the World Bank among 200 similar projects funded by them.

The World Bank has already signed an agreement with the Government of Sri Lanka to provide US\$ 39.8 Million as an outright grant for the implementation of rural water supply and sanitation program under 2nd CWSSP. This is considered to be the largest grant given by the World Bank to an Asian country.

The new project has introduced a different system of providing credit facilities (Rs. 3000 per family) to the CBOs for construction of toilets. Project provides a grant to CBOs as seed money for the revolving fund to accommodate 50% of the most deserving households. In turn, the CBOs will provide Rs. 3000 per household as a loan for construction of a toilet. Identification of needy households, establishment of rules and regulations for providing credit facilities, including repayment period, quantum of loan, rate of interest, if any etc., will be decided by the CBO. In the case of vulnerable families who cannot re-pay the loan due to absolute poverty, the CBO could provide them a grant instead of a loan. Under the new system, at the end of the total coverage, there will be a substantial amount of money left with the CBO, which could be utilized for other development activities within the community.

4.9.10.2 Asian Development Bank (ADB) assisted programs

Asian Development Bank (ADB) assisted rural water supply and sanitation projects have been implemented through the National Water Supply and Drainage Board (NWSDB)

³ An independent organisation comprising villagers

⁴ Smallest administrative division within a Pradeshiya Sabha.

3rd ADB assisted Rural Water Supply and Sanitation Project has also contributed immensely for the improvement of sanitation facilities in rural Sri Lanka. This project, apart from the water supply is targeting the construction of 87,000 household toilets, 200 institutional toilets including schools. In addition, Health and Hygiene Education Programs and environment programs are also implemented under this project. Furthermore, preliminary activities connected with 4th ADB assisted Rural Water Supply and Sanitation Project too has been concluded. Implementation of this project is scheduled to commence in January 2004.

ADB assisted rural water supply and sanitation project provides a grant of Rs.3000 for each of the selected needy households for the construction of a new toilet.

All these projects have health and hygiene education and environmental programs as sub components to cover other aspects of sanitation.

4.9.10.3 Non Governmental Organisations (NGOs) assisted programs

In addition to these major donor-funded projects, other donor agencies such as DANIDA and FINIDA and national and international NGOs such as Sarvodaya, Sewalanka, World Vision, Plan International, Helvitas, etc. have implemented significant number of 'toilet construction programs' in various parts of the country in different magnitudes adopting different approaches.

These different approaches had both advantages and disadvantages. Most of these programs were limited only to toilet construction and hygiene education and environment components were not given much emphasis.

It was found that NGOs and local authorities play a vital role in health education and mobilising communities towards implementing sanitation programmes. Some NGOs link the sanitation programmes with income generation activities and thereby guaranteeing an extensive participation of the rural peasants. NGOs also experimented some eco sanitation practices with the low-income urban settlements in and around the capital city attracting large numbers of participants due to the appropriateness of this technology for the waterlogged areas.

4.9.10.4 Government assisted programs

The Government has been the main provider of financial and technical assistance to address the growing demand of the rural population for improved sanitation facilities. It has been channeling funds for the purpose through the following institutions and programs.

- Ministry of Housing and Plantation Infrastructure
- Ministry of Health
- Ministry of Plantation Industries
- Integrated Rural Development Projects
- Decentralised Budget Allocations
- Special projects and Programs

4.9.11 Lessons Learnt

Through the implementation of a number of large rural water supply and sanitation projects, since the early 80s, we have gained wide experience and learnt enormous lessons. These lessons have been documented to a considerable extent and incorporated in subsequent projects. This has led to

a gradual improvement of implementation strategies and practices, which have in turn contributed towards the formation of the national policy as well.

Following are some of the key lessons.

- Close supervision and facilitation by Local Authorities will lead to ensure proper management and sustainability of rural water supply and sanitation facilities.
- Capacity building of the Local Authorities is essential for them to discharge their duties and responsibilities.
- Regular monitoring of water quality assures proper sanitation.
- Active participation and sharing of costs by the beneficiaries ensure success of sanitation programs
- Involvement of women and children from the inception is an essential element in sanitation programs. .
- Adequately empowered Community-Based Organizations (CBOs) with legal recognition will implement and manage the rural water supply and sanitation facilities more efficiently.
- More attention to the protection of environment and water resources and proper disposal of sillage and wastewater is essential to ensure proper sanitation.
- Health and Hygiene knowledge motivate people to acquire better sanitation facilities.
- All water supply projects should go together with sanitation.

4.9.12 National Policy for Rural Water Supply and Sanitation

Sri Lanka has formulated a National Policy⁵ for Rural Water Supply and Sanitation Sector. Future rural water supply and sanitation projects and programs should be in accordance with the National Policy.

4.9.12.1 Provisions made for sanitation in the National Policy

Sanitation is a personal matter that requires the commitment of each individual as well as the community at large to prevent health hazards arising from shortfalls in the disposal of waste.

Policy underlines that the Government of Sri Lanka promotes all activities leading to provision of access to basic sanitation to all citizens.

Basic Sanitation

According to the National Policy, the basic sanitation facility should be the *Ventilated Improved Pit* (VIP) Latrine.

Other acceptable options

Other acceptable options are as follows;

- Piped Sewer systems with treatment, which meets recognised standards.
- Septic Tanks with Soakage Pits
- Water Sealed Latrines with Disposal Pits
- Any other technology acceptable to the health authorities.
- Eco Sanitation

⁵ Please refer to National Policy for Rural Water Supply and Sanitation in Sri Lanka for details

4.9.12.2 Hygiene Education

Within the national policy for rural water supply and sanitation, hygiene education component has been given its due consideration. Hygiene Education will initiate behavioural changes and promote better hygiene practices among user communities through effective awareness creation. It also motivates communities to involve in all aspects of water supply and sanitation leading to long-term sustainability of facilities created.

The combined effects of sound hygiene behaviour together with adequate sanitation and clean water is considered important in achieving a higher quality of life. The National Policy ensures providing assistance for the promotion of the hygiene education as an integral part of the RWSS sector development.

4.9.12.3 Legal Framework

National Policy provides the legal framework to support and guide the sector institutions in performing their roles and responsibilities in providing sanitation facilities. It further elaborates that the legal authority vested in the respective institutions for the provision, ownership, and management of facilities should be duly recognized and accepted by all the stakeholders.

The sector stakeholders consider presence of a National Policy for rural water supply and sanitation as a great achievement. However, there are some areas such as legal recognition of CBOs, enactment of by-laws by Local Authorities to secure CBOs etc. have to be further strengthened.

4.9.13 Methodology Followed by the Present Rural Water Supply and Sanitation Programs.

After the National Policy for Rural Water Supply and Sanitation was formulated, major investments in the rural water supply and sanitation sector was streamlined to a greater extent in order to establish a uniform system under the patronage of the Rural Water Supply and Sanitation Division of the Ministry of Housing and Plantation Infrastructure. It is observed that the principles, concepts and the methodologies followed by the major program implementers are almost similar.

4.9.13.1 Concepts

Particularly large-scale rural water supply and sanitation programs being implemented with donor assistance have identified common basic principles and concepts. Accordingly, People centred, demand responsive approach is adapted in these programs. In this approach, communities are taken to the forefront to identify their priority needs, prepare plans and implement their own programs to derive the benefits for themselves. Thereby, it is envisaged that the communities will take interest to own, and operate & maintain them ensuring long-term sustainability.

4.9.13.2 Targeting / Prioritisation of communities

Targeting the needy beneficiaries in any community based development project is a complex activity. It has to be done with utmost care in order to ensure the most deserving people receive project benefits. Therefore, targeting the needy communities, in major rural water supply and sanitation projects in Sri Lanka, is being done by following transparent selection procedures. Communities are first made aware of the project, project benefits, funding criteria, operation and management responsibilities and the procedure to be followed in receiving project benefits. In

adhering to the basic principles of demand responsiveness, the communities are given an opportunity to request for project benefits.

Based on the existing coverage, the demand and the willingness to participate and contribute in the project, communities are prioritised for project implementation. These activities are facilitated by Non-Governmental Organisations selected as Partner Organisations (POs).

4.9.14 Project components

4.9.14.1 Community Development

Under the Community Development component, Field Officers assigned by POs working as facilitators, hold face-to-face discussions with beneficiaries in order to make them understand their problems, and their strengths & weaknesses. This process will enable them to study and analyse the situation that prevail in the village. They are encouraged to get organised in to small groups, so that they become united and strong as a pressure group. This also provides an opportunity to develop cohesiveness and unity among beneficiaries, leading to self-help activities to overcome some of the difficulties they face as individuals. This will also pave way to reduce their cost of agricultural and other activities they are engaged in.

Small groups are further strengthened during the process. These groups are later encouraged to form in to a larger organisation (Community Based Organisation - CBO) that will have a fair representation of the entire Grama Niladari Division (GND). This Organisation will thereafter take the initiative in development activities in the GND, including the implementation of water supply and sanitation projects.

4.9.14.2 Health and Hygiene Education

The Health and Hygiene Education (HHE) program is also one of the major components of rural water supply and sanitation projects. It deals with the following key health issues:

- Transmission of water borne diseases
- Hand washing practice;
- Safe water storage;
- Water dis infection;
- Latrine usage etc.

In addition to improving good health practices, RWSS projects aim at monitoring the water related diseases particularly among small children less than 5 years. There will be continuous monitoring of health indicators related to water borne diseases with the help of the local health authorities, so that project benefits could be measured in terms of reduction of water borne diseases.

4.9.14.3 Water Supply and Sanitation facilities

During the social mobilisation process, the small groups are expected to identify the needs of the community with regard to sanitation and potential water sources for future planning on the results of the village participatory survey. Simultaneously, Hygiene Education program will take place as a pre-requisite of construction of toilets. Once the CBO is formed it is expected to prepare a sanitation programme along with a proposal for water supply scheme. However, construction of toilets commences its activities before the construction work of water supply scheme starts. With

regard to the sanitation program CBO prepares a priority list based on the deservedness and provide a grant / loan of Rs. 3000 per household.

4.9.14.4 Environmental Protection

During the initial stage of mobilization, household environment programs are also implemented in supplementary to water and sanitation projects. Household based environment program includes;

- home gardening
- composting of household waste
- kitchen waste disposal
- household wastewater disposal
- maintenance of clean surroundings etc.

In addition to household based environment program, there will be a village based environment programs being implemented as well, together with RWSS projects

4.9.14.5 Village based environment program

Village based environment program will focus mainly on:

- identified water source protection
- catchment preservation and
- common drainage and waste water disposal setting.

4.9.14.6 Involvement of Stake holders

Another important feature in all major rural water supply and sanitation projects in the country, is the full involvement of all relevant stakeholders at all stages of project implementation.

The policy recommends the involvement of Local Authorities, Line Ministries and Departments such as Forest, Health, Education, Irrigation and Environment etc. in the implementation of rural water supply and sanitation projects in order to share responsibilities according to their mandates.

4.9.14.7 Coordination within Rural Water Supply and Sanitation Projects

Rural Water Supply and Sanitation Division (RWSSD) of the Ministry of Housing and Plantation Infrastructure, created under the sector reform program of the Government is responsible for donor negotiations, coordination, facilitation and monitoring of the implementation of rural water supply and sanitation projects.

RWSS Division provides the guidance for implementing rural water supply and sanitation activities in the country. Thereby, long-felt need for coordination among many stakeholders in the rural water supply and sanitation sector has been fulfilled with the setting up of this Division.

Coordinating committees have been established from national level to grass root level.

The National Steering Committee (NSC) is comprised of line ministries, Rural Water Supply and Sanitation Division together with NWSDB and the donors funding the rural water supply and sanitation projects. According to the sector development program supported by the national policy, the Provincial Coordinating Committee (PCC) at Provincial Level, District Coordinating

Committees (DCC) at District Level, Divisional Coordinating Committees (DLCC) at PS Level and the Village Coordinating Committee (VCC) at Village level are established as an integral part of the project implementation.

This arrangement is considered to be the most effective mechanism to provide backup support to the rural water supply and sanitation project implementation in Sri Lanka.

4.9.15 Issues and Constraints

There are issues and constraints faced by the sector amidst remarkable improvements achieved compared to other countries in the region

Some of the important issues and constraints are as follows;

- Variations in access to sanitation facilities within remote rural areas, estates, underserved settlements in urban areas and conflict-affected areas.
- Poor sanitation coverage and its linkage with poverty.
- Lack of sanitation facilities is directly linked to poverty. Poorest of the poor cannot find fund requirements for construction of a latrine.
- Subsidiary attention and insufficient investment.
- ‘Sanitation’ is not placed on the top of the priority list when the resources are limited.
- Unfinished institutional reforms, decentralization process and inadequate institutional capacity
- Decentralization of project implementation to Provincial and Local level alone may not gain the anticipated results unless the capacity is enhanced for implementation of sanitation activities. Existing manpower, funding and the institutional capabilities are not geared to meet the challenges.
- ‘Subsidy’ culture could limit coverage depending on limited investments.
- Providing subsidies has a long history. There can be a tendency of waiting for subsidies even by affordable people. When there are constraints on subsidy investments by the government or by the donors, this may badly affect the coverage.
- Lack of awareness creation on health and hygiene education. Some of the project implementers still have not considered the importance of health and hygiene education component as an integral part in the supply of water and sanitation
- Problems connected with deterioration of quality of water. Water quality has been subjected to continuous deterioration during the past few years than before, due to development activities and willful destruction of forest resources and unregulated waste disposal practices. This is causing a severe impact on health and sanitation. This situation could further aggravate due to lack of mechanism for regular water quality testing in rural areas
- Scarcity of water resources. Over extraction of ground water for drinking, agriculture and industrial purposes has increased tremendously causing severe problems. Non-availability of required quantity of water for sanitation has an adverse impact on health.
- Lack of coordination among project implementers.

4.9.16 Rural Sanitation and Poverty

Problem of sanitation is crucial in the dry zone, when compared to other areas in Sri Lanka. There are still some villages without a single toilet. Open defecation is one of the issues that we have to address.

When focused on rural water supply and sanitation in Sri Lanka, it is the rural poor that are mostly affected. Lack of access to safe water and adequate sanitation which are the basic needs, have not only left them in the clutches of poverty, but also forcing them to be poorer. They often fall sick due to unsafe water and poor sanitation conditions. Sickneses keep them away from their income earning activities and also diminish the limited resources and assets they have forcing them to seek the assistance of moneylenders and eventually getting in to the debt trap. Furthermore, children easily become the victims of malnutrition, which will subsequently be a heavy burden on the family and even on the government, in providing free medical care.

Long years of experience in working with rural poor living in very remote areas of Sri Lanka, suggests that poverty and poor sanitation conditions are highly correlated and inter- dependent.

When analysed, from a national perspective, the absence of this basic need to the people is not only aggravating the poverty, but also causing a heavy blow to the social and economic development of the country as a whole.

Therefore, there is an urgent need to search for a suitable strategy to address the issue of sanitation.

4.9.17 Conclusions

Strategies used for making sanitation work should be easily understandable and practicable by the rural communities as the success of the strategies developed mainly depend on the extent of the acceptability by the rural communities.

However, providing latrine facilities alone is not good enough. Educating the rural communities of the importance of using toilets, safe disposal of household waste etc. are also important as providing them with toilet facilities. The education and motivation have become so crucial as our studies in remote rural areas have proven that there were instances where toilets were provided by several programs, but some of the beneficiaries were not using them due to various reasons. This reveals some hidden facts connected with their attitudes, extent of knowledge, cultural and other behavioural patterns etc., which are closely associated with the problem of sanitation.

Therefore, there cannot be a single model, which can be adopted in all countries. The political, economic, social and cultural realities prevail in each country, are of prime importance in formulating a suitable institutional arrangement for any country particularly to meet the challenges of sanitation.

In conclusion, we the stakeholders in the water and sanitation sector are committed to achieve the Sri Lankan Government's ambitious target of providing adequate water supply and sanitation facilities for all citizens by year 2025.

We believe that this workshop will bring a ray of hope to relieve the suffering segment of the people in our countries.

Finally, on behalf of our delegation, I thank all of you for your cooperation and patient listening.