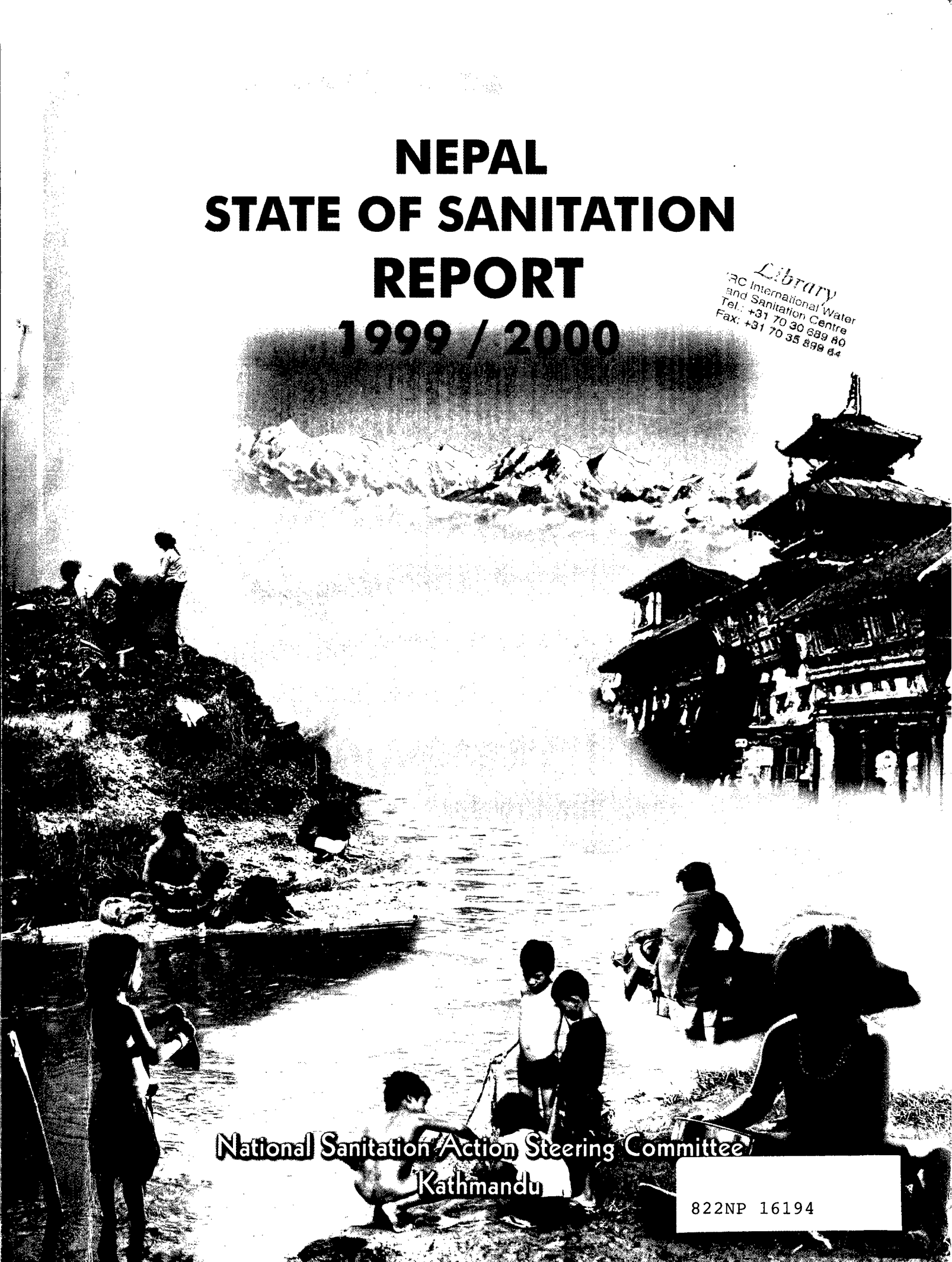
NEPAL
STATE OF SANITATION
REPORT
1999 / 2000



National Sanitation Action Steering Committee
Kathmandu

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Kathmandu

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Foreword

The health, hygiene and sanitation status of majority of Nepalese people is very low. The living standard of the people in the country with regard to health and economy is very poor compared to the people of other undeveloped countries in the world.

Despite the continuous efforts of governmental and non-governmental organizations in improving and sustaining sanitation status of people, millions of rural and urban population have been dying of several epidemics and communicable disease and a huge amount of national budget has been spoilt every year pushing the national economy far behind. In order to overcome these challenges and raise the sanitation status of people, His Majesty's Government has shown its strong commitment in Ninth Plan which aims at doubling the population coverage of sanitation. National sanitation policy has also been given high priority to sanitation and emphasizes the role of NGOs, User groups and private sectors in execution of the sanitation project activities successfully.

With a view to assess the sanitation situation in the country and contribute to sanitation activities, Environmental Sanitation Section of the Department of Water Supply & Sewerage and UNICEF have jointly prepared this report " NEPAL STATE OF SANITATION REPORT " on the basis of all the available information from the concerned institutions and projects. This report will fill up the gap in information on sanitation and will be useful for all concerned agencies to expand and improve sanitation facilities throughout the country. I hope this report will be a clear guideline and help to achieve the national objective on sanitation set forth by Ninth Plan by generating healthy, productive and prosperouse citizen.

Bal Bahadur K.C.
Minister
Ministry of Housing & Physical Planning.

Acknowledgements

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Finally thanks are due to all other ministries and agencies in Nepal and individuals who contributed to the content of this report.

Streeing Committee for National Sanitation Action
Chairmanship : Department of Water Supply & Sewerage.

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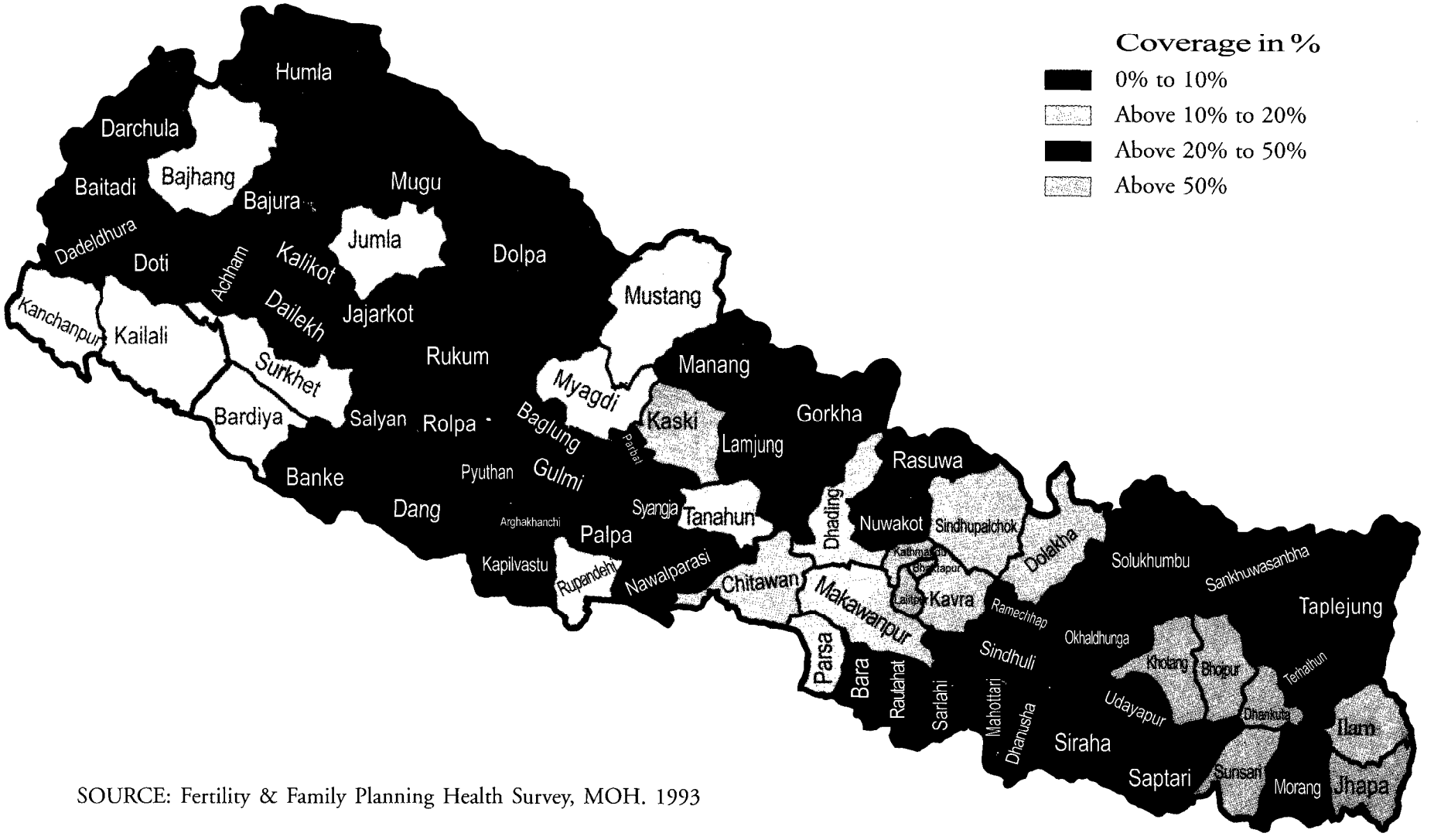
Sanitation Latrine Coverage



SOURCE: Fertility & Family Planning Health Survey, MOH. 1993

ABBREVIATIONS

ADA	Alliance for Development Alternatives
ADB	Asian Development Bank
AESR	Annual Environment Status Report
CBS	Central Bureau of Statistics
CHRDU	Central Human Resource Development Unit
CRU	Consumer Relations Unit
CSO	Central Statistical office
DALY	Disability Adjusted Life Years
DDC	District Development Council
DHPP	Department of Housing and Physical Planning
DPHE	Department of Public Health Engineering
DTCO	District Treasury Controller Offcie
DWSS	Department of Water Supply and Sewerage
ESS	Environmental Sanitation Section
FCGO	Financial Controller General Office
FCHV	Female Community Health Volunteer
FTC	Freestanding Technical Cooperation
GDP	Gross Domestic Product
GNP	Gross National Product
HDR	Human Development Report
HMGN	His Majesty's Government of Nepal
IDA	International Development Assistance
IMR	Infant Mortality Rate
INGO	International Non-Governmental Organization
IPA	Investment Plan Assistance
ISD	Institute for Sustainable Development
ITC	Investment-linked Technical Cooperation
KAP	Knowledge, Attitude and Practice
MEC	Ministry of Education and Culture
MFI	Micro Finance Institutions
MHPP	Ministry of Housing and Physical Planning
MLD	Ministry of Local Development
MOH	Ministry of Health
NEWAH	Nepal Water for Health
NFFPHS	National Fertility and Family Planning Health Survey
NGO	Non-Governmental Organization
NMIS	Nepal Multiple Indicator Surveillance
NORAD	Norwegian Agency for Development
NPC	National Planning Commission
NR	Nepali Rupee
NWSC	Nepal Water Supply Corporation
OPD	Out Patients' Department
ORT	Oral Rehydration Therapy
OSSP	On-Site Sanitation Program
PCRW	Production Credit for Rural Women
RWSG	Regional Water and Sanitation Group
RWSSFDB	Rural Water Supply and Sanitation Fund Development Board
RWSSP	Rural Water Supply and Sanitation Project
SSNC	Social Service National Coordination
SO	Service Organization
SFDP	Small Formers Development Programme.
SRDP	Sector Regional Development Plan
SWC	Social Welfare Council
TDF	Town Development Fund
TDFB	Town Development Fund Board
TDO	Town Development Officer
UDLE	Urban Development through Local Efforts
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNICEF-SA	United Nations Children's' Fund - South Asia
USAID	United States Agency for International Development
UWSSP	Urban Water Supply and Sanitation Project
UWSSRP	Urban Water Supply and Sanitation Rehabilitation Project
VDC	Village Development Council
VMSW	Village Maintenance & Sanitation Worker
WATSAN	Water and Sanitation
WB	World Bank
WDD	Women's Development Department
WDR	World Development Report
WHO	World Health Organization
WMRMC	Waste Management and Resource Centre
WSUC	Water and Sanitation Users' Committee
WUC	Water Users' Committee

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EXECUTIVE SUMMARY

1 Introduction

The aims of this report are: (i) to assess the current hygiene and sanitation situation of the country at the national, community and households levels; (ii) to review the efforts made by the government and non-government agencies for promoting sanitation; and (iii) to draw the attention of the public authorities, local government institutions and concerned agencies towards more effective measures in the field of sanitation, so that a breakthrough in facilitation and adoption of better sanitation measures can be achieved.

The government's policy statement on sanitation (DWSS, 1994) gives a broad interpretation of sanitation. Sanitation has been defined in that statement as 'activities which improve and sustain hygiene in order to raise the quality of life of an individual'.

In a wider context, sanitation includes the following aspects:

- Personal hygiene practices and community sanitation
- Food hygiene practices
- Proper handling, storage and use of drinking water

Proper method of disposal of human excreta

Proper solid and liquid waste disposal including urban drainage and solid waste management

Proper animal waste disposal.

Sanitation Efforts in the 1980s

The government increased its activities in the Water and Sanitation Sector considerably during the Drinking Water and Sanitation Decade (1980-89). The government announced various water supply and sanitation measures under the Basic Needs Programme initiated in 1987. The community Water Supply and Sanitation Project was implemented initially under the Ministry of Local Development and later under the Department of Drinking Water and Sewerage. Several other projects were also ran by various other agencies.

Lesson from the last Decade: Sector Review

In 1991, DWSS published the Drinking Water Sanitation Sector Review Report which assessed and evaluated the experiences. Its conclusions were: (i) the need for integrated programmes of drinking water and sanitation, (ii) sanitation and hygiene education, (iii) mobilisation of greater community participation, (iv) importance of use of NGOs and the private sector in implementation, (v) adoption of appropriate technology, (vi) better operation and maintenance of completed schemes, (vii) preparation and implementation of district level plans, (viii) priority for environmental sanitation and (ix) institutional restructuring of DWSS in the light of decentralisation efforts.

2 Current State of Sanitation

The state of sanitation in the country is poor. However, considerable improvements in sanitation (access to latrines) have taken place in recent years. The reported increase in overall sanitation (latrine) coverage from 19.8% in 1991 (NFHS 1993, data of 1991: rural areas 16.3% ; urban areas 69.8%) to 22.5% in 1996/97(NFHS, 1996:rural areas 17.5% ;urban areas 61.4%) is meager.

Sanitation needs to be urgently addressed considering the growing environmental pollution, particularly in towns, the persisting pratice of defecation in the open all over the country and the limited sanitation and hygiene awareness among the people.

Sanitation and Health

The main rationale for improving sanitation is to have better impacts on the health situation. The main health indicators have shown improvements in recent years. Various factors such as immunisation, increased household concern for and willingness for spending on health care, as well as provision of drinking water and sanitation facilities have accounted for this. The major health benefit of improved sanitation is obvious in the control of diarrhoea, especially among children. The incidence of diarrhea is falling now.

Low Demand for Latrine Construction

The task of getting households in rural areas to abandon the familiar habit of open defecation and to provide their own latrines in or near their houses has been difficult so far though some improvements have recently been observed. People are not enthusiastic about latrine construction

despite increased awareness about the bad effects of the exposed excreta and drinking of impure water on their health. Among the reasons for such reluctance, stated reference by the respondents in surveys, are lack of resource, and space and 'no perceived need' for latrine.

Sanitation Situation in Public Places

Sanitation is poor in most of the public places, offices, restaurants, around religious places, along the tourist routes, streets, etc. General negligence on the part of people and lack of strict control on sanitary standards to be maintained in restaurants and public places are responsible for these conditions. Water shortage also hampers practice of good sanitation.

Impact of Sanitation Programmes

Most of the Studies on the impact of sanitation programmes and projects conducted by agencies such as Nepal Red Cross Society, NEWAH, HELVETAS and FINNIDA indicate improvements in personal hygiene, household and community sanitation in the project areas, as also increase in the number and use of latrines constructed and decline in incidence of diarrhoea disease.

3 Institutions in the Water and Sanitation Sector

DWSS, the lead agency in the water and sanitation sector with Regional and District level Offices, executes several donor- supported projects including the Fourth Rural Water Supply and Sanitation Sector project which is done by a Development Board of the Government. Several ministries like the Ministry of Health, Ministry Education and Ministry of Local Development also conduct complementary activities. The Ministry of Health programme on control of diarrheal disease is closely related to sanitation promotion activities of the DWSS. The Ministry of Education has already incorporated some sanitation contents in secondary level courses, and environment education at the primary level. The Ministry of Local Development provides grants to VDCs widely used for drinking water works and executes the FINNIDA-supported Rural Water Supply and Sanitation Project. Several other donor agencies contribute to sanitation activities. Various international organisations like UNICEF are also actively involved in sanitation programme.

4 Sanitation and Waste Management in Urban Areas

With the fast pace of urbanisation in the country (at annual rate of 7.5%), the main urban centres which are expanding in terms of population and economic activities are facing problems of water pollution, poor sanitation and solid waste management. The city of Kathmandu is facing acute environmental problems on account of overcrowding, solid waste accumulation and pollution of all sorts. Several agencies are involved in provision of water and sanitation services in the urban areas of Kathmandu valley.

The Kathmandu Municipality carries out collection and disposal of garbage collected in the town, street sweeping and sanitation management in restaurants. Its Health and Environment programmes include control of various diseases and awareness programmes.

Waste management in Kathmandu city has been problematic. The Waste Management and Resources Mobilisation Centre previously operates under the MHPP to handle the work of collection and disposal of most of the wastes generated in the town is now take over by the municipality. The most urgent problem to be addressed are the separation of garbage (from the source onwards) and new landfill.

5 Sanitation Policy and Plans

Sanitation policy has been stated in the plan documents. The Eighth Plan (1992/97) policy mentioned integrated implementation of drinking water and sanitation programmes, involvement of user community, provision of training on latrine construction, promotion of sanitation education and providing sewerage and drainage system in urban areas.

In 1994, DWSS announced a new policy on sanitation. The policy aims at:

i bringing about changes in people's sanitary and hygiene practices through health education, information and community mobilisation,

ii ensuring community involvement, particularly women in water management, hygiene education promotion activities,

iii encouraging participation of NGOs and voluntary and community-based organisation.

Sanitation Programmes: Achievements of the Eighth Plan

The Eighth Plan aimed at raising the drinking water supply coverage to 72% of the population. The actual coverage was 61%. On the other hand, in the sanitation field, where the plan target was raising the sanitation (latrine), the actual coverage achieved was 20%. The efforts of different projects, large scale private housing construction with on site sanitation all over the country, and greater awareness of the people account for this increase.

Goals of the Ninth Plan (1997-2002)

The Ninth Plan has set high goals for both drinking water and sanitation. In drinking water, the target is Water for All (100% of population) by the end of 2002 and sanitation for 40% of the population (36% in rural areas, 60% in urban areas). The plan thus aims at doubling the population coverage of sanitation (latrine access).

Major Water and Sanitation Projects of the Government

Two large projects being executed by the Government over the Ninth Plan period are: (I) Rural Water Supply and Sanitation Project with World Bank Assistance of $18.28 million, and (ii) Fourth Rural Water Supply and Sanitation Sector Project with Asian development Bank Loan Assistance of $ 20 million. Under the World Bank-assisted project, drinking water and sanitation facilities will be provided to 900 communities in the Central and Western Region, extensive Health Sanitation Education activities will be taken up, latrines will be constructed in public institutions such as schools and health posts, and funding for household latrines will be provided through a revolving fund system operated at the local level.

Under the ADB-supported project, drinking water facilities will be provided to 1500 communities in 40 districts of Eastern, Mid-Western and Far Western Regions; low

cost sanitation (latrines) will be provided in selected places; and hygiene education will be provided through DWSS staff.

6 Resources

Human Resources for Sanitation Activities

A large number of personnel of central, district and local levels are engaged in activities related to sanitation promotion and drinking water. The categories of human resources involved in sanitation are (i) DWSS staff at all levels; (ii) the project staff of different organisations at different levels; (iii) health/ hygiene educators/ trainers, motivators, volunteers; (iv) teachers working as volunteers; (v) NGO Staff; (iv) local government institutions such as DDC/ VDC, Municipalities and their staff; (vii) User Group members; and (viii) Staff of various international organisations engaged in sanitation.

Financial Resources for Sanitation

In the 1991/93 budget of the government, 5.5% of annual development expenditure was the allocated to the water and sanitation sector. Of this amount, about 1.3% was allocated for the sanitation sub-sector. The average allocation as a proportion of the total government budget for the years 1955/96 was 3.8%. In the 1998/99 budget, the allocation for water and sanitation was 7% of the total development budget according to the NPC Document, *Central Level Programme, 1998/99.*

The World Bank RWSSP has allocated 8.5% finance for hygienic and sanitation education and 4.5% for institutional latrine construction.

Similarly, the ADB RWSSP has allocated 5% of the total project finance (including Government finance) to community education and awareness programme and 0.45% for sanitation (latrine).

7 Opinions of VDC/DDC Chairmen and Municipality Mayors

In a National Seminar on Sanitation (July 1998) organised by the Association of DDCs with UNICEF support, the local elected representatives expressed a concern about the poor state of hygiene, sanitation and poor inadequate water supplies and the various health problems created by this situation giving several suggestions for improving the situation. The suggestions included giving high priority for sanitation in VDC/DDC, Municipality budget, provision of public toilets, launching of sanitation campaigns and provision of drainage and waste disposal facilities.

A District Sanitation Survey conducted by DWSS in 1998 showed that several districts had taken up construction of institutional toilets in schools and health posts, had provided construction of a large number of households toilets, had conducted sanitation programmes with involvement of school students, and a number of districts had implemented model village schemes.

8 Approaches in Different Projects

A number of approaches to project implementation exist. The ADB-financed Rural Water Supply and Sanitation Project is being implemented by DWSS. The FINNIDA-supported RWSSP is being implemented by the Ministry of Local Development. The World Bank-supported

RWSSP is being implemented by a Development Board. Large NGOs (NRCS, NEWAH) have set up their own district network for implementation. However, in all the government and NGO projects there is a commonality in the use of local community, formation of NGOs and private sector is particularly noted in the World Bank-supported project.

9 Potential Impacts of Improved Sanitation

The most commonly recognised impact of improved sanitation will be the health status of the people. Human suffering will be reduced due to reduction in diseases caused by poor sanitation. Besides, economic benefits will be derived on account of reduced expenditure on health care both for the individuals and the country. Improved sanitation also contributes to human development. Girl attendance in schools will be improved due to availability of toilets (separate for girls) in schools. Generally, the girls and women will benefit from privacy and convenience in their toilet activities. Sanitation activities conducted in communities may also provide a framework for improved community management.

Benefits in terms of increased productivity and income are likely to accrue, too. There will be a reduction in workers' absence from work, either wage employment or self-employment with better health (being free from disease caused by poor sanitation). People will be able to work more productively.

Improved sanitation can also contribute to promotion of tourism.

If sanitation suffers, the people and the country may have to bear large economic costs that could amount to 2 to 4% of the GDP, even without including the potential costs of productivity loss and *environmental* liabilities.

10 Recommendations

The recommendations are based on the following five principles:

a Adoption of a demand-based approach to promotion of sanitation facilities
b Further emphasis on decentralised planning and implementation
c Promoting progressive technology choice (with respect to construction of sanitation units) with reliance on credit and private sector provision of *sanitation* equipments
d Focussing on a basic Sanitation Package (with components of latrine access, hygiene and urban waste management)
e Enhancing and Reprioritizing Public Resources.

Specific recomandation are the followings :

i A broad-based Sanitation Strategy should be adopted using development programmes of the government at the local level and the Media, besides the Water Supply Projects.
ii Campaigns should be launched to mobilize the large number of stakeholders emphasising benefits like privacy and convenience besides the health benefits of sanitation facilities.
iii Promotion of sanitation improvements through the provision of institutional toilets needs to be continued. The facilities already provided should be assessed in terms of their conditions and utilisation. Health clubs among children (of schools) should be promoted. Government officials, NGO workers and

representatives should set examples in improved sanitation and become role models for the community.

iv Effort should be made on further building the capacity of local government (DDCs, VDCs) and local community organisations (including the water users committees) to plan and implement sanitation activities as well as operate and maintain the facilities.

v Attention should be given to developing a framework for participation of private sector enterprises in supplying sanitation parts and providing technical assistance and monitoring services.

vi Community and household access to credit for installation of latrines should be promoted. Links should be established with other programmes at the local level (such as SFDP, PCRW and Grameen Bank) for supply of credit for sanitation works.

vii Municipalities should improve their financial management and generate more resources so that larger investments can be made on sanitation work.

viii Partnerships with private sector and local communities should be established for management of urban sanitation.

ix The National Sanitation Policy could be reviewed in the context of the emerging decentralisation framework.

x Sanitation should be established as a separate line item in the budget of the central government, DDCs and VDCs.

xi Effective coordination is required at all levels starting from the central level. Emphasis needs to be put on the process to ensure rapport and joint action among the local staff of different agencies, departments, NGOs and community groups.

xii District profiles on sanitation should be prepared. A National (Annual) Environment Status Report should be prepared.

xiii The name of the lead goverment agencies to sanitation should change from the department of water supply and sewerage to the department of water supply and sanitation to reflect the main work of sanitation that the department is addressing opposed to urban sewerage. Similarly the name of district water supply offices should be renamed District water supply and sanitation offices.

OVERVIEW

The Human Development Report 1998 of the United Nations Development Programme points out that "despite a more than doubling of the number of people with access to safe water since 1980, some 1.3 billion people still lack access to safe water, and some 2.5 billion access to adequate sanitation". In many developing countries, health status, especially of children and mothers, continues to be poor as reflected in the high incidence of diarrhea, malnutrition, maternal deaths and continued recurrence of water-borne diseases. Several studies of health impacts of water and sanitation improvements have highlighted that health gains from improved sanitation, especially improved hygiene practices, are far higher than those accruing from only improved access to water. These observations point to three critical aspects:

- compared to water, sanitation improvements have lagged far behind;
- gaps in access to sanitation are very widespread and demand greater policy attention; and
- without sanitation improvements, concomitant health improvements are not likely to accrue from isolated investments in water services.

This has also been largely true in Nepal. The State of Sanitation Report focuses on this important theme to induce greater policy attention on this important, though often neglected, dimension of human development. It aims to assess the current situation of sanitation, review the main institutional arrangements and stakeholder interests, identify the emerging trends in policies and programmes, assess the potential economic

benefits of improvements in this important area, and, to identify broad strategies to ameliorate this situation. It is visualized that this will help to create the necessary awareness and a social mobilization process, as has happened in Bangladesh, to bring sanitation in the centre-stage of public policy, planning and budgetary support. The Department of Water Supply and Sewerage (DWSS), with the support of UNICEF along with a wide range of stakeholders in the sector, has undertaken this task and plans to use this to generate the necessary debate in the country on this important aspect. The Report is envisaged to "serve the dual purposes of an advocacy tool to make hygiene and sanitation a priority in Nepal and to evaluate the effectiveness of interventions in the area".

State of Sanitation in Nepal: Based on the limited available information, it is evident that, while there has been some progress in improving sanitation conditions in Nepal, service levels are still very low, progress has been slow, and, more importantly, there has been inadequate emphasis on the qualitative aspects of sustainability of sanitation and its community acceptance.

Sanitation constitutes an important and critical dimension of the living environment, whose neglect leads to major costs of human suffering and economic losses. Sanitation is increasingly recognized as a wider concept, including practice of hygiene at personal and household levels, systems of human waste disposal, management of solid and liquid wastes, cleanliness in public spaces, and control of environmental pollution due to the inadequate treatment and disposal of human, animal and other wastes, besides the conventional meaning of sanitation as access to safe facilities for human excreta disposal.

However, sanitation generally receives low priority among the policy makers and even people themselves. The continuing neglect of sanitation in Nepal's policy has led to a situation of poor environmental conditions and a lack of hygiene among both the rural and urban populations. Over time, while the access to safe drinking water has improved significantly, the situation of sanitation has probably stagnated or even worsened. More importantly, a proper assessment is generally difficult, as there is very limited disaggregated information available for sanitation. It is common to find studies of water and sanitation generally devoted to the former with only a passing mention of sanitation.

Despite the wider recognition of sanitation, emphasis is generally placed only on disposal of human excreta and, therefore, provision of household and institutional latrines has been used as a primary indicator of access to sanitation. In general, access to latrines still remains very low, even when compared with other poor countries in the region such as Bangladesh. This is probably also responsible for the continuing morbidity and mortality due to related diseases. Regional variations in status within Nepal suggest the situation to be better in the central and western zones, and the mountain regions are generally better than the Terai.

Information on other aspects of sanitation is scarce. Based on available field

level studies, the situation with respect to effective collection and safe disposal of liquid and solid waste as well as sanitation in public spaces is probably worsening. There is a need to improve the information base, preferably through a community-based information and surveillance system, and as a part of the district planning process. A systematic effort with participation by local governments and community groups will help to create awareness and popular support for actions at the local level.

Stakeholders in Sanitation: In keeping with the global trends in decentralization, community control and increased reliance on the private sector, the policy outlook in Nepal is also changing. It advocates a paradigm shift from the central government as the main provider of sanitation services to placing the community and local governments at the centre of actions and initiatives for sanitation. Despite this rhetoric, several issues in institutional arrangements need to be resolved to make sanitation responsive to the needs and potential of different stakeholders.

In keeping with the global trends, Nepal has also embarked on decentralization by empowering the local governments in both urban and rural settlements. In Nepal, the local governments include municipalities for about 58 urban areas, 4000 village development committees (VDCs) and 75 district development committees (DDCs). Given the nature of most sanitation initiatives which necessitate local participation and consensus, the role of local leaders will become increasingly important. At the recent meetings of elected representatives of local governments, sanitation has emerged as a key dimension of local social development. However, given the experience from many other countries, their participation in direct service provision has a detrimental effect on service efficiency and effectiveness. Political will and interest are, however, crucial to create the necessary emphasis on sanitation, ensure access for the poor and to evolve appropriate partnerships with communities and the private sector.

In the changed enabling framework, the governmental entities will have to be reoriented for new roles with a greater focus on facilitation and coordination. The lead Ministry for water supply and sanitation is the Ministry of Housing and Physical Planning (MHPP). It was created in 1988 and has the responsibility for formulating the sector policies, strategies and planning. The Nepal Water Supply Corporation (NWSC), which was formed in 1989, has the responsibility to provide water and sewerage services in Kathmandu valley (including Kathmandu, Lalitpur and Bhaktapur municipalities) and 10 other large municipalities. The Department of Water Supply and Sewerage (DWSS) is responsible for providing water and sanitation services in all other municipalities and rural areas. In addition, the Ministry of Local Development and Ministry of Health also play an important role in sanitation. All the different government Ministries and departments have their local field staff at either district, VDC or *Ilaka* levels. Coordination efforts are necessary to ensure convergence of these different programmes.

External international agencies play a dominant role in Nepal's developmental programme, both in terms of total investments and influencing policies and programme focus. They have played an important role in bringing the international best practice experience to Nepal's developmental agenda. Many of them have worked with local governmental institutions, NGOs and community groups and to a limited extent have supported efforts to develop a private sector capacity in Nepal. Some of the critical innovations introduced by these agencies include:

- the emphasis on participation and control of water users' committees in delivery of water and sanitation services;
- recognition of women as key change agents in improving hygiene behaviour among households and communities;
- increased attention to hygiene awareness and behavioural approaches for improved practice as an important component of water and sanitation schemes;
- demand-based approach to latrine construction;
- focus on capacity building for urban management among the municipalities;
- introduction of private sector participation in water services; and
- development of micro-credit activities.

Since the decentralization pronouncements, the role of community-based organizations in development activities in Nepal has substantially increased. There are two types of local CBOs. The first are those that have emerged spontaneously through community initiatives, including youth clubs or traditional groups for credit or other purposes. The second type are the ones induced by external agencies, such as the Water Users' Committees (WUCs), farmers' groups under the Small Farmers' Development Program and women's credit groups under the PCRW and recently the Community Organizations created by Participatory District Development and Local Governance programmes. These have generally been formed under different government-linked programmes. In the urban centres, it has been less common to have town level water users' committees. However, at least one successful example of a WUC managing the town-level water scheme exists for the town of Dhulikhel. The Role of neighbourhood-level community groups is found to be important in other aspects of sanitation related to solid waste management and improving hygiene awareness and practice.

Though the official policy for water and sanitation in Nepal recognizes the role of the private sector, so far the role of the private sector has been largely limited to being construction contractors in government programmes and to manufacturing materials required for new facilities. However, local production has tended to be more costly and quality control has been difficult. Under the new policies, it is likely that the private sector will play a variety of roles, as consultants in studies and project formulation, as contractors for solid waste services or even operation of water supply services in large urban centres, and as suppliers. It is likely that the potential of the private sector role will be larger in the Terai region, with its higher densities and income levels as well as better transport and communications systems.

In the context of the foregoing discussion, a close review of the existing institutional arrangements to clarify the

role of different agencies, developing mechanisms for evolving partnerships, the capacity building of the stakeholders to undertake the new roles and participatory and consultative development of coordination and convergence strategies is critical to make sanitation initiatives more effective.

Sector Policies, Programmes and Investments: Over the last decade, there has been an increasing awareness about the need to improve the sanitation situation in Nepal. However, in practice, this has not really materialized. While the policy rhetoric suggests a priority for sanitation, allocations for sanitation have gone down in the Ninth Plan. New approaches and some positive trends are evident in specific projects, though on the whole a consistent and clear strategy is still not evident.

Most sanitation related-initiatives have emerged only during the nineties. While this decade saw a special National Sanitation Policy, it was through a number of innovative projects that the shifts in orientation to sanitation started to develop during this decade. Along with the new projects there have also been some efforts at restructuring institutional arrangements, either the existing ones such as the DWSS or by setting up new ones such as the RWSSDB or the Town Development Fund. The enhanced focus on sanitation is evident from the following:

1992 Enhanced Eighth Plan allocation for sanitation at 12.5 percent of the total allocation for water and sanitation sector, compared to the 3.3 percent during the Seventh Plan, and less than 1.8 percent in the three annual plans after the Seventh Plan (refer to Table 3.1)

1993 Creation of an Environmental Sanitation Section in the DWSS

1994 Adoption of a Nepal National Sanitation Policy and Guidelines for Planning and Implementation of Sanitation Program

1995 Formation of National and District Water Supply and Sanitation Coordination Committees

1997 UNICEF's plan of operations to cusing entirely on sanitation with preparation of the State of Sanitation Report for Nepal

1998 Action Plan developed by the local authorities as reflected in the activities agreed to by the ADDCN

Some of the emerging new trends in the approach to sanitation include:

- Decentralization in planning and implementation of water and sanitation schemes, especially with a focus on district level planning;
- More demand-based approaches with a complete rethinking on subsidies for construction of latrines;
- Sustainability in water and sanitation initiatives through community organizations and NGOs; and
- Enhanced urban sector initiatives with partnerships with communities and the private sector.

While over time the total plan allocation to water and sanitation has increased, the share of sanitation has remained limited. The external share

remains high in the sectoral plan allocations, though a disaggregated analysis for sanitation is not possible due to a lack of information. The general trend in external allocation, however, is towards a lower share of grants. During the Ninth Plan there appears to be a distinct shift away from an explicit allocation to sanitation programmes. This is despite the ambitious sanitation target suggested in this Plan. It is worth noting that over the Eighth Plan period, the estimated capital expenditure made on sanitation by the municipal authorities is almost three times that done through the Five Year Plan allocations. This potential may be enhanced considerably through better pricing policies, tax management and improved cost recovery systems.

Potential Impacts of Improved Sanitation: Improvements in the sanitation situation can yield significant benefits related to improvements in health and nutrition status, contributions of economic growth, impacts on other aspects of human development as well as improved environmental protection. While many of these benefits are difficult to value in economic terms, estimates for some of them suggest that the total annual benefits of improved sanitation is in the range of 4 to 10 billion NRs, or 1.5 to 4 percent of the GDP.

Improvements in sanitation affect individuals, households, communities, society and the environment in a wide variety of ways. These may be usefully grouped into four main types. First, are the most commonly recognized set of impacts due to the improved health status of the population. While these reduce human suffering, they also generate economic benefits due to reduction in the loss of income valued through the human capital approach as well as actual reduction in health expenditure.

The second set of impacts is related to other benefits of improved human development. A variety of benefits are possible, including improved education attendance, especially for girls, with considerable benefits of privacy, dignity and convenience in disemboweling for women. As the poor suffer proportionately far more due to poor sanitation, improvements will also benefit them more. Finally, the possibility of improved community organizations will be greater.

Sanitation improvements will also have benefits through improved economic growth. Besides reduction in worker absenteeism, the more important dimension in Nepal is the greater time and energy possible in self-employment. The time saved from caring for young children suffering from diarrhea will also partially be used for economic activities. With the use of waste to resource concepts, especially for animal waste and urban garbage, it will be possible to enhance agricultural productivity with better organic manure. Tourism revenues, an important economic activity in Nepal, are also likely to be improved. This is evident from the fact that some of the tourism development projects incorporate sanitation as an important component. Lastly, with increased attention to sanitation through partnerships with private sector and NGOs, there is a possibility of considerable employment generation.

Finally, improved sanitation will also enable improvements in environmental quality. First, the quality of the living habitat environment will be improved through better cleaning, drainage and provision of latrines. This will improve community welfare as well as having positive impacts on health. Another major casualty of inadequate sanitation has been the contamination of rivers and ground water. This may accrue intrinsic benefits for both the aquatic life as also greater amenity values for people due to the cultural and religious significance accorded to rivers in Nepal, besides mitigating the adverse health impacts.

Guiding Principles for Sanitation Improvements: Over the last decade, with population growth, increasing settlement densities and urbanization, the need to address sanitation issues has become more important. At the same time, new trends have emerged in relation to demand orientation, decentralization and a rethinking on appropriate technology. The emphasis is now on an enabling framework with wider stakeholder participation. Five basic principles underlie the enabling framework within which the future strategy directions need to emerge. These are:

- *Demand Orientation for Sanitation*: Need for a change in the past supply orientation by linking sanitation initiatives to demand and an enabling framework which focuses on developing sustainable modes of delivery involving partnerships with both the community and the private sector.
- *Decentralization*: Need for decentralization of responsibilities for sanitation to local level, district, village and municipal governments as well as community control and 'ownership' of water and sanitation services.
- *Progressive Technology Choices*: Rapid but sustainable access to safe sanitation requires choice of appropriate and progressive technology which meets minimum standards, is "safe" and uses locally relevant, simple and cost-effective technology.
- *Concept of a Basic Sanitation Package*: A basic sanitation package based on the wider meaning of sanitation includes: access to safe latrines and other sanitary facilities; improved hygiene practices at the household and community levels; community mobilization and organization; sustainable access to credit for households; incentives for the private sector to support sanitation delivery and for urban settlements – separation at source, recycling promotion collection and safe disposal of solid and liquid wastes at the settlement level and in special places.
- *Enhancing and Reprioritizing Public Resources*: Preliminary analysis suggests that investments needed to achieve a full coverage of the basic sanitation package, for the community mobilization and household motivation components, and to achieve the Ninth Plan targets for latrine coverage, are only about NR 4 to 10 billion (or annually MR 0.8 to 1.6 billion) as compared to the estimated annual costs of inadequate sanitation of NR 4 to 10 billion. This comparison suggests a very high level of economic benefits. Thus, there is a strong economic argument to enhance the resources for appropriate sanitation-related programmes. These will, however, need to be reprioritized to focus on the basic sanitation package.

AN AGENDA FOR ACTION

Recommendations for Improved Sanitation

Improved sanitation in its wider perspective needs to become a main emphasis of the development policy in Nepal. This is necessary due to the current low levels of sanitation as well as the considerable benefits which will be derived from improved sanitation, both for the households and the country as a whole. While there have been policy pronouncements for sanitation, it is critical that appropriate and sustainable strategies are developed to realistically attain the improvements envisaged under the Ninth Plan.

	An Action Agenda for Sanitation for Nepal
Advocacy for Sanitation	Commitment at the National Level Advocacy with Local Governments
Social Mobilization for Improved Sanitation	*Advocacy with Donors and NGOs* Broad-Basing the Motivation Strategy Sanitation Campaign Demonstrating Sanitation Improvements Sanitation must continue as usual connected with water supply Sanitation must now also be broad-based (not just in motivation strategy, as mentioned later), that is: integrating it with Health, Education, Environment, Tourism, Housing, Government building, Town planning, management of conservation areas, national parks, nutrition, integrated development projects highlighting sanitation and connecting it to their savings and credit schemes, and networking with the NGOs which now number 50,000 of which some 13,000 are registered with the Social Welfare Council Connect sanitation in particular with schools (school hygiene and sanitation)
Actions for an Enabling Environment	Capacity Building for Planning and Management Enhancing Private Sector Role in Supplies Community-Based Credit Systems
Other Aspects of Urban Sanitation	Municipal Financial Management and Investment Planning Municipal Service Partnerships Benchmarking Municipal/Utility Performance
Resolving Institutional Arrangements	A New Sanitation Policy with Decentralization • Institutional Roles • Financing Systems Local Action Plans for Sanitation Information Systems for Planning and Accountability

Advocacy for Sanitation

In most developing countries the world over, sanitation has generally been neglected in policies and investments. In Nepal, this situation has been worse than in many other developing countries, including its South Asian neighbours and deserves urgent attention. In the past, even the limited allocations often remained unutilized as demand was often not articulated. Widespread implementation of the basic sanitation package will focus on demand articulation and community motivation. Innovative measures will be needed to bring sanitation in the forefront of the political agenda and plan priorities. Advocacy efforts will be required with the national government to seek a greater national commitment to sanitation policies, and especially with the local governments which will have to take a greater responsibility for implementation. Similarly, while many of the donors and international agencies have started to give sanitation a high priority, several others need to add this emphasis.

Social Mobilization for Improved Sanitation

Motivation for sanitation, and especially for use of latrines and improved hygiene practices, has been recognized as important in Nepal's sanitation policies. However, a wider approach within a social mobilization framework would be more conducive to accelerating the popular demand for sanitation. This will involve:

Broad-Basing the Motivation Strategy:

There is a need to broad-base the motivation strategy through wider channels, including the use of different government programmes and media sources, inclusion of the motivation component in several community and household-linked programmes of other government departments and national and international NGOs.

Sanitation Campaign:

A concerted effort through a sanitation campaign, which mobilizes a large number of stakeholders and develops a simple message which captures both the notion of sanitation and its potential benefits, will help to provide an intensive societal boost to the concept of sanitation, as done in other countries such as Bangladesh and Myanmar. Such a campaign can be linked to a national and regional system of annual awards for best practices and achievements in sanitation and new concepts such as *Clean Village, Clean School, Waste to Resource.*

Demonstrating Sanitation Improvements:

The use of sanitary facilities and improved hygiene practices requires basic behavioural changes. This can be aided through provision of demonstration latrines. Government and NGO workers as well as the elected representatives can themselves help to set examples of improved hygiene practices and become role models for the community.

Actions for an Enabling Environment

With increased motivation for improved sanitation, an effective strategy will require an appropriate enabling environment to support delivery systems which are able to effectively respond to the new demands.

Three enabling strategies are identified:

Capacity Building for Planning and Management:

Capacity building of stakeholders, both at the institutional and community levels, to take on the new roles and responsibilities for planning and management of water and sanitation systems will be essential.

Enhancing Private Sector Role in Supplies:

Greater attention needs to be paid to developing an effective framework for participation of the private sector in supplying necessary components and other services such as technical assistance, monitoring, etc. Adequate demand within a manageable area can also support local entrepreneurs, though this approach may work better initially in the Terai region, where the possibility of business viability is greater, both due to higher incomes and densities.

Community-Based Credit Systems:

The sanitation policy in Nepal recognizes that no direct budgetary allocations are needed for household level sanitary facilities. However, one of the key constraints in enhancing access to latrines and other sanitary facilities is community and household access to credit. Access to credit can also be made more broad-based by linking to other programmes which promote community credit systems, providing credit for a variety of needs, including for economic activities, consumption, health needs and crisis-linked credit.

Other Aspects of Urban Sanitation

Urban sanitation issues are critical, both due to their high costs, and the possibility of serious public health problems with the resultant economic losses. In the emerging institutional scenario, responsibility for solid waste and storm water drainage in the rapidly expanding urban areas will rest with the municipal authorities. This requires attention to wider urban management reforms beyond the sanitation sector to evolve more sustainable systems with attention to differences in approach between larger cities and smaller towns.

Municipal Financial Management and Investment Planning:

A review of municipal capital investments in sanitation suggests that improvements in sanitation will need to be linked to larger municipal financial reforms.

Municipal Service Partnerships:

Global experience suggests that municipal authorities need to evolve partnerships with both the private sector

Hygiene & Sanitation behaviour has to be throught at an early age.

and communities for service delivery. In the case of urban sanitation, a variety of partnerships are possible, especially for solid waste management.

Benchmarking Municipal/ Utility Performance:

Comparative assessment, within a framework of benchmarking of municipal performance, can provide useful guidelines for improvements at the local level. Under this, planning for urban sanitation, based on an initial assessment of status, and regular and joint monitoring of performance over time, have to be carried out.

Resolving Institutional Arrangements

Appropriate institutional arrangements are essential to operationalize these recommendations. This necessitates both clarifying the institutional roles for different components of sanitation as well as supporting financial arrangements in the emerging framework of decentralization in Nepal. A major weakness in all service delivery has been a lack of accountability. As new forms are tried and encouraged, better systems of coordination and monitoring to ensure accountability to both the consumers and investors will become critical.

A New Sanitation Policy with Decentralization:

Formation of a new national sanitation policy, defining the institutional responsibilities and financing arrangements within the emerging decentralized framework and the range of recommendations discussed above will help to guide further development.

- *Institutional Roles*: Greater clarity in the roles of national versus local authorities and role allocation based on nature and capacity of different stakeholders. With decentralization, the role of local authorities, including the District Development Committees, Village Development Committees and municipal governments will become more important. Allocation of responsibilities for different components of sanitation, such as hygiene awareness and practice, access to latrines and other sanitary facilities, drainage, sewerage and solid waste management, will need to be defined.
- *Financing Systems*: Most of the investments in sanitation take place through the central budgetary allocations which are routed largely through the national level line departments such as the DWSS and NWSC, or funding agencies such as RWSSFDB and TDFB. However, the general tendency among all the agencies is to combine sanitation investments and allocations with water. This needs to be changed by making sanitation a *separate line item* in budgets, to create the necessary emphasis for sanitation.
- *Institutional Restructuring*: With decentralization, the allocations to the Line Ministries are likely to decline as the DDCs build up local capacity for planning and implementation. This will also affect institutional arrangements for planning and implementation. Some rethinking will therefore be required on the role of DWSS to facilitate the activities of DDCs and VDCs. DWSS can itself be corporatized to provide demand-based services to the local governments and community organizations. The possibility of using alternative

implementation arrangements through the NGOs, community groups and private sector needs to be developed.

Local Action Plans for Sanitation:

With decentralization, local level planning, coordination and implementation, at both the district and village or town levels, will become increasingly important. It will require plans to coordinate activities of different stakeholders in the process, including other relevant government departments, private sector, financing agencies, NGOs and community organizations. Local level plans incorporating local community concerns and providing for convergence across stakeholders will be necessary. Effective coordination is required at all levels, starting from the central level where appropriate legislation and instructions to local staff have to be issued. The coordination of NGO activities in terms of approaches, geographical coverage and institutional linkages, through self-regulatory activities, is essential.

Information Systems for Planning and Accountability:

Decentralization and larger stakeholder participation necessitate more transparency and accountability in the system. Accountability has to be linked to appropriate institutional incentives and participatory systems for performance monitoring. For this, good information systems through district profiles, district information systems and development of annual environment status report would be useful.

In conclusion,

A new Action Agenda for Sanitation in Nepal needs to be taken up for discussion and implementation immediately. This is essential to ensure that various development investments, especially in water and sanitation services, yield health benefits and improve the quality of human development and living environment for the Nepalese population. The significant economic benefits from sanitation also point to the need for a reorientation in the approach to sanitation. The past neglect of sanitation needs to be reversed through an approach focusing on a demand-led strategy with an action agenda developed within an enabling framework. Decentralization and increased emphasis on the role of new stakeholders such as the private sector and community groups will require new forms of coordination and planning, supported by improved information systems.

Section 1

State of Sanitation in Nepal

Sanitation constitutes an important and critical dimension of the living environment, whose neglect leads to major costs of human suffering and economic losses. Sanitation in this sense is increasingly recognized in a wider perspective, incorporating other aspects such as hygiene and sanitation in public spaces, besides the conventional access to latrines. However, despite this understanding sanitation generally receives low priority among the policymakers and people. The continuing neglect of sanitation in Nepal's policy has led to a situation of poor environmental conditions and lack of hygiene among both rural and urban populations. Putting the problem succinctly, sanitation is not progressing and one is left wondering why? Over time, while the access to safe drinking water has improved significantly, the situation of sanitation has probably stagnated or even worsened. More importantly, a proper assessment is generally difficult, as there is very limited desegregated information available on sanitation. It is common to find most studies of water and sanitation generally devoted to the former with only a passing mention of sanitation (Box 1.1).

Box 1.1 A Conceptual Method of the Sanitation Problem

Contamination of Water, Soil & Air
Inadequate Sanitary Practice
Low motivation & lack of future vision

⇧

Sanitation is not progressing - why ?

INSUFFICIENT & INADEQUATE SANITATION

⇧

- Inefficient use & maintenance of infrastructure
- Inadequate sanitary practices
- Low coverage of water & sanitation
- Low use of latrines
- Inadequate use of resources
- Poor institutional framework
  (Neglecting the need of the most vulnerable groups, ignoring the powerful role of the NGOs & private sector)
- Neglect of consumer preferences
- Little effective political & economic demand
- Inappropriate definition & use of the concept
  - too broad or too narrow use of the concept
  - weak focus on household excreta management
  - ignoring local drainage needs
  - risk avoiding approaches stifling innovation and undermining confidence rooted in fear of failure
- Inappropriate approaches
  - adopting universal solution ignoring diverse needs & contexts
  - preference to short-term over long-term objectives
  - Priority for urban over rural needs
  - use of wrong and limited technological options
  - top-down ineffective techniques
    (weak social mobilization social marketing approaches and participatory techniques)
  - ignoring critical issues of behavior
- Poor policy
  - favoring water supply at the cost of sanitation
  - priority to hardware at the cost of the software programmes
  - failure to be sensitive to the needs of children, women and high-risk low income groups
- Lack of political will in the decisions and policy makers
- Insufficient motivation among beneficiaries
  - cultural taboos and beliefs
    (low prestige and recognition of low-cost sanitation and hygiene rooted in excreta taboo and scavenger stigma)
  - distrust of institutions
  - abandonment and avoidance syndrome originating in past failure and weakness of existing policies

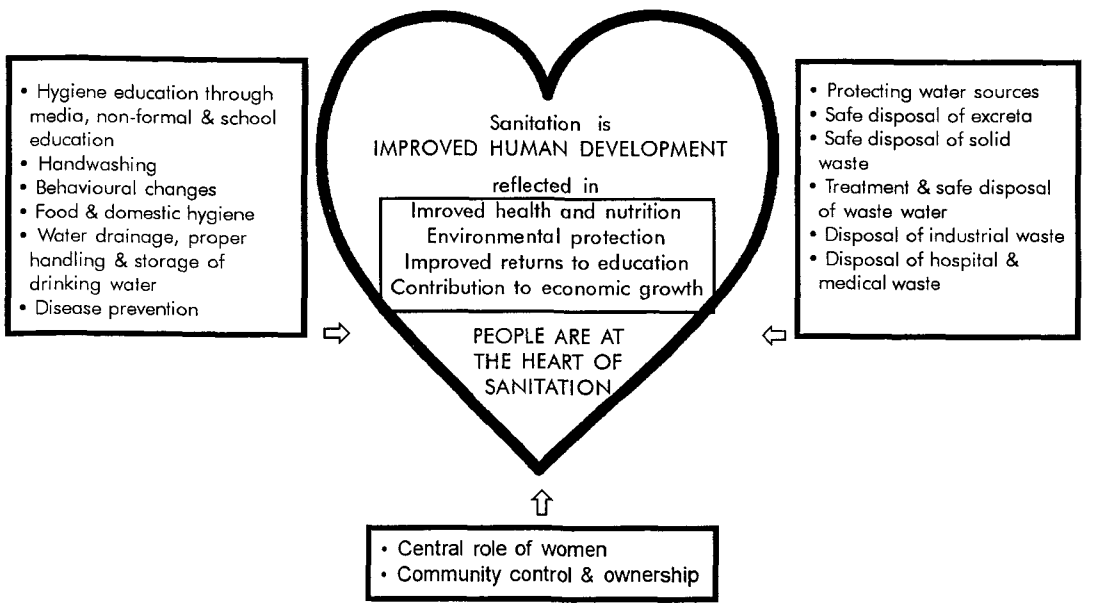
Adapted version of box D-7, Appendix A, UNICEF Handbook

1.1 'Sanitation Is Not Only Provision of Latrines'

Sanitation, when considered in a broad context, includes systems of human waste disposal, management of solid and liquid wastes, practice of hygiene at personal and household levels and control of environmental pollution due to the in adequate treatment and disposal of human and other waste. In general, however, emphasis is placed only on disposal of human excreta and, therefore, provision of household and institutional latrines has been used as a primary indicator of access to sanitation. While it is essential that any assessment of sanitation situation in Nepal involves a wider meaning of sanitation, such an assessment is hampered to a great extent by a lack of availability of reliable information.

Based on the limited information, available it is evident that, while there has been some clear progress in improving

Fig. 1.1 **What Is Sanitation? (The Sanitaion Pie)**



sanitation conditions in Nepal, service levels are still very low, progress has been slow, and, more importantly, there has been a lack of emphasis on the qualitative aspects of sustainability and community acceptance (Fig. 1.1).

Table 1.1 **Improvements in Water and Sanitation Status**
(percentage of households with access to water or a latrine)

Source	1990			1996		
Access to Latrines	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**
NMIS Estimate	-	-	-	12.0[1]	63.0[2]	15.0 [3] (17.6)
Nepal Liv. Stands. Survey[4]	-	-	-	17.7	73.7	(23.8)
NFHS[5]	16.3	69.8	19.8 (21.2)	17.5	73.4	22.5 (23.6)
Plan Targets:						
Eighth Plan (1997)[6]	-	-	-	8.9	48.5	12.9 (13.2)
Ninth Plan (2001)[7]	-	-	-	36.0	60.0	40.0 (38.6)
Access to Water						
NMIS Estimate	-	-	-	50.0	81.0	53.0
Nepal Liv. Stands. Survey[4]	-	-	-	68.8	95.6	70.4
NFHS[5]	?	?	?	61.4	84.7	63.4
Plan Targets:						
Eighth Plan (1997)[6]	-	-	-	71.0	77.0	72.0
Ninth Plan (2002)[7]	-	-	-	100.0	100.0	100.0

Source: 1. For 1990: HMG-MHPP (1991), Vol. II, Annex 10. These estimates are based on assessment by district officials at the four regional workshops for sector review during Feb.-April, 1990 and include latrines constructed through public programmes and privately.

2. For 1996: Estimate in HMG-NPC (1997c).

3. For 1996: HMG - NPC (1997a), p.12.

4. CBS (1996).

5. National Family Health Survey for 1990 and 1996.

6. For Eighth Plan targets HMG-NPC (1992).

7. For Ninth Plan targets HMG-NPC (1997d).

Note: Figures in parentheses are estimates of weighted averages for total population using the same population estimates for all sources. Population estimates are 16.8 and 1.7 million for 1991; and 18.8 and 2.3 million for 1996 for rural and urban population respectively, based on CBS (1995).

Table 1.2 Regional Variations in Sanitation Status - Access to Latrines
(percentage of households with a latrine)

	1996 (NMIS)[2]		
	Rural	Urban	Total
Eastern	na	na	9.0
Central	na	na	14.0
Western	na	na	18.0
Mid-Western	na	na	5.0
Far Western	na	na	4.0
Total	12.0	63.0	15.0

Source: Same as sources 1 and 3 for Table 1.1.

Access & convenience are important factors to take into account with regards to hygiene and sanitation issues.

1.2 Access to Latrines: Safe Disposal of Human Excreta

Access to latrines is the most commonly used indicator of the status of sanitation in Nepal. Information on access to latrines is available from varied sources, which give different results regarding the status and especially temporal improvements. In general, till the late nineties, systematic information on sanitation coverage was not available.

The 1990 status of sanitation is available from two sources: the NPC statistic is based on reports by district officials, and gives a very low estimate of access to latrines at only 6 percent of the total households. This estimate is essentially derived from the number of facilities known to have been constructed under various projects. The results of the Nepal Family Health Survey (NFHS), based on a sample survey of households, indicate a far higher level at 21 percent of total population with access to safe latrines in 1991. This is no doubt the only reliable source for the latrine coverage in Nepal as the NPC/DWSS statistic is not based on

Table 1.3 A Global Comparison of Nepal's Health and Sanitation Situation

Health/Sanitation Index			Nepal	Global Comparison[1]	N[2]
1. Prevalence of child malnutrition % of children under age 5		990-96	49	>Nepal 2	89
2. Under- 5 mortality rate per 1,000		1980	179	> Nepal 18	69
		1996	116	> Nepal 28	133
3. Infant mortality rate		1880	132	> Nepal 13	133
per 100,000 live births		1996	85	> Nepal 28	133
4. Maternal mortality rate per 100,000 live births		1989-95	515		
5. Access to safe water		1995		< Nepal 19	84
% of population	Urban	1995	48	< Nepal 19	68
	Rural	1995		< Nepal 34	68
6. Access to Sanitation		1995	20	< Nepal 12	107
% of population	Urban	1995	51	< Nepal 14	88

Source : World Development Report 1988/89. 1. The column gives the number of countries whose figure is higher than (>) or lower than (<) Nepals.
2. This column presents the total number of case for which data were available.

Box 1.2 Utilization of Toilets: The Role of Demand and Motivation

An evaluation study of two rural water supply and sanitation programmes by New ERA in 1990 brings out interesting results. Both were implemented with UNICEF funding in semi-urban sites in Kathmandu valley. One was through the Ministry of Local Development and the second was executed by the East Consult, a private sector organization.

- Over half of the beneficiaries of toilets indicated that they would have built a toilet even without subsidy - clearly indicating that effective demand needs to be identified rather than providing outright subsidies;
- Over 90 percent of the households who did not have a toilet indicated their willingness to build a toilet (indicating the effect of the programme) and 92.5 percent of the households cited comfort, privacy and prestige as reasons for installing a toilet as against 47.8 percent citing health and environmental reasons;
- Use of toilets by adult males was higher for those who had built the toilets on their own (outside the project), without any subsidies - indicating better utilization linked to higher demand;
- Over time, more frequent and sustained use of toilets was found - indicating that there is possibility of habit formation in toilet use;
- Better utilization rates were visible in projects implemented by the private group as compared to the one implemented departmentally; and
- Most of those willing to build a toilet, however, sought some support due to the dependency syndrome created by the subsidies provided under the projects.

Source: New ERA (1990).

Table 1.4 South Asian Countries: Population with Access to Sanitation Facilities

Country	Percent of population with access to latrine facilities		Per capita GNP
	1990	1994-95	1995, in US$
Bangladesh	20	30	240
Bhutan	40	na	na
India	10	29	340
Maldives	30	na	na
Nepal	6 (20)	6(15 to 24)	200
Pakistan	20	30	460
Sri Lanka	60	66	700

Sources::1990: UNICEF - South Asia (1993), p.14, 1994-95: World Bank (1997). Table 6, p. 224. For Nepal, the values in parentheses indicate the different estimates for 1990 and 1996. Refer to Table1.1 for details.

statistically representative sampling.

For 1996, detailed information is available from several sources (including from the third cycle of NMIS,npc, Nepal Living Standards Survey and NFHS), all indicating the status at about 17 to 24 percent of total population with access to latrines. The NFHS information shows that the situation from 1990 to 1996 has improved only marginally, with an increase from 21 to 24 percent of population (Table 1.1).

Constructing of latrine from local available materials.

Regional variations in status suggest the situation to be better in the central and western zones, and the mountain regions are generally better than the Terai. The Eighth Plan targets were actually exceeded in 1996 itself (Table 1.2).

An in the case of global comparison, (Table 1.3), in relation to its South Asian neighbors, too, Nepal fares poorly, as highlighted in Table 1.4. While other South Asian countries have a higher income level, even Bangladesh, which has a per capita income similar to Nepal, fares better and shows improvements during the early nineties. It would be useful to draw lessons from the integrated strategy adopted by Bangladesh since 1987. This has produced dramatic improvements, with the coverage increasing from 6 percent in 1987 to 30 percent in 1994-95.

The information on status needs to be assessed carefully as it does not take into consideration the qualitative aspects of access. For example, many evaluation surveys indicate that a large proportion of the latrines is often not functional. Further, access does not ensure actual utilization, especially in the rural areas where cultural practices and habits still inhibit actual use. Often, poor quality of toilets built through government programmes also results in ineffective use.

Table 1.5 Regional Incidence of Diarrhea

Region	Percent of children with an episode of diarrhea in last two weeks
Eastern	19
Central	18
Western	16
Mid-Western	18
Far Western	14
Urban	14
Rural	17
Total	18

Source: HMG-NPC (1997).

Table 1.6 Morbidity due to Sanitation-Related Ailments

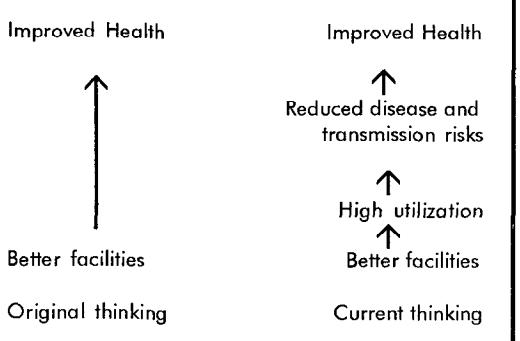
Type of Ailment	Percent of total ailments
Sanitation-related skin & scalp diseases	29.8
Worm infestation	14.9
Diarrhea	12.6
Dysentery	7.6
Gastritis	7.0
Total due to poor sanitation	71.9
Other	28.1
Total	100.0

Source:
MCH (1995) as reported in *Nepal Human Development Report* 1998, p. 59. Original information is based on cases reported in public health institutions.

An important dimension, however, seems to be the lack of felt need for latrines, especially among the rural habitants. Some of the studies have reported "no felt need" as an important reason for not building a latrine. For example, the NMIS reports that 66 percent of the households gave no felt need as a reason for not having a latrine (HMG-NPC, 1997). However, studies of different programmes indicate that such willingness can be enhanced through initial community education, and utilization is influenced considerably by genuine demand and effective maintenance (Box 1.2).

Other studies, such as the one by Water Aid (1995) for the NEWAH projects with the Small Farmers Development Groups, show that once motivation is created, the reasons given by the respondents for not building a toilet change to "lack of resources or materials" rather than "no felt need". This is especially true as most latrines being promoted require considerable procurement of materials and high financial costs in relation to the prevailing income levels in Nepal. Another study with a much larger sample and using a Knowledge-Attitude-Practice (KAP) approach highlights

Figure 1.2 Importance of Improved Hygiene Practices



Source: Adapted from Wijk and Moure (nd), Fig. 3.

the main reasons as "lack of money, technical knowledge and land" (DWSS/ UNICEF undertaken by New ERA, 1994, p. xvii). This study also finds a very high level of use (99 percent) among the 35 percent reference population, which owned a private latrine.

For good maintenance of latrines, access to adequate water is also necessary. These constraints, combined with negligence, lead to poor maintenance of institutional toilets (schools and offices) which have been provided through government support.

In the urban centres, the situation with respect to the felt need for toilets is seen to be different. A study of communities in 13 different towns by SEARCH (nd) reveals a high preference for toilets. The main constraints the communities face are availability of land and a lack of access to credit.

1.3 Incidence of Diarrhea and Other Sanitation-Related Diseases

One of the strongest links of improved sanitation is with the incidence of diarrhea-related diseases, especially among children. For this reason, the incidence of diarrhea among young children below 5 years of age is often used as a surrogate indicator for status of sanitation. These diseases are widely prevalent in Nepal with about 18 percent of children reporting an episode of diarrhea in the last two weeks in a recent NMIS survey (refer to Table 1.5).

They also account for a major proportion of childhood ailments and a high proportion of childhood deaths. Data on morbidity and mortality are generally incomplete and provide only a tentative indication of the health status. Based on the available information, Gautam and Shrestha (1994) indicate that diarrhea continues to be one of the leading causes of childhood deaths (at 16% to 25%). In morbidity patterns, diarrhea is a leading ailment at about 13% of all the ailments reported, following skin diseases and worm infestation at 30 and 15 respectively. On the whole, almost 72% of the total ailments are affected by poor or inadequate sanitation (Table 1.6).

1.4 Other Aspects of Sanitation

Within sanitation, access to latrines has received greater attention, partly due to its relatively easy measurement. However, other aspects of sanitation are equally important in order to maximize the overall positive impacts on health, productivity and environmental quality. This is recognized within Nepal as evident from the definition of sanitation suggested in the National Policy on Sanitation (1994). It included besides the "proper methods of disposal of human excreta", aspects such as "personal and food hygiene, proper handling, storage and use of drinking water, proper solid and liquid waste disposal and proper animal waste disposal".

Box 1.3 Solid Waste Management in Kathmandu Valley

In Kathmandu Valley, the situation was somewhat better with the implementation of an integrated solid waste system with full donor support, under which a Waste Management and Resource Mobilization Centre (WMRMC) was set up. It is estimated that of the 140 tones generated daily in the Valley, 65 percent is actually collected. About 50 percent is disposed through a sanitary landfill operated by the Centre. However, unsustainability of such grant-based support is evident from the emerging problems after suspension of the grants. The WMRMC, set up under a special statute, now faces difficulties. It may need to be dissolved as, under the Town Development Committee Act 1992, the solid waste functions have now been transferred to the municipalities. On the other hand, the municipalities may not have the necessary technical capacity to undertake this activity. This is evident from the municipal handling of the Centre's operations. Due to poor operations, citizens in adjacent communities have objected and it has become necessary to periodically close the disposal site. This results in extra dumping near the rivers adding to the pollution of rivers. It is clear that the municipality needs to explore the possibilities of unbundling and partnerships with private sector and community groups in solid waste management. Considerable experience of such partnerships exists in other countries, including in India from which lessons may be drawn.

Waste management is a growing problem in Nepal

Hygiene Awareness and Practice:

The undue emphasis on quantitative targets of latrine coverage has generally led to inadequate attention to hygiene awareness and practices. However, it is known from available literature that improvement in health, which is the ultimate objective of sanitation policies, depends as much, if not more, on improved hygiene practices as on access to and use of latrines. Current thinking, therefore, places emphasis on improvement in hygiene practices (Fig. 1.2). The focus is also on the behavioural aspects of hygiene practices, as it is realized that if hygiene behaviour improves, improvement will follow in all other aspects of sanitation. This would substantially reduce child and adult morbidity.

Government and donor programmes, since the late eighties, have increasingly focused on hygiene-related aspects, including personal and food hygiene, control of indoor air pollution and proper disposal of animal waste. However, assessment studies have been very limited and, therefore, the levels of community and household awareness and practices are known only to a limited extent. Some of the studies, however, indicate that despite a fairly good level of awareness of personal hygiene, practice often lags behind (New ERA, 1994). In general, many studies find that educating women about improved hygiene practices is far more effective than educating men (New ERA, 1990, p.13).

For good personal hygiene, water is also essential. Despite the improvements in availability of water, often quantity is quite limited and a significant proportion of the population continues to lack access. This probably makes it difficult to

Box 1.4 Sanitation Problems with Urban Growth in Janakpur Town

The town of Janakpur symbolizes the effect of rapid urban growth on sanitation systems. While over the last two decades considerable development has taken place in Janakpur, with all-weather roads, electrification, municipal water supply as well as an airport, growth has not included improvements in sanitation conditions. Public sanitation has definitely deteriorated. In the past, men and boys defecated in the paddy fields which were about 100 to 200 metres away. Women avoided such journeys and instead used vegetable gardens and bamboo groves adjoining their houses. The rural ecology of Janakpur could absorb such contamination due to the diluting effect of rain and effect of sunlight. However, with growth, cultivated land receded, houses took place of gardens, administrative offices were built in orchards and the bazaar grew across the paddy fields. For many families, private latrines were not affordable. For men, journey to the fields became too long and they began to perform ablutions along the banks of the nearest tank with complete deterioration of the environment and unbearable stench in the area. It is evident that the increasingly urban ecology of Janakpur can no longer support the rural practices of the urban poor.

Source: Burghart (1993)

make improved hygiene practices more widespread. Hygiene practices for water transportation storage and use also need attention. While only 50 percent of the households use some methods for safe storage of water and only 41 percent cover their water containers, all households report washing of vessels before filling and over 95 percent throw away stale (or the previous day's) water, probably an influence of good cultural practices.

Other such good cultural practices include: washing hands before and after eating, taking off shoes before sitting down for a meal, cleaning the mouth after meals and observing *jutho* which prohibits eating food already tasted by another person. Some good practices are found among specific ethnic groups. For example, the Tharu community requires all women to take a bath before entering the kitchen, regardless of economic status, water source and season. However, in general, children's excreta are considered harmless and, therefore, adequate protection from these is not a priority, resulting in contamination.

Solid Waste Management:

The importance of solid waste management is evident more in urban areas where it is not possible to dispose garbage easily and inappropriate solid waste practices lead to blockages in the limited roadside drainage. With the high urban growth in Nepal, this problem is likely to increase further. Information available for solid waste is even more limited than for other aspects of sanitation. "It is estimated that only 18 percent of the solid waste is collected by volume, which reflects the inadequate resources mobilized for this purpose (MSUD, 1990 as reported in World Bank, 1993a). In most cities proper disposal sites have not been identified. However, more efforts have been made in the Kathmandu Valley (Box 1.3).

The work done under the GTZ-funded Urban Development through Local Efforts (UDLE) initiative suggests that solid waste is often an important felt need at the local neighborhood level (*tole*). In Kathmandu, the private sector and NGOs now operate in several areas in

a commercially viable manner through user fees. Under the GTZ project in Bhaktapur, participation of Tole Sudhar Committees has helped to significantly improve the cleanliness in streets and public spaces. This may have also helped in enhancing tourism activity here. An additional aspect, which needs urgent attention in this context, is the proper handling and disposal of hospital waste, especially in some of the larger towns.

Collection and Treatment of Wastewater in Urban Centres:

Collection of water is relevant for both storm water and sewage. Information on these aspects is also not readily available, though in recent years there is now an increasing emphasis on proper drainage. Sewerage facilities are very limited throughout Nepal, with only some limited provision in the Kathmandu Valley. In Kathmandu core city area, sewerage systems are available and, under German funding, the city of Bhaktapur now has full sewerage coverage. However, even in these cases, treatment is inadequate and even the available facilities generally are in disrepair and most of the sewage, either through the sewerage system, or sometimes even through the open drains, flows into the rivers without any treatment. Treatment is also at times hampered as farmers have tapped the sewerage lines directly to fertilize their fields. It is also common to find the households unwilling to connect to a sewerage system due to the high connection costs (World Bank, 1993a, p.11).

In most other urban centres, while new buildings at times have their own on-site sanitation facilities, most others continue to rely on open areas for defecation and open drains or the nearest pathways for sullage removal (HMG-NPC, 1991, Volume I, p. 54). Over time, with growth and expansion of the town's physical area, earlier rural sanitation practices are no longer feasible and attention is required for the provision of wastewater collection systems (Box 1.4).

Sanitation in Public Places:

With tourism being an important economic activity for Nepal, sanitation in public spaces assumes greater importance. While systematic information on the status of public spaces is not available, several funding agencies have taken this as an important aspect of tourism-linked projects, such as those by the GTZ in Bhaktapur and Patan as well as the ADB project for Pokhara. For example, the ADB project report for their Second Tourism Infrastructure Development Project clearly highlights the fact that the poor environmental conditions in Pokhara, the second most visited destination in Nepal after Kathmandu, are affecting the development of tourism adversely. Poor public sanitation is also polluting Phewa Lake, which is also a tourist attraction (ADB, 1996a).

Another important aspect is the poor sanitary conditions in public buildings, including the education and health institutions. While no detailed information is available, most recent water and sanitation schemes provide for institutional public toilets, both to improve sanitation and to provide demonstration in the use of toilets. Anecdotal evidence suggests that the condition of these toilets is dismal. Unfortunately, while public offices generally have sanitation facilities, provided through public resources, their maintenance does not receive any priority. Some of the problems associated with poor sanitation and hygiene in other

public spaces include those in eating places and restaurants, vegetable and food markets and public offices.

1.5 Local Participation in Information Systems

It is clear that inadequate emphasis also reflects on the lack of any systematic information regarding environmental conditions and their linkages to the health status of the population. A systematic effort with participation by local governments and community groups will help to create awareness and popular support for actions at the local level. Essentially, the focus should not be on information collection only for upward transmission but more to support local decision-making processes. It is also critical to ensure information flows both ways. The reverse flow of analyzed information from the central to the local levels is equally important to make comparative assessment possible at the local level.

The move towards more decentralized approaches to planning and implementation of social policies also suggests the need for better local information systems which are critical for any rational planning. Some of the recent efforts at preparation of district water and sanitation profiles to support district level planning, which are being supported through the ADB Fourth Project, UNICEF and others, can also be very useful tools. UNICEF

Table 1.7 Status of Sanitation: Perceptions of Local Representatives

Aspect of Sanitation	Perceived Status
Sanitation Coverage	Lack of adequate number of household latrines Lack of adequate number of public toilets Lack of proper water and sanitary toilets in schools
Environmental Sanitation	Careless throwing of waste in public places including roads and streets Widespread open defecation along rivers, tanks and open grounds Lack of drainage facilities at the market places.
Awareness and Public Consciousness	Low awareness regarding the importance of the wider meaning of sanitation Indifferent responses of even educated persons Low literacy level and lack of awareness among women
Waste Management	Inadequate collection of garbage resulting in waste accumulation in urban areas Lack of containers for garbage collection at the local level Lack of appropriate dumping sites Disposal of waste in an unsanitary and haphazard manner
Markets/Food Handing	Unplanned weekly markets-*haats* Lack of waste disposal systems for markets Inappropriate, unclean handling of vegetables and meats in markets Widespread contamination of food
Drinking Water Sources	Polluted sources of water Shortage of water Polluted drinking water at the household level

Source: UNICEF (1998).

has also supported the participation of local elected representatives through different measures, such as a national seminar organized by the Association of District Development Committee of Nepal in July 1998. Table 1.7 highlights the local perceptions of the status of sanitation sought through direct responses from the DDC and VDC chairpersons and other municipal representatives. Such concerns need to be supported through a systematic assessment of the sanitation status and environmental conditions. Tools such as the participatory preparation of an annual environmental status report need to be developed.

Section 2

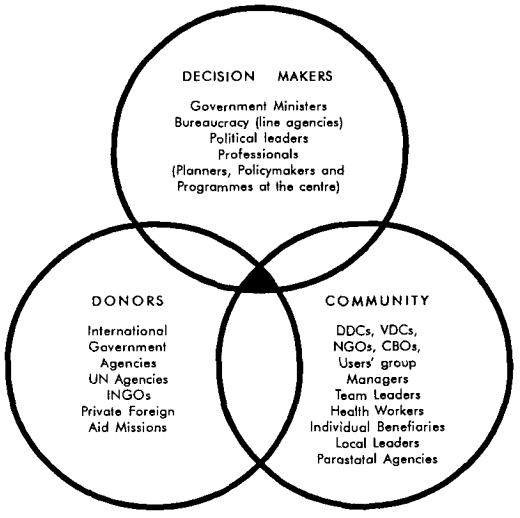
Stakeholders in Sanitation

The Eighth Five Year Plan of Nepal identifies one key institutional issue as the need to shift the focus of the Central Government from providing direct service provision to facilitating the provision of services by a variety of private and local government entities in an efficient and equitable fashion. This is also in keeping with the global trends in decentralization, community control and increased reliance on the private sector. From the paradigm of a dominant public sector role, with government as the main provider of sanitation services, this outlook recognizes different stakeholders and places the community and local governments at the centre of actions and initiatives for sanitation. These changes are also evident in the policy rhetoric in Nepal, though issues in institutional arrangements will need to be resolved to make sanitation responsive to the needs and potential of different stakeholders.

Considering the enormity of the problems and the issues at stake, initiative by the government alone will not be enough. As a steward and stimulator of the new sanitation movement, it does have a strategic role in planning and initiating that process. The government in building awareness, broadening support, creating commitments, as well as in seeking accountability and maintaining and monitoring the overall dynamics. The movement, however, demands the role of at least two more groups of actors – the donors (as facilitators) and the community including the local government and NGOs (as implementers) each of which will have to redefine and, if necessary, reinvent their existing roles in the new decentralized context that is emerging (Fig.2.1). A broad consensus for this purpose is essential for them to interact meaningfully. The larger this consensus – represented by the shaded portion in the diagram – the

Fig 2.1 Stakeholders in Sanitation

The hatched part stands for the joint interface between the three components.



better the uniformity in policies, planning and programming measures and higher the overall impact.

2.1 Decentralization and Local Governments

In keeping with the global trends, Nepal has also embarked on decentralization by empowering the local governments in both urban and rural settlements (Box 2.1). In Nepal, the local governments include municipalities for about 58 urban areas, 4000 village development committees (VDCs) and 75 district development committees (DDCs).

Municipalities:

Under the changes brought through the Municipalities Act of 1992, municipalities have the responsibility for several aspects of sanitation, including solid waste management and on-site sanitation. It is, however, not very clear to what extent they are able to perform their functions. For example, though over 77 percent of their revenue accrues through their own sources, octroi constitutes about 73 percent of this income. A large proportion has revenue surplus, almost half of which is used to meet development expenditures. However, with the new Local Self-Government Act, it is likely that octroi will be abolished, putting pressure on local governments to develop alternative sources and maximize the revenue from property tax and user charges. The GTZ-funded project Urban Development

Box 2.1 Decentralization in Nepal

The Local Self-Government Act which was passed in late 1998 by the parliament of Nepal and obtained the royal seal in May 1999 heralds a new era of governance in Nepal. Under this Act, the local governments, in the form of District Development Committees (DDCs), Municipalities and Village Development Committees (VDCs) are envisaged to become more important organs of government. Its major highlights include: empowerment of the users / beneficiaries, clear delineation of functional responsibilities and authority, clear directions for local level planning, quasi-judicial functions of the local governments and strengthening of local government resources. The Bill also provides for additional revenue resources, principles which would guide the central government in this regard and specifies the revenue items which must be shared with local governments. It provides for the setting up of a Finance Commission to decide the distribution of fiscal resources between the central and local governments. Over time, this will give greater powers to the local governments and provide a rational and systematic basis for resource allocation to local governments.

with Local Initiative (UDLE) has been working with the municipalities over the last several years to improve urban planning and municipal financial management. The emphasis in such efforts will have to be on local capacity building for partnerships and for better urban management.

District and Village Development Committees (DDCs and VDCs):

Other local governments under decentralization are the DDCs and VDCs, which have been formed under their respective Acts. They will play an increasingly

Box 2.2 Resolutions for Sanitation Action by Associations of Local Governments

On August 9, 1998 different associations of local governments, namely, the Association of District Development Committees of Nepal, the Municipalities Association of Nepal and the Association of Village Development Committees of Nepal, met at Kathmandu to discuss the issues related to sanitation, education, health and nutrition as the cornerstone of social development (Appendises 1 and 2). The importance of sanitation was recognized by all the participants at the meeting. This is reflected in the following main points of the resolution:

- Local bodies will incorporate the primary health and sanitation sectors in their priority areas.
- A sanitation campaign will be conducted in March 1999 due to general elections in May.
- Local bodies will adopt drinking water, nutrition, food, diarrhea, vaccination, income generation, employment promotion, family planning and safe motherhood as priority programmes.
- Local bodies will conduct all development programmes as integrated programmes of the VDC, the DDC and municipalities.
- Local bodies will conduct all development programmes by making settlement level plans, forming community-based organizations and integrating the organized groups with a view to conducting the aforesaid programmes.
- Local bodies will construct latrines and conduct compulsory child and women vaccination programmes within one year in the families of representatives up to the ward level.
- Local bodies will make it compulsory to send all children, over 6 years of age, of the families of local government staff, to schools.
- Local bodies will make all women members (above the age of 15 up to 49 years) of families of all the representatives literate within one year.
- This workshop/seminar considers that development includes not only physical development but also positive mental development and, for this reason, expresses its commitment to make participatory processes more effective for sustainable development.

Source: Adapted from a note by N. L. Shrestha UNICEF, 1998, mimeo.

important role as the block grants provided to them can be used for water and sanitation activities. However, more importantly, they will play a more active role in implementation of the government programmes for water and sanitation. The Acts authorize them to enter into contracts with any governmental or non-governmental organizations for carrying out developmental activities. Any project which has funding support from the DDCs will need to have a contract with it and others have to be implemented in coordination with the DDCs. VDCs also have similar powers and responsibilities, especially for non-formal education, health and hygiene activities, drinking water schemes, and income generating programs.

Role of Local Elected Representatives:

Local Self-Government will enable locally elected representatives to emerge as major stakeholders in the provision of local services (Box 2.1). Given the nature of most sanitation initiatives which necessitate local participation and consensus, the role of local leaders will become increasingly important. At the recent meetings of elected representatives of local governments, sanitation has emerged as a key dimension of local social development (Box 2.2). At another meeting of the mayors of municipalities in Nepal to discuss the possibilities of private sector participation in urban services, solid waste management, an important component of urban sanitation, was cited as a critical need by each of the ten mayors present.

Thus, the mayors would be a main stakeholder to put sanitation as a key local agenda in local programmes. However, given the experience from many other countries, their role will need to be to set this agenda rather than engage or participate in direct service provision. Most experience suggests that political influence in operations has a detrimental effect on service efficiency and effectiveness. On the other hand, political will and interest are crucial in creating the necessary emphasis on sanitation, ensuring access for the poor and to evolve appropriate partnerships with communities and the private sector.

2.2 Role of Government Ministries and Public Agencies

In the changed enabling framework, the governmental entities will have to be reoriented for new roles with a greater focus

Woman collecting water for domestic use.

Table 2.1 Roles and Activities of Government Ministries and Agencies

Ministry/Agency	Coverage	Role and Nature of Activities
National Planning Commission	· National level	· Coordination of overall national and sectoral plans in National level policy development
Ministry of Housing and Physical Planning (MHPP)	· Country	· Budget formulation · Lead agency for water and sanitation · Policy development
Department of Water Supply and Sewerage (DWSS) under the MHPP	· Country	· Programme implementation · Training · Implementation of international agency-funded projects
District Water Supply and Sanitation Offices (DWSSs) under the DWSS	· Within each district · Jurisdiction in the entire district	· Implementation of district level activities of DWSS · Publicity, campaigns for sanitation · Project execution · Coordination with DDCs · Technical support to DDCs and VDCs
Nepal Water Supply Corporation (NWSC) under MHPP	· Five municipalities of Kathmandu Valley · Other ten municipalities	· Complete responsibility for planning, implementation and operation of water and sewerage · Collection and treatment of wastewater in selected municipalities
Rural Water Supply and Sanitation Fund Development Board (RWSSFDB), under the MHPP set up under the World Bank-funded project	· Potentially the entire country · Limited initially to all districts in Central and Western development regions	· Providing financial assistance to rural water supply and sanitation activities through community groups with project management by NGOs as Support Organizations (SOs) · Credit for toilets through community-managed sanitation fund · Dissemination of health and sanitation messages through health workers and media
Department of Health Services (DHS) under the Ministry of Health (MOH)	· Country	· Activities related to control of diarrhea-related diseases · Provision of health education
Ministry of Education (MOE) and District Education Offices	· Country	· Dissemination of sanitation messages through teachers · Policy development for environmental protection and guidelines
Ministry of Population and Environment (MPE)	· National level	· Activities related to women development
Ministry of Local Development (MLD)	· Country · Rural development projects in selected districts	· Production Credit for Rural Women (PCRW) through local groups, including for sanitation · Supervision of rural development projects with sanitation components
Ministry of Tourism (MoT)	· Inselected districts with tourism and trekking potential	· Environmental guidelines for tourists · Ensuring cleanliness in tourist areas
Ministry of Women and Social Welfare (MWSW)	· Country	· Focus on women's issues through its Women in Development Programme
Ministry of Water Resources	· Country	· Allocation and monitoring of overall water use · Quality standards of disposal in water bodies
Agricultural Development Bank of Nepal	· Country	· Implementation of Small Farmers' Development Program which forms farmers groups who also take up water and sanitation projects
Social Welfare Council (SWC)	· National level	· Coordination of NGO and INGO activities

on facilitation and coordination. The lead ministry for water supply and sanitation is the Ministry of Housing and Physical Planning (MHPP). It was created in 1988 and has the responsibility for formulating the sector policies, strategies and planning. The Nepal Water Supply Corporation (NWSC), which was formed in 1989, has the responsibility to provide water and sewerage services in Kathmandu valley (including Kathmandu, Lalitpur and Bhaktapur municipalities) and 10 other large municipalities. The Department of Water Supply and Sewerage (DWSS) is responsible for providing water and sanitation services in all other municipalities and rural areas. In addition, the Ministry of Local Development and Ministry of Health also play an important role in sanitation. From 1992, the local governments through the DDCs, VDCs and municipalities have also been playing an increasing role in influencing, evolving and implementing water and sanitation strategies (Table 2.1).

Department of Water Supply and Sewerage (DWSS):

DWSS is the main agency responsible for water and sanitation in Nepal. It was established in 1972, initially under the Ministry of Water Resources. Now it is under the MHPP and all the rural and small town schemes are under this agency. In 1988, at the time of this transfer, the Community-based Water Supply scheme funded by the UNICEF also came under its purview. In 1990, under the decentralization initiative, directives were issued for community control, which especially included the mandatory formation of water users' committees (WUCs). In 1989, a training unit, Central Human Resources Development Unit (CHRDU), was created to provide special training to DWSS and NWSC on management, supervision and technical aspects as well as for trainers training for local village maintenance workers (VMWs) and water users' committees. In 1993, a separate Environment Sanitation Cell was created at the DWSS to put emphasis on sanitation.

Nepal Water Supply Corporation (NWSC):

The larger 13 towns in Nepal, including the three in the Kathmandu Valley are under the jurisdiction of the autonomous agency for water and wastewater services, NWSC. The first water and sewerage board was formed in 1974 as a part of the initial IDA-funded water supply and sewerage project. This was converted to a corporation in 1984 and later formed as NWSC in 1989 under the NWSC Act. Successive institutional structures have enjoyed greater autonomy, especially to attempt a move towards an economic tariff structure. Under the NWSC Act, it would be possible for the HMG to expand its jurisdiction, though at present the World Bank under its loan covenants prevents any unsustainable expansion. As utility, however, NWSC's financial and operational performance has not been satisfactory. The World Bank's Urban Water Supply and Sewerage Project (UWSSP) incorporated an institutional development component which was 15 percent of the total project cost, along with a number of covenants related to tariffs and expansion. NWSC has prepared a fifteen years development plan for 1990-2005. The first phase till 1999 is being partly financed by the World Bank's UWSSP. Of the total expenditure of 181 billion Nepali rupees, 15.9 percent is earmarked for sanitation -related components.

Ministry of Health (MOH):

The Ministry of Health also plays an important part in the sanitation sector, although its potential role is probably much greater. Like all the sectoral ministries, MOH is also organized hierarchically through offices at the central, regional, district, ward *(Ilaka)* and village levels. At the lowest level is the Village Health Worker (VHW), who is in charge of health education and forming mothers' groups along with other responsibilities. In addition, the Female Community Health Volunteers (FCHVs) are responsible for encouraging preventive health practices. Despite its extensive network, project report for the Nepal Rural Water Supply and Sanitation project (NRWSSP) asserts the weaknesses in this system, as it is overloaded and not adequately trained to carry out its functions.

Ministry of Local Development (MLD):

The Ministry of Local Development was till 1988 responsible for the UNICEF-funded Community Water Supply project. However, since this was shifted to DWSS, its responsibility is now limited to the Integrated Rural Development Projects, most of which have some water supply and sanitation components. In addition, its Town Development Officers (TDOs) are the member secretaries of the DDCs at district levels. The Women Development Division (WDD) of this Ministry attends to women's development issues. Its Production Credit for Rural Women (PCRW) supports development through women's groups. This programme began in 1982 and now has expanded to 67 districts from an initial five. The HMG's policy has been to use this strategy for improving the situation of women as well as a national poverty alleviation programme (ADA, 1997).

Rural Water Supply and Sanitation Fund Development Board (RWSSFDB):

Under the Rural Water Supply and Sanitation Project (RWSSP), a new autonomous agency has been set up through the government to implement the project through support organizations (SOs) including NGOs and VDCs. It is envisaged as a different mode of delivery to support projects with extensive community participation. The community organizations receive special emphasis with a separate legal identity and capacity building support. The project cycle involves initial planning, detailed feasibility analysis and preparation phase with a total project period of almost 24 months. RWSSFDB also provides training and other technical assistance to the SOs over the life of the project.

Other Ministries and Agencies:

Several other ministries also have an influence on sanitation activities, such as the Ministry of Education and Culture (MEC) which includes health education in school curricula, and its teachers' force (some 68,000 normally) who potentially could act as important agents of change in hygiene in schools and communities; the Ministry of Environment which is in the process of forming the new environmental legislation; the Ministry of Women and Social Welfare which focuses on women's issues through its Women in Development programme; and the Ministry of Water Resources which allocates and monitors overall water use. In addition, the activities of the NGOs and INGOs are

Table 2.2 Roles and Activities of International Agencies and Selected NGOs

Agency/ NGO	Coverage	Role and Nature of Activities
UNICEF	· National level for policy support · Selected VDCs in 40 districts for programme support	· Policy support to DWSS and training support through CHRDU · Pilot programme with emphasis on a basic sanitation package · Programme support to NGOs, including NRCS, NEWAH
World Bank	· Support to NWSC through the UWSSP · Support to RWSSFDB for selected districts in Central and Western Development Regions	· Programme support through funding for urban and rural water supply and sanitation · Policy support through technical assistance for private sector participation in water and sanitation activities
Asian Development Bank (ADB)	· Support to DWSS through the First, Second, Third and Fourth Rural Water Supply and Sewerage Project · Support to selected municipalities for solid waste management through Tourism Development Project	· Programme support through funding for urban and rural water supply and sanitation · Policy support through technical assistance for private sector participation in water and sewerage activities · Programme support for solid waste management and municipal capacity building
World Health Organization (WHO)	· National level	· Policy support on environmental sanitation · Technical assistance for management of hospital wastes
United Nations Development Programme (UNDP)	· National level · Selected districts (about 40) for programme support	· Policy support for local development planning initiatives · Programme support through the Participatory District Development Programme (PDDP), Local Governance Programme (LGP), Parts and People (PAP) including for district information system, district planning and capacity building of local level elected representatives
GTZ (Urban Development through Local Efforts - UDLE)	· National level for policy support · Selected municipalities for technical assistance and programme support · All urban areas for Town Development Fund (TDF)	· Policy support in development of municipal legislation · Programme support for urban management, including for solid waste management · Funding support through the TDF, including for solid waste management, toilet construction and drainage-related activities in urban areas
Department for International Development (DFID)	· Various hill districts	· Assistance to Gurkha Welfare Trust for water and sanitation activities
Japanese International Cooperation Agency (JICA)	· Various hill and Terai districts	· Assistance for school construction programme including toilets in 40 districts
FINNIDA Rural Water Supply and Sanitation Project - Phase I and II	· Selected districts in the Lumbini Zone	· Assistance to promote decentralization in water and sanitation through enhanced role of VDCs, Water Users Committees and private sector
United States Agency for International Development (USAID)	· National level	· Technical assistance for micro-credit through the Centre for Micro-Finance
Nepal Red Cross Society	· Three Terai districts and four hill districts	· Assistance for water and sanitation with a focus on local cooperation and participation of Users' Committees
Nepal Water for Health (NEWAH)	· Different hill and Terai districts	· Integrates community water, sanitation and hygiene education project through Community-Based Organization throughout the country. Also school sanitation and child to child activities.
CARE Nepal (Remote Area Basic Needs Project	· Selected remote districts	· Assistance for community infrastructure development including household and individual latrines
Helvetas (Self-Reliant Drinking Water Support Programme - SRWSP)	· Selected VDCs in the Western region	· Assistance for integrated sanitation activities with emphasis on behavioural aspects and improved sanitation habits

Box 2.3 NGO Coordination Committees

After restoration of the multi-party democratic political system in Nepal since 1990, the Non-Governmental Organizations (NGOs) are being given an important role in national development. NGOs have started to establish themselves as change agents. Some of the NGOs based in cities have managed to operate successfully by getting financial and technical support from donors. However, other NGOs, especially at the district level, due to their limited technical skills and resources, have remained rather marginal in the development efforts. Still, these local NGOs are in a better position to assess and deal with the grassroots problems due to their proximity and flexible approach. At the same time, for an agency such as the UNICEF, with its limited project staff, it was difficult to deal directly with the local NGOs. Recognizing the potential of these NGOs, UNICEF Field Offices started to support the establishment of an NGO network at the district level. An NGOs' Coordination Committee (NGOCC) was formed in Kavre district. It became the responsible body to coordinate with all the NGOs in the district in the matter of preparing project proposals, mobilizing external assistance, channeling funds to different NGOs, monitoring and reporting on the programmes to concerned agencies (DDC, UNICEF, line agencies, etc.). Success in Kavre district led to the establishment of similar NGOCCs in five other districts in the Central Region also. The concept of NGOCC has gained popularity and other donor organizations have also approached them to channel their support. NGOCCs have now also started to be established in other region of the country.

Source : Based on a note by R.Shakya, 1998

monitored by the Social Welfare Council (SWC). All INGOs and NGOs which operate in more than one district have to register with it. The Agricultural Development Bank of Nepal has a Small Farmers' Development Programmme, under which farmers groups are formed, many of which also take up water and sanitation projects. Lastly, the National Planning Commission (NPC) "coordinates overall national and sectoral planning and approves annual development estimates; the Ministry of Finance is responsible for allocation of budget resources" (World Bank, 1993a, p.2).

All the different government ministries and departments have their local field staff at either district or at times even VDC or Ilaka levels. Considerable coordination efforts are necessary to ensure convergence of these different programmes. Significant synergy can be generated through such convergence measures, especially for sanitation-related activities. This would, however, require special local level coordination efforts with adequate policy directions form Line Ministries in this regard.

2.3 Innovations through International Agencies and Non-Governmental Organizations

External international agencies play a dominant role in Nepal's developmental programme, both in terms of total

Communities should play a leading role in improving their own sanitary situation, to ensure sustsinsble changes.

investments as well as influencing policies and programme focus. During the seventies and eighties, there were hardly any NGOs in Nepal. However, since the early nineties, a large number of NGOs have been formed. Estimates suggest that there are now over 50,000 NGOs, and it is important that this resource be used effectively for partnerships for sanitation. They have played an important role in bringing the international best practice experience to Nepal's developmental agenda. Many of them have worked with local governmental institutions, NGOs, community groups as well as to a limited extent supported efforts to develop private sector capacity in Nepal. Table 2.2 highlights the activities and coverage of these institutions. Some of the critical innovations introduced by these agencies include:

- emphasis on participation and control of water users' committees in delivery of water and sanitation services;
- recognition of women as the key change agents in improving hygiene behaviour among households and communities;
- increased attention to hygiene awareness and behavioural approaches for improved practice as an important component of water and sanitation schemes;
- demand-based approach to latrine construction;
- focus on capacity building for urban management among municipalities;
- introduction of private sector participation in water services and sanitation; and
- development of micro-credit activities.

Box 2.4 Tole Sudhar Samittees

The Patan Project helped to pioneer a strategy of conservation through the promotion of participatory development initiatives of the local community of Patan. A pilot effort at one of the toles was spread throughout the town successfully through eight such samittees. The Tole Sudhar Samittees were formed at the outset, with the members drawn from among the target community, local leaders and the Lalitpur Municipality. The initial activities focused on motivitation to support the community's felt needs. By linking with different donor agencies, a variety of training support was also made available. Several activities including paving of streets and courtyards with bricks or stone, cleaning campaigns and waste management, a private toilet programme and the Sagal cleaning and rehabilitation programme have contributed to sustainable improvements in sanitation conditions in the neighbourhoods in Patan. Equally important, these Sudhar Samittees provide local community support organizations which then can take on a variety of activities based on local needs.

Source: Khyaju and Pradhanang, 1994.

Donors and Other International Agencies:

International agencies, both bilateral and multilateral as well as many of the international NGOs, have played an important role in both financing Nepal's water supply and sanitation investments as well as influencing policies in this important sector. These include multilateral agencies, such as ADB, IDA, UNICEF, UNCHS-Habitat, UNDP and WHO; bilateral institutions such

Box 2.5 Private Latrine Producers in Bangladesh as Motivators

In Bangladesh, over 2500 private latrine producers have sprung up. Local entrepreneurs produce and market slabs and rings for latrines, which they sell on the market. Despite the government subsidies for latrine parts sold at government village sanitation centres, local residents prefer to purchase latrine parts from private vendors because they are closer to people's homes, and their products are reliable and immediately available. The success of these groups is mainly due to the national social mobilization activity, which helped create demand, and to the work of some local NGOs, who initially helped local businesses establish such production centres. Once an adequate market developed, these centres have sprung up on their own.

Source: T. V. Luong (1995), Bangladesh Experiences, UNICEF, as reported in UNICEF (1997).

as those from Austria, Finland, Germany, Japan, Netherlands, Switzerland and UK as well as international NGOs (INGOs) such as the Red Cross, Water Aid, CARE, Save the Children, Helvetas, Gorkha Welfare Scheme, United Mission to Nepal, Plan International, Luthran World Service and Save the Children Fund Alliance and other religious organizations.

There are "at least 19 international NGOs (INGOs) active in the water and sanitation sector, primarily supporting smaller projects in both rural and urban areas" (HMG-NPC, 1991). They generally implement projects in collaboration with local NGOs.

Non-Governmental Organizations (NGOs):

There are a large number of NGOs in Nepal (some 50,000 of which are 13,000 registered), most of them established after 1990. Many have come up following the policy to implement many of the programmes through these organizations. NGOs in Nepal have to register under the Societies Registration Act at the District Administration Office. For associating with INGOs, they have to also register with the Social Welfare Council. There are a very few NGOs, such as the Nepal Red Cross Society (NRCS) and NEWAH, which operate with a national coverage. Most work in a limited number of areas and regions. A major constraint to the efforts of smaller local NGOs is inadequate coordination of their activities. While these NGOs have a far better understanding of local contexts and a better rapport with communities, their efforts often remain limited in coverage and have marginal developmental impacts. However, in recent years efforts have been made to coordinate their efforts for better impact (Box 2.3).

The responsibility for coordination of NGO activities lies with the Social Welfare Council (SWC). While in the past it has functioned as a controlling rather than a facilitating agency, it has started to develop strategies for liaison between NGOs and the government and among the NGOs themselves. Under the ADB's Fourth Water Supply and Sewerage Project, DWSS is also responsible for coordinating the activities of NGOs under a common policy framework and for providing technical assistance as necessary.

2.4 Communities as Key Stakeholders

Since the decentralization pronouncements, the role of community-based organizations in development activities in Nepal has increased substantially. There are two

types of local CBOs. The first are those that have emerged spontaneously through community initiatives, including youth clubs or traditional groups for credit or other purposes. The second type are the ones induced by external agencies, such as the Water Users' Committees (WUCs), farmers' groups under the Small Farmers' Development Program and women's credit groups under the PCRW. These have generally been formed under different government-linked programmes.

Water Users Committees:

Over the last decade, there is an increasing realization of the need for

Table 2.3 Institutional Arrangements for Sanitation – An Overview

Component of Sanitation		Main / Lead Institution	Government	Other Potential Partners			
				NGOs /INGOs	Community	Private Sector	Other
Household Latrines & other Sanitary Facilities	Rural	DWSS, DDCs/ VDCs	MOH, MOA, RWSSFDB	INGOs/ NGOs for implementation and innovation in technology, design & dissemination	WUCs COs	Suppliers of parts, masons; Client (farmers) for manure; Banks/credit Cooperatives for credit. Outright private sector support solidarity	Media Professional Organisations University
	Urban	DWSS, Municipalities Urban VDCs	MOH, MOA	As above	TSS	As above	Media Professional Organisations University
Health and Hygiene Awareness & Practice	Rural	DWSS, DDCs/ VDCs	MOH, MOE/ MOLD RWSSFDB	As above	WUCs COs		Media Professional Organisations University
	Urban	DWSS, Municipalities Urban VDCs	MOH, MOE	As above	TSS		Media Professional Organisations University
Solid Waste Management (including sanitation in public spaces)	Rural	VDCs/ DDCs	MOA MOA/ MOT				Media Professional Organisations University
Sewage Collection & Disposal	Urban	Municipalities	MOWR	Special committees such as those set up in Patan Museum	TSS	Farmers as clients; Private Contractors to deliver service	Media Professional Organisations University
Storm Water Drainage	Urban	DWSS and Municipalities for other towns	DOR			Concessionaires/ Contractors to provide service	Media Professional Organisations University
	Urban	Municipalities Urban VDCs			TSS		Media Professional Organisations University

community involvement and control over water and sanitation-related activities. There has been a policy decision to keep the Water Users' Committees as the focal point for all new water and sanitation schemes, especially in the rural areas. However, greater attention is needed to build up the capacity of WUCs to manage these responsibilities effectively.

Urban Community Organizations:

In the urban centres, it has been less common to have town level water users' committees. However, at least one successful example of a WUC managing the town level water scheme exists for the town of Dhulikhel. The role of the neighbourhood level community groups, however, is found to be important in other aspects of sanitation related to solid waste management and improving hygiene awareness and practice (Box 2.4).

2.5 Potential of the Private Sector

Though the official policy for water and sanitation in Nepal recognizes the role of the private sector, so far the role of private sector has been largely limited to being construction contractors in government programmes (Box 2.5). There have also been some attempts at developing local manufacturing capacity for materials required for new facilities. While this has been more common for water, some local production of fiberglass water seal latrine pans has been promoted. UNICEF and some NGOs have also promoted local manufacture of "concrete pour-flush latrine slabs". These are usually produced by local artisans or small, decentralized casting yards. In the Terai, concrete rings with pit linings are also being produced (HMG-NPC, 1991). However, in general, local production has tended to be more costly and quality control has been difficult.

Under the new policies, it is likely that the private sector will play a variety of roles, as consultants in studies and project formulation, as contractors for solid waste services or even operation of water supply services in large urban centres, and as suppliers of important components for sanitation projects. It is likely that the potential of private sector role will exist more in the Terai region, with its higher densities and income levels as well as better transport and communications systems. These characteristics will support commercial viability of these operations with a positive impact on private sector participation.

2.6 Issues in Institutional Linkages and Coordination

Table 2.3 highlights the complex prevailing institutional arrangements and the potential role of new partners in these arrangements. The 1994 National Sanitation Policy suggests that the DWSS will be the lead agency for sanitation and it will do this through coordination with the related agencies. It may be useful to rethink this for some of the urban components as the role of municipalities is

Latrines have no effect if they are not used.

likely to be critical for these roles. It is also important to assess and review the potential role of other ministries as a significant impact can be made, especially on the demand generation and hygiene awareness components, by developing symbiotic relationships among different government agencies.

An important aspect also concerns the mechanisms to be used for evolving partnerships with the community and private sector especially for creating appropriate delivery systems. Alternative models for this as emerging from the programmes of the World Bank, Asian Development Bank and UNICEF need to be reviewed for further support. It will be critical to have an inter-sectoral approach to achieve significant improvements in sanitation. An important emerging trend in Nepal relates to the emphasis on decentralization through the District and Village Development Committees (DDCs and VDCs) as well as the community groups, NGOs and the private sector. This is also a part of the official policies for water and sanitation. However, the actual efforts are rather limited, and there is a lack of effective coordination among several agencies involved in sanitation-related activities at that level.

Probably the most important and critical issue relates to the capacity building of stakeholders to undertake the different roles which have emerged over the last decade. While most projects do recognize this, efforts will have to be combined with the necessary institutional restructuring efforts. New institutional arrangements for coordination and evolving partnerships will also be required in this regard, including regulation for water, sewerage and solid waste services.

Past efforts at coordination have generally not yielded successful results. More participatory and consultative development of coordination and convergence policies and strategies is critical to ensure that different stakeholders are able to participate in the sanitation initiatives in a meaningful manner in the future.

Women bathing and washing clothes at the river

Section 3

Sanitation-Related Initiatives in Nepal

Policies, Programmes and Investments

Over the last decade there has beenan increasing awareness about the need to improve the sanitation situation in Nepal. This has been suggested by the international agencies and accepted in principle by the Government of Nepal. However, in practice, this has not really materialized. While the policy rhetoric suggests a priority for sanitation, allocations for sanitation have gone down in the Ninth Plan. New approaches and some positive trends are evident in specific projects, though on the whole a consistent and clear strategy is still not evident.

3.1 Highlights of Sanitation-Related Policies and Programmes

In support of the United Nations' call for the International Drinking Water and Sanitation Decade, His Majesty's Government of Nepal also increased its activities in the sector during the eighties. These efforts were within the framework of the Sixth and Seventh Five Year Plans of Nepal. By the end of the Seventh Plan, it was clear that while there was some

improvement in access to water services, sanitation had lagged far behind. This was at least partly due to the sole emphasis on water and only limited subsidized provision of latrines during this period.

Highlights on Efforts during the Eighties:

Most of the efforts during the eighties focused far more on water with a continuing neglect of sanitation. Most government efforts focused largely on subsidized provision of household latrines. For example, during 1982-87, the DWSS implemented a pilot household latrine construction project in several municipal areas with full subsidy. Though more than 3000 latrines were constructed, it is likely that these did not reach the poor target groups. No other supports for community involvement or motivation efforts were included in that project.

However, a few projects and programmes during this period, especially those supported by the international agencies and NGOs, did focus on hygiene promotion and motivational strategy for provision of household latrines. For example, some of these included:

- Community Water Supply and Sanitation Programme (CWSSP) funded through assistance from UNICEF and Helvetas, where sanitation promotion was integrated with improvement in water supply;
- Sanitation Programme in the Eastern Region with DFID assistance focused on health education, hygiene promotion, limited subsidies to households for latrines and a comprehensive programme for training of community volunteers;
- Rural Water Supply and Sanitation Project supported by FINNIDA in the Lumbini Zone, which included training for village health workers to converge water and sanitation with health activities of the village level health workers;

Following these examples, DWSS also introduced similar projects on a pilot scale towards the end of this decade. For example, the Nuwakot Project in 1988 had an emphasis on hygiene promotion with special workers recruited for this work. However, the subsidized provision of latrines continued and the project had to be later abandoned due to financial difficulties. During this period, some efforts at initiating solid waste management through the municipalities were also initiated such as those in Kathmandu and Lalitpur with a focus on waste collection and recycling system.

A sector review by the DWSS in 1991 highlighted the main lessons as:

- rather optimistic coverage targets set for the 1980s;
- community participation and role of women, though recognized, were not effectively achieved in most projects and schemes;
- human resource development received low priority;
- low priority was given to sanitation and health education and promotion components;
- financial constraints persisted, especially in relation to high subsidies for provision of latrines;
- poor planning and implementation was noticed at the district level;
- isolated provision of health education without the links to environmental sanitation proved ineffective; and
- rapid urbanization put additional strain on sanitation services and facilities in the towns and cities.

New Initiatives during the Nineties:

A number of new initiatives have marked the efforts during this decade, including a national sanitation policy and a number of innovative projects.

The National Sanitation Policy defined sanitation in a wider perspective, including aspects related to personal and food hygiene as well as treatment and disposal of solid, liquid and animal waste. It also identified the basic objectives and key strategies to achieve these. These included a greater emphasis on sanitation at the national level, focus on involvement of women, community groups and NGOs and more attention to motivation and awareness creation. It also advocated use of appropriate technology with limited and targeted subsidies. Budget allocation for education and awareness creation activities was explicitly suggested. This policy also advocated for a new legislation to enforce better sanitation in the urban areas and public places. The institutional focus remained on DWSS as the lead agency with specific cells for sanitation at all levels.

It was, however, more through a number of *innovative projects* that the shifts in orientation to sanitation started to develop during this decade. These included:

- The Fourth Rural Water Supply and Sanitation Project funded by the ADB and implemented through the DWSS focuses on institutional strengthening, especially for community awareness and education, participation of the district offices as the focal points for project implementation and direct and sustained participation of the Water and Sanitation Users' Committees (WSUCs) in planning, implementation and operations of water and sanitation systems.
- The Rural Water Supply and Sanitation Project funded by the World Bank being implemented through the RWSSFDB focuses on a demand-led approach with capacity building of community-based organizations. RWSSFDB funds support organizations from the NGO and private sector to provide the process management support to the CBOs for planning and implementation.
- The Rural Water Supply and Sanitation Project Phase II funded by FINNIDA being implemented through the Ministry of Local Development focuses on decentralization, mobilization through the private sector and NGOs and empowerment of the VDCs and User Groups for service delivery. Priority is given to capacity building of the DDCs and other local organizations. A District Water Supply and Sanitation Fund has been created to make the funding process transparent and rational.
- The Self-Reliant Drinking Water Support Programme funded by Helvetas, a Swiss NGO, being implemented through local partners, focuses on behavioural changes to improve sanitation practices with emphasis on community involvement and control. It avoids direct subsidies for latrine construction, and focuses on community motivation. The programme avoids a targeted and time-bound approach which makes the flexibility required in a community controlled approach more difficult.

- The Drinking Water and Sanitation Programme being funded by the Nepal Red Cross Society through its local branch offices and community-level *Sahayog Samitis* emphasizes motivation for health and sanitation. Community involvement is maximized and sustained impact is sought through community knowledge and awareness regarding sanitation, hygiene and health linkages.
- Water and Sanitation Programmes of Nepal Water for Health (NEWAH), a Nepalese NGO, focuses on sanitation and hygiene education through training of local staff and members of community groups. While a large number of latrines have been constructed, this activity is always preceded by motivational activities.

New Institutional Arrangements:

Increasing recognition of the need for new institutional arrangements to ensure a focus on sanitation, and to evolve community-controlled approaches in the sector through participation of NGOs and private sector, has also emerged in recent years, though only with limited responses. The first of these has been the creation of the Rural Water Supply and Sewerage Fund Development Board (RWSSFDB) as a part of the World Bank-funded project, following the successful implementation of the JAKPAS Project. RWSSFDB represents a new delivery mechanism which focuses on the involvement of NGOs, private sector and the community organizations. It is also an independent entity, though its dependence on government funds probably inhibits real autonomy in the long run. Another institutional innovation has been the GTZ-funded Town Development Fund, a new initiative to provide financing to urban local authorities. However, so far the activities of TDF have been grant-funded and, like the RWSSFDB, its sustainability may be affected adversely by its inability to ensure financial independence over time. Within the DWSS also, a separate cell for environmental sanitation has been formed to ensure a focus on sanitation.

3.2 Emerging Trends in Sanitation Initiatives

Over the last decade, sanitation policies, though limited in scope, have undergone considerable changes. Since the start of this decade, there has been an increasing realization of the importance of sanitation. This is despite the fact that the Ninth Plan has no explicit programmes for sanitation and the plan allocation to sanitation has probably gone down.

Focus on Sanitation since 1990s:

In general, most policies in Nepal had till recently given very low priority to sanitation. This was true till the beginning of this decade. While there were several reasons for change in this orientation, these culminated in the SAARC meeting in 1992 which brought out the very low position of Nepal in relation to its neighbors, especially in access to sanitation. It was also influenced by many of the international NGOs and funding agencies which had started to realize that the investments in water supplies would not yield significant health benefits without improvements in personal and public hygiene conditions.

The enhanced focus on sanitation is evident from the following:

1992 Enhanced Eighth Plan allocation for sanitation at

12.5 percent of the total allocation for water and sanitation sector, compared to 3.3 percent during the Seventh Plan, and only 1.8 percent or less in the three annual plans af ter the Seventh Plan (Table 3.1)

1993 Creation of an Environmental Sanitation Section in the DWSS

1994 Adoption of a Nepal National Sanitation Policy and Guidelines for Planning and Implementation of Sanitation Program

1995 Formation of National and District Water Supply and Sanitation Coordination Committees

1997 UNICEF's plan of operations focusing entirely on sanitation with preparation of the State of Sanitation Report for Nepal

1998 Action Plan developed by the local authorities as reflected in the activities agreed to by the ADDCN

Decentralization in Planning and Implementation:

Decentralization is a major emerging trend for all the social policies in Nepal. The formation and the enhanced role of different tiers of local governments, namely DDCs, VDCs and the municipalities under their respective statutes, will lead to local democratic pressures to build up over time. DDCs and VDCs have increasing responsibilities for water and sanitation. The recent ADB project for rural water supply and sanitation places importance on the preparation of district water and sanitation profiles as tools for district plans. It will also necessitate developing an adequate information base and the technical capacity for planning at this level. Some efforts are already underway to decentralize the efforts of the DWSS through the regional offices. The Fourth Project of the Asian Development Bank also provides for support to the DWSS in this process.

Rethinking Subsidies and Demand-Based Approaches:

Another major trend in policy has been the rethinking on subsidies. While capital subsidies for water supply still continue in the rural sector, it is envisaged that the operation and maintenance expenses will be met entirely by the users through fees levied by the users' committees. In the urban sector, there is an increasing emphasis on moving towards tariffs, which ensure full cost recovery. This is evident in the covenants, which have been agreed for the operation of NWSC, though these have been difficult to achieve in practice. Forsanitation,demand-based approaches are being advocated, especially for toilets, as their utilization clearly depends on effective demand. This has been incorporated in the World Bank project through a provision for a revolving sanitation fund. This would help to use the subsidies to both induce demand for toilets and leverage the limited resources manifold.

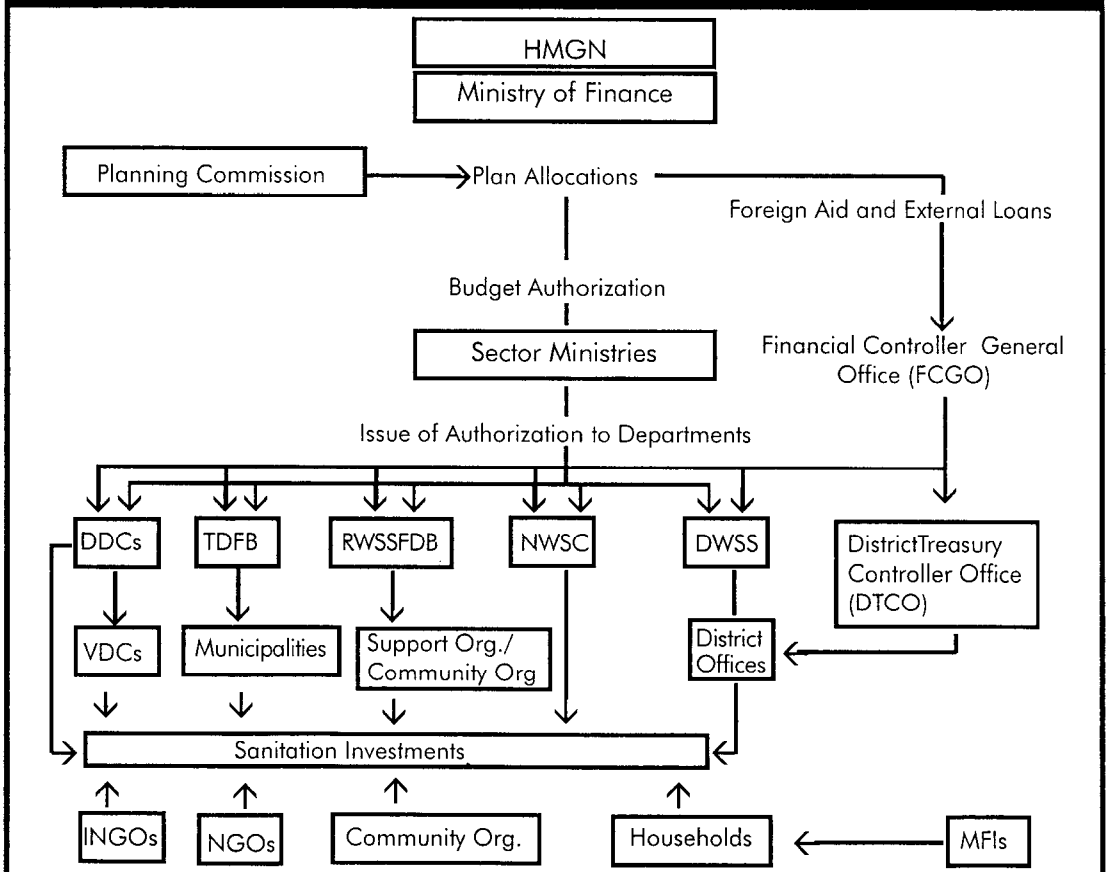
Sustainability through Community Organizations and NGOs:

The second important change in policy perspective has emanated from the fact that provision of water and sanitation facilities by themselves was not effective, especially when the community was not involved and lacked the hygiene awareness. As seen earlier in Section 2, maintenance and utilization of the new services were often poor. This has led to two new emphases: enhanced community role in water and sanitation programmes and the increasing importance to health and hygiene education in most programmes. All new water projects since

1992 now require the formation of waterusers'committees, which take over the operation and maintenance of services. They are also expected to levy adequate charges to cover the costs of maintenance. The WUCs also play a key role in motivation and hygiene education. Under the RWSSFDB projects, they also operate a revolving sanitation fund to provide credit for latrine construction.

In addition, the government has taken a major policy view, in general, and for water and sanitation sector, in particular, to involve the non-governmental organizations in the implementation of water and sanitation programmes. A variety of models have begun to emerge in this regard. These may be characterized by the new programmes of the three major international agencies, namely, the Asian Development Bank (ADB), UNICEF and the World Bank (WB). The ADB project essentially focuses on building the capacity of the DWSS to operate through the NGOs. UNICEF project components are routed through the DWSS and through NGOs and CBOs, whereas the World Bank has sought to create a new independent entity (RWSS Fund Development Board) which operates the funds for the rural water supply and sanitation projects through community organizations with assistance from support organizations (including NGOs and VDCs).

Figure 3.1 Existing Financing Arrangements for Water and Sanitation in Nepal



DDC	District Development Council	NGO	Non-Government Organization
DWSS	Department of Water Supply and Sanitation	NWSC	Nepal Water Supply Corporation
HMGN	His Majesty's Government of Nepal	RWSSFDB	Rural Water Supply and Sanitation Fund Development Board
INGO	International Non-Governmental Organization	TDFB	Town Development Fund Board
MFI	Micro Finance Institutions	VDC	Village Development Council

Enhanced Urban Sector Initiatives:

During the nineties, sanitation problems in urban centres have started to receive increased attention, especially for solid waste management, sewerage, sewage treatment and disposal. Different approaches have begun to emerge. For example, public-private partnerships, especially for solid waste management, are being explored. Kathmandu Municipal Corporation has taken a lead in this area and others are likely to follow. Another important aspect also concerns improved urban finances and management which have been the focus of the efforts under the GTZ-funded project of Urban Development through Local Initiatives (UDLE). UDLE has worked with municipalities to provide technical assistance for enhancing property tax revenues and better financial management. Many of these municipalities have taken up sanitation-related activities with funding from the Town Development Fund.

3.3 Plan Allocations and Investments in Sanitation

The lack of importance of sanitation is evident from an almost total lack of disaggregated information regarding investments in sanitation-related activities. This is true for both the government and non-governmental programmes.The existing financing arrangements are highlighted in Fig. 3.1.

Allocations in the Five Year Plans:

While over the years, there has been an increase in the allocations to the drinking water and sanitation sector, emphasis on sanitation has varied. During the Eighth Plan, there was a dramatic increase in the share of sanitation in total sector allocation (Table 3.1). However, this probably was due to the high costs of proposed sewerage projects for urban areas. The details of allocation to different components are not available. For the

Table 3.1 Planned Development Expenditure on Water and Sanitation

Period	Planned Devt. Expenditure (million NRs)			Water and Sanitation as a %	External funding	
	Total	Water - Sanitation	External funding	As a % of total	Watsan	as a % of total Watsan
Third Plan(1965-70)	2,101	31	na	1.5	na	na
Fourth Plan(1970-75)	5,048	92	na	1.8	na	na
Fifth Plan(1975-80)	10,985	437	na	4.0	na	na
Sixth Plan(1980-85)	29,529	1,126	438	3.5	6.8	38.9
Seventh Plan(1985-90)	53,410	2,302	892	4.3	3.3	38.7
Budget(1990-91)	13,279	681	305	5.1	1.4	44.8
Budget(1991-92)	16,297	1,012	360	6.2	0.7	35.6
Budget(1992-93)	21,595	1,212	651	5.6	1.8	53.7
Eighth Plan(1992-97)	113,479	6,273	4,831	5.5	12.5	77.0
Ninth Plan(1997-02)	225,280	20,958	12,982	9.3	6.7	61.9

Sources: *First to Eighth Plans: SRDP, Budgets for 1991-1993 and Eighth Plan documents as reported in World Bank (1993a);* External sources for the Eighth Plan: ISD (1998), Table 5.31, p. 138. Ninth Plan: HMG-NPC (1997c).

Notes: *The share of sanitation for the Ninth Plan was estimated by taking the Bagmati and Sewerage Project and a share of allocations to the DWSS and RWSSFDB. A 9.8 percent share of DWSS and RWSSFDB allocations has been assumed to hold for sanitation, based on the WB proposal for Rural Water Supply and Sanitation where sanitation is estimated at $2.09 million ($1.55 million for sanitation and hygiene education, $ 0.13 for institutional toilets and $ 0.41 for the sanitation revolving fund) out of a total project cost of $21.25 million. Refer to Table 3.3.*

Table 3.2 External Sources in the Water and Sanitation Sector
(percent share of external to total allocations)

Proposals for Ninth Plan Period

Year	Rural	Urban	Total
1997-98	47.2	70.9	55.5
1998-99	51.5	73.6	61.2
1999-00	50.8	75.4	62.2
2000-01	49.7	76.9	63.3
2001-02	51.1	77.5	63.8
Total	50.2	75.7	61.9

Source: Based on HMG-NPC (1998), Statement 8.

sector, almost 75 percent is spent on capital investments and the utilization rate appears to have been nearly 80 percent during the Eighth Plan period (Mehta, 1998).

During the Ninth Plan there appears to be a distinct shift away from an explicit allocation to sanitation programmes (Tables 3.1 and 3.2; also Tables A 3.1, A3.2 A3.3 and A3.4). There is only one explicit sanitation-related project for the Bagmati sewage treatment facilities with an allocation of about 0.5 billion Nepali rupees. However, there is some indication that sanitation elements are included in both the DWSS and the Rural WaterSupply and Sanitation Fund Development Board projects. In terms of the nature of allocation, however, based on the RWSSFDB and ADB projects, it is likely that this may be largely limited to the provision of institutional toilets only.

The only provision for individual latrines in these allocations is the limited revolving fund allocation being made for this purpose under each new project. This approach is rather surprising, especially in view of the rather ambitious target of 40 percent coverage envisaged in the Ninth Plan. While it is true that the conventional approach of providing a high cost fully subsidized toilet for individual households is not likely to work, an alternative strategy needs to be developed rather than a total withdrawal from this important aspect. The Bangladesh strategy, discussed earlier, provides useful lessons and may be adapted to suit the specific Nepali context.

Trends in External Funding:

It is clear from the analysis in Table 3.2 that external funding constitutes a significant share of allocation and utilization in the water and sanitation sector. During the Eighth Plan period, almost 70 percent of the total capital expenditure was met through external sources.

The expected share during the Ninth Plan is also as high as 62 percent. Among the main agencies, external funding is higher for NWSC (60 percent) and RWSSFB (85 percent). Even for DWSS,

Table 3.3 Funding for Municipal Sanitation Projects-Town Development Fund (TDF)
(for 1989 to 1998 in '00,000 NRs)

Type of Project Agency	GTZ (grants)	World Bank	KfW (grants)	Total	Percent of Total Disbursement	Total Project Costs: Total	Total Project Costs: Percent of total
Storage Waterdrainage	208.8				65.5		
Private Toilet	70.4	794.4	134.8	1138.5	10.5	1809.9	58.3
Public Toilet	32.9	-		183.3	2.0	502.6	10.2
Solid Waste Equipment	197.1	-	112.9	35.3	13.9	127.0	4.1
Pavement	60.4	-54.2	2.4	241.3	3.5	320.8	10.3
Recreational Park	11.7		-	60.4	2.5	134.4	4.3
Pokhari Improvements	14.2	30.9	-	42.6	1.3	131.7	4.2
River Cleaning Works	13.9	-	8.0	22.2	0.8	58.7	1.9
Total	599.4	-	-	13.9	100.0	21.0	0.7
		880.0	258.1	1737.5		3105.9	100.0

Source: Analysis based on information from the UDLE, Kathmandu, for the Town Development Fund.

almost a third of the allocation is to be covered through external funding sources (See also Table A3.5).

Most reports and studies fail to give separate details for sanitation and it is not possible to desegregate sanitation from the various projects. However, the overall sectoral trends in disbursements of external funding present interesting results. During the Eighth Plan period, over 43 percent of the funding has come as loans. Importantly, the share of loans shows an increasing trend over these five years. This is especially true for the investment project-related assistance. The major decline in grants has been from the multilateral agencies and the INGOs whereas the share of bi-lateral donors has remained the same and is entirely in the form of grants. The share of multilateral grants has declined from over a third in 1992 to just 11 percent in 1996. At an aggregate level, the share of multilateral agencies is nearly 60 percent with the remaining 40 percent from the bilateral donors. INGOs have a very small share of 1.4 percent only. In general, there also appears to be a greater emphasis on free standing technical cooperation. The total disbursement from these sources during the Eighth Plan period is estimated to be in the range of Rs. 4.1 to 4.8 billion NRs (Tables 3.1).It is, however, important to note that a large number of programmes in other sectors such as Area Development and Health and Urban Development also have some components related to sanitation. Though its is not possible to estimate this accurately without a detailed assessment of each program, even if a conservative 5 percent of total disbursement in these programmes is assumed, an amount of almost 4.0 billion Nepali rupees would have been spent on sanitation-related activities. This is equivalent to the total spending in water and sanitation sector during this period. The critical aspect, however, would be development of an approach, which ensures coordination and maximizes benefits in a sustainable manner.

Municipal Finance for Sanitation:

The plan allocations reviewed above fail to account for the significant local level spending done by the

In traditional water supply and sanitation programmes, most of the attention was given to water supply while hardly any for sanitation.

municipal authorities on sanitation-related activities. The main activities are described in Table 3.3, which lists the sanitation- related projects financed by the Town Development Fund over the past ten years (see also Table A3.6). A large proportion of the expenditure is noticeable on construction of storm water drainage. The other important categories are toilets and solid waste equipment. It is worth noting that over the Eighth Plan period (1992 to 1996), the estimated capital expenditure on sanitation by the municipal authorities is almost three times that done through the Five Year Plan allocations. It is worth while to explore the municipal role in urban sanitation along with aspects of improvements in urban financial management and capacity building for better service delivery systems. This will be especially true for solid waste, on-site sanitation and drainage components of urban sanitation. Analysis by the financial management unit of the UDLE project suggests that, of the 36 municipalities, almost 80 percent have borrowing capacity for additional debt. The total loan eligibility as per the TDF terms is estimated at over 3462 million Nepali rupees. This potential may be enhanced considerably through better pricing policies, tax management and improved cost recovery systems. However, to convert this potential into actual projects, technical assistance will be required for good project development and fair and transparent procurement processes.

3.4 Lessons Learnt

Table 3.4 below summarises the lessons learnt over the past in the area of sanitation planning and policy experience and suggests what needs to be done.

Table 3.4 Lessons Learnt

MAIN FINDING	LESSON LEARNT & WHAT TO DO
Need to Review Sanitation Programmes	
The sanitation situation in Nepal is in great lines as sad as or worse than that of its neighbours.	Major efforts needed in the sanitation sector can be joint efforts with the countries in south Asia, mutually reinforcing one another in finding out what works and what doesn't.
In traditional water supply and sanitation programmes, provision of water supply was dominant and sanitation hardly advanced.	Sanitation must be given top attention in two ways: (I) integration in any water supply programme and (2) broad-based integration of sanitation and hygiene with education, health, nutrition and, in all development programmes.
Sanitation is seen mainly as a question of latrine provision, not as a question of behavioural change.	Efforts should be redirected towards convincing people to change sanitation and hygiene habits.
In terms of access to latrines and toilets, sanitation coverage is one of the lowest key development indicators for Nepal's rural population (very little improvement, only 1.3% in the period 1991-1996, far less than the annual population growth of 2.2%).	Development of Nepal will be slowed down if sanitation coverage dose not go up. Further neglect is likely to skyrocket the multiple negative effects. Immediate attention must therefore be given to sanitation and hygiene promotion to render benifits from all other development efforts in the country.

with toilets reaching less than 20% household coverage, sanitation in terms of household toilets for excreta disposal is yet to become a norm. Leaders do not reflect this norm and Nepalese society lacks positive role models.	Priority focus should be on the country's leaders at all levels to set good examples in terms of hygiene practice and improving sanitation.
Government goals for the 9th plan are to reach 100% drinking water supply coverage by end-2002, and for sanitation a mere 40%. No major funding allocations are made to make the increase to 40% sanitation coverage possible.	Financial reallocations have to be made to ensure: 1) Family- focused hygiene and sanitation programmes; 2) Hygiene and sanitation for schools and other public gathering places.
In absolute terms, Nepal retrogresses at an enormous pace in sanitation : almost 350,000 additional Nepalese every year are added to the numbers practicing open defecation and, in 1999,some 17 million Nepalese are not using a toilet.	Top priority must be given to sanitation and hygiene in the National planning Commission, the Parliament, the Ministry of Finance, in the key sanitation ministries (MHPP, MOH, MOE and MLD) and in other government agencies.
Improvement in hygiene behaviour will significantly reduce child and adults morbidity.	DWSS together with all development partners should step up people-centred strategies to instill hygiene behaviour and provide an enabling environment to make low-cost items for toilet construction.
Country reports from Asia and elsewhere show that positive behavioural change can result from intensive hygiene and sanitation promotion through continuous reinforcement.	Use of all media to reinforce the key hygiene and sanitation massages to the target population is essential, with updated analyses of different media (inter-personal, drama, posters, IEC materials, radio, T.V etc.)
Sickness Costs of Inadequate	
Reduction in diarrheal mortality from over 44,000 in 1996 to some 33,000 in 1999 can be credited not to interventions in water supply and sanitation but largely to improved treatment practices through better and increased use of ORT and vitamin A supplementation.	Increase in water supply coverage in the last 25 years (from 20% to 66%) with sanitation coverage remaining far behind (reaching only 23%) has not led to major diarrheal disease prevention. This means prime attention needed in sanitation and improvement in hygiene behaviour.
Diarrheal morbidity and worm infections have not declined during the last 10 years. Improvement in water supply coverage and level of effort in sanitation and hygiene promotion has not seen the positive effects expected.	As nearly the total population in the rural and semi-urban areas is exposed to high risk of diarrhea and worm infestation, a shift in focus towards mass behavioural transformation for improved sanitation and hygiene is imperative.
Child malnutrition, causing insufficient brain development and stunting of 50% of Nepal's children under 5 years of age and wasting has declined in the last 25 years in an extremely low pace.	Neglect of sanitation improvement means an additional 50,000 children every year malnourished and stunted physically and mentally, depriving the country the full potential of human capital for its future. Sanitation and hygiene promotion should support efforts to drastically reduce child malnutrition.
Cost of Inadequate for Nepal	
At the national level, diarrheal sickness effect over 70% of the population keeping them out of the work force for millions of workdays per year, including mothers and older female children.	In the view of the enormous loss of scarce resources (loss of productive lives, workers' absence and productive time lost), attention must shift from curative to preventive health care.
For families the enormous cost related to diarrhea is mainfest in the death and sickness of dear ones and time and money needed and spent to care for them. The treatmant cost is estimated at up to 10% of the average family's annual income apart from fact that grils are abandoning school.	Nepal's families cannot afford to pay the high cost incurred by diarrheal disease. Promotion of effective hygiene and sanitation measures must reach them through all means available, while leaders must be the first to apply the needed practices and serve as role models.
As a primary source of faecal pollution, surface water sources become contaminated with fecal pollution as the non-user of toilets increase at the rate of almost a million every five years, due to direct contamination of these water resource and flushing of excreta into these water bodies during rain and especially during flash floods.	As most of the surface water bodies have become outright sources of disease and foul smell, causing human tragedy and a regrettable deterioration of the environment, many people, mostly the poor, are at increased high risk. Open defection must be addressed soonest througgh personal and mass hygiene education promotion and action.

Section 4

Potential Impacts of Improved Sanitation

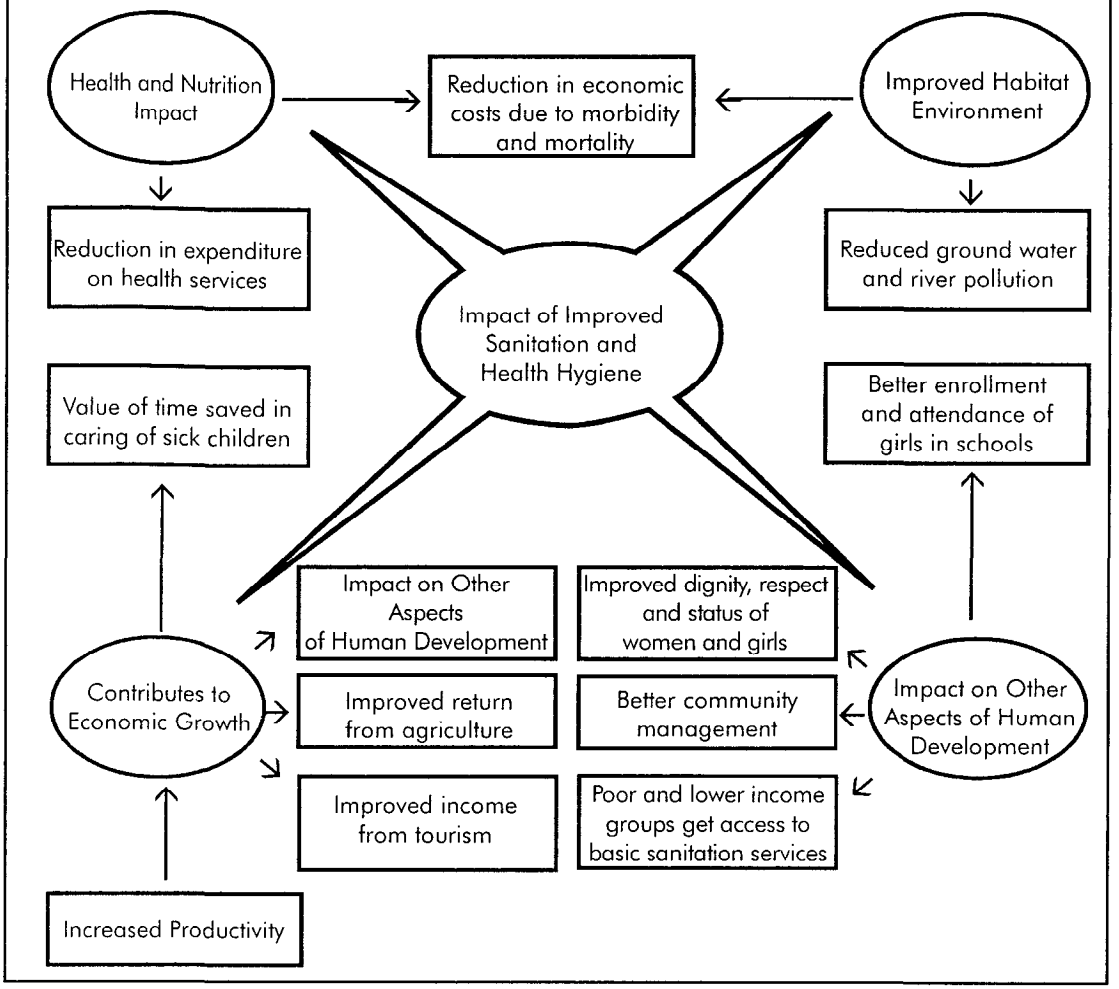
The main thrust of this paper has been to highlight the urgent need of raising the status of sanitation in Nepal in view of the inadequate attention paid to it both in policy and plan investments. The need for change in this status quo can be emphasized purely on human grounds. However, even in economic terms, sanitation improvements will yield significant benefits. While all the benefits are not quantifiable, this section highlights the nature of benefits with an attempt at assessing these to the extent possible. Specifically, the impacts related to improvements in human development, reduction in health costs and the potential costs of reduced tourism are analyzed in detail and quantified to some extent.

4.1 Overview of Potential Impacts

Improvement in sanitation affects individuals, households, community, society and the environment in a wide variety of ways that may be usefully grouped into four main types, illustrated in Fig. 4.1. First, is the most commonly recognized set of impacts due to the improved health status of the population. While these reduce human suffering, they also generate economic benefits and reduce the loss of income valued through the human capital approach from actual reduction in health expenditure.

The second set of impacts is related to other benefits of improved human

Figure 4.1 **Potential Impacts of Improved Sanitation**



development. A variety of benefits are possible, including improved education attendance, especially for girls, with considerable benefits of privacy, dignity and convenience in defecation, especially for women. As the poor suffer proportionately far more due to poor sanitation, improvements will also benefit them more. Finally, as most sanitation efforts require community management, the possibility of improved community organizations would be greater.

Sanitation improvements may bring benefits through improved economic growth. Besides reduction in worker absenteeism, the more important dimension in Nepal is the greater time and energy available for them in self-employment. The time saved from caring for young children suffering from diarrhea could also partially be used for economic activities. With the use of waste for resource concepts, especially for animal waste and urban garbage, it would be possible to enhance agricultural productivity with better organic manure. Revenue from tourism, an important economic activity in Nepal, is also likely to be improved. This is evident from the fact that some of the tourism development projects incorporate sanitation as an important component. Lastly, with increased attention to sanitation through partnerships with private sector and NGOs, there is a possibility for considerable employment generation.

Table 4.1 Valuation of Economic Costs due to Inadequate Sanitation,1996

Area of Health Impacts	Nature of Impact	Estimated Annual Costs (in billion NRs) Low Est.	High Est.
Health Impacts	Increased morbidity and mortality of water and sanitation-related diseases	1.50	6.00
Health Expenditure	Increased health expenditure on water and sanitation.- related diseases	2.20	3.60
Economic Growth: Value of Time Saved	Loss of time for income earning opportunities due to care of under 5 children suffering from diarrhea (partially estimated)	0.06	0.06
Tourism	Reduction in tourism-related revenues due to environmental degradation and perceived high health risks	0.20	0.40
	Total cost	3.96	10.40
	As a percent of GDP (%)	1.60	4.10
	Total cost per capita (NRs)	187.50	476.30
	Total cost per household (NRs)	1041.60	2646.00

Source: Based on Meera Mehta (1998).
Notes: GDP estimated from CBS (1997a) at Rs. 246 billion. Population in 1996 estimated to be 21.1 million with household size of 5.6 as per CBS (1995).

Finally, improved sanitation can also bring improvements in environmental quality. First, the quality of the living habitat environment would be improved through better cleaning, drainage and provision of latrines. This should improve community welfare as well as having positive impacts on health. Another major casualty of inadequate sanitation has been the quality of river and groundwater. This may bring intrinsic benefits for the aquatic life.

Table 4.1 indicates the various beneficial impacts of improved sanitation and health hygiene. Improved sanitation and hygiene practice can bring the following positive results:

(a) Health and Nutrition
- Reduced expenditure on health services and domestic health care expenditure
- Reduction in costs due to morbidity and mortality

(b) Environment
- Reduction in groundwater and river pollution
- Improvement in habitat environment

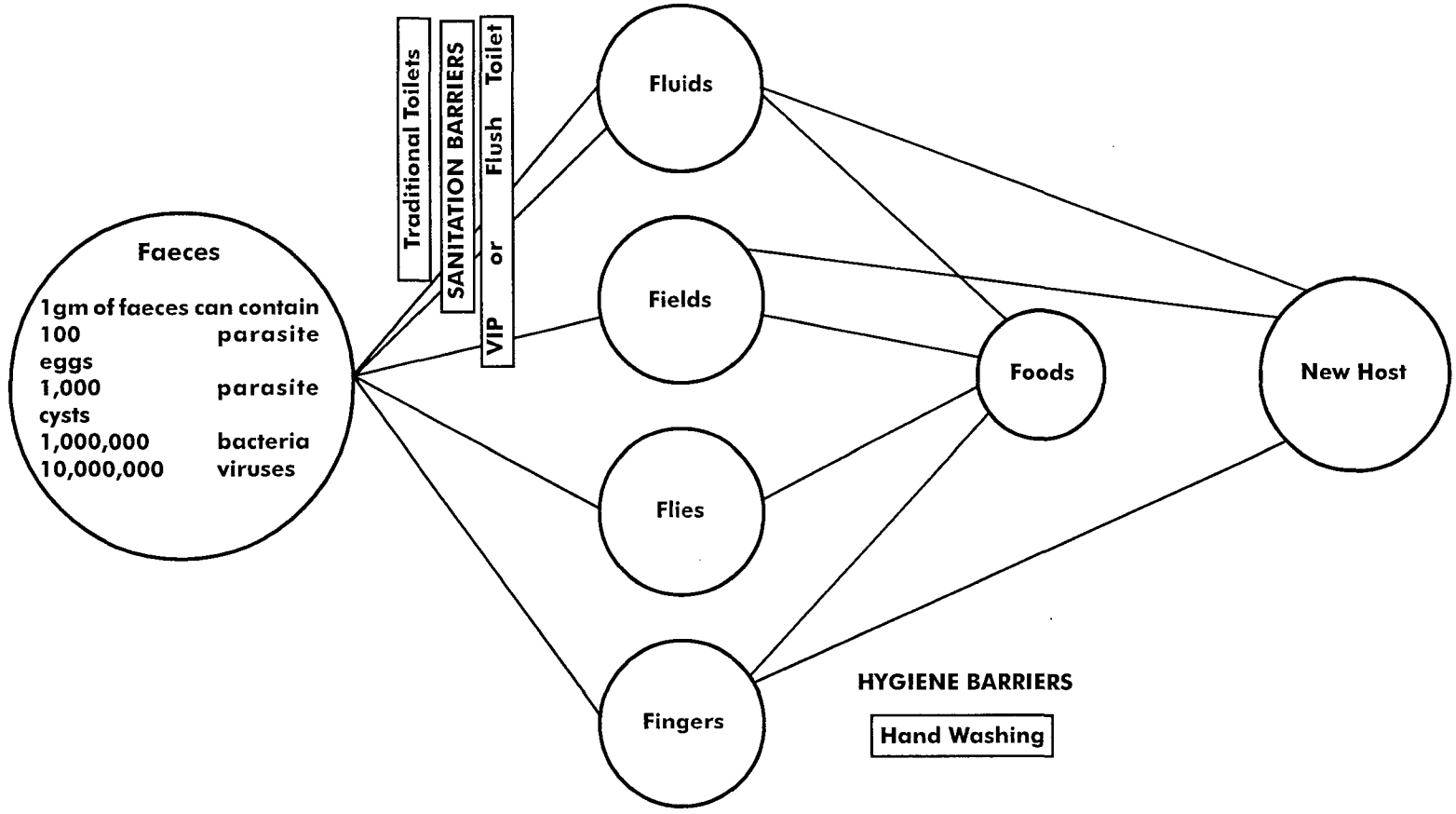
(c) Economic Growth
- Time saved in caring of sick children because children will be less sick
- Increased productivity because of reduced sickness incidence
- Employment generation in waste management activities
- Possibility of larger returns from farming activities through more regular work
- Increased income from tourism, as better environment attracts more tourists

(d) Human Development
- Higher enrolment of girls in schools, from enhanced privacy for girls
- Respect and dignity for women and girls because of privacy
- Better community management from community involvement in sanitation
- Better access for the poor to sanitation services (currently, the poor have least facilities)

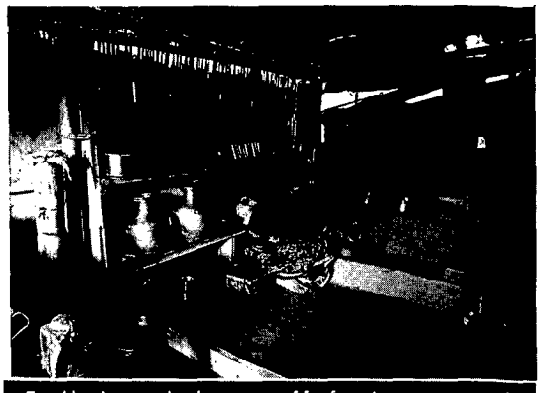
Fig. 4.2 indicates how faecal germs could be prevented from contaminating food and getting transmitted to mouth. Good sanitation (latrines) will prevent the germs from getting to flies, fields and fluids. Hygienic practices (hand washing) can prevent them from getting to foodand mouth.

Fig.4.2 **F-Diagram Illustrating the Various Stage in the Faecal Transmission of Disease**

(Broken lines indicate the successful impact of the sanitation and hygiene barriers in preventing the spread of disease and contamination through anyone of the six F elements)



It has been possible to estimate the economic costs of inadequate sanitation for only some of the impacts. Table 4.1 gives a summary of the results. The estimated annual costs in 1996 range from Rs.4 billion to 10 billion, which is 1.6 to 4.1 % of the GDP or Rs. 1042 to 2646 billion per annum.



Food hygiene and safe storage of foof are important secondary barriers in preventing transmission of diseases.

4.2 Health Impacts of Improved Sanitation

The most direct benefits from improved sanitation are expected to come from improvements in the health status of the Nepalese people, especially women and children. Linkages between health and different sanitation improvement measures are complex and varied as shown below. Health status by and large shows poor results, with Nepal falling behind some of its South Asian neighbours on critical health parameters. Economic costs linked to health impacts have been measured in two ways, using a human capital approach in relation to both morbidity and mortality impacts, as well as direct measurement of expenditure on health services. Evidently the total health-related economic costs of inadequate sanitation are very high, estimated at as much as 3.96/10.06 billion NRs per annum in 1996.

4.2.1 Overview of Sanitation and Health Linkages

Health impacts vary considerably across different sanitation-related measures. Table 4.2 illustrates some of these linkages which clearly highlight the importance of hygiene practices for improving the health status of any population. While diarrhea leads to both increased morbidity and mortality, other less understood diseases such as worm infestation lead to iron deficiencies and result in stunting, irreversible brain damage and under-achievement in schools. Anemia among pregnant women from worm infestation leads to higher maternal

Table 4.2 Health Impacts of Different Preventive Sanitation Measures

Infection	Preventive Measures					
	Safe Human Excreta Disposal	Personal Hygiene	Domestic Hygiene & Animal Waste Mgmt	Water & Food Hygiene	Safe Water Consump-n	Waste Water Disposal
Various types of diarrheas, dysenteries, typhoid & paratyphoid	X	X	X	X	X	
Roundworm (Ascariasis) & Whipworm (Trichuriasis)	X	X	X	X		
Hookworm	X		X			
Pork Tapeworm	X			X		
Schistosomiasis (Bilharzia)	X	X	X			
Guineaworm					X	
Scabies, Ringworm, Yaws		X	X			
Trachoma, Conjunctivitis		X	X			
Louse-born Typhus, Louse-born Relapsing Fever	X	X				
Malaria, Yellow Fever, Dengue		X			X	
Bancroftian Filariasis	X		X			X

Source: Boot and Cairncross 1993: 10-11.

mortality as well as low birth weight among the new-born.

Figure 4.2, popularly known as the 6-F diagram, highlights sanitation and hygiene barriers which can reduce or mitigate the effects of human waste and other contaminants on human health. While the "sanitation barriers such as latrines and clean water, keep contaminants from entering the environment, thus stopping them before they reach our food supply and mouth, hygiene barriers such as habitual washing of hands after using latrine and before meals directly prevent contaminants from reaching our food and bodies". These important lessons have emerged from the considerable work done during the seventies and eighties, related to "the Appropriate Technology in Water Supply and Sanitation efforts of the 1970s, plus the International Drinking Water Supply and Sanitation Decade of the 1980s" (Listorti, 1996, p.18).

There are several links between water and sanitation and environmental health and Listorti enumerates quite a few of the diseases and problems resulting from the poorly maintained environment (1996, p.17), such as:

- diarrheal diseases from faecal contamination of water and poor personal hygiene;
- guineaworm infestations from unprotected water wells and ponds;
- spread of mosquito habitat from water storage, poorly maintained storm drains, lack of drainage;
- infection caused by intestinal worms and other parasites from lack of sanitation;
- water and air pollution from unsanitary solid waste disposal sites;
- air pollution (dust and fumes) from waste disposal sites, transfer stations and trucks servicing there;
- scavenging at disposal sites and other collection/transfer points.

4.2.2 Health Status in Nepal

Nationwide data on important indicators of health status are often limited and inconsistent "due to inadequacy of reporting and the absence of a formal system of birth and death registration" (UNICEF, 1996, p. 58). The information available suggests significant gains have been made in improving health over the last decades. However, the health status in Nepal still presents a grim picture, compared to other South Asian countries.

Table 4.3 Access to Sanitation and Health Status by Development Regions

Development Region	Access to Sanitation (% of population)		Infant Mortality Rate,[1] 1991	Under 5 Mortality Rate,[2] 1993	Percent of Children 3-36 months 1996		Incidence of diarrhea[3] 1996 (%)	Duration of diarrhea,[4] 1996 (%)
		1996			Wasted	Stunted		
Eastern	(3.1)	(9.0)	85.4	126.0	47	18	19	52
Central	(12.2)	(14.0)	98.5	146.8	55	21	18	56
Western	(3.5)	(18.0)	79.6	114.4	55	12	16	59
Mid-Western	(2.7)	(5.0)	125.9	185.6	60	12	18	73
Far Western	(1.9)	(4.0)	124.0	180.5	53	17	14	68
Total Nepal	(6.0)	(15.0)	91.0 *(1995)*	114.0 *(1995)*	53	16	18	58

Sources: Access to Sanitation: 1990: HMG-MHP (1991); 1996: HMG-NPC (1997a), NMIS, Third Cycle, p. 12; IMR and Under 5 MR: NFFPHS, 1993,(not to be used for absoulate national totals data from 1991) as reported in UNICEF, 1996, p. 57 for 1995, refer to Table 4.4; Wasting and stunting: HMG-NPC (1997a), NMIS, Fourth Cycle, p.ii and A5; Diarrhea incidence and duration: HMG-NPC (1997a), NMIS, Third Cycle, pp. 6-7.

Notes:
1. Infant mortality rate: Deaths per 1000 live births.
2. Under 5 mortality rate: Deaths of children under 5 per 1000 live births.
3. Incidence of diarrhea as % of children <5 having incidence of diarrhea in the last two weeks.
4. Duration of diarrhea as % of incidence in the last two weeks lasting more than 3 days.

Refer to Table A4.3 for the method used for this estimate.

Table 4.4 Comparative Health Statistics

Indicator	Nepal	India	Bangladesh	Pakistan	Sri Lanka	South Asia	Low Inc. Economies (excl. India & China)	Source of Information
IMR (per 1000 live births)								
1960	195	165	156	163	71	na	na	HDR - 1997, pp. 166-167
1965	171	150	144	149	63	147	145	WDR-1992, pp. 272-273
1970	157	137	140	142	53	138	136	WDR-1970, pp. 292-293
1980	132	116	132	124	34	120	116	WDR-1997, pp. 224-225
1990	121	92	105	103	19	93	92	WDR-1992, pp. 272-273
1995	91	68	79	90	16	75	89	WDR-1997, pp. 224-225
Life Expectancy at Birth (years)								
1960	38.3	44	39.6	43.5	62	na	na	HDR - 1997, pp. 166-167
1990	52	59	52	56	71	58	65	WDR - 1992, pp. 218-219
1995	55	62	58	60	72	61	56	WDR - 1997, pp. 214-215
Maternal Mortality Ratio (per 100, 000 live births)								
1989-95	515	437	887	na	30	na	na	WDR - 1997, pp. 224-225
Under 5 Mortality Rate (per 1000 live births)								
1995	114	115	115	137	19	na	na	HDR - 1997, pp. 174-75
Underweight children under 5 (%)								
1990-96	49	53	67	38	38	na	na	HDR - 1997, pp. 174-175
Prevalence of malnutrition under 5 (%)								
1989-95	70	63	84	90	16	na	na	WDR - 1997, pp. 224-225

In relation to water and sanitation- related impacts, directly and indirectly, several important indicators are presented in Tables 4.3 and 4.4. Table 4.3 illustrates the links between access to sanitation and health status (Fig. 4.3). The most important link seems to be with under 5 mortality and duration of diarrhea.

Table 4.5 Disease Profile of Nepal, Department of Health Services

Type of Diseases	Reported Cases	Percent of total
	Cases	
A. Patients reported in 74 government hospitals *(July 1997 to April 1998)*		
Reported OPD cases		
Water and sanitation-related diseases	9,425	32.0
Total cases	29,474	
Reported deaths		
Water and sanitation-related diseases	105	13.7
Total cases	764	
B. Patients reported in all Government Hospitals *(1996-97)* (in millions)		
Reported OPD cases		
Water and sanitation-related diseases	2.02	34.1
Total cases	5.93	

Sources: Mehta (1998): Original Sources:
For A: MIS, Planning and Foreign Aid Division, Department, of Health Services;
For B: Raw data in Department of Health Services of Health, 1996-97.

Interpretation of these relationships has to be done with caution as several factors affect health status, though sanitation access has been found to be an important causal variable in many studies. This is why later analysis uses conservative estimates of the impact of sanitation. Among the development regions, the western and central regions in general have far better access levels and health conditions. The worst affected are the mid-western and far western regions. Development efforts will need to focus on these.

Table 4.4 presents the health status of Nepalese people over time and in comparison with other South Asian countries. In general, health status has improved over time, though Nepal shows the worst status and still lags behind both India and Bangladesh. One of the most important diseases which results from inadequate sanitation is diarrhea. Table 4.3 also gives an idea of the rather high incidence of diarrhea found among the children in Nepal. It is estimated that during 1996, almost 43 percent of all

under 5 deaths were due to this killer disease.[1] While awareness and practice of ORT can successfully help in the short term, the main underlying cause seems to be lack of sanitation facilities and poor hygiene practice.

Detailed information on disease profile for Nepal is not readily available. However, based on the recent statistics of diseases reported at the government health facilities, almost a third of the total out-patient cases and 14 % of the reported deaths are assumed to be caused by diseases related to inadequate water, sanitation and hygiene (Table 4.5).

Besides the better known diseases such as diarrhea, poor sanitation and hygiene can also affect through worm infestation. In developing countries worldwide, on an average over 70 percent of children aged 5-14 were estimated to be ill because of helminths. Studies in Nepal suggest that hookworm leads to iron deficiency among pregnant women. Another study targeting the school children also found that 74 % of the surveyed children were infected with worms. Despite such a high prevalence rate, awareness about the causes of this disease is low. Local beliefs often link it only to food habits, rather than also to poor hygiene and practice (JICA/JMA, 1998; JICA/JMD, 1998; Navitskyet al., 1998).

4.2.3 *Economic Costs of Health Impacts*

During the nineties, development of economic valuation techniques applied to environmental matters marked an important change from the earlier two decades. In the health sector, development of the disability adjusted life year (DALY) technique has helped to improve the process. At the same time, however, the conclusion reached in the 1970s by the London School oOf Hygiene and Tropical Medicine that "many health benefits are hard to measure, particularly in quantifiable cost-benefit terms and a huge panoply of variables are at play and make statistically significant or quantifiable studies extremely difficult" is still valid to some extent. Still, in the case of water and sanitation-related diseases where relatively fewer variables are likely to affect the health status, the DALY techniques are far more applicable (Listorti, 1996, p. 22).

Table 4.6 Health Impacts and Costs of Inadequate Sanitation in Nepal, 1996

Value of Annual Income Last (in billion NRs)

Access to "Safe" Latrines	Avg. Income /Worker	
Extent of health improvements due to improved sanitation High: 56% Low: 26%	Low (NRs. 10,378 (annum)	High (NRs.17,644 (annum)
1. 100% Provision of latrines		
High	5.9	3.5
Low	5.0	2.9
2. 50% Provision of latrines		
High	2.9	1.8
Low	2.5	1.5
3. 50% Provision of latrines and improved = hygiene		
High	3.4	1.9
Low	3.1	1.8
Average for all six scenarios	3.8	2.2

Source: Based on Meera Mehta, (1998), Status of Sanitation Report for Nepal, Report for the RWSG, World Bank, New Delhi.

Measurement of the costs of health impacts is complex and would require very detailed information, which is not available for Nepal necessitating use of proxy information. Improvement in health status due to reduction in water and sanitation-related diseases is reflected in both mortality and morbidity effects. This may be captured by estimating the life years lost due to illnesses (morbidity) and early deaths (mortality). The first can

Table 4.7 Annual Expenditure on Health due to Inadequate Sanitation

(in million Rs. at current price)

Source	1996-97		Est. Expenditure due to poor sanitation	
	Per capita (NRs.)	Total (million. NRs.)	(at 15% of total)	(at 25% of total)
	473			
Households	10	10,795	1,619	2,699
Private Enterprises	88	235	35	59
External Sources	68	2,005	301	501
Government	640	1547	232	387
Total		14,582	2,187	3,646

Sources: Analysis based on ADB (1994), and Mehta 1998).

be measured by the loss of days in productive life due to illness which will be related to age and depends on age distribution of health impacts. The mortality effects in economic terms are captured by the loss of economic life due to early death in relation to expected total life. The cost in this respect will equal the net present value of productivity, if the person was able to lead a full life.

These effects are captured through the measure called the Disability Adjusted Life Years (DALYs) which gives the likely economic costs of health impacts, due to both morbidity and mortality.

Using this approach, and proxy values of DALYs for Nepal, Mehta (1998) has estimated the total costs of inadequate sanitation. Based on different assumptions regarding the extent of sanitation improvements possible, and inclusion of hygiene improvements and average income levels for a Nepalese worker, the total economic costs of inadequate sanitation range from 1.5 to Rs. 5.9 billion per annum (Table 4.6, also appendix 4.1).

Reduced Costs of Health Care:

It is possible to assess the economic benefits of improved sanitation through reduction possible in expenditure on health-related services. Unfortunately, information on expenditure on health related to water and sanitation diseases is not available separately for Nepal. Based on an ADB study, reported in the Human Development Report for Nepal, a large proportion of total expenditure (76%) on health is made directly by the households. On the whole, health expenditure is found to be high in Nepal, at 538 NRs per capita in 1994-95. The total health expenditure of 10.94 billion at 5.3% of the GDP is also relatively high compared to both Bangladesh and Pakistan, though lower than for India (NESAC, 1998). Based on Mehta (1998), an estimated 2.2 to 3.6 billion NRs per annum was spent on health-related services due to inadequate sanitation in Nepal in 1996 (Table 4.7).

4.3 Other Impacts of Improved Sanitation

That sanitation improvements also result in a number of improvements in human development status is evident from the significant effects likely to accrue to the health status of population, especially children. In addition, improved health status would also allow greater benefits to flow from education, improve women's status in society and contribute to better community management structures. While it is difficult to estimate their monetary values, these benefits are important for an overall improvement in the quality of human development of Nepalese population.

4.3.1 Status of Women

Since the 80s, the role of women in water and sanitation programmes has been increasingly recognized as a result of more gender- sensitive approaches. While poor sanitation affects both men and women, lack of sanitation and hygiene affects women more due to the traditional role assignments in Nepalese society. Improved sanitation also has specific benefits for women

The availability of water and sanitation behaviour has to be thought at an early age.

[2] Based on field notes by Vijaya Shrestha, 1997.

such as greater privacy and convenience in disembowelment and more time available due to reduction in diarrhea among children. However, the most important benefit probably relates to the improved status of women, through programmes which help build their skills and place them in decision-making roles at the community level. Subtle effects on role changes and the willingness of men to share household responsibilities are also likely to result from such programmes. A good example is provided by a small village outside Kathmandu

Table 4.8 Access to Latrines by Income Groups

Consumption Groups	Toilet Access (% of total households)
1st Quintile (lowest 20%)	8.49
2nd Quintile	11.22
3rd Quintile	12.72
4th Quintile	19.72
5th Quintile (highest 20%)	47.15
Total	21.62

Source: CBS (1996), Nepal Living Standards Survey, 1995 -96, Volume One, Table 3.7.

where the activities following an awareness campaign for hygiene resulted in improved status recognition of women in the village community. Following their work in the women's group, women are now members of the VDC and forest management committee. One woman articulated the changing roles by saying: "What more can I tell you? I am here today attending this meeting and my father-in-law is taking care of my six month-old baby. Earlier, I could not visualize, even in my wildest dream, that a Nepalese father-in-law would look after a baby to enable a daughter-in-law to attend a public meeting".[2]

4.3.2 Returns to Education

Improved sanitation can also help in improving returns to investments in education in a variety of ways. A little recognized constraint on girls' attendance in schools is inadequate sanitary facilities in schools. While detailed studies and statistics are not available to illustrate this, field visits to many villages show the dramatic and sustained attendance of girls in schools, once adequate sanitary facilities have been provided. For example, a school latrine provided in Chalalganesthan VDC (Kavre District), under a UNICEF-supported Community Water Supply and Sanitation project in 1996, has resulted in a reported 150 % increase in girl enrolment (field observation, R. Shakya, WES, UNICEF, Nepal, 1998). Secondly, given the burden of caring of younger siblings assumed by girls in the Nepalese society, the expected reduction in small children's morbidity would free many girls from such burden enabling them to pursue their studies better.

4.3.3 Poverty Alleviation

While some of the adverse impacts of inadequate sanitation cut across income boundaries, considerable costs and loss of benefits accrue, especially, to the poor and low income groups, because the middle and upper income groups are often placed in a better situation to afford a variety of coping strategies. The limited information available in terms of the status of sanitation across different income groups clearly shows that the gaps in access to latrines, hygiene awareness and other services are far more concentrated among the poor and low income groups (Table 4.8). Similarly, the poor are likely to be more vulnerable to potential health problems arising from inadequate sanitation. Thus, in general, the benefits of improved sanitation will accrue far more to the poor and lower income groups.

4.3.4 Community Management Organizations

An added consideration relates to the benefits of community participation, around which most strategies of sanitation improvement are likely to be developed. In rural areas, it is now common to find Water Users' Committees (WUCs) which are mandatory requirements. Limited available studies generally point out that WUCs are active during the project phase but their interest and commitment tends to subsequently wane. It would be useful to assess the relative strength of WUCs under different approaches such as by the DWSS, under the RWSSFB and those organized under different NGO-linked activities. More efforts at revitalizing the WUCs, through specific programmes or through other efforts, such as the establishment of Associations of WUCs, need to be promoted.

For urban areas, the example of *Tole Sudhar Samitis* under the GTZ-funded Patan Conservation and Development Programme provides a useful illustration of community participation for sanitation-related activities. A more detailed assessment of these community organizations would be useful to judge their wider relevance, especially for community-based sanitation approaches in the urban areas.

4.4 Improving Economic Growth

The impact on economic growth may accrue from better productivity of more healthy workers, better returns from agriculture due to improved soil conditions and use of organic manure, as well as the possibility of better income from tourism.

Table 4.9 Tourism in Nepal, 1987-1996

Year	Total Number of Tourists (in '000s)	Gross Foreign Exchange Earnings (in million US$)	Growth Rate (%)
1987	248.1	60.2	5.5
1988	265.9	63.5	7.6
1989	239.9	68.3	- 6.7
1990	254.9	63.7	- 8.2
1991	293.0	58.5	4.4
1992	334.3	61.1	8.5
1993	293.6	66.3	33.0
1994	326.5	88.2	32.4
1995	363.4	116.8	30.0
1996 (est.)		151.8	
		In Million	Share of Exports
1996 (est.)		NRs.7774.2	14.0 (%)
Estimated loss in tourism revenues			
High (@10%)		388.7	0.7
Low (@ 5%)		194.4	0.4

Sources: CBS (1997c), *Statistical Year Book of Nepal: 1997*, NPSC, Table 5.5.
Notes:(1) Estimated loss in revenues due to poor sanitation @ 5 and 10 percent of total tourism earnings.
(2) Conversion to Rs. Exchange rate of 1 US$ = RS. 51.2.
(3) Exports in 1995-96 were RS. 55.4 billion as reported in CBS (1997c), Table 17.3.

4.4.1 Worker productivity

Improvements in worker productivity are likely to come from two related factors. First, reduction in morbidity will reduce absenteeism in wage employment. Even more important effect will be the availablity of more time and energy in the self-employment sector which is more prevalent among the Nepali workers. Without adequate studies in this regard, however, it has not been possible to measure these costs.

4.4.2 Returns from Agriculture

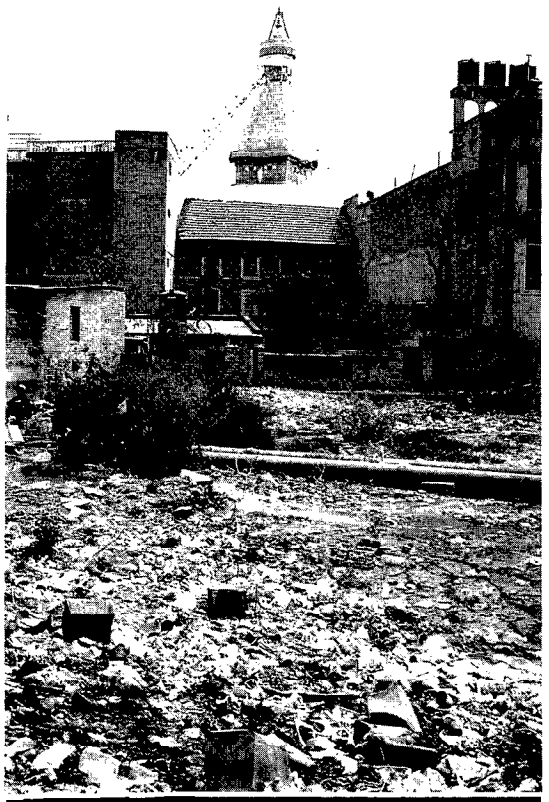
Agricultural productivity may also be enhanced through improved access to sanitation. First, in places, where farmers often divert sewage for irrigation, it will be possible to use the effluents after primary treatment to help reduce soil degradation that would improve long-run productivity through higher yields and use of land for crops of better value. Secondly, if appropriate sanitation facilities are used, larger production of organic manure will help to improve agricultural productivity

[2] It would, however, be useful to do tourist surveys to ascertain the validity of these assumptions. For example, the probable impact of the excellent solid waste collection system in Bhaktapur town may be also assessed in this regard. The ADB project on environmental management in urban centres to support growth of tourism may also provide useful lessons.

through better yields. This necessitates development of sanitation facilities to ensure production of good manure and making people aware of its use. At this stage, inadequate information again prevents estimating the likely benefits from this approach.

4.4.3 Impacts on Tourism

Tourism is a major economic activity for Nepal. The gross foreign exchange earnings from the sector are high, at an estimated US$ 152 million in 1996 or 14% of the total export earnings. Till 1994, the trend in foreign exchange receipts was slightly negative inrural terms, and at times, even in absolute terms as presented in Table 4.9. However, in 1995 and 1996, there was significant growth in tourism revenues at over 33%. Detailed surveys are not available, but the experience from other countries suggests that potential future growth may be affected by the perceived health impacts of poor sanitation, such as cholera and typhoid outbreaks, which have been seen, in the last few years. Further, unpleasantness of environmental degradation in urban centres due to the unabated river pollution and inadequate solid waste collection may also leave a negative impact.



Boudhanath-Sanitation is an issue that also effects tourism in Nepal.

No real information is available for Nepal on the possible impact of poor environmental conditions on income from tourism. It has, therefore, been necessary to rely on other studies, such as Brandon and Hommann (1995) for India and World Bank's estimates for its Middle East and North Africa Environmental Strategy, which have used assumptions of reduction in tourism revenues due to environmental degradation at 10 to 20 %.

A conservative estimate has been used for sanitation-related impacts at 2.5 to 5% of the revenues being adversely affected[3], suggesting a loss of Rs. 0.2 to 0.4 billion per year in 1996. It is clear that any policy in this regard will need to be evolved in an integrated manner for overall environmental improvement.

4.4.4 Employment Generation

Enhanced sanitation will also create considerable employment opportunities, especially through solid waste collection efforts in the cities. Similarly, widespread delivery systems for provision of latrines and other sanitary facilities in the rural and urban settlements can provide additional employment and income earning opportunities. But the lack of detailed studies renders makes it difficult to estimate the magnitude of employment and its economic value.

4.4.5 PotentialTime Savings

Studies show that one benefit of improved water supply services is the

time saved, especially for women and female children in collecting water, including the waiting time at source, which ranges from 1.25 to 8 hours in different regions. Studies indicate that the time thus saved is mainly used in farming activities, livestock maintenance, household care (including childcare) and taking rest. The value of productive time is linked to the average wage rate (WB, 1996b and ADB, 1996b).

Improved sanitation will also result in time saved from defecation, for both women and men. Although studies are not available in this regard, it is possible to estimate the possible time savings in the care of children under 5 years of age, who suffer from frequent episodes of diarrhea. The annual frequency of episodes for children under 5 years of age is estimated at 4.3. Assuming that at least one productive day of time is saved per episode with reduction in diarrhea among this age group, and an average wage rate of 40 NRs per day, the total cost of this care is estimated at 56 million NRs. Assuming that morbidity can be reduced by 50 % with improved sanitation, the costs of inaction are 0.02 billion NRs per annum. Importantly, these time savings would translate into additional time available for child care and income generating activities producing beneficial effects at the household level. The time saved in childcare can usefully be translated also into higher possibilities of education opportunities for the girl child.

4.5 Environmental Impacts

Another major impact is on the environmental quality of which two types are important.

4.5.1 Improved Habitat Environment.

Improved sanitation will have a direct impact on the quality of the living environment. This will be possible through cleaner streets, better maintained public spaces and reduction in water logging. These improvements will largely be related to community level strategies for improved sanitation conditions. In urban areas, measurement of these benefits may be done through the impact on housing prices. In the rural areas, this would be more difficult and may require some valuation of perceived benefits. While these benefits are clear, adequate studies are not available to permit their economic valuation.

4.5.2 Pollution of Rivers and Groundwater

Three different aspects of river and ground water pollution are important. The first are the effects due to pollution of water bodies and land degradation which result from inadequate sanitation, especially related to indiscriminate disposal of untreated sewage and wastewater. Health impacts due to pollution have been already captured to some extent in the analysis of valuation of health costs given above. Second are the amenity values related to improved environmental quality both due to the improved quality of water bodies such as rivers and lakes, and from the improved aestheticquality of street and public spaces with a better collection of garbage and solid wastes. For example, some surveys in India show a high willingness to pay for improving the environmental quality of "holy" rivers such as the Ganges and the Gomati. Lastly, the intrinsic benefits due to environmental improvements relate to the reduction of adverse effects on other species such as the aquatic life, which result from reduction of land and water pollution.

While it is generally believed that rivers, especially in the Kathmandu valley, are heavily polluted, only some studies done during the late eighties and early nineties

are available. These studies suggest that "the volume of untreated sewage entering the river system is very large and the effluent contains high concentrations of bacteria, nutrients and organic matter". To supplement the limited information available, the GTZ-supported Urban Development Plan exercise in the late 80s carried out an extensive water quality survey (Appendix 4.2 and Table 4). The worst affected segment in the Bagmati river is from the Patan Bridge to Chobhar. Almost all the parameters, including the key chemical parameters, such as DO, BOD, COD, nitrate, phosphate and coliforms, greatly exceed the water quality standards. One of the main reasons for this is the entry of untreated sewage from Patan and Kathmandu as well as a variety of industrial effluents. Downstream of Bishnumati River appears to be even more polluted than Bagmati. This is also true for Dhobi Khola and Tukucha, which have been found to be the most polluted of the rivers surveyed. However, both Manahara and Hanumante are relatively less polluted.

Though information is rather limited for groundwater pollution, the situation seems equally poor. The shallow ground water around Kathmandu is polluted both chemically and biologically."Of greatest concern is the level of coliforms in the extracted water, which (except when drawn from tube wells) exceeds WHO standards for drinking water"(Halcrow Fox and Associates, 1991).Shallow groundwater is probably polluted through seepage from the widespread use of septic disposal systems, which is also likely to discharge into the rivers and streams of the valley. With the population and economic growth in the valley, absence of concomitant improvements in sewage collection and treatment systems has aggravated the situation of rivers and groundwater to its worse condition in the 90s.

Use of ashes is a good alternative to soap for hand washing.

Section 5

Recommendations for Improved Sanitation

Improved sanitation in its wider perspective needs to become a main emphasis of the development policy in Nepal. This is necessary both due to the current low levels of sanitation and the considerable benefits to be derived from improved sanitation, for both households and the country as a whole. While there have been policy pronouncements on sanitation, it is critical to develop appropriate and sustainable strategies to realistically attain the improvement s envisaged under the 9th Plan.

5.1 Sanitation Improvement-Guiding Principles

Over the last decade, with population growth, increasing settlement densities and urbanization, the need to address sanitation issues has become more important. At the same time, new trends have emerged in relation to demand orientation, decentralization and a rethinking on appropriate technology.

The emphasis is now on an enabling framework with wider stakeholder participation. In that context, five basic principles can be noticed underlying the enabling framework within which the future strategy directions need to emerge.

i Change in Supply-Driven Sanitation Planning and Strategies

In the past supply-driven approaches have led to widespread disuse of latrines and latrine slabs have often served as 'relics of past projects'. Change in this approach requires firmly grounding any approach to demand orientation in actual implementation. Similarly, a change is required to position supply of safe sanitation within an enabling framework, which focuses on developing sustainable modes of delivery involving partnerships with both community and the private sector. This will increase participation of community and the private sector more effectively.

ii Decentralization in Planning and Implementation

Decentralization is an emerging trend in Nepal that has to be incorporated in all future policies. Water and sanitation in general tend to be local issues and increasing participation of local agencies and institutions is critical. This will, however, also require appropriate financing arrangements which enable an appropriate matching of local responsibilities with fiscal capacities as well as local capacity building for planning and management. Within the decentralized framework, community control and 'ownership' of water and sanitation services will also need to be integrated.

iii Appropriate and Progressive Technology Choices

Appropriate choice, which meets the minimum standards, is "safe" and uses locally relevant, simple and cost-effective

Box 5.1 Comprehensive Sanitation Strategy: Bangladesh Experience

Bangladesh has undertaken a comprehensive sanitation strategy during the 1990s which focused on achieving significant increase in the coverage of rural sanitation. It envisaged that the benefits of improved water availability will be more focused only with improvements in access to sanitation. In 1987, a conscious effort was made by the Department of Public Health and Engineering (DPHE) with UNICEF to promote water, sanitation and hygiene education in an integrated package. Under this approach, along with an orientation strategy compulsory construction of latrines was envisaged for all applicants for tubewells. In order to make this a viable approach, promotion of Do-It-Yourself Pit Latrine as a safe sanitation facility was adopted. "The emphasis was on containment of excreta in a closed pit combined with proper maintenance of facility and proper hand washing after leaving the toilet". The type of superstructure was left to the users, and its quality generally reflected the users' affordability. Almost 60 percent of the latrines built in recent years have been of this type. Initial resistance to this approach was mitigated by persistent advocacy with UNICEF support. A range of affordable and socially acceptable latrine options was developed. This process was supported through a strong social mobilization strategy, initiated with a national conference inaugurated by the Prime Minister. The Sanitation theme formed a part of most other child, women and community-related programmes. A variety of stakeholders were brought into the overall advocacy and action, using different methods and approaches for motivation. Increasing awareness and motivation resulted in increasing demand. On the whole, in the background of poverty and inadequate awareness, the Bangladesh strategy, based on appropriate technology, social mobilization and an integrated approach, generated very encouraging results. This is also evident from the results of close monitoring being done of the programme.

Source: Based on UNICEF-SA, 1993.

technology, is an important element of the enabling framework. The rapid expansion in access to latrines in Bangladesh and Myanmar is based on such a concept (see Boxes 5.1 and 5.6). Such technology choices will need to be integrated with households access to credit and private sector role as illustrated by the Rural Sanitary Mart example from India. This concept has a parallel in the incremental and progressive models used very successfully for urban housing and infrastructure in low income urban settlements. Rapid expansion in safe sanitation, envisaged under the Ninth Plan, will become possible only with such an approach.

iv Basic Sanitation Package

Within this framework of guiding principles, the strategies will need to focus on a wider concept of sanitation. Based on recent developments, the notion of a *Basic Sanitation Package* has been developed. This incorporates, besides the conventional focus on safe latrines, several other aspects such as other sanitary facilities (including washing and bathing areas, drainage around water taps, etc.), improved hygiene practices at household and settlement levels, sustained efforts at community mobilization, awareness creation and behavioral changes and measures to promote private sector participation. The basic sanitation package will thus include:

- access to safe latrines and other sanitary facilities;
- improved hygiene practices at the household and community levels;
- community mobilization and organization;
- sustainable access to credit for households;
- incentives for the private sector to support sanitation delivery;
- collection and safe disposal of solid and liquid wastes at the settlement level and in special places (for urban settlements);

Table 5.1 Estimated Costs of Sanitation Initiatives

(billion NRs. at 1997 prices)

Sanitation Initiatives	Estimated Investment Requirements/Healths Costs	
	Total Costs	Annual Costs
A. Basic Sanitation Package		
Full coverage by 2002 for community mobilization and household motivation and awareness campaign		
Mountains	0.2	0.04
Hills	1.2	0.24
Terai	1.6	0.32
Total	3.0	0.60
B. Access to Latrines for Ninth Plan Targets		
Standards of latrine construction		
Low	1.0	0.20
Medium	3.9	0.80
High	6.8	1.04
Costs of Health Impacts due *to Inadequate Sanitation*		
Low	na	2.70
High	na	9.60

Sources: For a) and b) Tables A5.1 for c) Table 4.1.

- and, the promotion of oral rehydration therapy for household diarrhea treatment, which is standard in this package.

v Enhancing and Reprioritizing Public Resources

Preliminary analysis of investments needed to achieve a full coverage of the basic sanitation package for the community mobilization and household motivation components suggests that the resource requirements exceed the likely availability of resources. For example, during the Ninth Plan, it is estimated that the allocation for sanitation is about 1.4 billion NRs as compared to the estimated 3 billion NRs required to achieve full coverage of the basic sanitation package by 2002 at 1997 prices (refer to Table 5.1 and Appendix Table A5.1). Investment requirements for achieving the Ninth Plan targets for latrine coverage range from 1.0 to 6.8 billion NRs depending on low to high standards. In relation to the estimated annual costs of inadequate sanitation of 4 to 10 billion NRs, these investments suggest a very

high level of economic benefits. Thus, there is a strong economic argument to enhance the resources for appropriate sanitation-related programmes.

However, even with the current level of resources, it will be possible to cover 50 percent of the population with a basic sanitation package. This suggests that there is a need to reprioritize allocations to focus on mobilization and motivation. These resources may also be mobilized through externally funded programmes in different sectors with the community participation component. For example, it is estimated that during 1992-1996, even if only 5 percent of such funds were used for sanitation promotion, it would be equal to 4 billion NRs. The resource requirements for effectively achieving the Ninth Plan targets of latrine coverage will need to be mobilized through household savings and by developing access to micro-credit for these purposes. This will require both a focus on the mobilization and motivation aspects as discussed above, and support for the development of credit systems.

Within these broad principles, specific strategies will need to be developed. These will include actions related to advocacy and social mobilization for sanitation to enhance demand for sanitation and actions to create an enabling environment for sustainable supply systems and improved urban sanitation. The critical link in all these considerations is to resolve institutional arrangements to ensure a clarity in roles, financing arrangements and measures to ensure coordination and performance monitoring. This will also necessitate adding sanitation as an important component in programmes of different departments and agencies.

5.2 A New Action Agenda for Sanitation

A new Action Agenda that adopts the principles just mentioned needs to be set with five key strategies to address the various dimensions of the problem-advocacy, enablement mobilisation, urban and institutional approaches (Table 5.2).

Table 5.2 An Action Agenda for Sanitation for Nepal

Advocacy for Sanitation	Commitment at the National Level Advocacy with Local Governments Advocacy with Donors and NGOs
Social Mobilisation for Improved Sanitation	Broad-basing the Motivation Strategy Sanitation Campaign Demonstrating Sanitation Improvements Sanitation must continue as usual connected with water supply Sanitation must now also be broad-based, that is: integrating it with Health, Education, Environment, Tourism, Housing, Government building, Town planning, conservation areas management/national parks, nutrition, integrated development projects highlighting sanitation and connecting it to their savings and credit schemes, and networking with the NGOs which now number 50,000 of which some 13,000 are registered with the Social Welfare Council Connect sanitation in particular with schools (school hygiene and sanitation).
Actions for an Enabling Environment	Capacity Building for Planning and Management Enhancing Private Sector Role in Supplies, advisory services training and also in supporting development initiative in concrete sanitation action Community based Credit Systems
Other Aspects of Urban Sanitation	Municipal Financial Management and Investment Planning Municipal Service Partnerships Benchmarking Municipal/Utility Performance
Resolving Institutional Arrangements	A New Sanitation Policy with Decentralisation • Institutional Roles • Financing Systems Local Action Plans for Sanitation Information Systems for Planning and Accountability

Box 5.2 **Step in Sanitation Advocacy**

Advocacy means development of political and social commitment to sanitation for social mobilisation which implies building of partnership and allies at all levels. Sience the key advocacy objective is to foster a positive policy environment in sanitation, making good advocacy at the policy level possible means :

1. Explaining how sanitation compares with other national priorities and how it is inked with the existing public public health priorities.
2. Buildingup enough political wil which means top-level support, among the key partitioners policy makers and xatalysts as a major strategic vechicle and basis for launching meaningful policy discussion on the theme.
3. Identifying the consumer preferences.
4. Identifying the high-level allies-the groups that must be involved to bulid political will and a supportive policy environment.
5. Formulating measures that can best deal with the resistance to change.
6. Promoting critical thinking amoung the three major stakeholder of sanitation (government; donors; NGOs, the private sectors and LGIs and community leaders) and enough critical mass to make the effort a sustainable venture overtime. Through effective national, regional and, ifessential community-level, dialogue, meeting, consultations and workshop, on policy and planning issues over the key constraints, limitations, challenges and resource potentials.

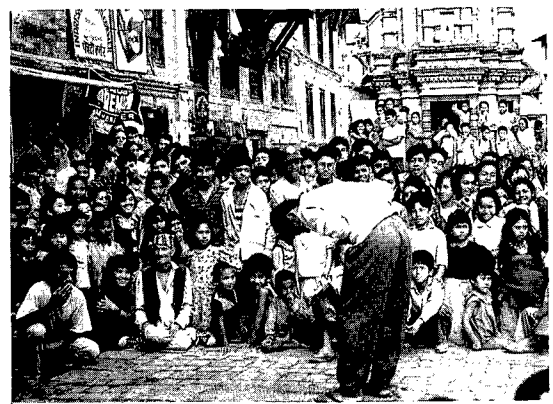
5.3 Advocacy for Sanitation

Compared to the policy neglect and poor understanding of the economic costs and benefits of the issue of sanitation common in the most developing countries and the region itself, the situation in Nepal is even worse and demands urgent attention and innovative measures to bring sanitation to the forefront of political agenda and plan priorities (Box 5.2).

i Commitment at the National Level

Despite the explicit policy pronouncements made in the past for sanitation, the ground reality is a continuing neglect of sanitation reflecting basically three wrong prospectives. First, the political representatives probably do not perceive sanitation as an important perceived popular need. Correction of such an attitude will need efforts to particulate the household and community demand for sanitation plus efforts at social marketing which remains inhibited since the 'voice' of women, for whom sanitation improvements are critical, does not find an important place in political dialogue. The role of women groups in providing a space for this 'voice' is essential. Other measures such as polls to influence party electoral platforms and policies need to be also explored.

Second, in national economic planning, sanitation is conventionally perceived as a social sector with low returns to investments. This perspective needs to be altered with detailed studies of economic benefits of improved sanitation, within the framework outlined earlier. Annually, the economic costs of inaction in sanitation are probably as high as 2 - 4% of the GDP or equal to 10 - 20 % of the annual average household incomes. Presentation of results to the appropriate ministries, especially including the Ministry of Finance, will help to gradually reorient the perspective. Discussions with important



Street theatre can be an effective way of promoting hygiene and sanitation

MPs on an initial action strategy followed by a presentation to the National Cabinet are essential. Advocacy activities are expected to be initiated with the National Conference on Sanitation in Nepal.

The third wrong perspective that demands attention is poor nomenclature that prevails in the domain of public hygiene and sanitation. Increased importance of sanitation in the public psyche can be effected through improved nomenclature: a change, for instance, in the names of relevant departments and grassroots organizations. In the corporate world, considerable efforts are made to evolve appropriate names and logos which reflect the organizational vision and image. In this spirit, the name of the Department of Water and Sewerage may have to be changed to the Department of Water and Sanitation to reflect the increased importance of sanitation. The community groups for management of water and sanitation systems could also be better renamed Water and Sanitation Users' Committees (WSUC).

Fig. 5.1 **The Target Audiences in Sanitation Programme**

Sanitation volunteer briefing women's group on hygiene and sanitation .

ii Advocacy with Local Governments

With decentralization, the role of local governments at the district, village and town levels will assume increased importance. Advocacy efforts with the local elected representatives have already been initiated as is evident from the resolutions of the DDC Association (Box 2.2). But more concerted efforts supported with best practice experiences are necessary. The best advocacy efforts for the local leaders would be to generate best practice examples within the country which demonstrate both the importance of sanitation and sustainable practical measures for its improvement.

iii Advocacy with Donors and NGOs

Many of the international agencies have already initiated efforts on their own to enhance the focus and attention on sanitation. However, many others still do not find sanitation attractive enough to convince their donors and governments. Thus, efforts are necessary to prepare adequate materials that highlight the positive impacts of past programmes focusing on sanitation. In this context, multilateral agencies such as the UNDP should also take a lead role in promoting sanitation programmes among the donor community as well as to coordinate the efforts of various agencies.

Box 5.3 National Sanitation Week in Myanmar: "800,000 families build their latrines"

Myanmar's commitment to the World Summit for Children and the Convention on the Rights of the Child prompted the country to take a fresh look at why it is still crippled by diarrheal diseases, killing annually about 30,000 children under five years of age. Recognizing the vital importance of good sanitation and hygiene practices to reduce diarrheal incidence and improve the overall quality of life, "Sanitation for All by the Year 2000" was declared in 1995 as a high national priority under the National Health Plan. The fundamental aspects of the programme, based on the self-help approach, and launched with UNICEF support were: (1) a minimum latrine standard, requiring the excreta to be contained in a covered pit in the ground, (2) a low-cost and do-it-yourself concept, focusing on the use of locally available materials and (3) intensive social mobilization. In early 1998, with the support of UNICEF and WHO, a National Sanitation Week was launched (11 to 17 May) to motivate 1 million families to construct their own sanitary latrines (12 percent of the households of the country), who could be reached by motivating 15 families in each of Myanmar's 66,000 villages and wards. Between January and May, social mobilization intensified through meetings organized at various levels, supported by Health Teams visiting various states and divisions to organize support from NGOs, school teachers and local leaders and producing a spate of information and communication materials, such as posters, pamphlets, visuals and models of affordable latrines, with the private sector and the national television and newspapers playing a significant role. The social mobilization created a sense of campaign ownership at the community level. Families chose to build their latrine with their own hands and with locally available materials producing a wide range of low cost and appropriate latrine designs suited to individual family preference and affordability. About 800,000 new sanitary latrines were reportedly constructed adding almost 10 percent to the national sanitation coverage and including many township authorities to set challenging targets to achieve the goal of Sanitation for All even before the decade ends. If exemplified a situation of success breeding success. Another National Sanitation Week 1999 is already being considered focusing attention on hygiene.

Source: "Sanitation Campaign in Myanmar", UNICEF - Myanmar, July, 1998.

Box 5.4 School Health Clubs in Kerala, India

"A key aspect of a sanitation programme in Kerala has been the formation of school health clubs. These health clubs, which conduct activities related to water hygiene, environmental hygiene, food and home hygiene, aim to inculcate good hygiene practices in young children through information sharing, knowledge, and skill developments. Children are involved in monitoring activities, such as handwashing and latrine cleanliness in their homes and schools, and take part in "sanitation weeks" and competitions. They also engage in community activities, such as making garbage pits in poor households and carrying out other sanitation promotion activities in their neighbourhoods."

Source: Danida and DGIS, Community-Managed Sanitation Programme in Kerala, India, as reported in UNICEF (1997).

5.4 Targeting the Right Kind of Audiences

An effective advocacy for sanitation would largely depend upon how sanitation programmes are targeted. For this purpose, a set of three kinds of audiences at three different levels can be conceived:

a. Government agencies; donors; partner organizations; religious community and opinion and political leaders
b. Fathers-and mothers-in law; uncles; teachers; and neighbours
c. Mothers; children; and child caretakers.

While it may be essential to streamline sanitation programmes differentially at each of these target audiences, it is obvious the major effort at change in sanitation an hygiene must be directed at the third one which constitutes the core primary audience (Fig 5.1).

5.5 Social Mobilization for Improved Sanitation

Motivation for sanitation, and especially for use of latrines and improved hygiene practices, has been recognized as important in Nepal's sanitation policies. However, a wider approach within a social mobilization framework would be more conducive to accelerating the popular demand for sanitation (Box 5.3). This will involve:

i Broad-Based Motivation Strategy

Most motivation strategies for sanitation and hygiene in Nepal have been launched only through water projects. While this is important, it would be useful to broad-base the motivation strategy through wider channels, including the use of different government programmes and media sources.

Box 5.5 25 Women of Darlami Transform Their Village

Twenty-five women of Dalami village in Ward No. 7 of Pangshia VDC in Morang district transformed their village into a model village of Morang district when they united themselves into an organization called Pragatishil Mahila Samuha.The village is now free from alcohol and smoking. Here they never hire labourers to work in the field because the group itself works as the labourers. According to Dali Maya Magar, chairperson of the group. Members of the group have been working turn by turn in the fields of all the members. This saves money on the one hand, while on the other, plenty of work is done in their field in the same day. They have launched a campaign to ensure that each household sends its girl children to school and all adult males and females join the adult and informal education classes run by the Community Development Service Centre. Dali Maya claims that there is not a child who does not go to school and not an adult who does not go to adult classes. VDC chairman Tek Bahadur Limbu says there is a new wave of development in the village due to the efforts of these women. The VDC office has also been extending all-out cooperation to the women's group. Alcohol is not produced and consumed in the village. There is a toilet in every home. The women also play a leading role in launching a cleaning campaign in the in the village and in building different roads, Mr. Limbu said.

Box 5.6 **Sanitation Success in Kerabari**

Poor sanitation facilities in Nepal make diarrhoea one of the biggest child killers, lead to insufficient nutrition and cause malnutrition. This bleak picture is slowly but surely changing in Kerabari, exemplified by the case of Vishnu Maya Tamang, a poor woman and a mother of ten children.

Talking about how she managed to dig the pit latrine and construct the small bamboo shelter, she shows great pride and satisfaction. But Vishnu is not alone in her achievement. During the last six months, about one fourth of all the households in Kerabari VDC, or over four hundred families, have decided to improve their sanitation facilities and construct a latrine.

Six months back, when the UNICEF-assisted Sanitation Programme was launched, a Sanitation Management Committee was established, nine Sanitation Motivators were selected who, together with some additional female sanitation volunteers, received training in safe sanitation practices, all this implying community involvement in the programme and in particular active participation of women. The campaign lincluded extensive door to door visits by the Sanitation Motivators, advocating and motivating for changed sanitation behavior and construction of latrines. Public meetings were also conducted to run street theatre on sanitation issues.

What Vishnu Maya saw there convinced her that she could do it herself. The simple model used local materials without external assistance, was easier and less expensive than was commonly believed.

It is yet too early to tell whether the Sanitation Programme has really brought about significant improvements in hygiene conditions. People, however, speak about reduced incidents of diarrhoea among children and improved well-being of the whole family. The environment is cleaner and the yards are more pleasant. The people of Kerabari are happy and confident that they made the right decision when they decided to construct latrines. Hopefully, this will be followed by several more.

By Johanna Eriksson

Inclusion of motivation component in several community and household-linked programmes of other government departments and national and international NGOs, rather than confining to only new water projects, would help to generate demand for sanitation, including private latrines, on a much wider scale. Preparation of appropriate motivation modules for sanitation which may be easily incorporated in a number of programmes will be useful for this purpose. Success of other interventions such as the school education programme for environmental awareness (Box 5.4) by the UDLE and other traditional social channels of communication also needs to be assessed and incorporated into such an approach.

Sanitation Campaign.

In modern societies, the role of media in influencing public opinion and public policies has become important and critical. This requires a carefully planned strategy with appropriate news articles, reporting on best practices and proper timing of media coverage, using different forms of media, including newspapers, magazines as well as radio and television. Media can also play a lead role in supporting sanitation campaign as a part of the social marketing efforts. This requires special efforts to orient the journalists, who report on development news, to sanitation issues.

The efforts at sanitation motivation can be usefully taken up in areas which already have water services, as compared to access to sanitation, drinking water coverage, especially in rural areas, is far

higher, reported at over 60%. This would be cost-effective and can be combined with the 9th Plan scheme for improving conditions in the existing water projects.

ii. Sanitation Campaign

Concerted effort through a sanitation campaign will help to provide an intensive societal boost to the concept of sanitation. Such efforts have been used successfully in Bangladesh and Myanmar with UNICEF support (Box 5.3). At home, the success of such efforts at Darlami and Kerabari point toward the potentials waiting to be tapped in this regard. (Boxes 5.5 and 5.6). But for this purpose to be achieved it will be necessary to mobilize a large number of stakeholders and develop a simple message which captures both the notion of sanitation and its potential benefits. Attention will need to be paid to the timing of such a campaign, preferably from mid-April to mid-August, when it is likely to have the greatest impact due to the monsoon when health conditions are at their worst. Such a campaign can be linked to a national and regional system of annual awards for best practices and achievements in sanitation. This will create a healthy competition among the various local authorities. These awards can also be linked to the preparation of an annual environment status report (See Box 5.12).

Box 5.7 Sanitation Project as an Entry Point-Haniman Gaon School

Haniman Gaon is a small village of Ghum Khahare VDC, Surkhet, in the Mid-Western development region of Nepal, where low and high caste people live together peacefully. Before the Water Supply and Sanitation Project they had to spend one to two hours in fetching water. The village also lacked any sanitation facility. There were many health-related problems, especially diarrhea, skin and gastro-intestinal diseases. When their request for a water supply and sanitation project was approved by the Nepal Red Cross Society, the people planned the project activities and established a Users' Committee, a Women's Group, a Youth Group and a Children's Group. Financial and technical assistance was received from the Nepal Red Cross Society/ Japanese Red Cross and UNICEF. During implementation, sanitation facilities such as a latrine, a garbage pit, a soak pit, a washing and bathing platform and a smokeless stove were provided to each household. The water supply system was also built and completed. However, sanitation proved to be the entry point for development in Haniman Gaon which now stands as a model in the rural areas. In the last two to three years, no small child has died from diarrheal diseases and women are involved in community level participatory work, practicing hygiene and maintaining the sanitary facilities they use. After the completion of the project, income generating activities and non-formal education were also initiated by the Users' Committee. This village provides a true example of sanitation project as a demonstration and an entry point for other developmental activities to follow.

Source: Based on WES observation reports by Hans Spruijt and N. L. Shreshtha, 1998.

The campaign can use a wider concept of motivation for sanitation, rather than relying only on the sanitation-health linkage. Other sanitation benefits such as privacy and convenience which accrue from access to private latrines and elevation of the household status, respect and dignity, especially for women, need further emphasis. Many household surveys have emphasized these to be important factors in the decision to use an individual household latrine. Similarly, for solid waste management, the notion of pride in one's city or neighborhood (*Tole*) can become an important motivation factor. Improved sanitation also helps to generate resources, especially out of waste. The possibility of producing manure from solid waste, which may either be sold or used for improving agricultural yields, needs greater attention. The *"Waste to Resource"* concept will also help to provide an economic rationale for improved sanitation practices.

iii. Demonstration of Sanitation Improvements

Use of sanitary facilities and improved hygiene practices require

basic behavioral changes, and can be aided significantly through demonstration. Many of the water and sanitation projects in Nepal already incorporate this approach. For example, the DWSS scheme under the 9th Plan, and the Fourth ADB Project, both have provisions of institutional toilets for this purpose. It is, however, necessary to assess the effectiveness of these toilets in terms of their conditions and utilization. Further, education materials or innovative measures such as health clubs among children can also be effectively linked to such facilities (Box 5.4). Demonstration may also be done using the behaviour modes of government and NGO workers. Often, sanitation provides opportunities for communities to plan together and work for its maintenance later. This leads to building of community management capacity, which later also transcends to other development activities (Box 5.7). In view of the Decentralization Act and the increased role of local governments, the elected representatives can themselves help to set examples of improved hygiene practices and become role models for the community. This has been recognized as evident from the resolutions made by the Associations of local governments (See Box 2.2). The role of elected women representatives is likely to be even more important in this respect.

Box 5.8 Training for Sanitation under ADB Projects in Nepal

Under the ADB-funded Rural Water Supply and Sanitation Project, DWSS provides for training at both the institutional and community levels. The former aims to train the DWSS staff to be sensitized to the concept of sanitation with community management and encourages use of social tools and techniques oriented to engineers, overseers and field technicians. At the community level, training is linked to actual implementation and involves all WSUC members. In the last three days, an intensive training to generate greater hygiene awareness among the community is held. WSUC members are encouraged, trained and supported with technical assistance to build their own toilets. This is followed by a week-long campaign on hygiene and sanitation under the guidance of a technician-in-charge of the scheme. Training is also extended to school teachers and community health volunteers.

Source: Based on notes by Vijaya Shreshtha, 1998.

5.6 Actions for an Enabling Environment

With increased motivation for improved sanitation, an effective strategy will require an appropriate enabling environment to support delivery systems that can effectively respond to the new demands. This sub-section focuses on two aspects of such demand, namely, new or improved latrines and sanitary facilities and hygiene awareness / practice. The main constraints faced for latrines relate to assistance in the choice of appropriate technology and credi access For improvement in overall hygiene practice, however, considerable behavioural change is necessary. This necessitates a larger process orientation.

Within the guiding principles, three enabling strategies are identified to support development of sustainable delivery systems:

i. Capacity Building for Planning and Management

With decentralization and the emphasis on community control through a demand-led approach, local governments and community organizations are expected to take on new roles and responsibilities for planning and management of water and sanitation systems. However, in most cases, the capacity for this does not exist. Capacity building efforts focusing at both institutional and community levels are essential. Such efforts have been initiated under some of the existing projects (Box 2.3). However, these will need to be strengthened and institutionalized.

For local authorities, capacity for a greater community orientation in planning and implementation is necessary. For WSUCs, management capacity for initial development and, especially, continued operation and maintenance will be necessary. It is otherwise common to find WSUCs failing to continue their activities after services have been provided. For sanitation and hygiene, this is crucial, as improvements in hygiene practices have to be sustained. It would be useful to explore the possibility of WSUCs themselves becoming 'trainers' for other communities. Such approaches have been successfully used by several NGOs such as SEWA Housing Services Trust and SPARC in India and the Federation of the Homeless Population in South Africa.

ii Enhancing the Role of the Private Sector in Supplies

One of the factors underlying the rapid expansion of safe latrines in Bangladesh has been the enhanced role of the private sector in supplies (UNICEF-SA, 1993). In Nepal, RWSSFDB also envisages participation of the private sector in a variety of roles. Greater attention needs to be paid to developing an effective framework for participation of the private sector in supplying the necessary components and other services such as technical assistance, monitoring, etc. Adequate demand within a manageable area can easily support local entrepreneurs as reflected by the experiences in Bangladesh and India.

This will also contribute to the social marketing approach enabling the potential private entrepreneurs to become motivators. This would happen naturally as the private sector will seek out new markets and respond to customers' needs for a variety of products such as latrine rings and slabs, as has happened in Bangladesh, or even for locally made cheaper soaps for hand washing. However, this approach may work better initially in the Terai region, where the possibility of business viability is greater, due both to higher incomes and densities.

iii Community-Based Credit Systems

One of the key constraints in enhancing household access to latrines is the scarcity of credit. This is especially true in the Terai belt where the cost of rings could adversely affect affordability of the poorest. Under the RWSSFDB schemes, this is addressed through a sanitationrevolving fund, created with an initial grant, and to be managed by the community through the WUC. However, access to credit can also be made more broad-based by linking it to other programmes promoting community credit systems that generally focus on micro-finance with the possibility of access to credit for a variety of needs, including economic activities, consumption, health needs and crisis-linked credit. Such a linkage will provide more sustainable access to credit for similar infrastructure purposes.

A variety of models exist in the developing countries, including Bangladesh, Thailand and India. Lessons may be drawn from these. The programmes in Nepal, such as the Production Credit for Rural Women (PCRW), Small Farmers' Development Programme (SFDP), Grameen Banks and the USAID-funded Centre for Micro-Finance, need to be assessed for inclusion of a sanitation component through the existing systems. PCRW and Grameen Bank programs are focused on rural women and the SFDP is focused on small farmers, both men and women. PCRW, which is implemented

by the Women Development Division of MLD, has 14,658 groups with 73,700 members with its cumulative credit disbursal at nearly 418 million NRs by July 1997. SFDP, which covers 652 VDCs in 75 districts, is implemented by the Agricultural Development Bank of Nepal which served nearly 200,000 small farmers including 40,000 women members, with a total credit disbursement of nearly 3000 million NRs.

Five Grameen Banks operate in Nepal, based on the group formation approach. The program helps women and small farmers to organize into action groups consisting of 5-8 members, which receive credit for income generating activities based on group collateral. The main objective of these programs is to raise the socio-economic status of the low income and socially deprived families. A combined package of skill and income generating training, saving/credit and community development activities exists in these programs. The Centre for Micro Finance provides technical assistance and opportunities for networking that can be used to introduce the idea of sanitation credit through micro-finance institutions.

At the butcher shop in Kathmandu.

5.7 Other Aspects of Urban Sanitation

Urban sanitation issues are critical, due both to their high costs and the possibility of serious public health problems with resultant economic losses. In the emerging institutional scenario, the responsibility for solid waste and storm water drainage in the rapidly expanding urban areas will rest with the municipal authorities. The focus, therefore, will have to be on municipal capacity building to deliver these services effectively. This requires attention to wider urban management reforms beyond the sanitation sector to evolve more sustainable systems. Adequate attention to differences in approach between larger cities and smaller towns is necessary.

i Municipal Financial Management and Investment Planning

The earlier review of municipal capital investments in sanitation suggests that improvements in sanitation will need to be linked to larger municipal financial reforms, incorporating useful lessons learnt from the GTZ-funded UDLE programme. Important interventions include resource mobilization measures through better property tax management as well as service-linked charges, improved accounting and financial reporting systems and the need for long-term capital investment planning. Development of municipal capacity will also render sanitation systems more effective. In such efforts, financing systems such as the Town Development Fund will need to move away from the largely grant-based approaches as

more demand for such investments is generated. Such changes in financing systems will need to be supported by technical assistance to the municipal authorities for project development, better procurement through fair and transparent processes and management of implementation.

ii Municipal Service Partnerships

Global experience suggests that municipal authorities need to evolve partnerships with both the private sector and the communities for service delivery. In the case of urban sanitation, a variety of partnerships are possible. For solid waste, the role of community in primary collection is important. The successful experience of the Tole Sudhar Samittees in Bhaktapur provides useful lessons (refer to Box 2.4). Lessons from several municipal-community-NGO partnerships for solid waste in India also illustrate the immense possibilities of such approaches. In the transportation and disposal of solid waste, the scope of private sector participation will prove useful. Municipal authorities in the Kathmandu valley are already exploring private sector participation in solid waste management. Technical assistance support to these efforts for better procurement processes and technology selection will prove very useful.

Issues related to partnerships for sewerage and drainage systems are far more complex. There is some attempt at public participation in Kathmandu valley towns as both NWSC and municipalities have programs where communities can initiate construction of combined sewers. However, problems often persist in linking these to city level systems which are either non-existent or deficient. Responsibility for sewerage in urban centres also needs to be clearly resolved. This will be especially true as higher forms of private sector participation are being explored for water supply in some of the NWSC towns, especially those in the Kathmandu valley. Unless these efforts also integrate the necessary provisions for sewage collection, treatment and disposal, it will lead to exacerbation of environmental problems. Planning for sewerage systems will also need to address the technology issues related to sewerage, especially in view of the limited financial capacity for investments in this sector.

iii. Benchmarking Municipal / Utility Performance

Provision of most sanitation-related services in the urban areas requires efficiency in management and effectiveness in service delivery. Comparative assessment, within a framework of benchmarking of municipal performance, can provide useful guidelines for improvements at the local level. Under this heading, planning for urban sanitation, based on an initial assessment of status, and regular and joint monitoring of performance over time, has to be carried out. This approach has been used in several countries and is being taken up for municipal services in South Asia under an ADB initiative.

5.8 Resolving Institutional Arrangements

Appropriate institutional arrangements are essential to operationalize these recommendations. This necessitates both clarifying the institutional roles for different components

of sanitation as well as supporting financial arrangements in the emerging framework of decentralization in Nepal. It also requires institutionalizing processes of convergence across a multitude of agencies and institutions. Assessment of past efforts and evolving new approaches will be the key to resolving institutional issues. In the past decade, the role of NGOs has emerged as important, though often the efforts remain fragmented, and appropriate coordination through self-regulation needs to be promoted. Lastly, one major weakness in all service delivery has been lack of accountability. As new forms are tried and encouraged, better systems of monitoring to ensure accountability to both consumers and investors will become critical.

Box 5.9 Rationalizing Resource Transfers to Sub-National Governments: State Finance Commissions in India

Under article 243 W of the new Constitutional Amendment Acts (73rd and 74th Amendments), State Finance Commissions have been established in most states in India. The main tasks of the State Finance Commissions are to:

- review the financial position of local bodies;
- make recommendations about principle of distributing the state resources among local bodies;
- clearly determine the assignments of taxes, duties, fees to local bodies;
- determine the principles for grant-in-aid from the consolidated funds of India; and
- suggest measures to improve the financial position of local bodies.

Many of the state governments have submitted their reports and some have been accepted. Many states have accepted these reports. Some of the states provide interesting examples of rational and predictable principles for resource transfers. It also adds the prediction value of local resources, which will enable the projects to be developed within an urban finance framework.

i A New Sanitation Policy with Decentralization

Formation of a new national sanitation policy, defining the institutional responsibilities and financing arrangements within the emerging decentralized framework and the range of recommendations discussed above will help to guide further development.

ii Institutional Roles

The range of recommendations discussed above clearly highlights the varied role of different stakeholders in sanitation. Responsibility for sanitation in Nepal is divided across several public institutions. This is especially problematic when in the same areas different agencies are partially responsible for similar functions. A good case in point is storm water drainage. While municipalities bear the basic responsibility for this, the Department of Roads and DWSS also have a role. Greater clarity in the roles of national versus local authorities is also necessary. Both horizontal and vertical fragmentation needs to be resolved through national and regional consultations. The broad principle of role allocation needs to be applied in relation to the nature and capacity of the different stakeholders.

With decentralization, the role of local authorities, including the DDCs, VDCs and municipal governments will become more important, as sanitation tends to be more of a local function. Functional allocations under different local government legislations will need to be clearly evolved. This has been initiated under the new Decentralization Act. A review of these with regard to sanitation through local consultation across the stakeholders will be useful. The experience under the 73rd and 74th

Box 5.10 Six Steps to a Sanitation Promotion Programme

Step 1	Initiate action - define the target area,	
	Make an outline plan, arrange for funding	
	Set up the team	Contact communities
	Hold a planning workshop	Build a network
Step 2	Make a detailed Formative Research Plan	
	Prepare a questionnaire and methods to answer each of them	Train the team
Step 3	Carry out Formative Research	
	Identify risk practices, select practices for intervention	Define the target audiences,communication channels and message positioning
Step 4	Analyse Results, Report and Feedback	
Step 5	Make the Communication Plan – comprising behaviour change objectives, target audiences and practices, positioning, communication channels and materials, monitoring and project management and budget	
Step 6	Set up and run the Sanitation Promotion Programme	
	Pilot, test and revise the messages, strategies and communication materials	Set up supervision and monitoring
	Carry out a baseline survey of the target behaviours	Evaluate

Adapted form Kanki and Curtis, pp. 15-22..

Constitutional Amendment Acts in India suggests that while adequate consultation is necessary, it will be useful to specify these directly in the national legislation. Allocation of responsibilities for different components of sanitation, such as hygiene awareness and practice, access to latrines and other sanitary facilities, drainage, sewerage and solid waste management, will need to be defined. These may also vary by type of settlements, that is, rural vs urban, as well as for the different sizes of urban settlements. While the roles of communities, NGOs and the private sector will get defined at the local level, national policies can provide directions in this regard. Table 2.3 highlights the potential role of different agencies in sanitation in this direction.

Financing Systems:

Changes will also be needed in financing systems. At present, most investments in sanitation take place through the central budgetary allocations routed largely through the national level line departments such as the DWSS and NWSC, or funding agencies such as RWSSFDB and TDFB. In addition, some of the block grants allocated to the DDCs on the basis of 0.5 million NRs per VDC are probably utilized for sanitation and municipalities also allocate their own resources for sanitation (refer to Annex 1 for the existing financing arrangements).

Additionally, systems of resource transfers from the central to the local level will have to be developed within the framework of public finance. The Decentralization Act envisages setting up of a Finance Commission in this regard. The experience of National and State Finance Commissions in India provides useful lessons (Box 5.9). In evolving these arrangements, sanitation needs to be included explicitly as an important sector.

With decentralization, the fiscal powers and authority of local authorities will need to be enhanced. Locally controlled new sources of revenues and capacity for medium-term capital

investment planning will become essential. For example, the new Decentralization Act envisages abolition of octroi as a source of revenue for municipalities. Unless substituted by a locally controlled and buoyant source of revenue, the adverse effect on municipalities is likely to be severe.

Institutional Restructuring:

With decentralization, allocation to line ministries is likely to decline as DDCs build up local capacity for planning and implementation. This will also affect institutional arrangements for planning and implementation. Some rethinking will be required on the role of DWSS to facilitate the DDCs and VDCs in the institutional restructuring process that is necessary. This may mean restructuring of DWSS to integrate its local level staff with DDCs as demand for technical capacity at this level increases. DWSS can itself be also corporatized as a separate entity to provide demand-based services to the local governments and community organizations. The possibility of using alternative implementation arrangements through the NGOs, community groups and private sector also needs to be developed. The experience of RWSSFDB and NWSC will need to be assessed and reviewed for use at the DDC level.

A key factor in resolving institutional arrangements also relates to the long-term sustainability of some of the new institutions. For example, the RWSSDB, which represents a new approach to delivery of services through NGOs, private sector and communities, fully depends on government grants. Alternative financing and ownership arrangements that ensure operational independence in the long term need to be developed. Agencies such as the RWSSDB need to develop management efficiency to cover operational costs and combine subsidies and loan resources in keeping with the availability of grant funds.

iii. Local Action Plans for Sanitation

With decentralization,local level planning, coordination and implementation will become increasingly important involving planning at both the district and village or town levels. It will require plans to coordinate activities of various stakeholders in the process, including the relevant government departments,

Box 5.11 Recommendations for Sanitation Planning

1 *Involve the local community from the earliest stage of program and planning.*
2 *Dedicate more of the budget to sanitation provision.*
3 *Dedicate an adequate proportion of resources available to maintenance and upgrading of water supply and sanitation system.*
4 *Provide incentives for cleanliness (in the form of prizes, rewards, etc.).*
5 *Arrange for an annual sanitation audit of the structures (latrines, ponds), waste disposal areas.*
6 *Encourage high profile public figures (politicians and community leaders) to support the school health campaigns.*
7 *Prioritise the problems.*
8 *Increase the priority given to developing environments that promote improved health conditions.*
9 *Define areas where interventions are feasible and suggest what can be done and how.*
10 *Make the most of a valuable resource, such as the school which can serve as a multipurpose venue for the whole community.*
11 *Make use of the hidden curriculum, public school and institutions - by cultivating the right ethics, the proper skill and resource use and behaviour patterns and by maintaining a clean environment around.*
12 *Identity the points for resistance to change and their obvious reasons.*

private sector, financing agencies, NGOs and community organizations. Local level plans incorporating local community concerns and providing for convergence across stakeholders will be necessary (Boxes 5.10 and 5.11).

Convergence and Coordination for Sanitation:

Responsibility for sanitation generally cuts across several sectoral departments. One major issue in implementation relates to the need for coordination and convergence of policies and local actions to maximize the benefits and impacts. In the past, attempts have been made to resolve these through the formation of national and district level sanitation coordination committees. The actual performance of these committees will need to be assessed. Experience with some of the recent projects, such as that of the Asian Development Bank and FINNIDA, which focus on district level information and planning systems, also need to be assessed. For each sanitation component, greater clarity in assigning the lead agency and evolving an effective coordination framework will be critical to resolving the institutional arrangements for sanitation. Effective coordination is required at all levels, starting from the central level where appropriate legislation and instructions to local staff have to be issued. At the local level, however, the emphasis needs to be on processes which ensure rapport and joint action among the local staff of various departments, NGOs and community groups. This in turn will require emphasis on measures such as regular meetings, joint action teams and informal team building efforts, rather than only formal committee structures.

Box 5.12 Annual Environment Status Report

An Annual Environmental Status Report (AESR) is a simple and useful tool for initiating local awareness regarding importance of environmental conditions. The new legislation in the state of Maharashtra, in western India, has made this a statutory requirement for all cities. Many cities have initiated this activity. Pune Municipal Corporation produced its first report in 1996, through external technical assistance. However, due to its usefulness, two subsequent reports have been produced through its own initiatives.

AESR in a city context provides information on the level of services, extent and nature of pollution, nature of efforts made at the local level to improve services and reduce pollution as well as the prevailing health conditions. As such a report is to be prepared every year, it becomes possible to trace the improvements or decline in these aspects on an annual basis. In some of the cities in Maharashtra, the effort is now being made to link AESR to determine city level infrastructure priorities and a more rational capital investment plan.

Self-Coordination of NGO Activities:

NGOs are envisaged to play an important role in sanitation. Their activities at present are, however, uncoordinated and the benefits often remain limited. Coordination in terms of approaches, geographical coverage and institutional linkages is essential. This, however, has to be done cautiously so that the very strengths of NGOs, namely innovation and flexibility, are not adversely affected by any efforts at coordination. Following the private sector's self-regulatory organizations (SROs), NGOs can themselves form a coordinationcommittee at both the district and national levels. The committee can provide both a forum for coordination among the NGOs and effective linkage with other government and donor agencies. Such a committee has been successfully facilitated by the UNICEF in the central region districts.

Table 5.3	Who Should Do What in Sanitation?
A.Parliament-MPs	• Reform of legislation, administration and budgets to favour sanitation
Central Government	• Make sanitation policy, and set up standards • Promote alternative fuel programme, such as the Gobargas • Run sanitation campaigns such as sanitation week
Ministry of Housing & Physical Planning	• Revision of national sanitation policy, name change, and separate budget for sanitation
Dept. of Water Supply & Sewerage	• Separate budget for sanitation enabling environment
Ministry of Finance Ministry of Education	• Policy revision to include water and sanitation for all educational centres (formal and nonformal) • Teachers to function as role models.
Ministry of Health	• Policy revision/assuming leadership role in hygiene and sanitation • Health staff to behave as role models
B.District/DDC	• Make district sanitation policy and programmes with long-term targets • Introduce programmes to encourage people to use toilet • Educate local authorities and communities on sanitation and toilet • Encourage NGOs and CBOs in achieving these objectives • Run sanitation awareness programmes (sanitation week, sanitation campaign, sanitation literacy, essay & inter-school competition) • Set up prizes for communities maintaining high sanitation quality
Kathmandu/Patan Municipal Leadership	• Take measures to insure model role in sanitation
Public Offices in Kathmandu	• Take action to insure toilets in offices
NAVIN ADDCN NRCS Other NGOs	• Leaders/volunteers/ facilitators to become role models for sanitation
C.Community/VDC	The local leaders • Make toilets and use them to set examples for communities • Run awareness programmes discouraging flow of toilet residues into drinking water sources & public places • Educate community on sanitation and personal hygiene • Educate children in these areas • Encourage communities in sanitation campaigns • Run competitions aimed at sanitation • Award prizes/set targets for the entire village for clean living
Development Organisations	Sanitation in rural areas - Campaign/large-scale promotion - Training of local volunteers - House-to-house visit for knowledge-sharing and actions - Provision of access to credit - Local entrepreneurs to provide components for sanitation facilities (toilets, bio-gas installation, smokeless stoves)
Big Employers (Industries, Tourist Agencies, Hotels, Business Houses, Agro-Business Units) and Small Enterprises	Clean-up efforts around their premises, adopting areas for cleaning, help employees to take up improved sanitation measures for image improvement and productivity growth
Hospitals, Religious Shrines, Schools, professional Association and Academic Institution, Training Units, Integrated Development Programmes, Banks and Private Sectors	Take care of wastage disposal and work in partnership for raising the status of sanitation - broadbasing sanitation
D.Family	All households • Make latrine as per their capacity • Protect the drinking water sources from the toilet • Wash hands properly before and after meal • Wash properly after use of toilet • Help the children to cultivate hand washing and sanitation habits • Encourage neighbours to make toilet and maintain good household sanitation and personal hygiene

iv Information Systems for Planning and Accountability

Decentralization and larger stake holder participation necessitate more transparency and accountability in the system. Probably, this is one of the greatest weaknesses in the existing institutional arrangements. Accountability has to be linked to appropriate institutional incentives and participatory systems for performance monitoring. Government institutions often tend to focus on monitoring only 'inputs'. Attention to developing appropriate measurement tools and monitoring performance on 'outputs' and 'impacts' will be critical to ensuring effectiveness of programmes. Sanitation impacts are especially difficult to measure. Similarly, the past emphasis on focusing on access to latrines as the only main output will also need to be revised. It is essential to develop appropriate monitoring indicators to capture improvement in hygiene practices (Appendix Table 8). For enabling strategies to become successful and ensure system accountability, good information systems in the following areas are critical:

- **District Profiles and Information Systems:**

  Decentralization of delivery systems requires better information at the district level. Such systems are essential for district level planning and to effectively coordinate activities of various government departments and international agencies including the INGOs. Such district information systems should also include development of monitoring indicators which can serve an intelligence function and help in programme evaluation. District systems can also be linked to community information systems and comparative assessments based on annual environmental status reports. Comparative analysis of information on environmental conditions and health conditions will provide grounds for healthy competition among the local authorities.

- **Annual Environment Status Reports (AESR)**

  Another information tool which will be useful is the preparation of an AESR at the local level, for VDC, municipality and DDC which may be included as a mandatory requirement within the new decentralized legislation, as has been done in one of the provinces of India (Box 5.12). It should be participatory, with communities and other local stakeholder groups contributing to the process of annual information collection and assessment.

- **Community Information and Surveillance System:**

  Given the need for community control and complexity of measuring sanitation impacts, community-based information and surveillance systems will serve a multitude of purposes. Essentially, the focus should not be on information collection only for upward transmission but more to support local decision-making processes. It is also critical to ensure information flows both ways from the local to the central, as well as, from the central to the local

levels. The reverse flows of analyzed information willenable comparative assessment at the local level.

5.9 Who Should Do What in Sanitation?

The review of the state policies in the health sector adopted over the last half century in Nepal unfolds lessons about both what can be done and what is no more pursuable. Restructuring the nation's traditional strategies in the sanitation area demands a new Action Agenda for Sanitation in Nepal which has to be taken up for discussion and implementation immediately. This is essential to ensure that various development investments, especially in water and sanitation services, yield health benefits and improve the quality of human development and living environment for the Nepalese population. In that context, Table 5.3 outlines the measures that can be suggested for various actors and agencies related to or working in the sanitation sector. The significant economic benefits from sanitation also point to the need for a reorientation in the approach to sanitation. The past neglect of sanitation needs to be reversed through an approach focusing on a demand-led strategy with an action agenda developed within an enabling framework. Decentralisation and increased emphasis on the role of the new stakeholders such as the private sector and community groups will require new forms of coordination and planning, supported by improved information systems.

A national strategy for sanitation would envision its program in the framework of an umbrella Institutional Community visualised as a totality of the Government agencies, Donors and INGOs and the Local Community and NGOs combined together. Government agencies in such a framework may be likened to influential members of a community because of the resources they control and the authority they wield. The Donors and INGOs could be likened to actors from outsides with resources and clout that can substantially affect the course of sanitation programmes. The local community and NGOs in their turn can act as the target audience for the former two stakeholders, but through their active involvement as actors in many capacities emerge as subjects rather than the passive objects they have been in the traditional mode of sanitation planning. The one area where they differ is that they are not catatysts like the former two categories of actors. They both act and are acted upon. The government and the donor together fulfil the various functions of a catalyst. They can establish a broad vision and a set of objectives together with the strategies to achieve them. They can help in building rapport and trust among the partners and their counterparts as also in developing the political will to fuel the campaign. They can develop institutional framework, form national-level working groups and build coalitions as and when necessary. They can do more. In the evolution of a strategic approach, disseminating skills and information and research output from abroad and centre, for instance, they can play a steward's role. In identifying target communities as well as in providing humanpower, materials and funding unavailable at the local level and in providing help and guidance in policy making, planning, programming and in coordinating roles, functions an activities they do have critical roles to perform. But, at the local level, the roles multiply beyond the catalytic functions.

5.10 Conclusion

To round up the discussion, this review shows that in the arena of sanitation, over the last few decades progress has been made, but most of that is of sporadic nature - creation of the Environmental Sanitation Section, adoption of the Nepal National Sanitation Policy and Guidelines for Planning and Implementation of the Sanitation Program, formation of National and District Water Supply and Sanitation Coordination Committees. The qualitative aspects of sanitation sustainability and community acceptance have not received adequate emphasis. Access to safe water over the years has improved significantly, but the situation of sanitation has stagnated, even worsened. Access to latrines, for one instance, still remains very low. Awareness about the need to improve sanitation situation in general seems to have increased. At recent meetings of the elected representatives of local governments sanitation has emerged as a key dimension of local social development. The July 1998 national seminarian sanitation of the ADDCN-UNICEF, for instance, gave a high priority for the role of sanitation. Still a consistent, clear national sanitation strategy is not yet at hand.

Gaps in access to sanitation are still widespread and demand immediate policy attention. Improvements in the field of sanitation have lagged far behind compared to those in the water sector. It is, moreover, clear that in the absence of improvements in sanitation, isolated investments in water services alone will not bring the health improvements anticipated. There is also a need to improve the information base, preferably through a community-based information and surveillance system, and as a part of district planning process.

Obviously, the traditional policy of combining sanitation to water is no more pursuable: it has failed to deliver the results anticipated. The two need to be separated in future planning and programming. Sanitation demands a fuller more adequate attention by itself to do justice to the enormity of the significance it claims rather than the adjunct role it has been accorded so far.

There is thus the need for:

a. A paradigmatic shift from the role of the central government as the main provider of the sanitation services to the community and local governments as the centre of actions and initiatives for sanitation with the government entities assuming the role of facilitators and coordinators;

b. Adoption of an enabling framework with wider stakeholder participation which involves five basic principles - demand orientation for sanitation, decentralization of sanitation responsibilities to the local levels, choice of an appropriate and progressive technology, adoption of a Basic Sanitation Package and enhancing and reprioritizing public resources.

c. Implementation of a new Action Agenda for Nepal which starts social mobilization for improved sanitation; broad bases the motivation strategy and demonstrates the sanitation improvements, with focus on schools, incorporating the key aspects of urban municipal aspects; resolves institutional arrangements, instituting capacity building measures; and initates local action plans.

All this, however, demands commitment at both the national and local levels. The new Action Agenda for Sanitation in Nepal needs to be taken for discussion and implementation immediately. This is essential to ensure that various development investments, especially in the water and sanitation services, yield health benefits and improve the quality of human development and living environment for the Nepali population at large. Ending the neglect of sanitation will demand reversing much of the policies and practices in the health and sanitation sectors that boldly focuses on a demand-led strategy with its action agenda centred on a mass enabling framework. For this purpose, advocacy with the local governments and the donors and NGOs is not only essential, but also critical to the goal of making health and sanitation possible for all.

Improved Hygiene and Sanitation can make a difference.

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Appendix 2.1 Group Report from National Seminar on Sanitation Organized by ADDC With UNICEF Support, 5 JULY 1998

(Letters in bold print following the numbered entries are meant to serve the purpose of cross-referencing.)

	RURAL (R)	URBAN (U)	MOUNTAIN (M)	HILL (H)	TERAI (T)
Problem (P)	1 Shortage of drinking water 2 Lack of household latrines UC2, HP2 3 Careless garbage disposal 4 Dirty env-t in places with waters & water facilities	1 Accumulation of wastes domestic wastes, human & animal excreta, wastes produced in public places, industrial wastes from hospitals & nursing homes RP3, HP3 2 Stagnant water pools and storm water	1 Prevalence of diseases such as diarrhea, skin infections, eye diseases, gastritis, hookworm, tetanus, goitre, tuberculosis, bronchitis, pneumonia, whooping cough 2 Impairment of physical growth of children, mental disabilities 3 Destruction of forests, soil erosion	1 Lack of drainage, sewerage VC1, TP1 2 Absence of public & private toilets in adequate numbers RP2, VC2 3 Lack of a system of proper waste disposal RP3, UP1 4 Poor management of livestock keeping, open grazing 5 Lack of conservation of water sources 6 Resource scarcity MC6 7 Unplanned settlements RC4, VC4, MC7 8 Difficulty of dispensing with old traditions	1 Lack of drainage of water & sewerage HP1, VC1 2 Pollution of rivers from industrial wastes 3 Open defection in rivers, open grounds 4 Poor maintenance of livestock 5 Pollution from wastes of vegetables and meat markets 6 Pollution related to use of plastic materials 7 Unplanned settlements 8 Unplanned *haat* markets
Causes (C)	1 Lack of awareness MC1, HP1, TC1 2 Indifference, careless habits 3 Poverty HC2, TC3 4 Unplanned settlements MC7, HP7, UC4 5 Free animal grazing 6 Lack of a system of waste recycling 7 Lack of definite state policies HC4	1 Lack of sewerage facilities HP1, TP1 2 Lack of safe toilets RP2 3 Lack of dumping sites 4 Unplanned settlements HP7, RC4, MC7 5 Poor management of livestock HP4 6 Lock of control on industrial wastes 7 Increased population densities, partly due to in-migration MC8	1 Lack of awareness, education (illiteracy) RC1, HC1, TC1 2 Lack of technical knowhow 3 Difficult topography, lack of transport facilities 4 Limited interaction 5 Scarcity of water sources 6 Scarcity of funds (govt. & non-govt. agencies) HP6 7 Traditional housing patterns HP7, RC4, UC4 8 Migration problem UC7 9 Increased tourist flows	1 Lack of awareness, illiteracy 2 Poverty RC3, TC3 3 Lack of political will 4 Lack of priority for planned sanitation programs RC7	1 Lack of awareness, illiteracy RC1,MG1,HC1 2 Lack of realization of social responsibility 3 Poverty HC2, RC3 4 Traditional practices

Solution (S)	1 Development of public awareness US1 2 Public toilets in dense areas (low cost toilets in public places) US2 3 Checking careless waste disposal (Waste mgt in market places) 4 Supply of safe drinking water 5 Discouraging free grazing of animals 6 Cleaning polluted rivers 7 Controlling sewers draining into rivers 8 Discouraging use of plastic materials 9 Controlling population	1 Dev-t of public awareness (intensifying educ-n & publicity on sanitation) 2 Safe public toilets 3 Reducing volume of waste production 4 Promoting integrated waste mgt 5 Arranging appropriate landfill sites 6 Sanctions & punishments to polluters (in line with local govt. concept) 7 Technical & financial assistance to municipalities in waste mgt.			
Measures (M)	1 Campaigns in collaboration with govt., NGOs 2 Sanitation programs from all local govt. agencies approved by DDC 3 Organizing sanitation committees at all levels from ward to district 4 Activating health service delivery network of govt. 5 Separate budget for sanitation in all agencies & levels MM13, HM2,TM8		1 Sanitation publicity through media 2 Formal and non-formal programs through schools and communities 3 Dev-t of transport facilities 4 Providing safe drinking water, conserving water sources 5 Afforestation programs 6 Imposing charges on tourists & using proceeds on sanitation programs 7 Family planning programs 8 Improving housing situation with financial & technical assistance 9 Rural electrification & energy dev-t programs	1 Programs for raising public awareness TM1 2 According high priority to sanitation and *corresponding budget* allocation RM5, MM13, TM8 3 Coordinating activities of agencies and associations concerned with health and sanitation under LGA stewardship 4 Special training programs for women in sanitation activities 5 Regular monitoring of sanitation programs	1. Mobilizing community workers for awareness promotion activities HM1 2 Activating communities *through orientation* programs 3 Launching integrated health programs in coordination with district public health office & related agencies 4 Mobilizing required manpower & material resources 5 Actions to reduce waste pollution 6 Addressing material & human development aspects in the process of dv-t

Measures (M)			10 Aciivities for promoting self-employment 11 Promoting market facilities 12 Formulating laws on health and sanitation & implementing them through local bodies 13 Allocating funds for health and sanitation with high priority in budgets of govt. and non-govt. agencies RM5, MM13, TM8 14 Launching special programs & eliminating social malpractices rooted in superstitions HM, TM 15 Conducting all communication activities in coordination with local agencies HM, TM		7 Framing and implementing appropriate policies by govt. 8 Dv-t of policies, allocating funds, executing activities by VDCS, DDCS & municipalities RM1, MM13, HM2

Appendix 2.2 Responses to Questionnaire from National Seminar on Sanitation Organized by ADDCN With UNICEF Support, 25 JULY 1998

(Letters in bold print following the numbered entries are meant to serve the purpose of cross-referencing.)

	VDC Chairman (V)	DDC Chairman (D)	MUNICIPALITY Representatives (M)
STATUS OF SANITATION	1 Not good, in many places 2 Programs have no impact 3 Limited sanitation works in the school	1 Not satisfactory, bad	1 Bad, including at personal levels 2 Environmental sanitation in a deterioration situation 3 Further deteriorating expected 4 Given low importance
CAUSES (C)	1 Lack of public awareness (only about 50% of people understand sanitation) 2 Poverty 3 Lack of education of health education (illiteracy) (educated person also negligent) 4 Educated persons not actives in educating others 5 Neglect of sanitation for a long time 6 Scarcity of resources DC7, MCs 7 Improper disposal of animal wastes DC8, MC6 8 Lack of drainage 9 Lack of constructed latrines DC9 10 Scarcity of state drinking water, use of contaminated food DC5 11 Absence of a system to punish the polluters DC6 12 Community backwardness 13 Unplanned livestock raising 14 Health workers not working seriously 15 Centralized policies & non-involvement of VDCs	1 Lack of public awareness 2 Poverty 3 Illiteracy 4 Selfish behaviour, neglecting community, future generations and country. 5 Shortage of safe drinking water VC10, MC 4 6 Absence of a system to punish the polluters MC4 7 Scarcity of resources VC6, MC5 8 Careless disposal of wastes VC7, MC6 9 Lack of • containers for waste • disposal • dumping sites • public toilets VC9 10 Population issues • unplanned growth of settlements • increased population pressure • increase in number of landless people, town of clear govt. vision and powerless LGAs	1 Lack of public awareness 2 Poverty 3 Illiteracy, low female literacy 4 Use of polluted water/shortage of drinking water VC10, DC5 5 Scarcity of resources, management and leadership VC6, DC7 6 Shortage of wealth workers 7 Careless disposal of wastes VC7, DC8 8 Lack of toilets, defecation on river banks, dumping sites 9 Heavy workload on woman 10 Inflationary price rise 11 Migration from outside areas 12 Tourist inflow 13 Prevalence of traditional practices 14 Lack of clear govt policy
EXTENT OF PRIORITY	1 No priority given at present 2 No special budget for sanitation at VDC level 3 NGOs have done something 4 Construction of low cost latrines has just been started	1 Low priority (though concern is now growing , some efforts are being made & attempts to accord priority have just started) 2 Efforts being made to raise public awareness 3 Some NGOs and Municipalities have taken up activities, No specific budget allocations made for sanitation	1 Low priority given to sanitation 2 Some information provided to people, schools informally 3 DDC not active in sanitation

MEASURES (M)	1 Raising public awareness on sanitation and environment through campaigns DM1, MM1, 2 Educational development 3 Training women VDC members 4 Involving people's representatives 5 Allocating separate budget on sanitation 6 Constructing: public toilets biogas plants in the market areas DM7, MM6	1 Raising public awareness VM1, MM1 2 Promote education awareness campaigns by concerned agencies, as well as program implementations with special efforts; on programs for people 's representatives, VDC\DDC activities to be launched in a correlated matter, imitating discussion between DDC and municipalities to develop & implement sanitation related programs (recycling of wastes, cleaning and constructing drainage, sewerage); training activities for people and seminars in general to mobilise manpower; educating future generations from primary level of school 3 Social & political mobilisation 4 Provision of containers for waste management 5 Resolution of unplanned settlement MM4 6 Promotion of poverty alleviation and employment measures MM12 7 Constructing roads, drainage/sewerage facilities, water works, VM6, MM6; biogas plants, arrangement of dumping sites, slaughterhouses, cleaning of rivers; provision of drinking water, restriction on open grazing of livestock MM11 8 Provision of resources and manpower for waste management MM13 9 Conservation of water sources, forest and controlling soil erosion 10 More power to LGAs in creating local resources, enhancing financial autonomy of local bodies MM13, preparing DDC level plan, allocating 10% of budget to sanitation	1 Use of media for wide publicity and to raise public awareness, communication to people on significance of the issue VM1, DM1 2 Supply clean drinking water 3 Compulsory health education – in schools 4 Priority to sanitation by LGAs and central govt. 5 Planned settlement DM5 6 Construction of private and public toilets, (in schools, offices) drainage and water supply works in markets areas DM7, VM6 7 Workshops in education 8 Compulsory female education 9 Involving women representatives in sanitation campaigns; organising women groups & educating them 10 Environmental legislation, e.g., as volunteers, ban on littering roads and pubic places and imposing environmental tax on tourists 11 Restriction on free grazing of animals DM8 12 Promotion of employment skills and measures for poverty alleviation DM6 13 Improvement of waste management, legal measures DM9 14 Empowerment of LGAs MM9
GENERAL	1 Action at household level can make a difference	1 Instruction on the health matters e.g., compost manure	1 Provision of resources to uplift backward regions

OBSERVATION	2 Campaigns should be launched 3 Communication through media 4 Sanitation activities in public places (markets, Chautaras, school) should be taken up 5 Orientation to local government essential 6 Financial grants to local govt. institutions for sanitation works 7 Polluters should be punished	2 Use of media for publicity 3 Involvement of teachers and intellectuals in sanitation promotion activities apart from govt & non-govt. agencies 4 Provision of adequate finance 5 Publicising idea of "Prevention is better than cure" 6 Legal measures taken to make people fulfil their duties 7 Elected representatives should set examples in good sanitation behaviour and practise 8 Maximum utilisation of donors' assistance 9 National policies should accord high priority to sanitation	2 Implementation of programs, provision of budget, completion of projects

Appendix 4.1
Estimation of Reduction in DALYs and Its Value due to Improved Sanitation

The most direct link between improved sanitation and human development is likely to come from the improved health status of population, especially due to the reduction in diseases such as diarrhea, dysentery, worm infestation, cholera and typhoid. Reduction due to the water and sanitation-related diseases is reflected in both mortality and morbidity patterns. Based on the information and analysis in the World Development Report (WDR) 1993, both of them can be aggregated into a single measure called DALYs. "DALYs are a combination of: (a) discounted and weighted years of life lost as a result of death at a given age; and (b) disability as a result of morbidity, adjusted by severity" (Brandon and Hommann, 1995, p.4). WDR 1993 gives detailed estimates of DALYs lost due to different diseases and separately for morbidity and mortality.

Following Brandon and Hommann (1995), and using the disaggregated information for India from the WDR 1993, possible reduction in DALYs, due to improved sanitation and its economic value, have been estimated for Nepal. The main limitation of this approach relates to the difficulty in separating the effects of improved sanitation on reducing DALYs. However, given the importance of sanitation noted in most studies and the use of base information on DALYs for India, these estimates are most likely to be rather conservative. The analysis for hygiene is only illustrative as very little statistical information exists on its health impact, though most studies recognize its importance.

The analysis to estimate the health benefits and its value in monetary terms has been done in five steps as described below. The detailed equations are also reported later.

1. Estimated Total DALYs lost due to Water and Sanitation-related Diseases:

For measuring the impacts of water and sanitation-related diseases, the information for India (in terms of DALYs lost per 1000 population) as reported in Table 1 has been used. It is evident that in 1990, the DALYs lost due to these diseases were about 45 per 1000 population. Given the comparable access to water and sanitation in Nepal in 1996 with the level for India in 1990, it is assumed that the same rate will be applicable for Nepal in 1997. With an esti mated population of Nepal in 1996 at 18.1 million, the total DALYs lost, due to mortality and morbidity due to water and sanitation -related diseases, are estimated to be 0.95 million.

2. Estimated Reductions in DALYs due to Improvements in Access to Sanitation:

The second part of the analysis estimates the possible reduction in DALYs due to improvements in status in sanitation. Based on a widely quoted study by Esrey et al. (1991), which reviewed almost 50 independent studies, it is estimated that the reduction in morbidity due to diarhreal diseases may be as high as 36 percent. Interestingly, this is higher than the estimate for reduction due to improvements in both water and sanitation at about 30 percent. For mortality, the available studies were fewer, but the estimated reduction is higher at 65 percent. "Of the studies which compared the relative importance of water and sanitation, most reported that sanitation had a greater impact on child health, based on mortality, growth and morbidity indicators" (Esrey et al. 1991, p. 613). Table 2 provides the main highlights of these results.

The information on DALYs lost due to water and sanitation-related diseases (as estimated in step 1) does not allow separate analysis for morbidity and mortality. It is, therefore, necessary to combine mortality and morbidity into one reduction factor. This is derived by using a weighted average of the overall mortality and morbidity components of these DALYs, as reported for India. The total reduction factor, which gives an estimate of reduction in DALYs due to improved sanitation, is in the range of 26.4 to 52.9 percent, based on assumptions related to the extent of improvements in access to sanitation (refer to Table A3).

3. Effect of Hygiene Improvements:

An important additional concern relates to the likely effect of hygiene awareness and practices. For this analysis, it is

assumed that people with access to water and sanitation facilities will also have better awareness and practice of hygiene. Thus a hygiene factor h is introduced: Rw = Rwo*.559 (or .264) * h, where h <= 1. The value of 1 for h implies that the hygiene levels are the same for both groups. A value of 0.4 is used for this analysis, implying that hygiene levels among those without access to "safe" facilities is only 40 percent of those with such facilities. Another assumption with a value of 0.2 for h is also used to illustrate the benefits of improved hygiene among those with access to facilities. Table 5 highlights this, as even by serving additional 50 percent of the unserved, hygiene improvements will help to reduce the DALY losses by an additional 15 to 25 percent.

4. Estimating Total DALYs Reduced due to Improvements in Sanitation:

In order to estimate the total DALYs, two assumptions related to improvements levels for provision of sanitation facilities to 100 and 50 percent of the unsaved population have been used. The second assumption corresponds closely with the targets set for sanitation in the Ninth Plan. Based on these assumptions, the reduction in DALYs for different scenarios ranges from 0.36 to 0.81 millions (refer toTable A5). This represents a reduction of 34 to 80 percent in DALYs lost due to water and sanitation-related diseases. The average reduction for all six scenarios is 0.48 million DALYs or 51 percent.

5. Valuing the Reduction in DALYs: The value of reduction in DALYs through health improvements has been done using the human capital approach, where the statistical value of one DALY is equal to the annual average productivity of one Nepali worker, as "one DALY implies one year in which a worker cannot work due to either sickness or premature death". It is necessary to adjust this value by the age at which DALY occurs, especially as the burden of sanitation-related diseases falls more heavily on children. Following Brandon and Hommann (1995), the value of one DALY is adjusted by weighting it by the age distribution of sanitation-related DALYs.[1] As information on annual average wage level was not available for Nepal, it has been estimated by using the information for India.[2] This is a rather conservative estimate. It also does not take into account the costs of inconvenience and discomfort faced in the analysis. Using this approach, the total value of reduction in DALYs due to improved access to sanitation ranges from 2.4 to 5.6 billion NRs (refer to Table A5).

Equations used in Estimating the Reduction in DALYs and their Value due to Improved Access to "safe" Sanitation Facilities

(1) DALYt = Rt*POPt / 1000

where:

DALYt = Total DALYs lost due to inadequate access to "safe" water and sanitation facilities (in millions)

POPt = Total population in 1996 (in millions)

Rt = Rate of DALYs lost due to inadequate access to "safe" water and sanitation facilities (per 1000 population) - Used as per information for India for 1990.

(2) RFt = RFmt * Wmt + RFmb*Wmb

where:

RFt = Total reduction in water and sanitation-related DALYs due to improvements in access to "safe sanitation"

RFmt = Reduction in mortality due to improvements in access to "safe" sanitation"

RFmb = Reduction in morbidity due to improvements in access to "safe" sanitation"

Wmt = Share of DALYs due to mortality as a result of water and sanitation-related diseases

Wmb = Share of DALYs due to morbidity as a result of water and sanitation-related diseases

(3a) Rs = Rso * RFt * h

where:

Rs = Rate, watsan-related DALYs among those with access to "safe" sanitation facilities (per 1000 population)

Rso = Rate, watsan-related DALYs among those without access to "safe" sanitation facilities (per 1000

population)

h = Hygiene levels for those without access to "safe" sanitation facilities as a proportion of those with safe facilities (%)

(3b) $Rt = P * Rs + (1-P) * Rso$

where:

Rt = Rate, watsan-related DALYs among the total population (per 1000 population)

P = Proportion of population with access to "safe" sanitation facilities (%)

(4) $DALYr = POPt * (1-P) * IMP * 1000 * (Rso - Rs)$

where:

DALYr = Reduction in DALYs due to improvements in access to "safe" sanitation facilities (in millions)

IMP = Proportion of needy population given access to "safe" sanitation facilities (%)

(5) $Vr = DALYr * W * Vsl$

where:

Vr = Total value of reduction in DALYs due to the improvements in access to "safe" sanitation facilities (in million NRs)

W = Average wage of Nepali worker in NRs

Vsl = Weighted average of statistical value of life weighted by the age distribution of watsan- related DALYs

Appendix 4.2
District and Regional Data Analysis

Data Collection

With a view to assess sanitation situation in the districts, several District Water Supply Offices (DWSOs) have started preparing District Sanitation Profiles (of the respective districts).

In order to provide database for the State of Sanitation Report, the DWSS made a major effort in collecting countrywide district data on the sanitation situation. For this purpose, a district level questionnaire containing a comprehensive set of questions related to sanitation status and programmes was sent to each DWSO. The data collected from the DWSOs were compiled at the regional level.

By July 1998, 42 DWSOs had sent the completed questionnaire to the concerned regional office of the DWSS. These data were compiled by the concerned regional office. The gist of the data is presented here in Tables 1 and 2.

Table 1 gives data on construction works completed as of now by various agencies. Table 2 gives the list of activities conducted in the districts concerned.

The findings from Table 1 are as follows:

- A large number of household and school latrines were constructed in the districts (reporting). The proportion of private and schools latrines used and maintained varied by regions. In general, a larger proportion of private latrines were used/maintained than the school latrines.
- Latrines in health institutes (constructed) were generally used/maintained.
- Construction of public toilets is limited; use / maintenance varied by regions.
- Construction of various sanitation facilities (mostly household-related, such as smokeless stoves, garbage pits, soak pits, wash basin platforms) was also undertaken.

The findings from Table 2 are as follows:

- Orientation/training activities were conducted for DDC members, NGO representatives, VDC members, teachers, volunteers, motivators and technicians in various districts.
- Sanitation Day was observed in several districts (on the Environment Day).
- The model village scheme was introduced in districts of four regions on a limited scale.
- School sanitation programme was launched in the districts of all the five regions. A large number of students participated in these programmes.

[1] These weights are based on the information reported in WDR1993, on age-wise DALYs for water and sanitation-related diseases for India as well as the value of life at different age levels (Brandon and Hommann, 1995).

[2] The annual wage for India in 1992 was $481.97. This escalated to $586 for 1996 at a 5 percent annual increase. The annual wage per worker for Nepal in 1996 has been estimated by using the ratio of per capita GNP of Nepal to India for 1995 (that is - 0.59 - 200 / 340 as reported in WDR1997). By this method, the annual average wage of a Nepali worker in 1996 is estimated to be NRs 16541.

Table 1 Sanitation Facilities Constructed by Various Agencies (as of Mid-1998)
(Data collected by DWSO s and compiled by regional offices of DWSS)

Sanitation facilities	Eastern (2 districts)		Central (15 districts)		Western (12 districts)		Mid-Western (4districts)		Far (9districts)	
	WAstern	B	A	B	A	B	A	B	A	B
Household Latrines	6,600	83	25,230	91	24,015	41	8,427	75	15,,723	56
School Latrines	245	55	1,826	56	1,161	59	272	96	629	78
Health Post Latrines	33	91	80	95	63	87	18	100	151	94
Sub-Health Post Latrines	85	71	22	50	100	79	32	97	25	84
Public Toilets	7	86	62	42	97	63	10	100	160	74
Smokeless Stoves	950	57	9,727	97	8,752	40	520	71	1,770	35
Garbage Pits	4,700	10	8,253	90	9,460	46	472	36	3,110	61
Soak Pits	5,055	100	2,069	98	4,235	89	80	100	804	71
Drainage System (km)	1.5	100	718	100	221.5	-	374	56	5	100
Washing Basin Platform	44,000	100	5,150	40	59,087	98	340	100	2,341	88

Note: A = Number constructed B = % Used maintained.

Table 2 Sanitation Promotion Activities in Districts/Regions, 1998

Training/Orientation	Eastern (2 districts)	Central (15 districts)	Western (12 districts)	Mid-Western (4 districts)	Far Western (9 districts)
a. Water & Sanitation Coordination Committee Meetings					
Number	2	14	14	3	16
b. DDC Orientation Seminars					
Number	2	4	2	2	5
Participants	25	123	49	85	113
c. NGO Orientation Programme					
Number	1	4	4	1	16
Participants	14	101	36	10	322
d. VDC Orientation Meetings					
Number	4	6	11	1	28
Participants	75	155	422	27	686
e. Teacher Training					
Number	4	16	5	4	16
Participants	53	181	72	27	327
f. Motivator Training					
Number	5	44	10	5	13
Participants	78	634	224	1,312	258
g. Technician Training					
Number	3	8	9	2	6
Participants	42	104	121	35	82
h. Volunteer Training					
Number	8	52	17	6	22
Participants	285	1,272	352	1,139	744
i. Sanitation Day	a. Environment Day b. Visit Nepal Day	In 4 districts	Environment Day (Manang District)	-	In 2 districts
j. Sanitation Week	-	In 6 districts	-	Yes	-
k. Model Villages	-	5 VDCs, different wards	2 VDCs, different wards	2 districts different VDCs/wards	2 districts different VDCs/wards
l. School Sanitation Programme	4 schools (175 students)	71 schools (14,151 students)	96 schools (11,451 students)	403 schools (60,400 students)	61 schools (4,516 students)

Table A3.1 Plan Programmes for Water and Sanitation
(Proposals for the Ninth Plan - in million NRs)

	Programme	Proposed Development Expenditure (In million NRs) Rural	Urban	Total	% to total
1	Completion of incomplete projects transferred from the 8th to 9th Plan	2,100.0 (210)	67.5	2,167.5	10.3
2	New projects for pipe distribution systems	7,608.8 (761)	2,952.4 (295)	10,261.2	49.0
3	Protection and up gradation of existing schemes	663.7 (66.4)	-	663.7	3.2
4	Construction of new tubewells	178.5 (17.8)	31.4 (3.1)	209.9	1.0
5	Deepset tubewell construction	571.2 (57.1)	-	571.2	2.7
6	Construction of protected tubewells	285.0 (28.5)	-	285.0	1.4
7	Repairs and hand over of completed projects	250.0 (25.0)	-	250.0	1.2
8	Improvement and expansion of existing system	-	1,800.0	1,800.0	8.6
9	Improvement of water quality and	-	250.	250.0	1.2
10	Melanchi Water Project	-	4,000.0	4,000.0	19.1
11	Bagmati Sewerage Project	-	500.0	500.0	2.4
	Total	1,1357.2	9,601.3	20,958.5	100.0
	Percent to total	54.2	45.8	100.0	

Source: Based on information in NPC (1998), "Water supply and sanitation programmes for the Ninth Plan".
Note: Figures in parentheses are the proposed shares of popular contributions na - not available

Table A3.2 Beneficiaries under the Plan Programmes for Water and Sanitation
(Proposals for the Ninth Plan - in million persons)

	Programme	Proposed beneficiaries (in million persons) Rural	Urban	Total	% to total
1	Completion of incomplete projects transferred from the 8th to the 9th Plan	123.5 (631)	3.4 (14)	126.9 (645)	13.1
2	New projects for pipe distribution systems	321.5 (23,50)	124.1 (281)	445.6 (2631)	45.9
3	Protection and upgradation of existing schemes	102.1 (20,420)	-	102.1 (20420)	10.5
4	Construction of new tubewells	119.0 (15,870)	20.9 (2790)	139.9 (18661)	14.4
5	Deepset tubewell construction	71.4 (4,760)	-	71.4 (4760)	7.4
6	Construction of protected tubewells	47.5 (3,165)	-	47.5 (3165)	4.9
7	Repairs and hand over of completed projects	-	-	-	0.0
8	Improvement and expansion of existing system	-	36.6 na	36.6 na	3.8
9	Improvement of water quality	-	- na	- na	0 na
10	Melanchi Water Project	-	(1) na	(1) na	na
11	Bagmati Sewerage Project	-	(1)	(1)	
	Total	785	185	970	100.0
	Percent to total	80.9	19.1	100.0	

Source: Based on information in NPC (1998), "Water supply and sanitation programmes for the Ninth Plan".
Note: Figures in parentheses are the proposed numbers of schemes / projects; na - not available.

Table A3.3 Ninth Plan Allocations for Water Supply and Sanitation to Different Agencies

Agency / Project	Allocation (mill. NRs)	Percent to Total	External Sources Percent to Total	Main Sources
DWSS	7,802.6	37.2	29.4	ADB, UNICEF
NWSC	4,929.0	23.5	60.3	World Bank
DDCs	201.5	0.9	-	-
VDCs	1,456.9	6.9	-	-
RWSSFB	1,442.8	6.9	85.6	World Bank
NGOs / INGOs	590.5	2.8	-	-
Private / Households	35.2	0.2	-	-
Melamchi Water Project	4,000.0	19.1	na	NORAD / JICA / France ADB / World Bank
Bagmati Water Project	500.0	2.4	na	na
Total	20,958.5	100.0	-	-

Source: Based on NPC (1998), Drinking water and sanitation programmes for the Ninth Five Year Plan, Statements 9 and 10.

Table A3.4 Capital Expenditure on Water and Sanitation

Year	Actual Capital Expenditure (in million NRs)	Actual Total Expenditure (in million NRs)	Percent to total expenditure (revenue and capital)
1992-93	1,528.6	1,817.4	84.1
1993-94	501.3	1,969.6	46.9
1994-95	638.0	1,082.8	58.9
1995-96	1,296.5	1,680.8	77.1
1996-97	1,043.9	1,260.1	82.8
Total	5,008.2	6,910.7	72.5
Total allocation in the Eighth Plan (in million NRs)	6,273.0		
Actual capital expenditure as a percent to total allocation	79.8		

Sources: Year-wise expenditure: ISD (1998) Table 7, p.13, Eighth Plan allocation: HMG-NPC 1992).

Table A3.5 Trends in External Funding for Drinking Water and Sanitation -1, 1992-96

(percent to total in a year)

Type of Assistance	1992	1993	1994	1995	1996	Total	Total in million NRs
Investment Project Assistance (IPA)							
Loans	31.3	34.1	35.6	62.9	56.5	43.3	1,789.4
Grants	24.4	51.8	31.5	9.2	3.7	27.6	1,147.1
Investment-related Technical Cooperation (ITC)							
Grants	34.8	7.4	2.9	10.8	6.7	9.7	402.8
Free-standing Technical Cooperation (FTC)							
Grants	9.5	6.6	30.0	17.2	33.1	19.4	804.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	4,153.2
Type of Assistance	1992	1993	1994	1995	1996	Total	Total in million NRs
Multilateral Funding							
Loans	31.3	34.1	35.6	62.9	56.5	43.3	1,789.4
Grants	35.0	11.2	16.8	17.9	10.7	15.6	656.7
Bilateral funding	30.6	53.3	47.6	17.0	31.3	39.5	1,639.7
Bilateral funding NGOs	3.1	1.3	0.0	2.3	1.5	1.4	58.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	4,153.2
Total in Million NRs	441.6	1,285.0	898.0	610.4	917.9	4,153.2	

Source: Analysis based on information for Drinking Water and Sanitation sub-sector as reported in Development Cooperation Reports for Nepal, 1992 to 1996, UNDP.

Table A3.6 Estimated Municipal Investments in Sanitation

Item	Capital Investments in Million NRs
Total capital investments by municipal authorities 1992 to 1997	2,148.2
Share of sanitation-related projects in total disbursements by the Town Development Fund, 1992-97	60.8%
Estimated sanitation-related investments by municipal authorities 1992 to 1997 (@ 60.8%)	1,288.9
Estimated capital expenditure on sanitation during the Eighth Plan period in urban areas	4,69.5

Notes : Total capital investments by municipal authorities are based on the information reported in UDLE (1995 and 1997).Share of sanitation in total disbursements by the TDF is based on the information from the UDLE for the TDF. Estimate for the Eighth Plan period is based on the total capital expenditure from the ISD (1998) as reported in Table 3.2 and the share of sanitation is based on 12.5 percent allocation for the Eighth Plan (Table3.1) and share of urban is assumed at 75%.

Table A4	Relative Status of Water and Sanitation,1996		
1990	Urban	Rural	Total
Water	66	34	37
Sanitation	34	3	6
1996			
Water	85	49	53
Sanitation	63	12	15
Proposed for the Ninth Plan (2002)			
Water	100	100	100
Sanitation	75	45	50

Sources: 1990: WDR 1994, p.146.
1996: HMG-NPC (1997 a, b) NMIS, 1996 p. 2.

Notes: For 1996, access to water represents access to "safe" water within 10 minutes (round trip) and flow rate criteria used by the DWSS to define 'reasonable access'. Sanitation refers to access to latrine.

Table A4.2	Chemical and Bacteriological Characteristics of Kathmandu City Sewerage and Industrial Effluents					
Composition	Bansbari Shoe Factory Effluents	Balaju Industrial District Effluents	Carpet Factory Effluents	Sewage (Bauddha)	Sewage (Balaju)	Sewage (Kalimati)
Temperature C	25.00	23.00	21.00	22.50	25.00	20.00
pH	11.72	7.23	6.92	7.44	7.26	7.70
DO, mg/L	3.80	1.10	0.00	1.00	0.80	0.40
BOD, mg/L	460.00	126.00	320.00	90.00	66.00	582.00
COD, mg/L	794.00	198.00	411.80	123.40	123.00	250.00
N-NH, mg/L	1,700.00	0.01	31.80	0.26	2.64	2.10
N-NO, mg/L	96.14	0.65	0.80	0.34	0.54	0.60
P-PO, mg/L	<0.10	0.15	0.21	<0.10	<0.10	<0.10
Cl, mg/L	6,177.00	202.95	455.40	232.65	435.60	252.30
Chromium, mg/L	1,600.00	-	-	-	-	-
Total Coliform	>4800	>4,800	>4,800	>4,800	>4,800	>4,800
per 100 mL	1100	>4,800	>4,800	>4,800	>4,800	>4,800
Faecal Coliform per 100 mL						

Source: CEDA 1990 as reported in Halcrow Fox, et al., 1991.

Table A4.1 Water Quality of the Rivers and Streams

Sample No.	PH	T.D.S. (mg/l)	D.O. (mg/l)	B.O.D. (mg/l)	C.O.D. (mg/l)	N-Ammonia (mg/l)	N-Nitrate (mg/l)	Chloride (mg/l)	P-Ortho Phosphate (mg/l)	Total Coli. Per 100 ml	Chromium (mg/l)	Arsenic (mg/l)	Copper (mg/l)
WHO Standards	6.5-8.5		6	15	30	1	10	200	0.25	<10	0.05		
Bisnumati													
1	7	50	7.9	2	59	<0.02	1	7	0.12	150	<0.01	<0.01	0.03
2a	9.9	128	7.4	14	149	0	1	12	0.25	250	<0.01	<0.01	0.12
2b	7.1	130	2.9	10	34	0	1.5	12	0.17	6,400	<0.01	<0.01	0.03
3a	7.2	162	0.7	30	122	1.42	0.5	22	0.7	4,600	<0.01	<0.01	0.03
3b	7.4	208	0.2	30	38	0.05	0.5	28	1.25	4,800	<0.01	<0.01	0.03
Dhobi Khola													
4	7	76	8	10	35	<0.02	1.25	9	1.2	60	<0.01	<0.01	<0.03
5a	7.4	190	5.8	13	49	<0.02	1.5	36	1.1	385,000	<0.01	<0.01	0.06
5b	7.3	212	0.2	12	56	<0.02	1	40	1.16	58,000	<0.01	<0.01	0.09
6a	7.6	212	4.8	11	35	<0.02	1.12	38	1.3	5,200	<0.01	<0.01	0.03
6b	7.6	240	4.6	11	49	<0.02	1.12	42	1.7	88,800	<0.01	<0.01	0.15
Manohara													
7	7.1	76	8.4	2.4	21	<0.02	3.5	6	1.2	Nil	<0.01	<0.01	<0.03
19a	7.6	235	9.4	2.4	28	0.24	2.87	8	0.45	9,600	0	<0.01	<0.03
19b	7.7	235	9.2	2.5	14	0.44	3.12	8	0.37	TNTC	0	<0.01	<0.03
Bagmati													
8	8.3	58	8.3	2.8	7	<0.02	1.12	4	1.2	Nil	<0.01	<0.01	<0.01
9a	7	58	5	3.2	174	<0.02	1.75	8	1.5	22,000	<0.01	<0.01	<0.01
9b	7	52	6.5	3	56	<0.02	1.83	9	0.05	9,800	<0.01	<0.01	<0.01
10a	7.2	74	8.4	3.2	42	<0.02	8	10	0.31	4,700	<0.01	<0.01	<0.03
10b	7	70	8	30	49	<0.02	3.75	16	0.32	2,000	<0.01	<0.01	<0.03
11a	7.6	114	9	3	21	<0.02	3	8	0.4	2,500	<0.01	<0.01	<0.03
11b	7.2	88	7.6	2.8	14	<0.02	5	12	0.31	2,600	<0.01	<0.01	<0.03
12a	7	127	7.6	3	10	<0.02	4.5	14	0.45	TNTC	<0.01	<0.01	<0.03
12b	7.5	134	6.5	3	10	<0.02	5.5	14	0.75	3,800	<0.01	<0.01	<0.03
13a	7.5	186	2.5	10	14	<0.02	<0.05	24	1.8	398,000	<0.01	<0.01	<0.03
13b	7.6	162	3.5	12	14	<0.02	0	28	1.2	2,000	<0.01	<0.01	<0.03
14a	7.5	202	0.1	2.6	25	0.24	0.25	24	1.8	49,000	0	<0.01	<0.03
14b	7.5	204	0.3	25	14	0.03	<0.25	28	1.3	706,000	0	<0.01	<0.03
15a	7.8	182	6.6	4.2	7	0.1	1	16	0.5	5,800	0	<0.01	<0.03
15b	7.6	186	2.8	4.6	3	0.7	<0.25	21	1	87,400	<0.01	<0.01	<0.03
Hanumante													
16a	7.9	308	7	3.5	10	<0.02	<0.25	32	2.3	TNTC	<0.01	<0.01	<0.03
16b	7.9	310	6.9	3	14	<0.02	<0.25	30	2.67	TNTC	<0.01	<0.01	<0.03
17	7.9	216	8.2	1	14	<0.02	4.12	9	0.05	14,000	0	<0.01	<0.03
Tukucha Khola													
18	7.1	514	0.1	75	125	1.56	<0.25	56	8	TNTC	0	<0.01	<0.03

Source: Consultants, Jan. 1991 as reported in Halcrow Fox, et al., 1991.

Notes: a = morning sample, b = afternoon sample, TNTC = too numerous to count.

Table A4.3 Estimation of Diarrhoea Deaths for Children under 5 Years of Age, 1996

Step 1: Estimation of annual incidence of diarrhea			
Total population Nepal, 1996		21126,637	CBS Pop. projections, 1995
Share of under 5 children	15.9%	3460,837	Family Health Survey, 1996
Diarrhea incidence - reported	18.0%		NMIS
Annual average = reported			
* weight for March	18% to 922	16.60%	Do HS Annual Report 1996-97
(reported = % in last two weeks,			
weight for March = 0.922)			
Total annual diarrhea incidence		14933,373	
*(Total annual = average for two weeks*26)*			
Diarrhea incidence (cases per child per year)		4.31	
Step 2: Estimation of deaths due to diarrhea			
Total diarrhea cases		394,925	Annual report of Dept of HS
Total diarrhea-related deaths		1010	Annual report of Dept of HS
Proportion of deaths to total cases (%)		0.26%	
Estimated total deaths due to diarrhea for under 5 children		38,191	
Step 3: Deaths due to diarrhea as a proportion to total deaths			
Total population , 1996		21126,637	
Total estimated female population	50.1%	10591,396	CBS Pop. projections, 1995
Child bearing women		4522,526	CBS Pop. projections, 1995
Gross fertility rate per 1000 women	42.7%		
Total estimated births in a year	167	755,262	Family Health Survey, 1996
Under 5 mortality rate-deaths per 1000 births			MoH, Annual Report, 1996-97
Total deaths for under 5 children	1,18.5	89,499	Family Health Survey, 1996
Estimated deaths due to diarrhea			
Deaths due to diarrhea as a % to total deaths		42.7%	

Source: Based on analysis by UNICEF, 1998.

Table A5 Summary of Reductions in DALYs and Their Values, 1996

	DALYs Reduced per year (million)	Percent Reduction (%)	Value of Annual Reduction in DALYs Reduced (in billion NRs)
100% Provision of Sanitation			
High	0.76	79.9	5.6
Low	0.64	67.1	4.7
50% Provision of Sanitation			
Hygiene = Low			
High	0.38	39.9	2.8
Low	0.32	33.5	2.4
50% Provision of Sanitation			
Hygiene = Improved			
High	0.43	44.9	3.1
Low	0.39	41.6	2.9
Ninth Plan Provision for Sanitation (1997-2002)			0.8

Source: Refer to Table A8 and text.

Table A6		Weighted Value of Life
Age group	Share of DALYs lost due to communicable diseases (India)	Estimated value of a year of life
0 - 4	66.3	0.2
5 - 14	10.4	0.5
15 - 44	18.3	1.2
45 - 59	3.2	0.9
60+	1.8	
0.7		
Total	100.0	
Weighted Average		0.446

Sources: Share of DALYs lost: World Bank (1993), *World Development Report, 1993*, Table B-4, p.220.Estimated value of a year of life by age group: World Bank (1993), *World Development Repor, 1993*, Box 1.3, p. 26.

Table A7		Estimates of Worker Productivity, 1996
High Estimate based on Indian Information		
Indian annual average wage per worker	1992	US$ 481.97
	1996	US$ 585.8 *(escalated @ 5.0 % per annum)*
	1996	NRs 29,995 *(@ 1.0 US$ = 51.2 NRs*
GNP per capita - India		
- Nepal	1995	US$ 340
Ratio of Nepali / Indian GNP per capita	1995	US$ 200
Estimated Nepali annual wage per worker	1995	0.558
	1996	NRs 17,644
Low Estimate based on Nepali household income		
Average Annual Household Income	1996	NRs 40,700
Household size	1991	5.6
Worker participation rate	1996	70.6 %
Average Annual Income per worker	1996	NRs 10,378

Sources: Indian wage in 1992: CSO (1992) as reported in Brandon and Hommann (1995), Table 6a.
GNP per capita for India and Nepal: World Bank (1997), WDR1997, Table 1, p. 214.
Household Income 1996: CBS (1997a), as reported in *Nepal Human Development Report 1998*, Table 7.2, p. 115.
Household size 1991: CBS (1995);
Worker participation rate 1996: CBS (1997a), as reported in *Nepal Human Development Report 1998*, Table 6.1, p. 99.

Table A8 Estimation of Reduction in Sanitation-Related DALYs through Provision of Access of Safe Sanitation

		100 % Provision		50 % Provision				Average for all Six Scenarios
				Hygiene = Low		Hygiene = High		
	Unit	High Reduction	Low Reduction	High Reduction	Low Reduction	High Reduction	Low Reduction	
Population, 1996, millions	Millions	21.12	21.12	21.12	21.12	21.12	21.12	
Water and sanitation-related DALYs	Millions	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent population with safe sanitation	%	15	15	15	15	15	15	
Rate, total water and sanitation-related DALYs (Rt)	Per '000	44.9	44.9	44.9	44.9	44.9	44.9	
Rate, DALYs among those with "safe" sanitation (Rs)	Per '000	9.0	14.8	9.0	14.8	9.0	14.8	
Rate, DALYs among those without "safe" sanitation (Rso)	Per'000	51.3	50.3	51.3	50.3	52.1	51.5	
Reduction in DALYs due to sanitation improvements	%	55.9	26.4	55.9	26.4	55.9	26.4	
Maxi. Improvements in DALYs (Rf)	%	44.1	73.6	44.1	73.6	44.1	73.6	
Parameter for hygiene (h)	%	40	40	40	40	20	20	
Extent of provision of services to the needy	%	100	100	50	50	50	50	
DALYs reduced due to provision of sanitation services	millions	0.76	0.64	0.38	0.32	0.43	0.39	0.49
Water and sanitation-related DALYs remaining	millions	0.19	0.31	0.57	0.63	0.52	0.56	0.46
% reduction in DALYs	%	80	67	40	33	45	42	51
NRs / annum / worker	NRs	17,644						
Weighted average of statistical value of life (Millions.446)		7,869						
Total value of reduced DALYs	Mil NRs	5,966	5,010	2,983	2,505	3,353	3,104	3,820
NRs / annum / worker	NRs	10,378						
Weighted average of statistical value of life (Millions.446)		4,628						
Total value of reduced DALYs	Mil NRs	3,509	2,947	1,755	1,473	1,972	1,826	2,247