सत्यमेव जयते

# Sustaining the Sanitation Revolution

## India Country Paper

SACOSAN III

New Delhi, 16-21 November 2008

## CONTENTS

## ABBREVIATIONS

| | |
|---|---|
| APL | Above Poverty Line |
| ARWSP | Accelerated Rural Water Supply Program |
| BDO | Block Development Officer |
| BPL | Below Poverty Line |
| BSUP | Basic Services for the Urban Poor |
| CCDU | Communication and Capacity Development Unit |
| CRSP | Central Rural Sanitation Program |
| CPHEEO | Central Public Health and Environmental Engineering Organization |
| DDWS | Department of Drinking Water Supply |
| DEE | Department of Elementary Education |
| DLM | District Level Monitoring |
| DWSM | District Water and Sanitation Mission |
| GDP | Gross Domestic Product |
| GoI | Government of India |
| HDI | Human Development Index |
| IEC | Information, Education and Communication |
| IPC | Interpersonal Communication |
| MDG | Millennium Development Goal |
| M&E | Monitoring and Evaluation |
| NFHS | National Family Health Survey |
| NAGUS | National Advisory Group on Urban Sanitation |
| NGP | Nirmal Gram Puraskar |
| NGO | Non Government Organization |
| NRHM | National Rural Health Mission |
| NSS | National Sample Survey |
| O&M | Operation and Maintenance |
| PC | Production Centre |
| PRI | Panchayati Raj Institution |
| RGDWM | Rajiv Gandhi Drinking Water Mission |
| RSM | Rural Sanitary Mart |
| SHG | Self-help Group |
| SSA | Sarva Shiksha Abhiyan |
| SWSM | State Water and Sanitation Mission |
| TSC | Total Sanitation Campaign |
| ULB | Urban Local Body |
| UNICEF | United Nations International Children's Education Fund |
| UT | Union Territories |
| VAMBAY | Valmiki Ambedkar Awas Yojana |
| WHO | World Health Organization |
| ZP | Zila Panchayat |

## GLOSSARY

**[Above/Below] Poverty Line:** To measure poverty, it is standard to look at level of personal expenditure or income required to satisfy a minimum consumption level. The Planning Commission of the Government of India uses a food adequacy norm of 2400 to 2100 kilo calories per capita per day to define state-specific poverty lines separately for rural and urban areas. These poverty lines are then applied on India's National Sample Survey Organization's household consumer expenditure distributions to estimate the proportion and number of poor at State level.

**Anganwadi:** pre-school, initiative under the Integrated Child Development Scheme of the Government of India

**Civil Society:** Civil society comprises the totality of voluntary civic and social organizations and institutions that form the basis of a functioning society, in contrast with commercial organizations or state-backed structures. It can include organizations such as registered charities, development non-governmental organizations (NGOs), community groups, women's organizations, faith-based organizations professional associations, trade unions, self-help groups, social movements coalitions and advocacy groups

**Ecological Sanitation:** Also referred to as 'ecosan', this is a sanitation method that works on the principle of 'closing the loop' i.e. human waste is a resource and rather than being disposed, should be treated, recovered and reused. In ecosan, urine and feces are separated at source and not mixed with water. The separated urine can be applied as fertilizer after treatment and feces can be composted.

**Infant Mortality Rate:** refers to number of deaths per thousand live births in the first year of a child's life.

**Information, Education,** Communication: software activities that support and promote the provision of program services and facilities, e.g. media campaigns, capacity building activities, community hygiene promotion sessions and so on.

**Life expectancy:** number of years an individual (at any age) is expected to live given the prevailing age specific mortality rates of the population to which he/she belongs.

**Panchayati Raj Institutions:** The term 'Panchayat' literally means 'council of five [wise and respected leaders]' and 'Raj' means governance. Traditionally, these councils settled disputes between individuals and villages. Modern Indian Government has adopted this traditional term as a name for its initiative to decentralize certain administrative functions to elected local bodies at village, block and district level. It is usually called Gram Panchayat at village level, Panchayat Samiti at block level and Zila Parishad at district level.

**Sex Ratio:** number of female per thousand males

**Millennium Development Goals:** The Millennium Development Goals are eight goals to be achieved by 2015 that respond to the world's main development challenges. These include:

Goal 1: Eradicate extreme poverty and hunger
Goal 2: Achieve universal primary education
Goal 3: Promote gender equality and empower women
Goal 4: Reduce child mortality
Goal 5: Improve maternal health
Goal 6: Combat HIV/AIDS, malaria and other diseases
Goal 7: Ensure environmental sustainability
Goal 8: Develop a Global Partnership for Development

**Total Fertility Rate:** number of live births a woman would expect to deliver if she were to live through her reproductive years (15-49) and to bear children at each age in accordance with the prevailing age-specific fertility rates.

**Total sanitation approach:** a community-wide approach based on participatory principles which seeks to achieve not only 100 per cent open defecation free communities but also broader environmental sanitation objectives such as promotion of improved hygiene behaviours and solid/liquid waste management.

## TABLES



## FIGURES



## CURRENCY UNITS AND EXCHANGE RATES

| | |
|---|---|
| 1 lakh | 100,000 |
| 1 million | 1,000,000 |
| 1 crore | 10,000,000 |
| 1 billion | 1,000,000,000 |

1 US$ = INR 48, unless otherwise mentioned in the text

## EXECUTIVE SUMMARY

Lack of adequate sanitation is a pressing challenge in both rural and urban India. Sanitation-related diseases take a heavy toll of lives, especially children's lives, and are a drain on productivity and incomes. Lack of adequate sanitation also forces households into the continued indignity of open defecation, which is an acute problem especially for women and young girls. Improving access to sanitation is therefore appropriately included in the Millennium Development Goals.

As India becomes more populous – India's population will exceed 1.8 billion by 2015 – its growth poses significant challenges to the provision of environmental services such as water, sanitation, solid waste management and drainage. However, in both rural and urban spheres, promising initiatives are underway to tackle the sanitation challenge. Accordingly, this Country Paper is divided into two parts – rural and urban sanitation.

**Part 2: Rural Sanitation** traces the evolution of the rural sanitation sector. Beginning with ad hoc initiatives in the initial Five Year Plans after independence, India's first national program to increase access to rural sanitation at scale, the Central Rural Sanitation Program, was launched in 1986. Despite considerable investment, this approach failed to motivate and sustain high levels of sanitation coverage as it was based on the erroneous assumption that provision of sanitary facilities would lead to increased coverage and usage. Recognizing the limitations of this approach, the Total Sanitation Campaign was launched in 1999. The TSC moves away from the infrastructure focussed approach of earlier programs and concentrates on promoting behaviour change. In addition, it includes a fiscal incentive scheme, Nirmal Gram Puraskar, that promotes the role of Gram Panchayats and local communities in achieving community-wide total sanitation status.

Rural sanitation coverage has received a fillip under the TSC, increasing from just 22 per cent in 2001 to nearly 57 per cent in 2008. This section analyzes the strategies adopted to scale up the TSC such as community-driven approach, menu of technological options and service delivery mechanisms and the achievements of the program with respect to the Millennium Development Goals, convergence with related sectors and dignity of women. It also touches on the role and contribution of partnerships, civil society and media to the success of rural sanitation initiatives. While the TSC has been successful in scaling up rural sanitation, the program has also faced challenges in implementation. Some of the lessons learned from this implementation experience are outlined using the framework of 4i's i.e. Role of Institutions, Incentives, Information and Inclination. This section concludes with a critical reflection on the emerging issues confronting the TSC today such as how to measure outcomes, setting standards and benchmarks, innovative communication channels and most importantly, how to achieve a sustainable sanitation paradigm.

**Part 3: Urban Sanitation** begins with a look at existing coverage in Indian cities, noting that while a third of India's urban population does not have access to adequate sanitation, the situation is even more grim with respect to the urban poor. To address this situation and building on earlier initiatives, the Government of India has formally approved the National Urban Sanitation Policy in 2008 which envisions the creation of totally sanitized cities and towns. The policy articulates the following goals: awareness generation and behavior change, open defecation free cities in which all urban dwellers have access to safe sanitation, integrated city wide sanitation planning and sanitary and safe disposal of urban wastes. In addition, the policy promotes community and local government participation in the planning, implementation and management of urban sanitation services.

In urban sanitation too, the importance of sustainability is highlighted, specifically addressing the issue of 'willingness to charge' for services and the impact on environmental health. This section concludes with an analysis of three successful initiatives in urban sanitation from across India – public toilet blocks built under the Build-Operate-Transfer model in Delhi, participatory and community-led approach operationalized in the Mumbai Slum Sanitation Program and the integration of community participation, local government initiative and private sector participation incorporated in the Alandur sewerage project, Chennai.

# 1

# INTRODUCTION

## 1.1 The Sanitation Challenge

Sanitation (often referred to as 'environmental sanitation') includes interventions for the safe management and disposal/re-use of waste. The delivery of safe sanitation services includes infrastructure (e.g. latrines, sewers), associated behaviors (e.g. toilet usage, hand-washing) and a requisite enabling environment (e.g. public health regulations, fiscal incentive schemes for achieving sanitation outcomes). Safe sanitation prevents waste from coming into contact with humans. This is linked to reduced burden of disease and illness-related expenditure, improved water quality and a cleaner environment, ultimately resulting in a better quality of life.

Lack of adequate sanitation is a pressing challenge in both rural and urban India. Everyday, an estimated 1,000 children under five die in the country because of diarrhea alone, a preventable disease. Prevalence of child under-nutrition in India (47 per cent according to National Family Health Survey III, 2005-06) is among the highest in the world and nearly double that of Sub-Saharan Africa. Child under-nutrition is aggravated by the prevalence of diarrheal disease, and is responsible for 22 per cent of the country's burden of disease (World Bank 2005). Some studies suggest that it affects child cognitive and motor development and undermines educational achievement. Sanitation related illnesses in both children and adults drain productivity and income, ultimately perpetuating poverty. In addition to public health implications, lack of adequate sanitation forces households into the continued indignity of open defecation, which is an acute problem especially for women and young girls. On the other hand, access to safe sanitation in schools is linked to continued education enrolment by young girls and teenage women, particularly at puberty. Sanitation, therefore, is appropriately included in the Millennium Development Goals as it has a direct bearing on initiatives to reduce poverty and improve health and literacy.

| Table 1 – INDIA FACTSHEET |
|---|
| **Area:** 3,287,590 $km^2$ |
| **Capital:** New Delhi |
| **Population:** 1.02 billion |
| **Infant Mortality:** 57/1000 |
| **Life Expectancy:** *61 years* |
| **Below Poverty Line:** 28.6% |
| **Adult Literacy:** 61% |
| **Human Development Index:** 127 |

*Source:* Planning Commission, 2001 and National Family Health Survey III, 2005-06

## 1.2. Country Profile: India

### 1.2.1 Key Demographic Indicators

India is home to 1.08 billion people, about

one-sixth of the world's population. According to the Census of 2001, roughly 72 per cent of India's population lives in more than 550,000 villages and the rest in about 5,161 cities. According to the Ministry of Health and Family Welfare, India's **infant mortality rate** was estimated at 57 per 1000 live births in 2006, improved from 115 in 1981. The **sex ratio** has fluctuated between 927-934 between the period 1971 to 2001. Between 1982 and 1997, the **Total Fertility Rate** declined from 4.8 to 3.7 in rural areas and from 3.4 to 2.5 in urban areas. **Life expectancy at birth** has increased from around 30 years at independence to 60.7 years in 1996 (National Human Development Report 2001).

With declining fertility rates countered by reduced infant mortality and increased life expectancy, projections estimate that India's population will exceed **1.2 billion by 2015.** As India becomes more populous, its growth poses significant challenges to the provision of environmental services such as water, sanitation, solid waste management, and drainage.

**Table 2 – INDIA: PROJECTED POPULATION GROWTH**

| Year | Total Population (billions) | % Rural | % Urban |
|---|---|---|---|
| 2000 | 1 | 72 | 27 |
| 2005 | 1.08 | 71 | 29 |
| 2010 | 1.16 | 69 | 30 |
| 2015 | 1.22 | 67 | 32 |

*Source:* UN-Habitat (2003) *The Challenge of Slums*

### *1.2.2. Socio-economic Highlights*

India's real **Gross Domestic Product** (GDP) has grown at a fast pace rate over the past five years, with an annual average growth of 9 per cent. At the national level, the incidence of **Below Poverty Line** (BPL) on the Head Count Ratio has declined from 44.48 per cent in 1983 to 26.10 per cent in 1999-2000, with significant disparities within and between States (Planning Commission 2001). In terms of **Human Development Index** (HDI), India ranks at 127 in the global ranking, although there has been significant overall improvement at national level on this indicator over the past few decades. As with the BPL count, national aggregates conceal wide disparities in achievement between states. At national level, the **Gender Equality Index** (GEI) stood at 67 per cent in the early nineties. This implies that on an average the attainments of women on human development indicators were only two-thirds of those of men (Planning Commission 2001). Gender equality was found to be higher in states that have done well in improving their female literacy levels.

## 1.3 Structure of this Paper

Apart from this Introduction, this paper comprises two additional parts.

**Part 2** provides an overview of the rural sanitation scenario in India. It traces the evolution of the rural sanitation sector, from ad hoc initiatives in the initial Five Year Plans after independence to the sector reforms embodied in the launch of the Total Sanitation Campaign (TSC) from 1999 onwards. It analyzes strategies adopted and achievements related to upscaling and sustainability of the rural sanitation program. It also touches on the role of partnerships and civil society and their contribution to the

success of rural sanitation initiatives. Part 2 concludes with a critical reflection on the challenges and emerging issues confronting the TSC today.

**Part 3** provides an overview of **urban sanitation** in India. It begins with a look at existing urban sanitation coverage in India. Building on earlier initiatives, the Government of India has formally approved the National Urban Sanitation Policy in 2008 which envisions the creation of totally sanitized cities and towns. In addition, the policy promotes community and local government participation in the planning, implementation and management of urban sanitation services. This section concludes with an analysis of three successful initiatives in urban sanitation from across India - public toilet blocks built under the Build-Operate-Transfer model in Delhi, participatory and community-led approach operationalized in the Mumbai Slum Sanitation Program and the integration of community participation, local government initiative and private sector participation incorporated in the Alandur sewerage project, Chennai.

# 2

# RURAL SANITATION

## 2.1 Policies, Principles and Reforms

### 2.1.1 Policy Framework for Sanitation and Hygiene

The responsibility for provision of sanitation facilities in the country primarily rests with local government bodies – municipalities or corporations in urban areas and Gram Panchayats in rural areas. The State and Central Governments act as facilitators, through enabling policies, budgetary support and capacity development. In the Central government, the Planning Commission, through the Five Year Plans, guides investment in the sector by allocating funds for strategic priorities. While the first five plan periods were characterized by relatively negligible investments in sanitation, it received a major fillip from the Sixth Plan (1980-85) onwards and the launch of the International Drinking Water Supply and Sanitation Decade in 1980. Responsibility for rural sanitation was also shifted from the Central Public Health and Environmental Engineering Organization to the Rural Development Department.

In 1986, the Rural Development Department initiated India's first nation-wide program, the Central Rural Sanitation Program (CRSP). The CRSP focused on provision of household pour-flush toilets and relied on hardware subsidies to generate demand. This approach failed to motivate and sustain high levels of sanitation coverage as it was based on the erroneous assumption that provision of sanitary facilities would lead to increased coverage and usage. It also did not include adequate attention to 'total' sanitation which includes improved hygiene behavior, school and institutional sanitation, solid/liquid waste management and environmental sanitation. Despite an investment of more Rs. 6 billion and construction of over 9 million latrines in rural areas, rural sanitation grew at just 1 per cent annually throughout the 1990s and the Census of 2001 found that only 22 per cent of rural households had access to a toilet.

### 2.1.2 Sector Reforms and their Impact

In the light of the relatively poor performance of the CRSP, Government of India restructured the program with the launch of the Total Sanitation Campaign in 1999. TSC advocates a participatory and demand driven approach, taking a district as a unit with significant involvement of Gram Panchayats and local communities. It moves away from the infrastructure focussed approach of the earlier programs and concentrates on promoting behaviour change. Some key features of the TSC include:

- A community led approach with focus on collective achievement of total sanitation
- Focus on Information, Education and Communication (IEC) to mobilize and motivate communities towards safe sanitation
- Minimum capital incentives only for BPL households, post construction and usage
- Flexible menu of technology options
- Development of supply chain to meet the demand stimulated at the community level
- Fiscal incentive in the form of a cash prize – Nirmal Gram Puraskar (NGP) – to accelerate achievement of total sanitation outcomes.

### Nirmal Gram Puraskar

The Nirmal Gram Puraskar of the Government of India, introduced in 2004, is a scheme that offers cash rewards to local governments that achieve 100% sanitation i.e. they are 100% open defecation free ( ODF ) and have tack led issues of liquid and solid waste management . The amount of incentive is based on population as shown below.

**(All figures in Rs. 100,000)**

| Particulars | Gram Panchayat | | | | | Block | | District | |
|---|---|---|---|---|---|---|---|---|---|
| Population Criteria | Less than 1000 | 1000 to 1999 | 2000 to 4999 | 5000 to 9999 | 10000 and above | Up to 50000 | 50001 and above | Up to 1 million | Above 1 million |
| PRI | 0.50 | 1.00 | 2.00 | 4.00 | 5.00 | 10.00 | 20.00 | 30.00 | 50.00 |
| Individuals | 0.10 | | | | | 0.20 | | 0.30 | |
| Organizations other than PRIs | 0.20 | | | | | 0.35 | | 0.50 | |

**Source: Govt. of India, Dept. of Drinking Water Supply <http://ddws.nic.in/TSC/crsp/TS CPhy_st.asp?Form=ALL> Accessed**

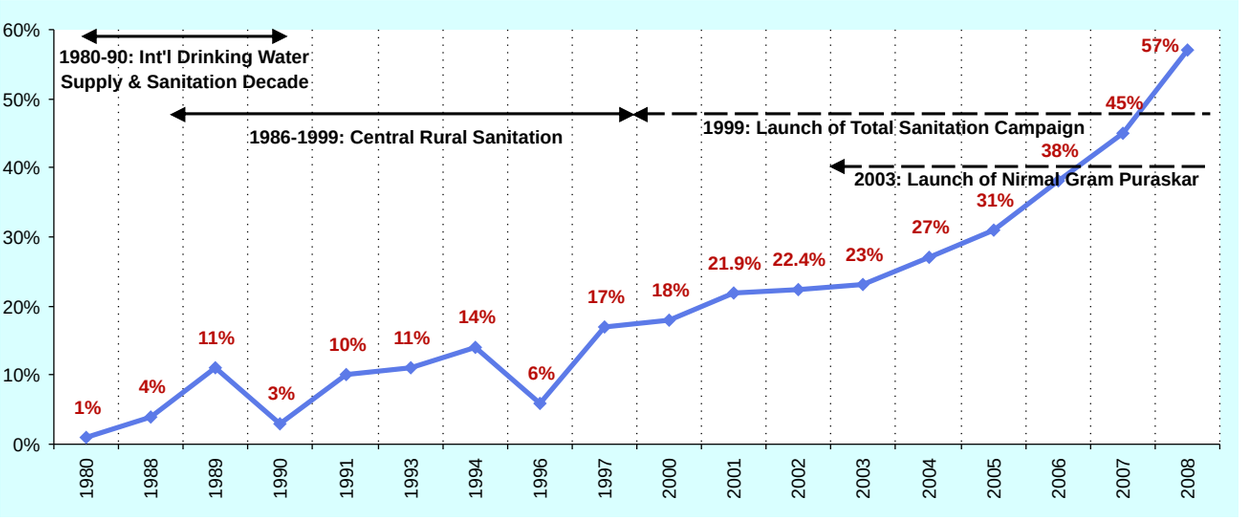
The TSC is being implemented at scale in 590 districts of 30 States/Union Territories (UTs). Against a target of 108.5 million individual household toilets, the toilets reported completed is about 57 million as of October 2008. In addition, about 0.68 million school toilets, 14,540 sanitary complexes for women, and 222,267 anganwadi (pre-school) toilets have been constructed. The detailed coverage achieved under TSC and NGP is given below in Section 3.1 Coverage. The Eleventh Five Year Plan has a target of completing 12.9 million individual toilets.

## 2.2. Strategies Adopted to Achieve Scale and Sustainability

### 2.2.1 Coverage

After sluggish progress throughout the eighties and nineties, rural sanitation coverage received a fillip with the implementation of the TSC. As can be seen from Figure 1 below, individual household latrine coverage has more than doubled, from around 22 per cent in 2001 to 57 per cent in 2008.

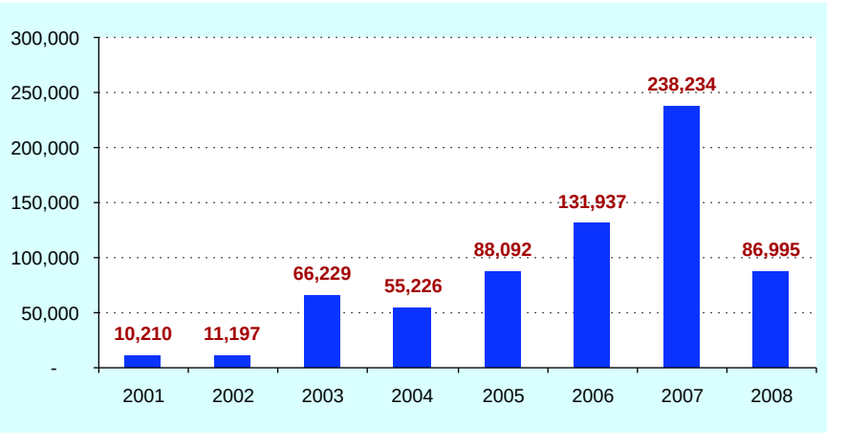
**Figure 1: Rural Sanitation Coverage in India**




Source: Govt. of India, Dept. of Drinking Water Supply http://ddws.nic.in Accessed 16 Oct-08

In addition to individual household toilets, the TSC lays emphasis on school sanitation. Since inception, a total of 6,80,000 school toilets have been constructed towards a target of 11,80,000. The year-wise physical progress on this component is shown in Figure 2 below.

**Figure 2: Year-wise Achievement in Construction of School Toilets**



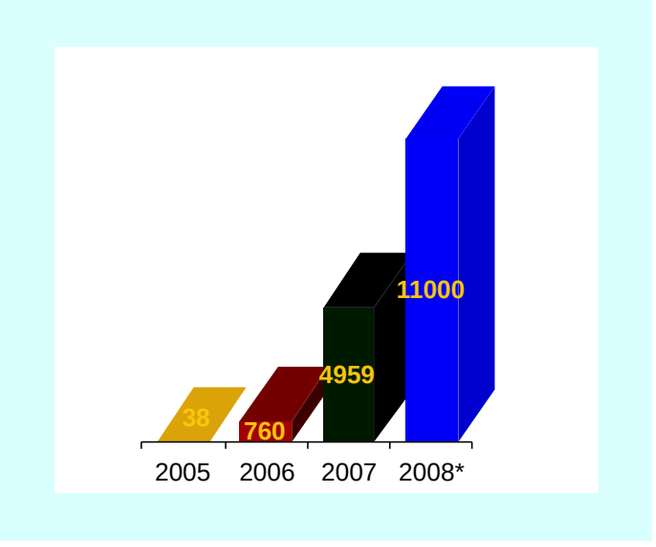

Source: Govt. of India, Dept. of Drinking Water Supply http://ddws.nic.in Accessed 16 Oct-08

It is important to note that the figures above only reflect the number of households/schools that have a toilet and do not take into account sanitary conditions of the toilet or its usage. They also do not consider sanitation more broadly e.g. by considering improved hygiene behaviors such as hand-washing with soap. The coverage figures are also calculated by taking the number of households as in the 2001 census or in the original project documents. Initial indications of an evaluation study

show that around a quarter of household latrines are not being used (Planning Commission, Eleventh Plan Document, page 173). Field studies have pointed to lower levels of latrine usage because of inadequate awareness of the importance of sanitation, water scarcity, poor construction standards and the past emphasis on expensive standardized latrine designs.

Since its launch, the Nirmal Gram Puraskar (NGP) has been very successful as a fiscal incentive for achievement of sanitation outcomes. From just 40 Gram Panchayats from 6 states that received the prize in 2005, the number went up to 4959 Panchayats from 22 states in 2007. In 2008, more than 30,000 Panchayats were nominated for this prize and more 11,000 Panchayats
Have been selected for the award in 2008.

**Figure 3: Year-wise Nirmal Gram Puraskar Achievement**

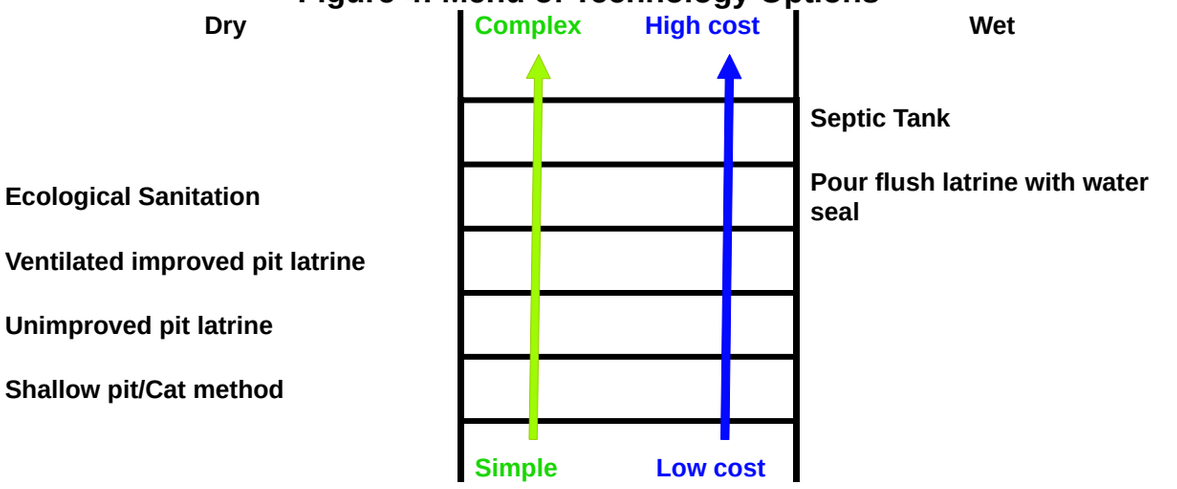



* denotes provisional figure for NGP awards
Source: Govt. of India, Dept. of Drinking Water Supply http://ddws.nic.in Accessed 16 Oct-08

### 2.2.2 Community Led Approach and Technology Choices

The TSC strategy is to make the campaign community led through leadership by the local bodies, youth and women organization, school in implementing the campaign. The community is sensitized by creating awareness about the impact of open defecation and lack of sanitation on health, dignity and security especially of women and children. In rural sanitation, 'encouraging cost-effective and appropriate technologies for ecologically safe and sustainable sanitation' has been one of the main objectives of the approach. The implication for technology is that this should be improvised to meet consumer preferences 'in an affordable and accessible manner by offering a range of technological choices'.

**Figure 4: Menu of Technology Options**




### 2.2.3 Convergence with Related Sectors

Integrating sanitation programs with initiatives to improve water availability and health care would increase the likelihood of achieving public health outcomes such as reduction in diarrheal diseases. Parallel to the implementation of the TSC, Government of India is also implementing the rural water supply programs and the National Rural Health Mission (NRHM) program. GoIs rural water program seeks to address issues of access to water and its quality in 55,067 habitations, while the main aim of NRHM is to provide accessible, affordable and reliable primary health care in rural areas.

The RGDWM, NRHM and TSC are all identified as social sector flagship programs by the GoI. In principle, all three programs are implemented through the same district-level institutions. Many activities of the programs are complementary, such as community mobilization, IEC campaigns, capacity development and others, and there are many complementarities e.g. Anganwadi (crèche) workers are included as motivators for taking up interpersonal communication at the grassroots level.

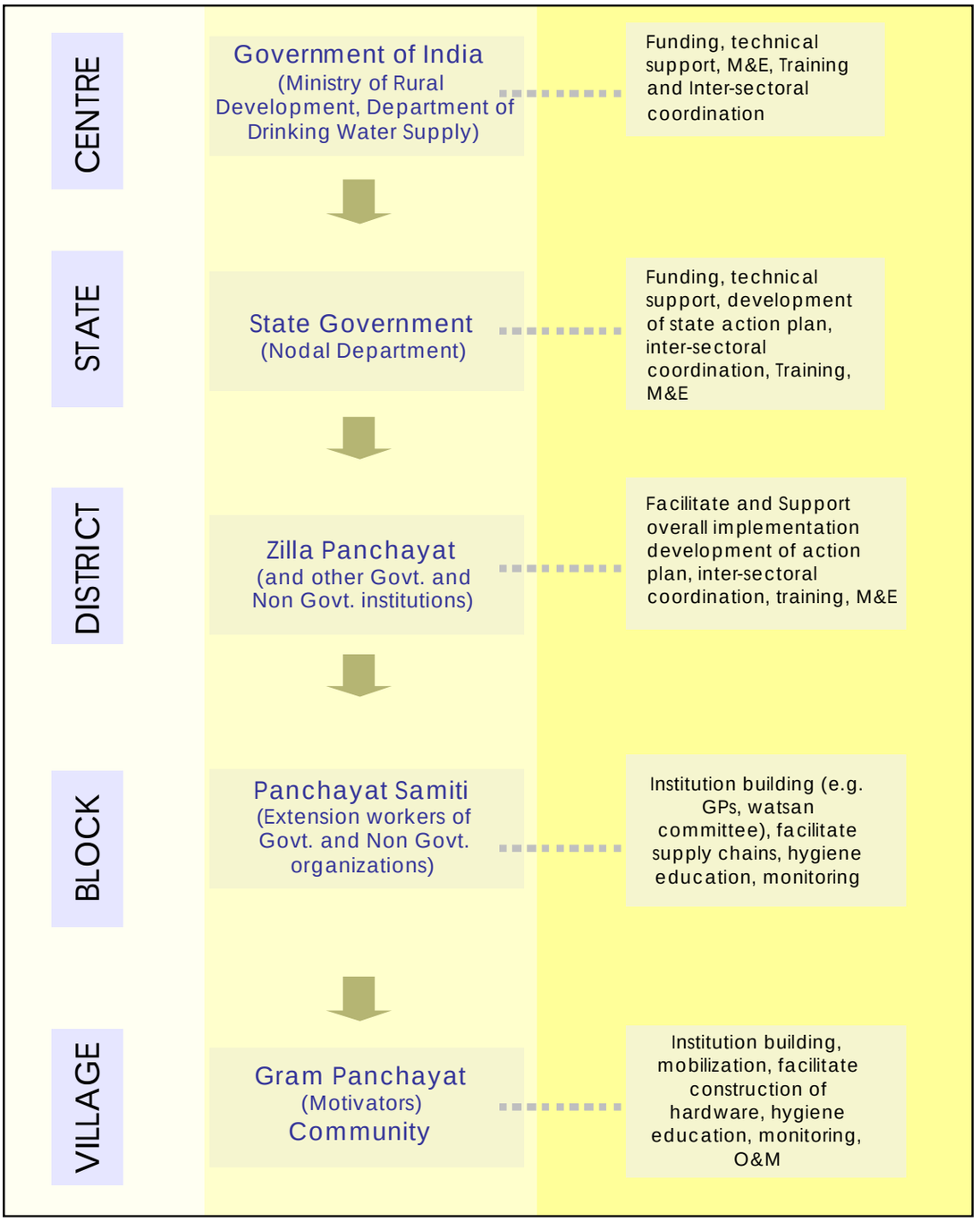
Since school sanitation and hygiene education is an integral part of TSC, convergence is established with Department of School Education and Literacy (DSEL) and the Sarva Shiksha Abhiyan (SSA), the flagship program of GoI to achieve universal elementary education. The emphasis is on providing a school environment equipped with necessary inclusive sanitary facilities as well as ensuring these facilities are safe and well maintained and help to inculcate improved hygiene behaviours in children. Training of teachers is also organised at district and sub-district levels to impart hygiene education in the schools.

### 2.2.4 Service Delivery Mechanisms

The TSC operates through district projects of 3-5 years duration, jointly financed by central and state governments with contribution from beneficiary households (generally in the ratio of 65:25:15). At district level, Zilla Panchayats implement the project.

Similarly, at the block and the Panchayat levels, Panchayat Samitis and respective Gram Panchayats are involved in implementation of the TSC. TSC delivery structure is shown in Figure 5 below.

**Figure 5: TSC Delivery Structure**



## 2.3 Achievements

### 2.3.1 Progress towards Millennium Development Goals

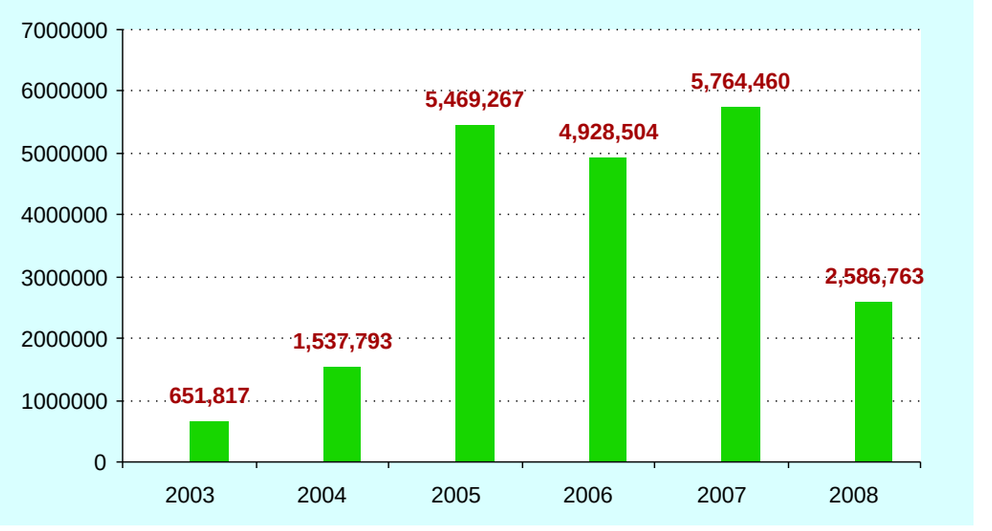
Sanitation is one of the most pressing global development issues and is appropriately included in the Millennium Development Goals (MDGs). Out of eight MDGs, three are directly linked to sanitation: reduce child mortality, combat disease and ensure environmental sustainability. Even the first goal, eradicate extreme poverty, is linked to sanitation as high health and coping costs associated with illnesses caused by inadequate sanitation drain productivity and incomes, contributing to poverty.

One of the targets under the MDG Goal 7: ensure environmental sustainability, is to halve, by 2015, the number of people without sustainable access to safe drinking water and safe sanitation. Although the MDGs were formulated in 2000, the baseline for most of the MDG targets, including that on water and sanitation, has been set as 1990. At current rates of progress (57% coverage as of 16 Oct-08), GoI will not only meet the sanitation MDG but exceed it, as more than 90% rural sanitation coverage may be achieved by 2012.

### 2.3.2 Private initiatives

Private initiatives play a major role in achievement of household and institutional sanitation coverage. Under the TSC, Above Poverty Line (APL) households are expected to build household toilets without any household incentives. To date, more than 20 million APL household toilets have been constructed as compared to 26 million BPL household toilets (DDWS 2008). The trend in APL toilet coverage is shown in the graph below. In addition, the private sector is predominantly involved in the supply of sanitary materials and services, and to an increasing extent in maintenance.

**Figure 6: Year-wise APL Toilets Constructed**

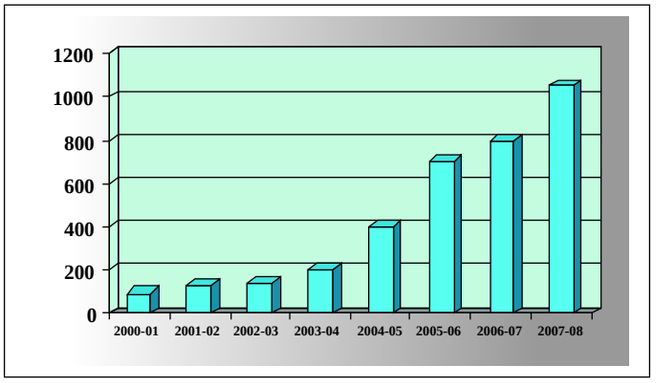



Source: Govt. of India, Dept. of Drinking Water Supply http://ddws.nic.in Accessed 16 Oct-08

### 2.3.3 Resource mobilization

Reflecting the high priority attached to rural sanitation, a budget of more than Rs 4400 crores has been has been allocated for TSC projects since inception in 1999 (details in graph below).

**Fig 7: TSC Fiscal Year-wise Budget Allocated (in crores)**




Source: Govt. of India, Dept. of Drinking Water Supply http://ddws.nic.in Accessed 16 Oct-08

### 2.3.4 Dignity of women

Lack of awareness and socio-cultural attitudes have meant that sanitation has not received the recognition it deserves. This forces a large number of households to the continued indignity of open defecation. This has adverse impacts on health, well-being and dignity, and is an acute problem especially for women and young girls. This is because women and young girls often have to wait until after dark to defecate which increases the risk of urinary tract infections, chronic constipation and psychological stress (WASH 2006). Women are also vulnerable to physical and sexual violence if they are forced to wait until early morning or late evenings to look for a secluded space in which to defecate. Lack of toilets also makes it difficult to manage discreetly symptoms related to pregnancy, menstruation and child birth. The absence of sanitary facilities in schools is also linked to female drop-out, especially at puberty. Finally, recruitment and retention of female teachers is also affected by lack of proper sanitary facilities in schools.

Field evidence shows that the involvement of women in water and sanitation programs increases the likelihood of successful interventions. In light of the significant gender dimension of sanitation, the TSC Guidelines encourage the involvement of women in the implementation of the program. While not laying down a straitjacketed approach, the Guidelines suggest that women's thrift and credit groups or other committees may be involved in mobilizations as well as entrepreneurial activities such as supplies of sanitary materials and services.

## Micro-credit For Macro Change!

MYRADA, an NGO, has facilitated the setting up of all-women federations of microcredit groups in Erode district of Kerala. These federations use a seed fund provided by an international development organization not as a grant but as a revolving fund for sanitation improvements and other activities that contribute to an improved quality of life for members. Individual members borrow money for toilet construction and the repayments are again given as loans to other members. No interest is charged. In the entire cycle once this project gets complete, the original fund remains intact to be used in other initiatives.

The unique feature of the project is that entire disbursal of funds is done by the members, and MYRADA is only involved at the time of audit of the federations. The motto behind this project is not only to encourage safe sanitation, but also to empower women by entrusting the implementation and management of sanitation to institutions run by them. The success of the sanitation initiative has motivated members to extend their support beyond toilet construction to support bathing enclosures, rain water harvesting structures and biogas plants run on human and animal waste.

Source: Dept. of Drinking Water Supply, Govt. of India

### 2.3.5 Bridging Gaps: Equity, Gender, Environment

The Total Sanitation Campaign (TSC) and the Nirmal Gram Puraskar (NGP), by its emphasis on collective achievement of safe sanitation, is effectively an inclusive approach by including the marginalized populations, involving the poor and women. A focus on Total Sanitation as the goal means that the whole community has to achieve access to safe sanitation, which makes the community address the sanitation needs of the marginal populations as well. Incentives are targeted at Below Poverty Line households. Regular monitoring is done to ensure coverage of schedule caste and schedule tribe households. The new school toilet designs incorporate requirements of disabled and girls including menstrual hygiene. In schools especially, disposal of sanitary napkins in girls' toilets is big problem from the health aspects.

### Use of Incinerator for School Toilet waste in Tamil Nadu

In Tamil Nadu, low cost incinerators (approximate cost US$ 27-33) for waste disposal have been put to use in many rural schools, especially in girls toilets. An incinerator comprises of primary, secondary chambers and emission control systems with exit doors for ash removal. In each chamber there is an outlet in the wall for disposal for soiled napkins and the wire gauze chambers on the other side of the toilet wall is used for the collection of waste including soiled napkins. These dropped napkins and other waste are disposed on a weekly basis by firing from outside the box. The use of incinerator technology has helped make girls comfortable attending school during menstrual days.

Source: Dept. of Drinking Water Supply, Govt. of India

## 2.4 Role of Civil Society

Civil society has played a key role in India's sanitation movement. Many civil society organizations have operated successfully as intermediaries between the project and local people, responsible for facilitating project implementation activities such as community mobilization, capacity building and cost-sharing. These civil society organisations have experimented and developed innovative approaches in community mobilization, technologies and other spheres of sanitation, the lessons from which has been sought to be scaled up and sustained in the national level sanitation campaign.

## 2.5 Partnerships, Alliances and Networking

### 2.5.1 Media as Partner

Sanitation is considered taboo, a 'dirty word' that does not often come up in polite conversation. The International Year of Sanitation initiative acknowledges this cultural bias, noting that the topic of sanitation is not a regular feature in mainstream news media, unless there is sensational news such as a disaster linked to sanitation or its

lack thereof. However, different types of media, be it print, radio or television, at national, state and sub-state levels, are an important target audience as they are the main channel to communicate with other target audiences.

DDWS recognizes the important role played by media in communicating the message of total sanitation in its national communication strategy. The strategy envisages that mass media will play an integral role in IEC at national and state level, supplemented by IPC (inter personal communication) at grassroots level (TSC Guidelines 2007). To operationalize this strategy, a Communication and Capacity Development (CCDU) has been set up in each state which is fully funded by the central government. As part of its media outreach, DDWS has introduced a 'Media Corner' on its website (http://ddws.nic.in/MediaCorner.htm) which lists the latest sanitation news stories from across the country.

### 2.5.2. Research and Development

R&D is a support activity for which DDWS provides 100 per cent funding to research organizations. Traditionally, research funding has focused on water sector but the need for focusing concerted research efforts for sanitation has been highlighted. The three major areas identified for R&D inputs to enrich and sustain the current sanitation program are:

- **Technology related:** Initiatives are required in sanitation technologies particularly in the product/design, evacuation, decomposition and maintenance and construction with regard to leach pit technology or any improvement in existing installed septic tank technology. More investments are needed in solid and liquid waste technologies, bio-gas, eco-sanitation, methane recovery from landfill sites, etc.
- **Program related:** Innovations in planning, communication, monitoring, financing sanitation program are needed to ensure faster and sustainable implementation of the sanitation program.
- **Other areas that impact sanitation sector:** Initiation of impact studies on the importance of sanitation interventions in the areas of cognitive development of children, nutritional status, other health and disease indicators, education: drop out and enrolment rate, water quality improvement, cost benefit analysis (increase in income, reduction in loss of man-days), overall child development, women empowerment, etc. Initiation of other R&D initiatives in the excreta decomposition technology for railway coaches, developing standards/norms for food hygiene, using of solar/wind energy in sanitation, innovation in sanitary pad technologies and its promotion, improvement in incinerator-cost, design, standardization, disposal of used sanitary pad, school friendly waste management technologies and systems, inclusive designs for households and institutions.

### 2.5.3 Use of IT

A significant factor in the success of the TSC is the online monitoring system which makes information on program implementation available in real time. Monthly Progress Reports (MPRs), comprising physical and financial data, are submitted by districts through an online interface (paper reports are explicitly discouraged). To incentivize timely submission of MPR, successive financial disbursement is linked to this and this is also an indicator in the state performance report card prepared by DDWS. For process monitoring, including quality of sanitary facilities and usage, District-level Monitoring Agencies (DLMs) have been appointed which submit quarterly monitoring reports into the online system. The online monitoring system can be accessed at http://ddws.nic.in

## 2.6 Challenges and Solutions

The challenges and solutions facing the TSC program are analyzed below using a SWOT – Strengths, Weaknesses, Opportunities and Threats.

**Figure 8: SWOT Analysis of TSC Program**

| | |
|---|---|
| **Strengths**<br>• Committed financial resources<br>• Programme focusing on all elements- HHL, School, Pre school, Supply chain, SLWM, Communication and capacity building, incentive system<br>• Local bodies taking lead | **Weaknesses**<br>• Inadequate focus on hygiene promotion<br>• Weak supply chain affecting post construction support and O&M<br>• Weak monitoring system for process parameters<br>• Lack monitoring of usage and sustainability of the toilets |
| **Opportunities**<br>• Increased awareness among PRIs, Women groups and government officials<br>• Successful models in all states for scaling up<br>• No dearth of resources | **Threats**<br>• Too rapid scaling up<br>• Poor monitoring of clean village award (NGP) |

## 2. 7 Lessons learned - Success stories: What Works and Why?

In 2009, the TSC will complete a decade of implementation. During this time, the program has scaled up from a few pilots to cover 590 districts across the country. Given the time and scale of experience gained, now is an opportune time to take stock of lessons learned from key drivers of program successes. These are discussed below in the form of 4i's, namely, Inclination, Institutions, Information and Incentives.

### 2.7.1 Role of Inclination

In the context of TSC, inclination is understood at two levels. Firstly, at the macro level it refers to mobilization of political will and creation of an enabling environment to support program implementation. Secondly, at the grassroots level, inclination refers to the importance of behavior change in ending open defecation and achieving total sanitation.

At the macro level, TSC has been identified as a flagship social sector program for development of rural areas by the GoI (Planning Commission, Eleventh Plan).
The strong buy-in for the program approach and goals at all levels of government is evidenced by the progressive increase in financial and other resources committed towards program implementation (from outside government also) and the upscaling of the project districts since 1999. TSC has also received priority from His/Her Excellency the President of India and Union Minister for Rural Development, who have graced the Nirmal Gram Puraskar awards ceremony and felicitated the winners in person.

At the grassroots level, inclination is interpreted as willingness to change behavior to end open defecation and adopt safe sanitation. Further, safe sanitation becomes meaningful and effective only when an entire community adopts it because even if a few persons practice open defecation, all are exposed to sickness and disease. Recognizing that safe sanitation is a habit and not just constructing toilets, the TSC Guidelines explicitly support a demand-driven and participatory approach at community level. In addition, the TSC envisages that the key actor in changing the sanitation status of a community is the community itself, while the role of government and outsiders is to facilitate this process of transformation. This has been demonstrated by the increase in number of local governments (communities) which have attained NGP.

### 2.7.2 Role of Institutions

The current institutional arrangements demonstrate a holistic approach to sanitation service delivery and involve all administrative levels of the implementation chain, from centre to village. Experience with TSC implementation shows that having a dedicated sanitation cell within this holistic framework that is concerned specifically with and held accountable for implementation of sanitation initiatives can be very effective.

Sanitation is often a local issue that has to be addressed by the community residing in a particular habitation. Panchayats or local governments are ideally placed to promote total sanitation due to their outreach and mandate. In addition, Panchayats are in a good position to undertake or facilitate the long-term monitoring and support of rural sanitation services. NGO interventions have been successful in community mobilization and capacity building, but experience shows that Panchayats' involvement in partnership with civil society organizations accelerates scaling up and promotes

sustainability. Most importantly, however, communities must be empowered to own the process of changing their sanitation status. Commercial sanitary ware suppliers can support this process by responding to demand for different types of technology options, but this can also occur through local entrepreneurs, community groups, NGOs or cooperatives.

### 2.7.3 Role of Information

TSC signals a departure from the traditional mode of implementing sanitation programs by focusing on behavior change rather than infrastructure. Communicating this approach across tiers and building the capacity of different actors involved in implementation is integral to the success of the program. To realize the full potential of this campaign, instead of seeing IEC as a one-time activity, it cannot be considered complete until total coverage and usage are achieved. To facilitate IEC, GoI provides funding at state and district levels and has also identified reputed research and development institutions as Key Resource Centres to orient program managers in states and districts. In addition, the innovations introduced by TSC such as shift from a subsidy to a post achievement incentive regime can be scaled up based on demonstrated success on the ground through exposure visits, documentation (electronic, audio-visual and print) and exchanges at different levels e.g. a regional exchange like SACOSAN. At grassroots level, there are many approaches to mobilization but the best way is a holistic approach that empowers communities to take informed decisions regarding their sanitation status. While this change can be initiated by a facilitator (government or NGO), leadership within the community is required for scaling up and sustaining change.

### 2.7.4 Role of Incentives

Despite a tendency to look towards enabling financing as a means of mobilization, the TSC moves away from high, upfront subsidy and instead provides for a post usage cash incentive for identified BPL families. This has to be given as a reward after the BPL family has constructed its own toilet and is using it. Further, to incentivize collective outcomes, Nirmal Gram Puraskar (NGP- Clean Village Award) has played an integral role in scaling up TSC. The NGP scheme has elicited a tremendous response, with the number of Panchayats awarded going up from a mere 40 in 2005 to more than 11,000 in 2008. By providing incentives to community efforts to meet collective gains in sanitation, the scheme helps to raise the status of the winning village, create peer pressure among neighboring villages, and stiff competition among all tiers of governance within and across states. Mobilization of Panchayats for sanitation promotion also has positive spill-over effects such as strengthening decentralization to facilitate the overall socio-economic development of a community.

**Nirmal Gram Juvvalapalem in West Godavari District of Andhra Pradesh**

Juvvalapalem is a small village with a population of 3700 in West Godavari District of Andhra Pradesh. Prior to becoming a Nirmal Gram, open defecation was a common practice in the village. The initiatives taken by the Panchyat have not only bagged Juvvalapalem a Nirmal Gram Puraskar but also contributed to improving the quality of life for all residents. This is the story of that change.

Initially, the Juvvalapalem Panchyat faced lot of resistance and non co-operation from different sections of society. However, gradually they were able to convince people of the importance of safe sanitation through intensive communications and awareness campaigns in which children played a major role. The villagers were asked to take oath to keep village free from open defecation. In addition, a comprehensive waste disposal system has been developed. Under this, household waste is collected daily from doorstep by a cycle rickshaw or bullock cart, segregated into recyclable and bio degradable, then properly disposed to safeguard public health. The water supply system has also been upgraded with mineral water of international standards being provided free to schools and hospitals and at a nominal charge of only 12 paisa per litre to the public.

Source: Dept. of Drinking Water Supply, Govt. of India

## 2.8 Emerging Issues and Solutions

### 2.8.1 Standards and Benchmarks

TSC moves away from the traditional supply-driven approach which prescribed technology and instead articulates informed choice from among a menu of technology options for households that opt to move from open defecation to fixed point defecation. While many options exist for on-site sanitation, choosing between options is often predicated not on technical factors alone, but also on affordability, aesthetics, cultural factors and so on. However, the sanitation technology adopted has to conform to safe sanitation standards, i.e. it should not lead to human contamination through any intermediary like water, flies, etc. To facilitate decision-making among options to ensure safe and sustainable sanitation, there is a need for standards and benchmarks that enable like-for-like comparison between different options and provide reliable estimates of installation and recurring maintenance costs.

### 2.8.2 Measuring Outcomes

As the TSC has been operating at scale for several years across districts, it is an opportune time to measure outcomes of this program. This is because outcomes, especially public health outcomes, take time to come to fruition. The current monitoring system which was put into operation at program inception captures the inputs e.g. financial investment, and corresponding outputs achieved, e.g. toilets built, ODF Panchayats. In terms of tracking outcomes, these are partially captured through indicators like usage and to some extent by the NGP verification process, but this is currently a one-time event.

The present monitoring system can include outcomes such as health, e.g. changes in infant mortality and burden of disease, that can be attributed to the TSC. Developing this will require an agreement on a standard set of indicators that are based on agreed upon international definitions, preferably linked to the Joint Monitoring Program. This should clarify roles and responsibilities at all levels, provide the formats and protocols for linking the system, and include simple tools that can be used at the state and district levels. In addition, capacity needs to be developed to implement the systems including the capacity to use the data to inform program implementation.

### 2.8.3 Public sanitation

In TSC, public sanitation including highways, eateries, market places, bus stands etc. has been addressed by the eligibility criteria of the NGP incentive program which requires that sustainable sanitation facilities be in place in all areas that come under a Panchayat's jurisdiction in order to reach open defecation free status. However, this does not fully resolve the issue, since Panchayat budgets may be stretched to pay for installation of public sanitation facilities. Even if full capital costs are financed best practices in institutional arrangements (e.g. user charges) and incentives to sustain regular maintenance is being accessed and experimented (e.g. sustaining NGP status).

### 2.8.4 Sanitation and Water

Availability of adequate water is a factor that influences demand for sanitation e.g. hand washing after defecation and flushing excreta require sufficient quantity of water. In turn, sanitation can impact quality of water e.g. appropriate technology, especially for pit latrines, is a must to prevent groundwater contamination. According to WHO 3.3 million people die every year from diarrhea diseases and at any time there are 1.5 million suffering from parasitic worm infections stemming from human excreta and solid wastes in the environment. As such sanitation is more important than water from the point of view of impact on the health, dignity, and quality of life of the poor. There is scope to address the linkages between sanitation and water quality and quantity through convergence with the Government of India flagship rural water program which is being implemented in parallel with the TSC.

### 2.8.5 Waste as Resource


It is estimated that 15,000 to 18,000 million liters of liquid waste and 0.3 to 0.4 million metric tons of solid waste (organic/recyclable) is generated in rural areas each day (DDWS 2008). With an increasing number of Panchayats attaining open defecation free status, it is necessary to address solid and liquid waste management alongside, as part of the effort to achieve total sanitation. This element has already been incorporated in policy through a revision in the TSC Guidelines in 2007 and allocation of 10 per cent of TSC funds towards financing of the capital costs of technologies for waste management. In addition, DDWS has issued a Technical Note on 'Solid and Liquid Waste Management in Rural Areas' (pictured alongside). While selecting technology options, the focus has been on re-use and not just disposal to ensure sustainability. This requires not just technical guidance but also change in mindsets to see waste as wealth instead of garbage. There are many promising examples of this from across the country which can be adapted at scale.

### 2.8.6 Addressing Slippages

Over the past few years, there has been a tremendous scaling up of the TSC with a geometric rate of increase on most performance parameters and a substantial commitment of financial resources. At the same time, the issue of sustainability has come to the fore as preliminary results from GoI evaluations have indicated slippage in the form of latrines not being used. To address this slippage, there is a need for increased community involvement to sustain behavior change to end open defecation which can be achieved through concerted IEC efforts. Further, this needs to be supported by rigorous monitoring to flag and address slippage in early stages when it is relatively easier to reverse.

### 2.8.7 Communicating through Communities

Field experience shows that peer pressure can play an important role in facilitating behavior change to end open defecation. Communicating through communities therefore has shown the potential to scale up and sustain TSC outcomes. This has been operationalising through the NGP program. There has been a geometric increase in the number of NGP Panchayats from around 40 in 2005, to more than 11,000 in 2008. These Panchayats are living examples of change and motivators and natural leaders from here can be an excellent resource for: a) scaling up through facilitating capacity building and mobilizing change in as yet uncovered Panchayats; and b) sustaining change in their own Panchayat to prevent slippage. Further, exposure visits and documentation of NGP experiences backed up by an effective dissemination strategy will facilitate communication through communities of best practices in total sanitation.

### 2.8.8 Sanitation for Infants and Children

Changing behavior among infants and children by proper toilet training at home, in pre-school and in school, hygiene education has been shown to be successful. It also results in bringing changes among parents and the community at large. The school hygiene education has been shown to be successful in also bringing about changes among parents and the community. Hence greater focus on providing child friendly, inclusive toilets with seats proportionate to the number of children in pre-school and in schools would bring about the lasting sanitation revolution that India aims for. Thus in order to change the behavior of the children from very early stage in life, it is essential that Anganwadis (pre-school) are used as a platform of behavior change of the children as well as the mothers attending the Anganwadies. For this purpose under TSC each Anganwadi is provided with a baby friendly toilet. At the domestic level also it is found that these excreta of small babies are not handled properly as in many cases it is not considered harmful. It is therefore advocate to construct baby friendly toilet also at the individual household level.

### 2.8.9 Other Aspects of Sanitation

There are many aspects of sanitation which are emerging as the next generation issues to be tackled. Some of these are safe disposal of animal wastes in rural and in urban

areas, sanitation for the aged and sick, sanitation in disaster situation and sanitation for migrants and nomadic and landless people. Studies to research these areas and practical initiatives to be taken, best models practices identified and then evaluated. The best models need to be disseminated and upscaled.

## 2.9 New Directions for Developing Countries

### 2.9.1. Need for an Alternate Sanitation Model

The survival and wellbeing of developing nations depends largely upon sustainable development and for this, sustainable water supply and sanitation are essential requirements. There is a need for a paradigm shift from 'flush and forget' systems to recycling in the form of 'waste to wealth' systems for waste management. Conventional on-site wastewater disposal systems, such as pit latrines or septic tanks, carry the risk of groundwater contamination.

At the same time the issue of food security must be considered. Sustained food production depends on sustained soil fertility and soil carrying capacities. With fertilizer production requiring a lot of energy and natural phosphorus reserves declining, and with soil quality not being maintained by artificial fertilizers, there is a need worldwide and in India to find solutions for these problems.

### 2.9.2. Innovative Ecological Sanitation

Ecological Sanitation aims to promote the development, implementation and dissemination of socially and culturally acceptable, sustainable, hygienically safe and ecologically sound sanitation approaches. With other partners demonstration projects are being implemented in different areas of India. The overall objectives of those projects are (i) to introduce the ecological sanitation concept and to identify the appropriate wastewater handling approaches that satisfy technology, cost and institutional framework and enable maximizing the utilization of existing pipes and treatment facilities (ii) to recover the nutrients from urine and faeces for agricultural purposes and (iii) to contribute to the reduction of wastewater discharged to sewers through recycling of grey water. The alternative paradigm of ecological sanitation offers the potential of sustainable sanitation for developing countries.

# 3

# URBAN SANITATION

## 3.1 Coverage

According to the Census of 2001, 30.6 million urban households which form 35.49% of the urban households suffer inadequate access to sanitation facilities and more than 37% of the total human excreta generated in urban India is unsafely disposed. Out of these 30.6 million households, 12.04 million (7.87 %) urban households do not have access to latrines and defecate in the open. 5.48 million (8.13%) urban households use community latrines and 13.4 million households (19.49%) use shared latrines. 12.47 million (18.5%) households do not have access to a drainage network. 26.8 million (39.8%) households are connected to open drains. The status in respect of the urban poor is even worse. The percentage of notified and non-notified slums without latrines is 17 percent and 51 percent respectively. In respect of septic latrines the availability is 66 percent and 35 percent. In respect of underground sewerage, the availability is 30 percent and 15 percent respectively. 37 percent of the wastewater generated is let out into the environment untreated. Three-fourths of surface water resources are polluted and 60 percent of the pollution is due to sewage alone. Poor sanitation severely impacts public health, causes hardships and imposes huge medical expenditure, especially for the poor. The loss due to diseases caused by poor sanitation for children under 14 years alone in urban areas amounts to Rs. 5 billion at 2001 prices.

Information collected by CPHEEO, Ministry of Urban Development indicates that as on 31.03.07, about 63 % of the urban population have got access to sewerage, low cost sanitation and septic tank facilities at present i.e. about 30% population have got access to sewerage and 33% have got access to low cost sanitation and septic tank facilities. The coverage figures mentioned above indicate accessibility only and the quality and quantity of the services may not be as per norms in some cases.

As per assessment made by the Central Pollution Control Board in Class I cities and Class-II towns during 2003-04, about 26,254 MLD of wastewater was generated in 921 Class I cities and Class II towns in India (housing more than 70% of urban population). The wastewater treatment capacity developed so far is about 7044 MLD – accounting for 27% of waste water generated in these two classes of urban centres. Most of the cities have only primary treatment facilities. Thus, the untreated and partially treated municipal waste water finds its way into water sources such as rivers, lakes and ground water, causing water pollution.

### 3.2 Policy Framework

Under the Constitution of India, water supply and sanitation is a State subject. Urban Local Bodies (ULBs) have the responsibility for planning, design, implementation, operation and maintenance of water supply and sanitation services in cities and towns. At the Central level, the Ministry of Urban Development is the nodal agency for formulation of policies, strategies and guidelines and assists the States by providing financial assistance for the development of urban water supply and sanitation schemes in cities and towns. The Central Public Health and Environmental Engineering Organization (CPHEEO) is the technical arm of the Ministry and assists in preparation of policy guidelines, technical manuals etc. related to urban water supply and sanitation.

To achieve 100 per cent population coverage for sewerage, sewage treatment and low cost sanitation facilities in urban areas during Eleventh Plan, the following steps have been identified:

- Install more plants to treat, recycle and reuse sewage.
- Industrial and commercial establishments must reuse and recycle treated sewage to reduce fresh water demand.
- ULBs should amend their by-laws to make it mandatory for all residents to connect their toilets to the existing sewerage system.
- Fringe areas of cities and colonies of economically weaker sections and slum dwellers be covered with low cost sanitation facilities, either on individual household basis or community basis with “pay and use system” with adequate maintenance arrangements. Necessary penal clause to be enforced effectively to stop open defecation practice as well as indiscriminate throwing of garbage/litter in public places.
- Targeted subsidy may be given to urban poor for taking water supply/sewerage house service connections, metering, to and construction of toilets.
- Comprehensive storm water drainage system be developed in all cities and towns in order to avoid water logging during monsoon.

### 3.3 Sector Reforms: National Urban Sanitation Policy, 2008

The Government of India, in discussion with the States, constituted a National Urban Sanitation Task Force in 2005 comprising eminent policy makers, practitioners, experts and NGOs in order to take stock of the situation and formulate a policy to comprehensively deal with the challenges in urban sanitation in Indian cities. Based on the recommendations of this task force, a National Urban Sanitation Policy has been approved by the Government of India in October 2008. The main elements of the policy are discussed below.

### 3.3.1 Policy Vision and Goals

The vision of the policy is that all Indian cities and towns become totally sanitized, healthy and livable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.

The policy articulates the following goals:

*Awareness Generation and Behavioral Change*

a. Generating awareness about sanitation and its linkages with public and environmental health amongst communities and institutions
b. Promoting mechanisms to bring about and sustain behavioral changes aimed at adoption of healthy sanitation practices

*Open Defecation Free Cities*

The ultimate objective is that all urban dwellers will have access to and be able to use safe and hygienic sanitation facilities and arrangements so that no one defecates in the open. In order to achieve this goal, the following activities shall be undertaken:

a. Promoting household access to safe sanitation facilities (including proper disposal arrangements)
b. Promoting community-planned and managed toilets wherever necessary, for groups of households who have constraints of space, tenure or economic constraints in gaining access to individual facilities
c. Adequate availability and 100 per cent upkeep and management of public sanitation facilities in all urban areas, to rid them of open defecation and environmental hazards

*Integrated City Wide Sanitation*

Re-orienting institutions and mainstreaming sanitation by

a. Mainstreaming thinking, planning and implementing measures related to sanitation in all sectors and departmental domains as a cross-cutting issue, especially in all urban management endeavors
b. Strengthening national, state, city and local institutions (public, private and community) to accord priority to sanitation provision, including planning, implementation and Operation & Maintenance (O&M) management
c. Extending access to proper sanitation facilities for poor communities and other un-served settlements

*Sanitary and Safe Disposal*

100 per cent of human excreta and liquid wastes from all sanitation facilities including toilets must be disposed-of safely. In order to achieve this goal, the following activities shall be undertaken:

a. Promoting proper functioning of network-based sewerage systems and ensuring connections of households to them, wherever possible

b. Promoting recycle and reuse of treated waste water for non-potable applications, wherever possible, will be encouraged

c. Promoting proper disposal and treatment of sludge from on-site installations (septic tanks, pit latrines, etc.)

d. Ensuring that all the human wastes are collected safely confined and disposed-off after treatment so as not to cause any hazard to public health or the environment

*Proper Operation and Maintenance of all Sanitary Installations:*

a. Promoting proper usage, regular upkeep and maintenance of household, community and public sanitation facilities

b. Strengthening Urban Local Bodies (ULBs) to provide or cause to provide, sustainable sanitation services delivery

### 3.3.2 Strategy

- States will be encouraged to prepare State Sanitation Strategies within a period of 2 years. Cities will be urged to prepare model City Sanitation Plans within a period of 2 years. Each state shall formulate its own State Urban Sanitation Strategy taking into account its local urban context. Cities will operationalize the state strategy by preparing and implementing City Sanitation Plans. The states will also be encouraged to formulate State Reward Schemes. A state level apex body will monitor the implementation of the state strategy, and a nodal agency will be appointed for planning and implementation. Each state and its cities would need to devise effective institutional arrangements at the city level. However, the ULB's (or their equivalent structures) must be at the centre of all urban sanitation activities.
- Providing assistance for the preparation of Detailed Project Report (DPR) as per city sanitation plan as and when requests for funding are received
- Promote public-private partnership in respect of key projects/activities identified in the city sanitation plan
- Provide technical assistance and support for awareness generation and capacity building to states and cities within this financial year
- Periodic rating of all Class 1 cities (423) in respect of Sanitation and recognition of best performers by instituting a National Award within this financial year. The award

scheme will take into account output related parameters such as complete elimination of open defecation, elimination of open scavenging and personal protection to sanitary workers, safe collection and disposal of total human excreta, recycling and reuse of treated wastewater for non-potable applications, efficient and safe management of storm water and solid waste management, process related parameters such as monitoring and evaluation, observance of proper O&M practices, clear assignment of institutional responsibilities, sanctions for deviance on the part of polluters and outcome related parameters such as improved quality of drinking water, reduction in water borne diseases etc. On the basis of the rating scheme, cities will be classified as Red, Black, Blue and Green which would denote and increasing level of achievement of good environmental and health outcomes.

- A National Advisory Group on Urban Sanitation (NAGUS) will be convened by the Ministry of Urban Development. It will be broad based and will include representatives of the Ministries of Health, Social Justice and Empowerment, Housing and Urban Poverty alleviation, Water resources, external experts and representatives of State Governments National Advisory Group on Urban Sanitation will assist the Ministry of Urban Development in implementing the National Policy. Ministry of Urban development will set apart resources to the extent of Rs. 500 million over a five year period for activities such as National awareness generation campaign, Rating and National award scheme, Capacity building and training ,State level strategies and sample City Sanitation Plans (CSPs) and the National Advisory group on Urban sanitation

### 3.4 Millennium Development Goals (MDGs) of Sanitation

The Millennium Development Goals (MDGs) (Goal No.7) enjoin upon the signatory nations requiring them 'to halving the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015'' and 100% access by 2025. This implies extending coverage to households which are presently without improved sanitation, and providing proper sanitation facilities in public places to make cities open-defecation free. Since the early 1990s, India has made good progress in developing water supply and sanitation (WSS) infrastructure in urban areas. According to the information given in the India Water Supply & Sanitation published by World Bank in 2006, if access to sewers and septic tanks was about 43% in 1990, the MDG target should be about 72% at the end of the 12th Plan; with an official figure of about 62% in 2001, India should be able to exceed the MDG target. The discussion of future estimates presented in this report, is based on the following targets for the end of the 12th Plan (2017): (i) sanitation coverage ratio: about 82% broken down as follows: about 52% connected to sewers, 30% to septic tanks, and an additional 16% to latrines. However, Government of India envisages providing access to water supply facilities and sewerage and on-site sanitation facilities to 100% of the urban population by the end of the 11th Five Year Plan (March 31 2012).

## 3.5 Government of India Initiatives

### 3.5.1 Programs

The Integrated Low Cost Sanitation Scheme (LCS) was initiated by the Government of India in 1980-81 for the replacement of service-latrines and the rehabilitation of workers engaged in the occupation of manual cleaning. About 2.3 million service latrines (of the 5.4 million reported by NSS, 1989) were converted into sanitary ones by July 2007, and more than 50,000 scavenging workers rehabilitated. Even conservative estimates show that more than 0.12 million workers remain to be rehabilitated (MHUPA, 2006). Therefore, while policy measures and programs have been alive to the issue, results achieved have hitherto been unequal to the scale of the challenge.

The guidelines have been revised recently with a view to convert 600,000 dry latrines into water borne flush toilets in the country from 2007 to 2010. The objective of the scheme is to convert /construct low cost sanitation units into sanitary two pit pour flush latrines with superstructures taking into account of the local conditions (area specific latrines) and construct new latrines where EWS Households have no latrines. The scheme is on 'All Town' coverage basis.

Over Tenth Plan (till June 2006), about 0.6 million individual household latrines were reported to have been constructed under the LCS Scheme with a total subsidy release of Rs. 320 million of a total budget of Rs. 2 billion; and an additional allocation/ release of Rs. 250 million for 2006-07.

Under the Valmiki Ambedkar Awas Yojana (VAMBAY, a successor to the National Slum Development Program) Scheme during the Tenth Plan (by Jan 2006) around 40,000 community toilet seats have reportedly been constructed. This would have provided access at best to 0.8 million households (even if assuming a very high usage of more than 80 persons per seat).

Creation of infrastructure for sewerage and sanitation was eligible for assistance under the Mega-cities scheme and the scheme for integrated development of small and medium towns. These two schemes have been subsumed under JNNURM and UIDSSMT with effect from December 2005. Sanitation has been accorded very high priority under JNNURM and account for 19.19% of the total number of projects (66 Nos). The cost of these projects is Rs 80 billion i.e. 24.26% of the cost of all projects sanctioned under the scheme. Adequate emphasis to sanitation is also ensured while approving the City Development Plan for the Mission cities. In respect of UIDSSMT, so far, out of 662 projects approved, 94 pertain to sewerage with a total estimated cost of Rs. 29 billion. Funds to the tune of Rs. 6 billion have been released for implementation of 56 projects. Another scheme for creation of urban infrastructure including sanitation in satellite towns of the 35 million plus cities is under finalisation. The reform agenda of JNNURM also mandates provision of basic services to the urban poor including security of tenure at affordable prices, improved housing, water supply, sanitation.

Recently, the Ministry of Urban Development has formulated benchmarks for service delivery in the sanitation sector. The benchmarks will be used to appraise projects which are proposed for assistance under various schemes of the Ministry as well as externally aided projects. Besides, the extent to which various ULBs achieve the benchmark will be monitored. The details of the benchmarks are as given below:

| Service Benchmarks | | |
|---|---|---|
| 1. | Coverage of waste water network services | 100% |
| 2. | Collection efficiency of waste water network | 100% |
| 3. | Adequacy of waste water treatment capacity | 100% |
| 4. | Quality of waste water treatment | 100% |
| 5. | Extent of reuse and recycling of treated waste water | 20% |
| 6. | Extent of cost recovery in waste water management | 100% |
| 7. | Efficiency in redressal of customer complaints | 80% |
| 8. | Efficiency in collection of sewerage charges | 90% |
| 9. | Capacity utilization of Waste Water Treatme nt Facility | 100% |
| 10. | Coverage of Toilets | 100% |

### 3.5.2 Community Development

There has been an increasing shift in policy, from 'supply-driven' to 'demand-driven' approaches that promote community participation in the planning, implementation and management of sanitation services. There is a need for more demand-led initiatives where communities are involved in the planning, implementation and management of sanitation services. This would have to be an integral part of project implementation if the project is to be sustainable in the long run. Communities must be mobilized in such a way that ownership rests with the community. In this respect, it must be noted that ULBs cannot withdraw from their responsibility totally even if communities take full charge of operations and maintenance (O&M) of assets created. Community mobilization is important but must be in the context of ULBs addressing challenges and responsibilities in undertaking sanitation service provision, as well as also providing funding as required. The template for the City Sanitation Plan which forms part of the National Urban Sanitation Policy prescribes the formation of a City Sanitation Task Force which will ensure the participation of the community in the creation and maintenance of sanitation infrastructure.

### 3.5.3 Local Self Government

The National Urban Sanitation Policy envisages that the State Urban Sanitation Strategies must ensure clear ULB responsibility as envisaged in the 74th Constitutional Amendment (CA). Where this is partial or incomplete, states will need to make concerted efforts to devolve powers, roles and responsibilities along with financial and

personnel resources necessary for ULBs to discharge their functions. Alongside, the ULBs will also have to be accorded wide-ranging powers over agencies that currently carry out sanitation related activities in the city but are not directly accountable to them, e.g. para-statals and Public Health Engineering Departments.

ULBs will need to be responsible for asset-creation and managing systems including service delivery. The ULB may bring in public, private and community agencies/groups to provide services on its behalf. But the final accountability with regard to performance in sanitation will have to be that of the ULB. Departments and para-statals currently carrying out these responsibilities will need to be accountable to the respective ULBs (including for example, financing through the ULBs). The State governments will need to make explicit directions in this regard, including roles for NGOs and CBOs.

State Strategies will need to dwell on this issue carefully – strengthening existing state level institutions that are charged with ensuring compliance of ULBs to environmental standards (e.g. State Pollution Control Boards), health outcomes (e.g. Health Departments), and Service Delivery Standards (e.g. State Urban Departments). Wherever these responsibilities or action on deviance are not spelt out clearly, the state strategy will need to make these clear. The strategy will also have to identify the ULB as having the key regulatory remit over all properties and agencies/households in the city in respect of outcomes and process standards stipulated by it.

### 3.5.4 Behavior Change

The mindset of households and communities in regard to sanitation, and as reflected in institutional biases, are at the root of according low priority to sanitation. This has resulted in worsening the situation of all stakeholders, both users (most importantly women and children who suffer shame, indignity apart from inconvenience and huge health impacts, also the poor forced to defecate in the open for lack of access) and sanitation workers (scavenging, solid waste and sewerage / sanitary workers who are exposed to continued socio-economic misery and cultural discrimination, apart from unsafe occupational environments). Public agencies also accord low priority to provision of community and public toilets citing constraints of tenure and land even though they are legally empowered to make sanitation their priority public health and environmental responsibility in cities. Thus, the National Urban Sanitation Policy recognizes that sanitation must be publicized among government agencies, ULBs, communities, households, and NGOs/Private Sector as an issue involving changed collective behavior leading to health and environmental outcomes for all. These awareness generation efforts must target the related work and workers to the stigma attached to sanitation; and elevate the importance and dignity of sanitation related work in the eyes of all public agencies, and citizens and stakeholders. Awareness generation through the print and electronic media has thus been accorded high priority under the policy.

### 3.5.5 Sanitation and Health

The impact of poor sanitation is on public health, especially the incidence of water-borne diseases. These diseases are a result of faecal matter entering the food chain at any of the many points of vulnerability: at a personal hygiene level; in terms of unsafe disposal of wastes at household level (leaking pits, over-flowing tanks, broken sewers, etc.); unsafe conveyance (ex-filtration from trunk mains, unsafe transportation of septage cleaned by suction machines); or unsafe disposal (into land and water bodies). Given that 100 % sanitation is not practiced in any urban area in India, it can be surmised that all Indians in urban India are at risk of consuming human excreta if not doing so already – no wonder this shows up in the morbidity and mortality rates. In economic terms, the cost per DALY (Disability Adjusted Life Years) lost due to poor sanitation and poor hygiene practices, is estimated at $120 (Rs. 5,400) and $20 (Rs. 900) (World Bank, 2001). A 2006 paper estimated that about 23 million children (under 14 years) in urban India are estimated at risk from diseases due to poor or inadequate sanitation. This translates into an estimated Disability Adjusted Life Years (DALY) burden of diarrhoeal disease of more than a million life years (Total for India is 12 m life years only for under 14 years population for rural and urban combined). This is equivalent to an estimated DALY 'cost' of diarrhoeal disease for children at risk from poor sanitation of Rs. 5 billion at 2001 prices. (UNICEF-Planning Commission Consultation, 2006). Thus, lack of proper sanitation implies huge economic costs.

Untreated and partially treated domestic wastewater causes bacterial pollution of surface sources and increases the load of unknown chemicals in water bodies. Discharge of sewage effluent to a river can be beneficial to environment where quality standards are set and met appropriate to the minimum dilution afforded to the effluent by the river flows. However, inappropriately practiced, effluent discharge to a river can have considerable adverse effect on its general environment. The adverse effects of discharging an effluent inappropriately treated consistent with the dilution available in a river or other watercourse are:

- a lowering of the dissolved oxygen content which threatens most life –fish, aquatic animals and plants;
- a gradual blanketing of the bed of the river, suffocating benthic plants and other life;
- an over-enrichment by nutrients causing prolific growth of algae which becomes over-dominant and closes off other forms of aquatic life;
- a lowering of the oxygen absorption capacity by blanketing the surface with foam where residual levels of detergent remain;
- potential toxicity to life – both the inhabitants of the river and those consuming them, including humans – if heavy metals or other toxic material enters the sewers and is not removed during treatment; and

- possible viral or bacterial infections in swimmers and others practising water sports and other contact recreation.

While reliable data is not available on the impact of untreated wastewater on land and water-bodies affected in and outside urban areas, the Tenth Five Year Plan says:

> "Three-fourths of surface water resources are polluted and 80 % of the pollution is due to sewage alone".

With increased urbanization, and scarcity of land and water-bodies, especially around urban areas, environmental consequences of untreated wastewater will become serious, and can even cause conflicts and disruptions in the lives of communities.

### 3.5.6 Sustainability

The problem of poor and inefficient O&M of water supply and sanitation services is prevalent in most of the ULBs due to inadequate financial resources, as they are unable to raise the water tariff and sewage cess without the approval of the provincial governments. The ULBs **recover hardly 2/3rd of the O&M expenditure** from water supply and sanitation charges as revenue. A survey conducted among the consumers indicates that they **are 'willing to pay'** a reasonable tariff, provided they are assured of getting reliable and adequate water supply at their premises. However, still there is a culture of **not 'willing to charge**' among the decision makers in the ULBs.Most WSS operations do not generate sufficient revenues to recover their O&M expenditure, as evidenced by working ratios (ratio of operating costs, excluding depreciation and debt service, to operating revenues, excluding operating subsidies) exceeding 1. The performance of Indian WSS Service Providers is the lowest among comparable Asian countries. Mega-cities, except Delhi and Kolkata, usually cover their O&M costs from user charges. Also, in these mega-cities, the connection and collection ratios are somewhat higher than in other MCs or ULBs and a larger commercial and industrial consumer base allows cross subsidization among categories of customers. The main factors contributing to the lack of financial sustainability are mostly; (i) poor financial management and accounting system; (ii) inadequate tariff level and distorted tariff structure; (iii) high capital and O&M costs; (iv) overstaffing; and (v) high level of non-revenue water. In recognition of this issue, the National Urban Sanitation Policy emphasises the need for strengthening Urban Local Bodies (ULBs) to provide or cause to provide, sustainable sanitation services delivery. The service level benchmarks also emphasise cost recovery in waste water management and efficiency in collection of sewerage charges. The reform agenda of the JNNURM also mandates levy of reasonable user charges by ULBs/Parastatals with the objective that full cost of operation and maintenance or recurring cost is collected within the next seven years. In the case of the North Eastern and other Special Category States, they may recover 50% of the operation and maintenance cost initially and graduate to full recovery in a

phased manner. The optional reforms included incorporation of bye-laws for reuse of recycled water.

### 3.5.7 Environmental Health

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## 3.6 Success stories with critical analysis

### 3.6.1 The BOT Initiative in Delhi

Private sector development of public toilets via Build, Operate, and Transfer (BOT) contracts is relatively new in India. In Delhi, the idea first emerged in 1998 under the

auspices of the New Delhi Municipal Corporation (NDMC). Fumes International, a local company, had noticed the dismal state of public toilets in the city and approached NDMC with an idea. It proposed to construct new toilet blocks using its own resources, then operate them for a fixed period, after which ownership would transfer to the municipality. The right to use the road facing walls of the complexes as advertising spaced would enable the operator to offset some of the development costs. The NDMC agreed.

The proposal was attractive as it potentially offered two important benefits:

1. Private financing of public infrastructure: The new services would be both financed and operated by the contractor. All the municipality had to do was provide the land and monitor the facilities once they were running. In return, it would receive a monthly licence fee from the operator, funded by advertising revenue.
2. An incentive for maintenance: It was anticipated that the potential for advertising revenue would create an incentive for the contractor to construct a good quality building and keep it in working order- many toilet blocks developed under this contract featured well-kept gardens and plants.

On the initiative of the operators, BOT contract now include a clause allowing the operator to landscape the site, making it more attractive both to users and advertisers.

Toilet blocks built under this and subsequent contracts had separate facilities for men and women (four to six compartments for each) plus two or three urinals and one or two showers. The first site proposed by the private contractor was at a busy shopping complex in a high income neighbourhood. Subsequent sites were selected in consultation with the NDMC and it was initially possible to find places with both a high demand for toilets and strong advertising potential. The contract period for this first batch was set at 10 years; subsequent contracts, though, had shorter periods.

To exploit the advertising potential, the private contractor entered into a contract with a public outdoor advertising agency that paid the contractor to use the advertising space and thus bore the business risk. The contractor employed a caretaker on a fixed salary, and set user charges at Rs.1 (US$0.02) for the urinal and Rs.2(US$0.05) for the toilet, in line with limits set by the NDMC. The project was a great success-both the private contractor and the outdoor advertising agency made good revenues, users received a good quality service, and the municipality was relieved of the onerous task of providing public toilets in some key locations.

### 3.6.2 Mumbai Slum Sanitation Program

The Municipal Corporation of Brihan (Greater) Mumbai, (MCBC) implemented the World Bank-assisted Slum Sanitation Program (SSP) as a part of the Mumbai Sewage

Disposal Project (MSDP) that commenced in 1995. The Slum Sanitation Program was a component of the MSDP project and aimed at “improving the health and environmental conditions in Greater Mumbai including the slum dwellers”. It was targeted at about one million slum dwellers (approximately 20 percent of the total Mumbai slum population) living on municipal land at about 10 percent of the MSDP project cost (approximately Rs.13.2 billion or US$295.6 million).

Under SSP, about 330 community toilet blocks (CTBs) with more than 51,00 toilet seats were constructed and handed over to community groups to use and maintain. Implemented over 1996-2005. This program is estimated to have benefited about 400,000 people in the slums of Mumbai. The program was unique in (a) fostering a participatory and demand-led approach in a complex metropolitan socio cultural environment; (b) supporting partnerships between the MCBM, non-governmental organizations, private construction agencies, and slum community groups; (c) initiating innovations and incentives; (d) providing superior technical specifications that help ensure improved service quality standards; and (e) responding creatively to an merging market for operations and maintenance.

### 3.6.3 Alandur Sewerage Project

The Alandur sewerage project, Chennai, conceptualized in 1996, incorporated elements of community participation, local government initiative and private sector participation ultimately leading to a more sustainable approach to urban service delivery. The project involved construction of an Underground Drainage Scheme (UDS) of 120 kms and Sewage Treatment Plant (STP) of 24 MLD. Project implementation was based on a mix of a construction and build-operate-transfer contract structured as an Engineering, Procurement and Construction (EPC) contract. The EPC contractor had to design, finance, build, operate and then transfer the STP after a lease period as stipulated in the contract. People's support for the project was elicited through active campaigns and awareness programs by local body officials and councilors, ably supported by key policy makers and government officials.

The project was executed with private sector equity for the BOT segment and household participation in financing of the contract. Deposits were mobilized from households @ Rs.5000/ household and Rs.10000 from commercial / industrial customers. As part of the strategy to raise resources from capital market, Tamil Nadu Urban Development Fund (TNUDF) floated bonds in September 2000 for an amount of Rs.1000 mn. The bond issue was rated AA+ (SO) by IRCA with a coupon of 11.85 %( half yearly) and a tenor of 5 years. The bonds were credit enhanced through a bond reserve fund of Rs.3.2 million and an escrow on TNUDF's receivables in the event of default. The issue received good support from banks, insurance companies and institutions mopping up about Rs.1000 million. The total initial project cost of Rs.453.13 million was to be financed out of loans, grants, beneficiary contribution and contribution

of the private operator in the ratio of 75:14:5:6, respectively. Land acquisition was funded by the Alandur Municipality. The lender's risk was secured by opening an escrow account out of the property tax collection and stamp duty receipts of the Alandur Municipality. Recovery of Rs.150 per household per month to bridge the gap between the project cost and the funds mobilized was guaranteed by the state government, which also gave guarantee for repayment of loans. Cost escalations and time delays were taken care of by the appointment of a project management consultant.

The major lesson learnt from the initiative was that Private sector participation to become a success would need institutional changes as well as capacity building through enhancement of technical capacity of municipal officials. Moreover, it has to be supported by the strong political leadership as well as a commitment towards monitoring and management.

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