PROGRAMME EVALUATION ORGANISATION

Evaluation Study on Total Sanitation Campaign

2013

PLANNING COMMISSION
GOVERNMENT OF INDIA

Preface

The Government of India initiated in the year 1999 the Total Sanitation Campaign, a community-led comprehensive programme to ensure sanitation facilities in rural areas with broader goal to eradicate the practice of open defecation. The sanitation programme is demand-driven and people-centred and has evolved from the limited achievements of the Central Rural Sanitation Programme (CRSP), the first structured programme launched in 1986, for rural sanitation in India. The main goal of Total Sanitation Campaign is to eradicate the practice of open defecation by 2010. The TSC gives strong emphasis on Information, Education and Communication (IEC), Capacity Building and Hygiene Education for effective behaviour change with involvement of PRIs, CBOs, and NGOs etc. The key intervention areas are Individual household latrines (IHHL), School Sanitation and Hygiene Education (SSHE), Community Sanitary Complex, Anganwadi toilets supported by Rural Sanitary Marts (RSMs) and Production Centers (PCs).

The earlier concept of sanitation, limited to disposal of human excreta by cess pools, open ditches, pit latrines, bucket system etc., has now expanded and includes liquid and solid waste disposal, food hygiene, personal, domestic as well as environmental hygiene. The Proper sanitation is one of the basic determinants of quality of life and affects not only the general health but also, plays a very important role in our individual and social life. Good Sanitary practices prevent contamination of water and soil and thereby prevent diseases. To provide a boost to the programme, a post-achievement award scheme, the Nirmal Gram Puraskar (NGP) was introduced in 2003 as an incentive scheme for fully sanitised and open-defecation-free gram panchayats, blocks and districts. Earning an NGP award has now become a matter of pride and prestige. The incentive is provided to Panchayati Raj Institutions (PRIs) as well as individuals and organizations as they are the driving forces for full sanitation coverage.

The Programme Evaluation Organization (PEO) of Planning Commission was entrusted to conduct an independent evaluation of the TSC programme in order to assess the socio economic impact of the programme, especially on individual health and environment with regard to the improvement of the sanitary services on different user groups, particularly the rural poor. The rationale of the present evaluation study is to provide important evidence to support better implementation of the TSC in the country. The study covered 122 Districts, 206 Blocks, 1207 Gram Panchayats, 127 Rural Sanitary Marts (RSM) / Production Centres, 11,519 beneficiary households spread over 27 sample States of the Country.

One of the significant estimates of the study is that 72.63% households in rural India in the sample states practice Open Defecation (OD) irrespective of having or not having toilet facilities. The predominant reasons of the OD are lack of awareness, established age old practice, non-existence of community latrines and insufficient number of latrines. However, the programme of TSC has reduced medical expenses for 69% of the households in the sample states and incidence of illness has been reduced faster in NGP Gram Panchayats. Also, the sample households have reported a sense of well-being after having toilets in their home. The details of the findings are explained systematically in different chapters of the evaluation report. The TSC programme has now been subsumed to Nirmal Bharat Abhiyan (NBA) in the Twelfth Five Year Plan with the aim of transforming the country to open defecation free India by 2017, giving emphasis on the construction of adequate number of community led sanitary complexes.

The study received constant support and encouragement from Hon'ble Deputy Chairman, Planning Commission and Secretary, Planning Commission. The study design was prepared by Dr. R.C. Dey, Director, PEO and the present shape of the report as well as the analytical framework of all chapters was developed under my guidance and supervision. The detailed list of officers involved in the study is given at the end of the report. I would like to thank all my PEO field units to carry out intense field investigation for this study and also, gratefully acknowledge the help and cooperation received from the NIC Unit of Planning Commission. I hope the lessons learnt from the findings of the present study will make the stakeholders realize the ground realities and will guide the policy makers of the country in formulating the programme in more effective directions.

Rjena

(R.A. Jena)

Adviser (PEO)

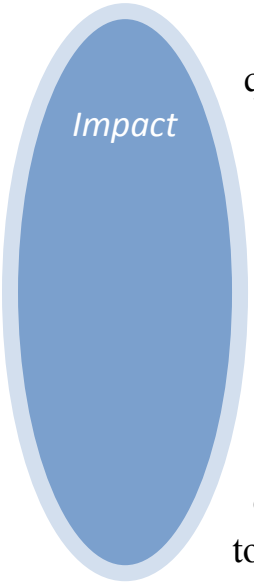
New Delhi,

Dated: May, 2013.

C O N T E N T S – V O L U M E - I

Executive Summary

TSC is the improved version of the Central Rural Sanitation Programme (CRSP) with the objective of improving the quality of life of rural people by impacting upon individual health and providing privacy and dignity to women.



Though it is very difficult to isolate the impact of TSC on general quality of life of the rural people, the study has found that the people in the Nirmal Grams Panchayats are enjoying better quality of life by way of fewer incidences of diseases caused by improper hygiene and unsafe water supply, reduced medical expenses and increased time for earning.

Average number of times family members in a household become ill in NGP awarded Gram Panchayats had been reduced from 0.24 in 2006 to 0.17 in 2008. 88% of the selected households who are having toilets feel that their "general well being" have been improved and 96% of the households in this category feel that with the availability of the toilet women feel more secured. After having toilets the medical expenses have been reduced and more time is available for income generating activities.

It has also been established that there has been positive impact of the implementation of TSC on the level of income of the rural households.

General Quality of life is expected to be impacted upon by "eradication of the practice of open defecation" "maintenance of Solid and Liquid Waste Management" and also by way of "improved hygienic behavior of the people".

If we consider a household as a household practicing open defecation if at least one member of the family practices open defecation, the estimated percentage of open defecation in rural India comes to 72.63%.

During the first 6 years of its implementation, TSC programme did not focus on Solid and Liquid Waste Management and it was included as separate component only in 2006. Our study found that only 14% of the Gram Panchayats have adopted any kind of waste management system. Though, individual cases of success have been observed but collective institutional effort in this direction still remains a distant dream.

Regarding improvement in hygienic behavior not much has been collected but the study estimated that more than half (55%) of the households still do not use soap before and after the meals.

Now we again come to our first component i.e. eradication of practice of open defecation.

Eradication of Open Defecation

The practice of open defecation is supposed to be stopped by providing all individual households access to the toilets (target by 2012), toilet facilities to all schools and anganwadi centres (target by 2009) and Community Sanitary Complex/Women Sanitary Complex in case there is no space or there exist financial constraints. In 2003 Government of India has added one new component "Nirmal Gram Puraskar" to give fillip to the campaign.

Unavailability of the toilets is the main reason for the huge percentage of households still defecating openly. According to our estimates, out of 73 households per 100 rural households where at least one member of the family practices open defecation, 66 households are forced to do so due to unavailability of toilets, 1 household is forced to do so due to inadequacy of number of toilets and 6 households are doing so in spite of having toilets.

"Lack of awareness" and "established age old practice" stand out as the predominant reasons for open defecation in case of households where toilet facilities are already available. Gap between availability and adequacy of toilets is another reason. 36% of households having toilets reported that they are forced to resort to open defecation due to lack of adequate number of household latrine.

Interpersonal communication has been the most effective communication tool within the IEC framework. But, most projects have not used this tool in the prescribed manner. Only 46% Gram Panchayats have appointed motivators and most of the motivators have been assigned the role to persuade people to construct the latrines. The outcome of the IEC activities may be the construction of a number of household latrines, but it has been unable to create demand for sanitation by way of making people aware of public health impact of this.

Individual Household Latrines

Except in the state of Karnataka, Kerala, Sikkim, Tamil Nadu, Haryana and Gujarat, households in most of the other states reported that there exist issues relating to toilet- structures like roof, walls, doors as well as depth of the pit. Only59% households have toilets that are both covered on all sides and have a roof. The percentage ranges from only 12.3% in West Bengal to 99 % in Sikkim.

Non availability of adequate water is also a problem. Only about 46% Households are reported to have adequate water for flushing and tap water is available in the latrines in only 3.61% households.

Under TSC there is a provision for conversion of existing bucket latrines to sanitary latrines since bucket latrines are not permitted. The study found that 4.4% households are still using bucket toilets. Bucket type toilets are still prominently used by the households of Manipur

Community Sanitary Complex

Community Sanitary Complexes are to be constructed where IHHLs cannot be constructed or at the public places, markets etc, where large scale congregation of people takes place. 25 % selected households in Maharashtra are using community toilets. Besides this, a small percentage of households in Gujarat, Tamil Nadu and Haryana are using community toilets as an alternative. 83% of the selected Gram Panchayats have no community sanitary complexes. Till March 2009 only about 50% target of the construction of community sanitary complex/women sanitary complex could be achieved. Maintenance of these complexes appeared to be the biggest problem. The idea of using community toilets as an effective alternative for the poorest section has not really caught up in most of the states.

School and Anganwadi Toilets

Though it was expected that by the year 2009 all govt. schools and anganwadi centres would be provided with the toilet facilities, our study found that many govt. schools in Manipur, Assam, Bihar, Meghalaya, Madhya Pradesh and Jharkhand are still without any sanitary facilities. Many anganwadis are still without toilets even in NGP awarded Gram Panchayats. The scheme of "enhanced rent" for anganwadis situated in the private buildings has not delivered the desired result.Hence, sanitary facilities could not be provided to the most of the

anganwadis in private buildings.

Nirmal Gram Puraskar

One of the purposes of launching of Nirmal Gram Puraskar was to recognise the efforts made by PRIs and institutions towards ensuring full sanitation. 83% Gram Panchayats who have been awarded with NGP have said that there has been remarkable decrease in open defecation. It was also found that more people in NGP villages are adopting better hygienic practices and hence less affected by the water borne diseases. But the veracity of ODF (Open Defecation Free) status is a matter of concern. 13.8% households of the Gram Panchayats awarded with Nirmal Gram Puraskar have reported that some of their family members still resort to open defecation. Though only 0.65% NGP awarded Gram Panchayats reported non-availability of toilets in the schools, for anganwadis, this percentage comes to 17%.

Organisation and Implementation

In all the selected states, Central Guidelines are followed. In Orissa and Bihar, state specific operational guidelines have also been prepared and followed. In each district, Base Line Surveys were conducted and PIPs were prepared. As a part of startup activities, training were also imparted to the key programme managers. Though some aberrations have also been found like in Punjab, BLS has been carried out many times and the latest one was concluded in 2008. Communication and Capacity Development Units (CCDUs) have to be set up at the state level to support the districts in developing a good IEC plan and also in implementing it. They also need to take up HRD and monitoring activities. CCDUs have been established in all selected states except in Haryana.

The State Sanitation Committee is the implementing agency at the state level in all the selected states. They are working under different nodal departments of the State Government in different states. Public Health and Engineering Department (PHED) is the nodal department in four states (Assam, Bihar, Manipur and Meghalaya). At the district level, District Water and Sanitation Committee is the implementing agency. Our study has found no significant role of the block level agencies. In 84% of the cases, Gram Panchayats are involved in various degrees, they are implementing agencies in 39% cases. Village Water and Sanitation Committees (VWSCs), the lowest level agencies at the village level, exist in 65% of the Gram Panchayats. Their

maximum contribution was felt in dealing with the financial aspect like opening bank account, collection of tariff for operation and maintenance. But their performance is very poor in the activities like awareness, procurement of construction materials etc.

The flow of funds for TSC, as envisaged in the Central Guidelines, differs slightly from State to State due to the difference in their institutional set up and administration of the scheme.

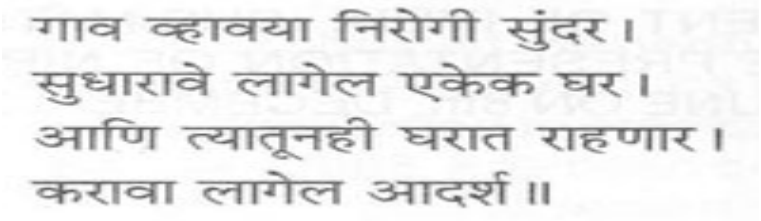
Rural Sanitary Mart and Production Centres

Rural Sanitary Mart/ Production Centres are supposed to provide an alternate delivery mechanism once demand for sanitary materials is created through IEC. It is expected that all households would have access to the RSM/PCs. Our study however found that only 29% Gram Panchayats and 32% households have the access to the RSM. It is expected that after initial support from the government the RSM/PC would sustain themselves as a commercial venture. For most of the RSM/PCs, this business does not earn profit. 78% RSMs think that they cannot operate without Government grant. 42% RSMs and 23% PCs have not yet returned the revolving fund which is to be refunded after achieving the sustenance.

Chapter 1
Total Sanitation Campaign Scheme: Background, Objectives and Components

1.1 Introduction

Sanitation is not a new concept in India. Since ancient times, importance was attached to cleanliness and, resultantly, there evolved systems of sanitation and drainage. The Indus Valley Civilization is an example. Also the chapter on administration pronounced by Chanakya, in the "Arthashastra" during the 4th Century BC, contains details on maintaining hygiene and cleanliness. This message has been carried forward from century to century. In recent times, the example of Tukadoji Maharaj, a great saint of Maharashtra, is a shining example. He did pioneering work in village development. In his book 'Gramgita' while emphasizing the need for hygiene, he said,


गाव व्हावया निरोगी सुंदर।
सुधारावे लागेल एकेक घर।
आणि त्यातूनही घरात राहणार।
करावा लागेल आदर्श॥

Which means:-

"Every house in a village will have to be transformed to make the town or village hygienic, healthy and beautiful. This will require each and every member of a household to strive for highest moral values and righteousness."

1.2 Relevance

India cannot achieve real development if majority of its people live in unhealthy and unclean surroundings due to lack of access to safe water and sanitation. Poor water and sanitation facilities have many other serious repercussions. A direct link exists between water, sanitation and, health and nutrition and human wellbeing. Consumption of contaminated drinking water, improper disposal of human excreta, lack of personal and food hygiene and improper disposal of solid and liquid waste have been major causes of many diseases in India. It is estimated that around 30 million people suffer from water related illnesses. Children, particularly girls and women are the worst affected. Many children, particularly girls, drop out of school and are denied their right to education because they are busy fetching water or are deterred by the lack of separate and decent sanitation facilities in schools. Women often suffer from lack of privacy, harassment and need to walk large distances to find a suitable place for defecation in the absence of household/ appropriate neighbourhood toilet facilities. Poor farmers and wage earners are less productive due to illness, and national economies suffer. Without safe water and sanitation, sustainable development is impossible.

1.3 Challenges

Sanitation refers to the provision of facilities and services for the safe disposal of human waste . Basically, we are talking about toilets, or versions of toilets such as latrines. Most developed countries are well equipped with flush toilets; however in developing countries, sanitation is based on much more basic facilities that are often little more than a hole in the ground. Design is not important, as long as the facilities in question dispose of waste in a hygienic way. Billions of people - over one third of the world's population - lack access to sanitation facilities. That is almost twice the number of people living in extreme poverty. Sanitation is also one of the world's leading causes of disease and child death.

Although there has been an upward trend in scaling rural sanitation coverage, sanitation suffers from political neglect at every level. There is a sense of shame and stigma attached to the issue that prevents it from being a high profile political issue. Unlike more attractive issues like water, or issues like HIV/AIDS which have overcome their stigma, sanitation still largely a hidden issue. This has made India figure in the list of those countries (mostly in sub-Saharan Africa and Southern Asia) which have not been found on track in achieving the MDG goal on sanitation (Box 1.1). Figure 1.2 below shows the relative position of India vis-a-vis other countries.

Box 1.1

Sanitation and the Millennium Development Goals: **Target 10. Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.**

Figure 1.1 Progresses towards MDG Target

1.4 Institutional Efforts in the Field of Sanitation

1.4.1. Conventional Approach

Water supply and sanitation were added to the national agenda during the first five-year planning period (1951-56). Rural sanitation, in particular, came into focus in the Government of India in the World Water Decade of 1980s. The Central Rural Sanitation Programme (CRSP) was started in 1986 to provide sanitation facilities in rural areas. It was a supply driven, infrastructure oriented programme that relied heavily on high levels of subsidies for latrine construction. This approach was criticized since the sanitation coverage grew very slowly between 1990 and 2000. As a result of these deficiencies and low financial allocations, the CRSP had little impact on the gargantuan problem. The experience of community-driven, awareness-generating campaign based programmes in some states and the results of evaluation of CRSP, led to the formulation of the Total Sanitation Campaign (TSC) approach in 1999. The high subsidy approach changed to a "Demand Driven Approach".

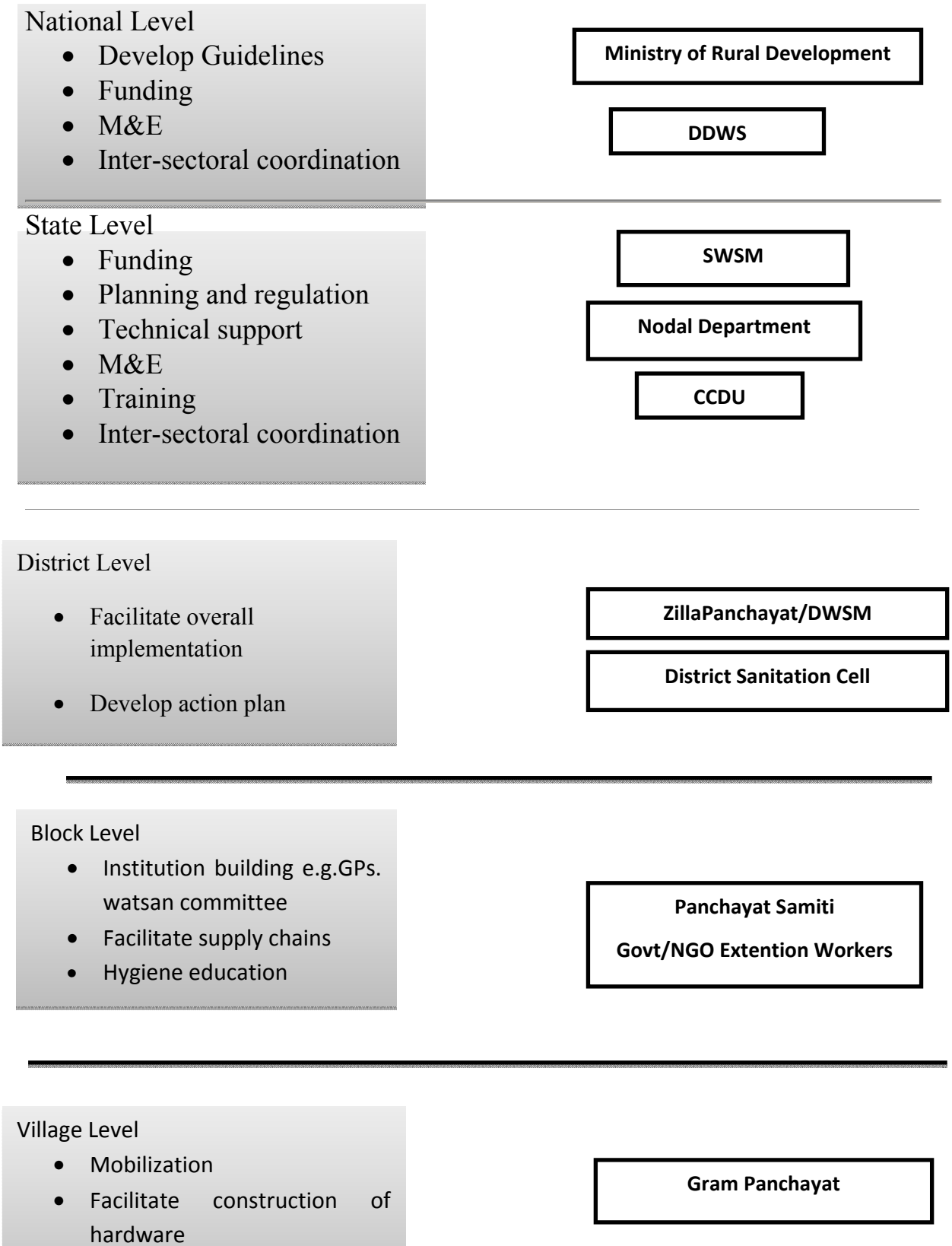
1.4.2. Sectoral Approach

Total Sanitation Campaign (TSC) is a comprehensive programme to ensure sanitation facilities in rural areas with the broader goal of eradicating the practice of open defecation. The TSC reform principles are demand-driven and community-led. The concept of sanitation, which was previously limited to the disposal of human excreta by cess pools, open ditches, pit latrines, bucket system, has now been expanded to include liquid and solid waste disposal, food hygiene, personal, domestic as well as environmental hygiene. To add vigour to the TSC, in October 2003, Government of India initiated an incentive scheme named the 'Nirmal Gram Puraskar'(NGP). NGP is given to those "open defecation free" Nirmal Gram Panchayats, Blocks, and Districts which have become fully sanitized. The incentive provision is for Panchayati Raj Institutions (PRIs) as well as individuals and organizations that are the driving force for full sanitation coverage.

1.5 Main Objectives of the TSC

- Bringing about an improvement in the general quality of life in the rural areas.
- Accelerating sanitation coverage in rural areas to provide access to toilets to all by 2012.
- Motivating communities and Panchayati Raj Institutions promoting sustainable sanitation facilities through awareness creation and health education.
- In rural areas, providing schools by March 2013 and Anganwadis by March 2013, with sanitation facilities and promote hygiene education and sanitary habits among students.
- Encouraging cost-effective and appropriate technologies for ecologically safe and sustainable sanitation.
- Developing community-managed environmental sanitation systems focusing on solid & liquid waste management.

1.6 Institutional Framework for Rural Sanitation



1.7 Main Components of TSC

1.7 (a) Start Up Activities**:** The start-up activities include conducting of preliminary survey to assess the status of sanitation and hygiene practices, people's attitude and demand for improved sanitation, etc. with the aim to prepare the District TSC project proposals for seeking Government of India assistance. This includes conducting a Baseline Survey (BLS), preparation of Project Implementation Plan (PIP), initial orientation and training of key programme managers at the district level.

1.7 (b)IEC Activities: Information, Education and Communication (IEC) are important components of the Programme which intend to create demand for sanitary facilities in the rural areas for households, schools, Anganwadis,Balwadies and Community Sanitary Complexes.

1.7 (c) Rural Sanitary Marts and Production Centers: A Rural Sanitary Mart is an outlet dealing with the materials, hardware and designs required for the construction of not only sanitary latrines but also other sanitary facilities, such as soakage and compost pits, vermi-composting, washing platforms, certified domestic water filters and other sanitation and hygiene accessories required for individuals, families and the environment in the rural areas. Production Centres are the means to improve production of cost-effective affordable sanitary materials. The Production Centres/RuralSanitary Marts could be opened and operated by NGOs/ SHGs/ women Organizations/Panchayats etc.

1.7 (d) Provision of Revolving Fund in the District: Based on the successful initiative taken by Self Help Groups and Dairy Cooperative Societies in arranging low / zero interest finance to their members for toilet construction in many parts of the country, a sum of upto Rs 50 Lakhs, subject to the restriction of 5% earmarked for alternate delivery mechanism (which includes the cost for setting up RSMs and PCs) may be given to each TSC project as revolving fund.

1.7 (e) Construction of Individual Household Latrines: A duly completed household sanitary latrine shall comprise a Basic Low Cost Unit with a superstructure. The programme is aimed to cover all the rural families. Incentive, as provided under the scheme, may be extended to Below Poverty Line (BPL) families, if the same is considered necessary for full involvement of the community. The construction of household toilets should be undertaken by the BPL household itself and on completion and use of the toilet by the BPL household, the cash incentive can be given to the BPL household in recognition of its achievement. The BPL household may also contribute to value addition to the basic unit at its own expense. All houses constructed for BPL families under Indira AwasYojana shall invariably be provided with a toilet under TSC for that district. It is assumed that APL families, through motivation, will take up construction of the household latrines on their own. Construction of bucket latrines is not permitted in the rural areas. The existing bucket latrines, if

any,should be converted to sanitary latrines and the unit cost and sharing pattern shall be identical to that of construction of individual house hold latrines.

1.7(f) Community Sanitary Complex**:** These Complexes, comprising an appropriate number of toilet seats, bathing cubicles, washing platforms, wash basins etc, can be set up in a place in the village acceptable and accessible to women/men/ landless families. The maintenance of such complexes is very essential for which Gram Panchayats should own the ultimate responsibility or make alternative arrangements at the village level. User families may be asked to contribute a reasonable monthly user charge for cleaning & maintenance. The ultimate aim is to ensure construction of maximum number of IHHLs (construction of community complexes will be restricted only to places where IHHLs cannot be constructed, for whatever reason) and also teach the community of "Hygiene practices". Such complexes can also be made at public places, markets, etc. where large-scale congregation of people takes place.

1.7 (g) Institutional Toilets:

1.7 (g).(i) School Toilets: Toilets in all types of Government Schools i.e. Primary, Upper Primary, Secondary and Higher Secondary and Anganwadis should be constructed. Emphasis should be given on toilets for girls in schools. The number of toilet units to be constructed should be adequate to meet the requirements of the school as per the strength of the students attending the school. State/UT Governments, Parent-Teachers Association and Panchayats are free to contribute from their own resources over and above the prescribedamount.

1.7 (g) (ii)Anganwadi Toilets: Each anganwadi should be provided with a baby-friendly toilet. Since there are a large number of Anganwadis operating from private houses, the following strategy may be adopted;

(a) In all the Anganwadis, which are in Government buildings, baby-friendly toilets should be constructed from out of the TSC funds to the extent laid down in the guidelines.

(b) Those Anganwadis, which are in private buildings, the owner must be asked to construct the toilet as per design, and, he/she may be allowed to charge enhanced rent for the building to recover the cost of construction. Alternatively, the toilet may be constructed from revolving fund component under the TSC and, suitable deductions made from the monthly rental paid to the owner to recover the cost over a period of time.

(c) For new buildings, which are going to be hired for Anganwadis, buildings having baby-friendly toilet facility only should be hired.

1.7 (h) Solid and Liquid Waste Management: Panchayati Raj Institutions (PRIs) are required to put in place mechanisms for garbage collection and disposal and for preventing water-logging. Under this component activities like common compost pits, low cost drainage, soakage channels/ pits, re-use of waste water, system for collection, segregation and disposal of household garbage etc may be taken up. Successful models may be further replicated dovetailing funds from

other rural development programmes. NGO cooperation may be sought to develop / test / document / replicate such models.

1.7(i) Administrative Charges: The Administrative Charges include money spent on training, salary of temporary staff deployed during project period, support services, fuel charges, vehicle hire charges, stationery, monitoring & evaluation of TSC project. In order to implement the projects professionally, specialist consultants from the fields of Communication, Human Resource Development, School sanitation & Hygiene education and Monitoring may be hired for the project period.

The following items of expenses are specifically prohibited under "administrative expenses":

a. Purchase of vehicles
b. Purchase of land and buildings
c. Construction of official buildings and rest houses (this excludes toilet units needed for TSCprojects)
d. Purchase of office equipment
e. Expenses for any political party and religious organisations
f. Expenses for gifts and donations
g. Purchase of cell phones
h. Transfer of funds to the State level institutions for meeting administrative expenses.

Box 2

Importance of Sanitation is highlighted by these Inspiring Quotes

Sanitation is more important than independence- Mahatma Gandhi

The day every one of us gets a toilet to use, I shall know that our country has reached the pinnacle of progress."-Pandit Jawaharlal Nehru

Sanitation is a Noble Mission for the Nation. - Dr A P J Abdul Kalam

Good Sanitation should be birthright of all citizens- -Dr.Manmohan Singh, Prime Minister of India

Chapter-2

The Evaluation Study: Objective, Methodology and Sample Design

2.1. Purpose of the Evaluation Study

The Development Evaluation Advisory Committee (DEAC) under the chairmanship of Deputy Chairman, Planning Commission entrusted Programme Evaluation Organisation, Planning Commission with the work of conducting the in-house evaluation study of the Total Sanitation Campaign, a scheme run by the Ministry of Drinking Water Supply & Sanitation, Government of India. The main purpose of the evaluation study is to assess the socio-economic, health and environmental impact of improved sanitary services on different user groups, particularly the rural poor. This study intends to assess the durability of impacts of sanitary facilities and to examine whether the impacts are sustainable over time or not. The rationale of the present evaluation study is to provide important evidence to support better implementation of the TSC in the country.

The objectives of the study have been designed vis-à-vis the objectives of the TSC. The study is a process and impact evaluation of rural sanitation under TSC.

2.2. Objectives of the Evaluation Study

1) To assess the extent of coverage and use of sanitary services and personal hygiene practices in the rural areas
2) To assess the institutional mechanism at the State and Project levels and the role of line departments and Gram Panchayats in the implementation of TSC.
3) To evaluate the impact of TSC on quality of life of rural people i.e health, economic conditions, environment and gender aspects, physical security, dignity, utilization of time, school attendance and productivity.
4) To identify the sanitation promotion activities (i.e. mass media, participatory, incentive and targeted hygiene activities) undertaken by the project stakeholders at various levels for creation of awareness in the rural areas.
5) To identify the measures taken up by the PRIs/CBOs/NGOs/Alternative mechanisms/SHGs/VWSCs for improving sustainability of sanitary services at the grass root level.
6) To analyse the factors responsible for success and major constraints in implementation of TSC (inadequate government policies, lack of funding, fragmented institutions, unacceptable people's attitude/behaviour) and to suggest the measures for the same.
7) To assess the impact of NGP on the coverage of households with toilets and sustainability of open defecation-free status in the village.

2.3. Indicators

2.3.1. Performance indicators:

- Number of Households having latrines before the implementation of the TSC project in the district
- Number of households which have constructed latrines under TSC project – both Above Poverty Line and Below Poverty Line families.
- Proportion of communities, population and households having improved sanitary facilities (Type of latrines constructed (Single/double pit)
- Access to the sanitary facilities by poor, minorities and vulnerable groups (distance factor)
- Location of toilet - inside/outside/back/front of the house
- When toilets were constructed – 1 year, 1-4 years, 5-9 years, 10-20years ago
- Proportion of people using latrines everyday (Male/Female/Children)
- Investment costs (total costs, costs per system, cost per household),
- Sanitary conditions at the toilets
- Operation and maintenance (level of maintenance) of the sanitary facilities
- Community contribution (Cash, labour, both)
- Willingness to pay for improved services
- Mechanisms for garbage collection and disposal and for preventing water-logging.
- Reasons for open defecation
- Inconvenience caused before construction of toilets
- Key Hygiene practices
    - Handwash-before/after food, before/after using toilet
    - Method of washing – water/soil/ash/soap & water
    - Nail cutting

School and Anganwadi Sanitation

- Availability of toilets(Boys/Girls)
- Condition of maintenance of toilets
- Use of toilets, separate toilets for girls and boys
- Prevalence of personal hygiene among the children

2.3.2. Sustainability indicators:

- Tariff being collected
- Awareness about linkages between water sanitation and health
- Functionality of Water and Sanitation Committee
- Proportion of vulnerable groups served

- Satisfaction of beneficiaries
- Availability of water
- Availability of plumber/maintenance worker

2.3.3. Impact indicators

- Health: Reduction of water and sanitation-related diseases, better hygiene related to behavioural change – hand washing practices, proper disposal of faeces, hygiene practices in storage of water, better understanding of the water related diseases and domestic hygiene.
- Social: increase in the number of children (especially girls) attending the school due to better water and sanitary facilities
- Economic: increased household per capita income and consumption, reduction in medical expenses
- Gender: Women's perception about level of privacy provided by access to sanitation facilities, women's perception about safety of using water and sanitation services
- Environmental: Reduction in open defecation in the village, proper drainage, solid and waste management.

2.4. Methodology:

The primary objective of the Campaign is to measure the sanitation coverage, and the operational unit is the district. Keeping this in mind, proportion of sanitation coverage as against the target has been taken as the parameter for selection of units at the various stages. The sampling design decided on is a 4-stage sampling scheme.

2.4.1. State level:

In order to maximize the power of the sample taken, the states have been stratified according to their performance vis-à-vis sanitation coverage into four strata, viz. Very Good, Good, Average and Poor. The selection of 20 states was done purposively. Detailed description of the strata is given below:

Selected States*

Strata	Performance	States
Very Good	75%-100%	Sikkim (100%), Kerala (95.4%), Haryana (86.6%), West Bengal (83.5%), Tamil Nadu (76.4%)
Good	50%-75%	Manipur (70.5%), Gujarat (68.6%), Assam (62.1%), Uttar Pradesh (60.02%), Punjab (60%), Andhra Pradesh (59%), Maharashtra (58.3%), Uttarakhand (54%), Meghalaya (51.7%)
Average	25%-50%	Madhya Pradesh (48.9%), Karnataka (42.1%), Rajasthan (38.4%), Orissa (35.6%), Jharkhand (27.7%)
Poor	0%-25%	Bihar (23.4%)

* The figures in parenthesis are the performance figures in percentage provided by the then Department of Drinking Water Supply and Sanitation, Ministry of Rural Development, GOI before inception of the study.

2.4.2. District Level:

Districts are the units for the implementation of TSC and so, special care has been taken for the selection of the districts. Of the 593 districts where TSC has been implemented, 122 districts (around 20%) have been selected. This is done to improve the precision of the conclusions and also to increase the spread of the evaluation study to as many districts as possible. A constant number (7) of districts are allocated to each state and the selection of these 7 districts in each state is done randomly following the probability proportional to size (PPS) scheme.

We have taken the number of Gram Panchayats (GPs) in each district to be the size parameter. Using this size parameter, PPS method has been applied to select 7 districts for each state. Some states like Sikkim (2), Manipur (2), Meghalaya (2) and Uttarakhand (4) have been allotted less number of districts keeping in view their smaller size. The application of this method has ensured that the spread of the survey is broad enough. The selected sates and districts are given in Annex 1.

2.4.*3. Selection of Blocks:*

The blocks have been selected after selecting the GPs from the districts.

2.4.4. Selection of Rural Sanitary marts and Production centres (RSM/PCs)

From every district selected for the survey, 2 Rural Sanitary Marts or PCs, whichever is applicable have been selected purposively. In case both RSM and PCs are available, 1 RSM and 1 PC have been selected.

2.4.5. Selection of Gram Panchayats

From each of the selected districts, 10 Gram Panchayats have been selected randomly. Of these, 2 are GPs with Nirmal Gram Panchayat award, wherever available.

2.4.6. Selection of Households/Beneficiaries

10 Households have been selected from each selected GP. Of these, 2 Households from SC/ST categories (wherever available), have been selected. The Households, represented by a woman, have been selected purposively. This is in conformity with the objectives of the TSC where provision of dignity to the women is one of the major aims.

2.4.7. Selection of Focus Groups

A group of 5-8 persons, who are knowledgeable about the Campaign and/or involved in the planning and implementation of the TSC, have been selected. Here also, representation of women and people belonging to SC/ST categories has been ensured.

2.4.8. Qualitative Notes:

Qualitative Notes were also prepared to capture information which could not be included in the structured schedules.

2.5. Sample Size:

The table given below summarizes the sampling scheme at the different levels. The actual sample for which the information could be collected differed from the planned size due to the reasons noted below the table.

Sl. No.	Sample Stages	Total size planned	Actual number of schedules canvassed
1	States	20	20
2	Districts	122	122
3	Blocks	Selected after selection of GPs	206*
4	GPs	122 X 10=1220	1207**
5	RSM/PCs	122 X 2=244	127***
6	Household/Beneficiary	1220 X 10=12,200	11519@
7	Focus Group Discussion	1220 X 1 =1220	1207#

*Difference was due to non-existence of block level offices of the nodal TSC implementing authority in states viz. Assam, Bihar & Jharkhand

**Beneficiaries under the scheme could not be identified in 3 selected GPs of Assam and hence GP level schedule could not be canvassed though effort was made to fulfil the required number of Household schedules from the existing GPs with beneficiaries. Also, GP-level schedules of 10 GPs of district Ramgarh in Jharkhand could not be canvassed as the district was newly formed out of District Hazaribagh and information with respect to TSC for the Reference period was not available.

***Difference is mainly due to non-existence of RSM/PCs in various districts in Andhra Pradesh, Assam, Meghalaya, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand.

@Difference is mainly due to (a) shortfall of 11 Household beneficiaries in 4 GPs of Assam, (b) non- implementation of IHHL component of TSC in all selected districts of Punjab (except in few GPs in Patiala district).

#Difference is due to shortfall in number of GP level schedules canvassed, FGDs in those districts could not be conducted.

2.6. Reference Period:

Reference period of the evaluation study is from April 2001 to March 2009.

2.7. Mixed Selection of States:

In the present evaluation study, field level schedules in 15 out of 20 selected states, were canvassed to only those selected households which have toilets.

2.7.1. Justification for 100% coverage of those HHs having sanitary facilities in 15 states

The design of the Evaluation study (discussed earlier in the chapter) mentions:

"The main purpose of the evaluation study is to assess the socio-economic, health and environmental impact of improved sanitary services on different user groups particularly rural poor. This study is also intended to assess the durability of impacts of sanitary facilities or whether the impacts are sustainable over time or not. The rationale of the present evaluation study will be to provide important evidence to support better implementation of the TSC in the country. The objectives of the study are designed vis-à-vis the objectives of the TSC. The study will be process and impact evaluation of rural sanitation under TSC."

Clearly, the idea of our study was to go beyond simple enumeration of houses having or not having latrines, and deeply probe into actual process, impact and nature of implementation of the scheme. This could only be done if we concentrated on households having sanitary facilities.

2.7.2. Justification for random selection of HHs with/without toilets in rest of the 5 states

A 100% enumeration would have suffered from the following shortcomings:-

a. Data on Open defecation would not be accurate, since many who do not have latrines may be using community latrines.

b. Any analysis of households not having toilets would not be possible. For example, their profiles, complaints, suggestions, etc would not be reflected.

c. Also, it would not have been possible to do a comparative analysis of HHs having and not having toilets.

2.7.3. Justification for selection of the specific 5 states for random selection of HHs with/without toilets.

As per the design of the Evaluation study, the 20 states were selected after categorising the states into four strata, namely, *very good, good, average, and poor*, there being only one entry in the last category, namely, Bihar. Of the rest, five were in the 'very good' category, nine in the 'good' category, and 5 in the 'average' category. Therefore, we have chosen 1 state each from the 'very good' and 'average' category and three from the good category, which actually represents the middle performing level.

Strata	Performance	States
Very Good	75%-100%	Tamil Nadu (76.4%)
Good	50%-75%	Gujarat (68.6%)
Good	50%-75%	Uttar Pradesh (59%)
Good	50%-75%	Maharashtra (58.3%)
Average	25%-50%	Madhya Pradesh (48.9%)

Chapter-3

Organizational Set Up, Planning, Implementation and Monitoring

3.1 Organisation of TSC

3.1.1 State level

Every State has constituted a State Water & Sanitation Mission (SWSM) which is a registered society under Society Registration Act. At its apex level, it has a Governing Council which provides policy guidance and is authorised to review and evaluate the programme. It is usually headed by the Chief Secretary of the respective State Govt. The State Sanitation Committee is the implementing arm for the scheme under the overall control of the nodal department of the State Govt. For example, in **Haryana**, it is the Development & Panchayat Department which serves as the nodal department for implementation of TSC while it is the responsibility of the Rural Development Department in case of **Odisha,** Panchayat & Rural Development Department in **West Bengal,** Rural Water Supply and Sanitation department in **Karnataka** and **Andhra Pradesh** and Public Health Engineering (PHE) Departments in **Meghalaya, Assam, Manipur** and **Bihar,** Rural Housing & Rural Development Department in **Gujarat**. The nodal department has the responsibility of implementation, monitoring, co-ordinating among the Central, State, District level authorities.

In **Kerala**, the Apex body at the State level is named Kerala Sampoorna Suchithuva Mission, which is a registered charitable society under the administrative control of the Local Self Government Department which controls all the district projects. **Punjab** has seen the control of implementation of the scheme shifting base between the Rural Development & Panchayat Deptt. and the Deptt. of Water Supply & Sanitation (DWSS) four times since 2000-01. Presently, it is the DWSS, Govt. of Punjab which is responsible for implementation of TSC in the state and acts as the State Coordinator.

3.1.2 District level

Since the implementation of the Total Sanitation Campaign requires large scale social mobilization, its implementation at the District level is to be done by the Zilla Panchayat. However, in case Zilla Panchayat is not in existence, District Water and Sanitation Mission implements the project. The line departments play a catalytic role in implementation. Analogous to the State Sanitation Mission at the State level, there is a District Water & Sanitation Mission (DWSM) formed at the district level with focussed mandate for the district in particular. Accordingly, the District Sanitation Committees are

responsible for implementation of the campaign at the district level. Preparation of the Programme Implementation Plan (PIP) for the district is the sole responsibility of the district nodal agency e.g. Executive Engineer, DWSS in **Punjab**, Additional Deputy Commissioner, DRDA in **Haryana**. As elected Zilla Panchyats (ZPs) are functioning in **Karnataka**, creation of a separate DWSM is not necessary. The ZP is the District Level Water & Sanitation Mission (DWSM) for Government of Karnataka. The targets fixed for inclusion in the plan are based on the Base Line Survey (BLS). The projects formulated at the district level by the district nodal agency are scrutinised at the State level authority and submitted for approval of the National Scheme Sanctioning Committee (NSSC), GOI of the M/o Drinking Water & Sanitation. The district project offices have district co-ordinators whose head is appointed usually from the State level nodal departments. These offices execute, co-ordinate and monitor all components under TSC in the district.

3.1.3 Block/Taluka/Tehsil level

As the numbers of villages are quite large in districts in many States like **Andhra Pradesh**, **Gujarat, Karnataka, Meghalaya** etc, it is difficult for the District authorities to interact directly with the many Village Water & Sanitation Committees. Hence, Block/Mandal/Taluka/Tehsil Level Water & Sanitation Committees are constituted to interact more closely with Gram Panchayats in the day-today implementation of the programme.

The Block level agencies do not have significant role in the planning and implementation of TSC in Bihar, Assam etc. Though the Organisation chart received from Assam show existence of Anchalik Panchayat (Block) Water and Sanitation Committee (APWSC) for blocks of General/PRI areas which is chaired by the President, Anchalik Panchayat of the Block concerned, the field team observed non existence of such structure in the field. Even **Bihar** State level authority furnished an organogram with BWSC at a level below DWSC, but on ground was block level had no role as found during the study period. The same is the case for **Kerala,** mainly due to the marginalisation of powers of Block Panchayat during implementation of three Tier Panchayati Raj System. The developmental activities carried out by the Block Panchayat have now been devolved to GPs. Though block level and taluka level sanitation committees are reported to be formed in Meghalaya, Gujarat etc, it is the Gram Panchayat (GP) level, which has a greater role in TSC implementation.

3.1.4 Gram Panchayat level

To supplement the efforts of State Government in implementation of TSC, the involvement of PRIs, particularly Gram Panchayats, is most significant. GPs have a distinct advantage in implementation of TSC as they

have a better knowledge and understanding of Socio- cultural and economic status of the general public. They have a wider reach among the marginalised and disadvantaged people because they represent the local constituency. GPs would more effectively own, operate and maintain the community assets constructed. Village Water & Sanitation Committees (VWSC), consisting of members of Self Help Groups and PRI members of village, exist in villages with population of up to 1500 and work for health, sanitation, water supply and related issues. The committee also has special invitees like elected members of district / block panchayats or eminent persons who are subject experts, to help them function better and achieve desired goals. Then there are the Village Extension Officers (VEOs), as in the case of **Kerala**, who are the lowest level link between the beneficiary and the Gram Panchayat. They receive applications for cash incentives from the beneficiaries, submit these applications to Gram Sabha for approval, disburse cash incentives to beneficiaries, keep records and physically verify the toilets constructed. Ward Sanitation Samitis oversee, advise and supervise the implementation process. The Table given in Annex-2 shows the presence of VWSC in the selected districts and their involvement in the TSC implementation.

From the study results, it was found out that 65% of the selected GPs had a Village level Water & Sanitation Committee. Though VWSC's were reported to be taking up TSC related issues in the Gram Sabha meetings, ensuring community participation, participating in decision making activities of the campaign, arranging community contribution (like land etc.), procuring construction materials from Rural Sanitary Marts, their maximum contribution was felt in dealing with the financial aspects of the scheme which included opening and managing bank accounts and collection of funds for sanitation works and managing/ financing of Operations & Maintenance (O&M) of the campaign.

Organisational Structure for TSC implementation in the sample States, wherever available during the field visits, is given in Annexure 4.

3.2 Guidelines followed by the State Governments in TSC Implementation

All states which were covered by the study reported to be following centrally laid-down guidelines. In Odisha, the Rural Development Department of Odisha, in collaboration with UNICEF, has brought out detailed Operational Guidelines for implementation of TSC in the state of Orissa. These guidelines have been prepared after detailed consultations with various stakeholders and with diverse inputs. Bihar government also had drafted State specific guidelines to suit the needs of the State.

3.3 Coverage of Districts, Blocks, GP and Households

Under TSC, a "demand driven approach" has been adopted with increased emphasis on awareness creation and demand generation for sanitary facilities in houses, schools and for cleaner environment. The TSC is being implemented with a district as a unit wherein a project proposal emanates from a district. TSC projects have been allocated based on the demand raised by the States as well as their performance in implementation of the existing projects. The number of project districts has been progressively increased to cover the entire rural area in the States. The following parameters for implementation of TSC were reported by various other states:-

1. Availability of funds for implementation.
2. No. of BPL Households in the block,GPs etc.
3. Districts/Blocks/Talukas/GPs having open defecation.
4. School children not having sanitation facilities in the schools.
5. Anganwadi children not having sanitation facilities in the Anganwadis.
6. Solid & liquid waste management not properly maintaining GPs having open defecation.
7. Households not having latrines as per Baseline survey

In **Assam**, it was reported to have covered all GPs but the criteria for selection of Households were limited to BPL card holders, which was also the case in **Madhya Pradesh**. **Odisha** authorities reported that Districts, Blocks and Villages where coverage under Rural Water Supply has been adequate, particularly for weaker sections of the people, including scheduled castes and scheduled tribes and where there is a demand for sanitary latrines, have been selected for TSC implementation. Those districts in **Odisha,** where integration of water supply and sanitation programme has been attempted, are given preference in preparing projects for intensive coverage. Gram Panchayats/ Villages which have endemic health problems, resulting from water and excreta-borne districts, villages with no sanitary facility for women or where demand from women folk exists, were given priority in this state. Households of those villages are selected where the felt need has already been generated, reputed voluntary agencies are working and there are other on-going programmes in order to ensure maximum coverage in Blocks/GPs. Table given in Annex-3 will throw some light on the selection criteria adopted as reported by the district level implementing authorities. However, not all the points which formed the basis for selection could be reflected in the table, including availability of water in the Blocks/GPs etc.

3.4 Communication and Capacity Development Unit (CCDU)

The Central guidelines framed by the Ministry of Drinking Water Supply & Sanitation envisages setting up of a Communication & Capacity

Development Unit (CCDU) at the state level, for taking up state level HRD & IEC activities as well as monitoring of TSC projects. In states where Water supply & sanitation are handled by two different departments, a separate CCDU may be set up, subject to the condition that officials handling water supply should be actively associated with this CCDU. Specialist consultants from the fields of Communication, Human Resource Development, and Monitoring and School sanitation & hygiene education may be engaged by the CCDU.

As per the finding of this study, CCDUs have been established in States (except **Haryana**) to promote development of State-specific IECs to facilitate implementation of reform initiatives in WATSAN sector and to provide Capacity Development of functionaries and stakeholders at all levels. CCDUs have been given functional autonomy in the discharge of the following functions.

- To act as the State level facilitating agency as well as Project Management Unit (PMU) for effective implementation of TSC.
- To develop and make the Block and Panchayat level capacity development operational plan of different stakeholders.
- To provide training with focus on the key areas of Programme management for Government officials, PRIs and other stakeholders. Impart Information, Education and Communication (IEC), execution of hardware activities to Engineers and Masons.
- To facilitate development and make operational the State and District level IEC plans.
- To identify the Key Resource Centres and experts to facilitate IEC and capacity development activities.
- To develop region (Tribal, Western) specific training modules.
- To devise new technologies which may be taken up under the rural water and sanitation sector.
- To advocate conventional and traditional water conservation and rain water harvesting.
- To undertake action research on various aspects of sanitation, sanitation facilities on health indicators, IEC strategies etc.
- To provide HRD and IEC inputs to Accelerated Rural Water Supply Programme (ARWSP), Swajaldhara and Total Sanitation Campaign (TSC) project in the States.
- To document successful cases or initiatives taken by the States/ agencies in dissemination of information. States which are poor performing shall also be documented to find out the reason for it and possible solutions which may be accelerate their performance.
- To undertake Solid and liquid waste management.

CCDU in **Punjab** is in existence since 2004 but plays a limited role. However, the state authorities reported that it has been providing support in

capacity building, training, IEC and organizing awareness campaign through the officers of implementing agency and various stakeholders of Drinking Water Supply Program, Water Quality Monitoring and Surveillance Program and Sanitation (including TSC) also. CCDU in **Manipur** provides training to the PHED Officials, Elected Panchayat Members and Villagers by sending them to the various training Institutes namely Ram Krishna Lok Sakti Parisad, West Bengal, National Rural Development Institute (NIRD), Hyderabad and Guwahati, Academy of Training, Nainital, Uttarakhand and Other Institutes recommended by Department of Drinking Water, Ministry of Rural Development, Govt. of India. In West Bengal, CCDU is located in the State Institute of Panchayat and Rural Development (SIPRD) and manages the HRD activities, development of IEC strategies and IEC materials. It also provides necessary assistance to the District Sanitation Cells for activities related to generation of awareness on toilet use, health and hygiene. As in West Bengal, the State Institute of Rural Development is the CCDU in **Sikkim** also.

Gujarat State Rural Development Corporation (GSRDC) is the nodal agency for planning and implementation of the programme through the CCDU Cell and consists of experts with relevant experiences in the field. CCDU, **Haryana** was reported to be in the process of being set up at the Haryana Institute of Rural Development as a separate unit though the sanction was given by GOI during 2008-09. In **Maharashtra**, UNICEF also supports CCDU by providing coordinators who are subject experts in sanitation. CCDU in TN is housed within the **Tamil Nadu** Water Supply and Drainage Board (TWAD). In **Kerala**, there is already a CCDU sanctioned in Water Resources Department. The Government of Kerala has now accorded administrative sanction to set up a separate CCDU in Suchitwa Mission. Kerala CCDU has published a technical manual for solid waste management and organises orientation training in school sanitation for teachers to make schools the model places for good sanitation facilities as well as sanitation and environmental practices. The main thrust of the orientation is to enhance the activities of School Health & Sanitation as well as Ecology Club and also delineate the sanitation issues for sorting it out through appropriate intervention. Efforts have also been stepped up in all the districts of Kerala to establish toilets, especially girl-friendly toilets in all government schools. In collaboration with SarvaSikshaAbhiyan, action is initiated to develop Integrated School Sanitation Plan.

In **Jharkhand**, the Programme Management Unit (PMU), a State level nodal agency, set up in July,2004 discharges all the functions of CCDU with State level training institute VISWA as its extended arm fulfils the need of organizing capacity building events for all the stakeholders. PMU has been responsible for developing training modules, designing and developing IEC materials for extensive and intensive dissemination of overall aspects of Water and Sanitation programmes undertaken by the State. Key Resource Centres(KRCs) in **Odisha** for TSCinclude “Indira Gandhi Training Centre”,

"State Institute of Rural Development", "State Institute of Health and Family Welfare", "Indian Red Cross Society (Orissa Branch)", "Centre for Youth and Social Development", all of which are located in Bhubaneswar.In **Uttarakhand,** an independent organisation named "Water and Sanitation Support Organisation (WSSO)" has been constituted as a registered society under State Water and Sanitation Mission with the mandate of organising in-house training, create awareness amongst community and stakeholders, and identify KRCs at State and regional level.

3.4.1 Structure of CCDU

1- Director (01) on deputation from Govt. as per the pay scale.
2- State Coordinator (01) on deputation from Govt. as per the pay scale.
3- Accountant (01) on deputation from Govt. / as per the pay scale.
4- Consultants (03) on contract
5- Data Entry Operator (02) on contract
6- Peon (01) on contract
7- Security Guard (01) on contract
8- TA/DA for State Coordinator/ Consultants as per State Govt. TA/DA norms.

3.4.2 Funding of CCDU:

The Government of India funded the CCDU on 100% basis till 31st March, 2012 i.e. upto the end of 11th Five Year Plan. Funds are provided by the GOI @ Rs. 6.00 crore per year for major States and Rs. 4.00 crore per year for smaller States (population basis). States prepare State, District and Block level Master Plan on IEC and HRD reflecting the activities they wish to undertake keeping in mind their region specific problem for budgetary approval of the GOI. These are supposed to comply to the General Financial Rules as amended form time to time. Separate account needs to be maintained for CCDU clearly indicating the budget heads under which expenditure has been incurred.

In 2009, the IEC and HRD activities were converged at the state level to be undertaken through the Water and Sanitation Support Organization (WSSO) under State Water and Sanitation Mission. CCDU's were to be part of WSSOs having expertise and infrastructure for carrying out IEC and HRD activities of all programmes of rural water and sanitation sectors. The WSSO's are provided upto 2% of the National Rural Drinking Water Programme (NRDWP) allocation for funding in support activities. All CCDU's in the State including CCDU for sanitation are required to present their work programme to the SWSM and obtain funds through the WSSO from the NRDWP allocation. No separate funds are released to CCDU's from the Total Sanitation Campaign.

3.5 Implementation process of TSC

3.5.1 Formulation and approval of Project/Plan proposals

The TSC is being implemented with a district as the unit for planning in all the implementing States in a phased manner over different years. A detailed survey conducted throughout the districts collects data on the requirement of IHHLs, School Sanitation, Community Sanitary Complexes, Anganwadi Sanitation and RSM/PC. This baseline survey is undertaken by NGOs, Education Institutions & other Research Institutions guided by the nodal department in the States. Based on this data, a Project Implementation Plan (PIP) is prepared and submitted to the State Govt. It consists of these main components: 1) Individual House Hold Toilets target and fund requirement (BPL families) 2) School Toilets target and fund requirement 3) Anganwadi Toilets target and fund requirement 4) Solid & liquid waste management 5) IEC and Administration cost.

The project proposal which originates from a district is scrutinized by the State Government and transmitted to the Government of India (Department of Drinking Water Supply, Ministry of Rural Development). At the national level, there is a NATIONAL SCHEME SANCTIONING COMMITTEE (NSSC) which approves the project proposals for the select districts, as received from the State/UT Governments. Its constitution is as follows:-

1. Secretary, Department of Drinking Water Supply, Ministry of Rural Development-Chairman
2. Additional Secretary & Financial Advisor, Ministry of Rural Development-Member
3. Four non-official experts in the field of rural sanitation-Members
4. Secretary in-charge of rural sanitation of the State whose proposal is to be considered-Member
5. Joint Secretary, Department of Drinking Water Supply, Ministry of Rural Development-Member Secretary

The PMU facilitates the formulation of Project Implementation Plan (PIP) for the districts and its sanctioning by NSSC at various points of time The proposals of districts for release of subsequent instalment (after release of 1st instalment of approved TSC Project by Centre) of TSC project fund are scrutinized and forwarded to GOI for release of Central share. PMU also facilitates districts in framing of annual implementation plan and formulating the necessary budget. The yearly budgets relating to State share are sanctioned and released to districts in conformity of proposals already forwarded to GOI.

3.5.2 Annual Implementation Plan (AIP)

The main objective of the Annual Implementation Plan (AIP) is to provide a definite direction to the programme and also to ensure monthly and quarterly monitoring of physical and financial progress during the course of the financial year vis-à-vis the planned activities included in it and the objectives of TSC.

The AIP includes:-

(a) report on the progress made by the State in achieving the objectives of TSC,
(b) details of activities taken up under the various components of the TSC,
(c) write ups of success stories, best practices, innovations introduced, new technologies used
(d) a plan of activities with physical and financial estimates under each component of the TSC for the next year.

An Annual Implementation Plan should be prepared first by the Gram Panchayats based on the anticipated progress in sanitation coverage. The Gram Panchayats plans should be consolidated into Block Implementation Plans (BIP). The District Water and Sanitation Committee should prepare the District Implementation Plan (DIP) by suitably consolidating the Block TSC Plans.

The DIP is scrutinized by the SWSM and all DIPs of the districts in the State compiled into an Annual Implementation Plan (AIP) for the State. The States/UTs prepare the AIP and submit before the commencement of the financial year on the basis of the balance works to be completed, to the DDWS, for use at the Annual Plan discussions in Plan Approval Committee (PAC) meetings. The AIP include part A and part B districts eligible for release of next instalment to work out the eligibility of the state as a whole for release of funds. Part 'A' districts are those which are likely to become eligible for release of next instalment as on 31st March of the previous financial year. Part 'B' districts are those which are likely to be eligible by 30th September of the financial year for release of further funds to the states.

The quantum of funds to be released to the districts is decided based on the criteria of release of funds to the implementing agency in four instalments (30, 30, 30, 10). As soon as final outlay/eligibility for funds is decided based on the discussions in the PAC, the Annual Action Plans prepared earlier may be reviewed and modified. The modified AAP should be forwarded to the Central Govt. within a fortnight of the discussions in PAC and also uploaded in the website through online monitoring system.

3.5.3 Project Completion

When a Project gets completed fully in a district, the Implementing Agency at the District level submits a completion Report along with Audit Certificate and Utilization Certificate through the State Government to the Department of Drinking Water Supply, Ministry of Rural Development, Government of India. Acceptance or otherwise of the Completion Report is informed to the State Government and the District Implementing Agency by the Government of India. The TSC Project cycle in the Project Districts is expected

to take about 4-5 years. States have taken initiative for conducting Post Project evaluations, and seek GOI assistance, for the purpose.

3.5.4 Flow of funds from Centre to grass root level (process):

3.5.4.1 Release of Funds

Upto 2008-09, GoI released Central shares of funds directly to District Implementing agencies subject to receipt of details of the Implementing Agency at District level and name of the bank, IFSC Code and A/c. No. etc. From the year 2009-10, funds were released from the Centre to the State Water Sanitation Missions (SWSM) for onward release to the districts. The SWSM operate a Savings account in a Nationalized Bank except in the case where State Government/UT has justified and taken prior approval of the Central Government to open account in any other bank in the name of State Water Sanitation Mission dedicated for all transactions relating to TSC including Central share, State share, beneficiary share or any other receipt.

The Plan Approval Committee(PAC) headed by Joint Secretary (Sanitation), GOI with representative of Integrated Finance Division, Secretary of the State concerned, nominated experts on sanitation, if any and representatives of Ministries of Health and Family Welfare, Women and Child Development, School Education & Literacy and Panchayati Raj approves the Annual Plan on the basis of the appraisal report, the recommendation of the SWSM, the availability of Central Plan funds, commitment of the State government regarding release of State share and previous state share release position. Funds are released to the States based on the approval of PAC subject to the availability of funds and fulfilment of all other requirements of documents, as required.

3.5.4.2 Release from Centre to State level

The Central assistance is released to the Implementing Agency in four instalments (30, 30, 30, and 10). The first instalment is released immediately after the approval of the project proposal by the National Scheme Sanctioning Committee. The release of further instalments is subject to the following conditions:

- Receipt of a specific proposal from the State/UT with recommendation of the State Government with district wise physical and financial progress reports;
- Commitment of the state to release of proportionate State share into the SWSM account with in fifteen days of release of central share;
- Utilization of 60% of the available resources (80% in case of last instalment for the eligible district), including the State share and interests accrued thereon;
- Audited statements of accounts of TSC up to the year preceding the previous financial year;
- Receipt of utilization certificate in the prescribed Performa signed by the Member Secretary of SWSM, for the previous financial year;

- Receipt of certificate in the prescribed proforma stating that the districts to which funds are proposed to be released have complied with the conditions of release and Audit Reports, Utilization Certificates and Progress Reports have been received and scrutinized;

3.5.4.3 Release from State to District level

The States/UTs have to release the central assistance received along with the matching State share to the District implementing agency/agencies within 15 days of receipt of Central assistance

The release of funds by SWSM to the districts is subject to the following conditions:

- For all the hardware activities executed, the corresponding household/ community contribution, including APL households are taken and reflected appropriately in the progress report.
- Expenditure and Utilization certificate: At least 60% (80% in case of last instalment) of the total available funds under central share as well as state share, including interest are properly utilized. Separate utilization certificate for the central fund and the state fund is submitted. The utilization certificates are to be countersigned by Chairman - DWSM/DRDA/District Collector or CEO of District Panchayat as the case may be.
- Audit Certificate: The accounts of the TSC project are audited annually by C&AG/Chartered Accountant as per provisions in the GFR. The certificate is to be countersigned by the Chairman DWSM/DRDA/District Collector or CEO, District Panchayat as the case may be.
- A Certificate regarding not purchasing any in-admissible items given by the Chairman of the DWSM/DRDA/District Collector or CEO, ZillaParishad as the case may be.
- A report of Review Mission (panel of experts) confirming proper implementation and progress thereof.
- The last instalment is released only if the expenditure is at least 80% of the available funds (separately for centre and state) and on submission of the Utilization Certificate and AG Certificate/Chartered Accountant Certificate of previous year.
- The District Implementing Agency is required to transfer the funds for the works to the Gram Panchayat (VWSC in States where GPs do not exist) within 15 days of receipt of funds.

The above flow of funds, as envisaged in the Central guidelines, differs slightly from State to State due to the differences in their institutional set up and administration of the scheme. For example, in **Rajasthan, Meghalaya, Odisha, Madhya Pradesh,** the funds from District level pass on to the BWSC/ BDOs/PanchayatSamity before they reach the hands of the GP/NGOs/VWSC for payments to the beneficiaries. The payments of subsidy for the individual latrines are made on the recommendation of the VWSC. However, in some

districts of **Punjab**, the funds were transferred by DWSM to District Education Officers for construction of school toilets. Further, in case of IHHL, the toilets were constructed by the households itself and the IHHL incentives were given to the beneficiaries directly to the households after verification of the officials of the implementing agency and Sarpanch of the Gram Panchayat. In **West Bengal**, the ZilaParishad releases funds to the blocks for subsidy, establishment of Marts, IEC, HRD activities etc. Funds are also released to Sanitary Marts and Gram Panchayats for IEC activities. In **Sikkim**, initially the state allocated funds directly to the Gram Panchayat Units (GPUs). Later on, the state started allocating fund through the district RM & DD. After the establishment of the Block Administrative Centres (BACs), the funds to the GPUs are routed through these BACs.The beneficiaries are given fund/ material by the GPUs. Till the date of completion of the field work of this study, **Haryana** State Sanitation Mission was in the process of getting registered though the release of funds was sanctioned by GoI for the year 2009-10. In **Kerela**, the District release funds to the Gram Panchayat for the implementation of IHHL which further funds the beneficiaries through cheques after completion of the construction or in advance (in deserving cases). District funds flow to the Block Panchayat for the implementation of School and Anganwadi toilets. In case of Sanitary Complexes, funds are provided to both Block as well as the Gram Panchayats.

3.5.4.4 Interest Earned On Project Funds

The TSC funds (Central and State) are to be kept in a bank account. The household / beneficiary contribution need not be deposited in this account. The interest accrued on TSC funds is treated as part of the TSC resources. The District Implementing Agency has to submit utilization of interest accrued on TSC funds along with claim(s) for subsequent instalments, which is reflected in the Utilization Certificates.

Flowcharts depicting the flow of funds from Centre to grass roots level, wherever available during the field visits, are given in Annexure II. Details on the financial aspects of the scheme are covered in the concerned chapter.

3.5.5 Execution and coordination of the project

Though the details on the organizational set up and the different departments implementing TSC in different states in the country with the functions they perform have already been discussed in the first part of this chapter, some additional inputs received from the state level authorities have been included here to make the report more informative.

3.5.5.1 Execution:

At State Level, the TSC project is executed under the overall supervision of the CCDU through the ZillaParishads, PanchayatSamities and Grampanchayats. The DWSC is the key authority for execution of the project at the district level. At the Gram Panchayat Level, Non Governmental

Organization (NGOs) working as Support Organization (SO) acts as facilitators in the process. The Gram Panchayat plays an integral part in the effective implementation of the campaign and is the focal point for the project activities. In many states like **Maharashtra**, **Meghalaya** and **Gujarat**, the VWSC, headed by the village Headman plays a key role in execution which includes the construction of the latrines, ensuring these are used by the individual households covered under this scheme, providing raw materials/equipments for construction of latrine etc. through NGOs. The construction of School/ Anganwadi toilets is executed by the VWSC under the supervision of the Village Education Committee (VEC). The incentive money for various components of the campaign is distributed to the beneficiaries through the Gram Panchayat in an open meeting to maintain transparency in the campaign. In **Punjab**, some components of TSC could be implemented in limited way and the Solid Liquid Waste Management component was introduced only in the end of 2007-08. In **West Bengal**, NGOs who also run the sanitary marts execute the TSC projects.

3.5.5.2 Coordination:

To achieve the desired outcome of imparting health benefits to the population, coordination and convergence are being done at state level among various agencies, which include the State Water & Sanitation Mission (SWSM), the health department, education and rural development departments. In the 'campaign approach', a synergistic interaction between the Government agencies and other stakeholders, intensive IEC and advocacy, with participation of NGOs/Panchayati Raj Institutions/ resource organizations, take place to bring about the desired behavioral change for relevant sanitation practices. Provision of alternate delivery system, proper technical specifications, designs and quality of installations are also provided to effectively fulfill the generated demand for sanitary hardware. The State level Coordination is done by the Principal Secretary of the nodal implementing department at State level. For example, Financial Commissioner-cum- Principal Secretary (FCDP), Development &Panchayats Department in **Haryana** etc. Co-ordination with State/Central Level Authorities i.e. Secretary DWSS, MoRD and DWSM at district level is usually the responsibility of the nodal implementing agency viz., the State Coordinator-cum-Superintending Engineer, DWSS in **Punjab** etc. It acts as the Secretariat of the District Sanitation Committees for implementation of TSC. Further, the Executive Engineer-cum-Member Secretary DWSM is responsible for co-ordination with Deputy Commissioner, Additional Deputy Commissioner, State level authorities, Gram Panchayats and other stakeholders of TSC. At the block level, BDO, Block Sanitation Committee/ the Block TSC Cell (Programme Officer / Extension Officer / Master Trainer etc.) function to coordinate the work at the Village level through Gram Panchayats, like in **Gujarat, Maharashtra** and many other states. **Sikkim** reportedly lacks a

system of regular coordination with agencies other than the implementing agency.

3.5.5.3 Start up Activities

Central guidelines emphasise the need of the start-up activities which includes conducting of preliminary survey to assess the status of sanitation and hygiene practices, people's attitude and demand for improved sanitation, etc. with the aim to prepare the District TSC project proposals for seeking Government of India assistance. These activities include conducting a Baseline Survey (BLS), preparation of Project Implementation Plan (PIP), initial orientation training programme for personnel deployed in implementation of the programme at various levels i.e. State, District, Block and GP level.

3.5.5.4 Baseline Survey (BLS) and Project Implementation Plan (PIP)

BLS is a detailed survey conducted throughout the districts and collects data on the requirement of IHHLs, School Sanitation, Community Sanitary Complexes, Anganwadi Sanitation and RSM/PC. This baseline survey is undertaken by NGOs, Education Institutions & other Research Institutions guided by the nodal department in the States. Based on this data, a Project Implementation Plan (PIP) is prepared and submitted to the State Govt. It consists of these main components: 1) Individual House Hold Toilets target and fund requirement (BPL families) 2) School Toilets target and fund requirement 3) Anganwadi Toilets target and fund requirement 4) Solid & liquid waste management 5) IEC and Administration cost.

The PMU facilitates the formulation of Project Implementation Plan (PIP) for the districts and its sanctioning by NSSC at various points of time.

At the time of the visit of the study team to the field in the selected states, the Baseline Survey (BLS) was reported to be completed; the PIPs prepared for each of the project districts and sent for approval to the Central Ministry. However, the study team which visited districts in **Punjab** pointed out that though the BLS was conducted in the year 2004-2005 in most of the districts and PIPs also prepared; but the formats used and the methodology followed for carrying out these activities lacked uniformity. Staff of the implementing agency were not trained enough to carry out the work. Similarly, the PIPs were not carefully prepared, preserved and implemented in all the districts visited. Though, some districts in **Punjab** conducted a BLS again in 2008, but it suffered from similar lacuna as in the first stage. As a result, any planning, such as preparation of PIP or submission of revised proposal was bound to be misleading. The districts could not satisfactorily conduct the pre-project activities. Although the Implementing Agency at the State Level claims to have set up the CCDU at the State Level, but it is not functional and as a result, the study team observed that many Executive Engineers, who were the member secretaries of the DWSM, did not have sufficient knowledge of the provisions of the scheme.

3.5.5.5 Orientation/training programmes organized for key programme managers:

As part of the start up activities in the districts, training had to be imparted to officials and the staff of the nodal agency (DRDA, PHE etc.)/District Level Officers/officials of line departments like Education, ICDS, Development and Panchayats / block level stakeholders / BDOs/ PanchayatSamitee Representatives/ village level workers like AWW/ASHA/SHG members/ Volunteers/ Motivators/ School Teachers/ Sarpanch/ Gram Panchayat Members /Gramsevaks/ PRIs/ Masons/ Anganwadi Supervisors/ AnganwadiSevikas/ SHG Group/ Swachattadoot students/ Kendra Pramukhs of BRC/ CRCs of Education department etc.

3.5.5.6 IEC Activities

Sanitation is more an issue of bringing about a behavioural change rather than just construction of toilets. For behavioural change of the communities, location specific intensive IEC Campaign involving Panchayati Raj Institutions, Co-operatives, Women Groups, Self Help Groups, NGOs etc., which addresses all sections of rural population and meets their sanitary hardware requirements in an affordable and accessible manner by offering a wide range of technological choices, is an important strategy.

Institutional arrangement for implementing IEC

Institutional arrangement for implementing IEC operates at three levels with some broad functions:

(1) State Level (SWSM):

- Development of generic IEC materials, like posters, jingles, promotional films, catalogues for wall paintings by CCDU. These activities may also be outsourced, if the need arises.
- Development of a media plan for the state wide activities.

(2) District Level (DWSM):

- Planning, implementing and monitoring IEC activities. Each district is to develop a district specific perspective IEC plan and an annual IEC plan based on suggestions of the SWSM.
- Carrying out the IEC activities through NGOs or through the GPs.
- Plan and conduct inter –district and intra – district exposure visits.

(3) Block Level (BWSC)/ GP/ VWSC:

- Wall paintings, community interactions with SHG members and campaigns.
- Training of Grass root functionaries like AWW, ASHA, SikshyaSahayaks and SEMs at Block level in Inter Personal Communication (IPC) and counselling.

As part of the IEC strategy, motivators engaged at the village level for demand creation take up behaviour change communication and are given

suitable incentives from the funds earmarked for IEC. This incentive is performance based i.e. in terms of motivating the number of households and schools/ Anganwadis to construct latrines and soakage pits and also use the same subsequently. The focus of IEC is on health and hygiene practices and environmental sanitation aspects. The IEC activities include wall paintings, wall writing, street plays, folk media, GP meeting, rallies at GP level, development of micro plan in GP, hoarding, demonstration activities (village and school cleanliness, demo of safe hand washing practices, safe handling of water), orientation workshops at district level for block level trainers, orientation workshop at block level for GP level trainers etc. It also includes training programmes for masons, Self Help Groups etc, for activities related to sanitation, such as production of sanitary pan, sanitary napkins, etc.

Each project district is required to prepare a detailed IEC Annual Action Plan by February of the preceding financial year, with defined strategies to reach all sections of the community. The aim of such a communication plan is to motivate rural people to adopt hygiene behaviour as a way of life and thereby develop and maintain all facilities created under the programme. The Annual IEC Action Plan is duly approved by the District Panchayat (or the DWSM where such bodies are not in existence). The Communication and Capacity Development Units (CCDUs) set up at the state level provides support to the districts in developing a good IEC plan and also in implementing it.

Under IEC, mass media campaign is to be taken up at the national and state level but not at the district level. At district level, focus is on inter-personal communication through motivators, volunteers, facilitators and Gram Panchayats, use of folk media and also outdoor media like wall painting, hoarding, an exposure visit of Sarpanches and Officers etc. The triggering tools like sanitation mapping, analysis of shit, walk of shame and transact walk and Brahamashtra under Community Led Total Sanitation approach were used to create shame, hatred and disgust among the communities collectively.

In active states, the IEC activities are also being coordinated from state level through electronic (Radio Jingles) and print media (campaign), panel on state roadways buses, Swachhta weeks organised throughout the state with school involvement, Swachhtayatras and exposure visits, celebration of Solid & Liquid Waste Management fortnight in the villages in the state. Other efforts include organizing morning processions of school children, essay, quiz, painting and poster competitions in the schools.

Study team in **Punjab** observed that the IEC activities have not been taken up so far and the funds for IEC activities largely remained unspent. Hence, people are not aware and do not come forward to avail the incentive and adopt sanitation as a way of life. Officials of the implementing agency were not interested in carrying out the IEC activities. The situation was completely different in the neighbouring state of **Haryana**, where the study team reported various types of IEC activities that were taken up in the state including wall

paintings, rallies, PrabhatPheries, engaging motivators on salary basis to motivate both BPL and APL families, training camps at district level as well as at Block level to train motivators.

Details on the IEC and concerned issues are discussed in the subsequent chapters.

"SNJOG"

The Orissa State Water & Sanitation Mission of Rural Development has launched an intensive Mass Convergent Campaign for successful implementation of Total Sanitation in the State from 18th-30th June 2007 in convergence with Women & Child Development, Health & Family Welfare, School & Mass Education, Panchayati Raj departments. All these departments have joined together in the intensive campaign which has named "SANJOG". The campaign aims to mobilize the front line grass root level and 1st level of mobilizes/motivators of the respective departments to first construct toilets in their households under the TSC programme so that they can ideally motivate others in the village to have toilets in their households. The focused target group of stakeholders consists of:

- Ward members – 87000(P.R.Deptt.)
- Self Employed Mechanics – 9000(P.R.Deptt.)
- SikhyaSahayaks – 45000(S&ME deptt.)
- Anganwadi workers – 36000(W & CD deptt.)
- ASHA workers – 35000 (H & FW deptt.)

All NGOs, SHG leaders, AW helpers, Primary School teachers and civil society organisation have also requested to join the campaign and have own toilets, if not the financial disciplinary action should be taken against them, as they were the key personnel to propagate the basis need cum ideas of this TSC.

The inspections are essential to check and ensure that construction work has been done in accordance with the norms, the community has been involved in construction, the latrines are not polluting the water sources and also to check

whether there has been correct selection of beneficiaries and proper use of latrines after construction. Such inspection ensures that the sanitary latrines are not used for any other purpose. It also checks whether TSC information of a Gram Panchayat has been displayed transparently in Gram Panchayat (by wall painting or special hoarding).

Monitoring through regular field inspections by officers from the State level and the district levels is essential for the effective implementation of the Programme. Monitoring focuses on whether a project is being implemented as deigned, providing timely information for ensuring that progress, quality and effect of processes and procedure is maintained. Process evaluation examines how the project operates and addresses problem in service delivery. Implementation of the TSC is being monitored through monthly progress reports, review meetings and field visits. Under monitoring activities, it is ensured that construction work has been done in accordance with the norms, the community has been involved in construction, and the latrines are not polluting the water sources. At the State level, the programme is monitored through Monthly / quarterly review meetings. The State Coordinator-cum-Superintending Engineer of the nodal implementing agency is responsible for monitoring of TSC at State Level. Physical checking is also done frequently by State level authorities. The progress is also reviewed through Deputy Commissioners in CMs review meetings. In **Gujarat**, the TSC Project Cell under Gujarat State Rural Development Corporation (GSRDC) acts as the nodal agency for implementation of TSC project in the state and monitors the project at state level. At the District Level, Nodal Officer of the implementing department is responsible for monitoring of physical and financial performance of the TSC. The performance of TSC is also being reviewed by the Deputy Commissioner in District level Water Sanitation Committee's meeting as and when it meets. At the block level, as in **Meghalaya**, the BDO, the block coordinator TSC and JJE (PHED) coordinates/monitors the project. The responsibility to bring about improvements in the implementation of the sanitation programme in **Odisha** rests with the **Odisha** State Water and Sanitation Mission through CCDU which monitors the TSC programme in all the districts with the support of the Key Resource Centres (KRC) and State Advisory Team (WATSAN Think Tank). In **Sikkim**, monitoring is limited to ad-hoc inspection by the block, district and state officials.

Govt of India Monitoring – The National level Monitors at the Central level and the State Water & Sanitation Missions conduct periodical field level inspections to review the progress. The progress Report and other information regarding implementation of each program (Swajaldhara, TSC, CCDU etc.) in the state is submitted on the website of Department of Drinking Water & Sanitation, GoI – www.ddws.nic.in time to time, thereby ensuring the transparency and accountability in TSC implementation.

3.7 Evaluation

The States/UTs are required to conduct periodical Evaluation Studies on the implementation of the TSC by the reputed Institutions and Organizations and submit their reports to the Government of India. Remedial action on the basis of the observations made in these evaluation studies should be taken by the States/UTs. The cost of such studies can be charged to the HRD component of the TSC as per the Central guidelines.

Review: A team of experts in the district to review the implementation in different blocks frequently is to be constituted by the TSC project authority. Similarly, such team is to be constituted at the state level to review projects in each district once a quarter. In addition, Government of India will send its review missions to the states periodically to assess the quality of implementation. A multi agency team of officers / professionals will be constituted at the time to undertake the review.

The Review Committee (for TSC) has been reported to be constituted at the state level except in **Rajasthan, Punjab, Uttarakhand, Sikkim, Kerela, TN, Jharkhand.Gujarat** reported that the State Sanitation Mission under the Panchayat, Rural Housing and the Rural Development Department reviews the implementation of TSC programme in the State. In **Maharashtra**, the State Level Review Committee to oversee the implementation of TSC Project in all the districts of Maharashtra has been constituted with Deputy Secretary/ Project Director as the Chairman, State coordinator as Member-Secretary and representatives from the State Development and Panchayat departments, KRCs (NGOs), Water Sanitation Project of South Asia (UN-WSP). In **Haryana**, the programme is being reviewed at the State level under the monthly / quarterly by the Financial Commissioner-cum- Principal Secretary (FCDP), Development &Panchayats Department in ADCs meeting. State Sanitation Mission has been constituted under the Chairpersonship of Chief Secretary, **Haryana** to oversee the implementation of TSC in the State.

Review Committee not formed for TSC

At the state level	Rajasthan, Punjab, Uttarakhand, Sikkim, Kerala, Tamil Nadu, Jharkhand
At the district level in (some/all of the selected districts of the study)	Andhra Pradesh, Assam, Bihar, Jharkhand, Kerala, Madhya Pradesh, Punjab, Rajasthan, Sikkim, Tamil Nadu, West Bengal

National Review Teams visited during last two years (2007-09)

At the state level	Meghalaya, Uttar Pradesh, Karnataka, Haryana
At the district level in (some/all of the selected districts of the study)	Assam, Jharkhand, Tamil Nadu, Gujarat, Haryana, Kerala, Karnataka, Odisha, Uttar Pradesh, Meghalaya, Uttarakhand

Chapter 4

Role of Rural Sanitary Marts and Production Centres

4.1 Introduction:

The strategy of TSC has been "to bring about the relevant behavioural changes for improved sanitation and hygiene practices and meet their sanitary hardware requirements in an affordable and accessible manner by offering a wide range of technological choices".[1] The thrust has been to generate demand for better sanitary facilities and adopt an alternative delivery mechanism to meet the demand. Rural Sanitary Marts and Production Centers are supposed to provide the alternative delivery mechanism not only to fulfill the community needs but also to "encourage cost effective and appropriate technologies for ecological safe and sustainable sanitation".[1] It was expected that the RSMs and PCs would provide "materials, services and guidance needed for constructing different types of latrines and other sanitary facilities which are technologically and financially suitable to the area."[1]. Hence, it was assumed that by establishing RSM and PC following can be achieved.

- Affordability and accessibility for the sanitary facilities
- Ecological safe and sustainable sanitation
- Technology improvisation for sanitation
- Locally suitable and preferred sanitation

4.2 Establishment of RSM and PC

RSM and PC can be opened and operated by NGO/SHG/Women Organisations/ Panchyats/etc. Since it is to work like an enterprise, support from private entrepreneurs may also be taken. The RSM/PC should have a Memorandum of Understanding (MoU) with the District Implementing agency. RSM must have hardware materials and design for the construction of IHHL/ Institutional Toilets/CSC. They should also deal with the other sanitary facilities like soakage and compost pits, vermin-composting, domestic water filters etc. They should also ensure that a range of varieties are available for the choice at an affordable cost. It is the responsibility of the District Implementing agency to monitor the working of the RSM and PC and ensure that RSM/PC have a suitable method of quality certification and trained masons and motivators. District Implementing Agencies have also to provide training to the managers of RSMs and PCs.

[1] Guidelines, Central Rural Sanitation Programme, 2007

Production Centres are also needed for cost effective production so that cheap and good quality materials suitable for the local preference can be produced. If a RSM decides not to open a production centre it has to make sure that variety of pans are available. They may procure specific quality materials through competitive bidding.

Out of 1207 selected Gram Panchayats only about 29% have reported that there exists any RSM/PC. Only 32% selected households have said that RSM/PC are available. Bihar, Jharkhand and West Bengal are the only selected states where most of the selected Gram Panchayats and households have reported about the availability RSM/PC**.** The authorities of the state and the selected districts have also reported adequate number of operational RSM/PC. So it appears that these three states have fully adopted this mechanism. But observations from the field study reveal that the situation is not as good. In West Bengal except in the District of East Medinipur, all RSMs are actually functioning as production centres. They are producing pans and constructing latrines. In Bihar only one RSM is functional in the selected districts and in Jharkhand no RSM is functional in the selected districts. So we can say that in the three selected states the mechanism is being operated mostly by production centres. Furthermore, in Bihar and Jharkhand the Production Centres are opened temporarily as "mobile PC" only for the construction work. The role of Production centres in these two states is limited to digging the pit and constructing the latrine. Even pans are bought from the other agencies in most cases. Orissa is the other state where the state authority claimed a large number of functional RSM/PCs. Our visiting team has found that the SHGs and Panchayats are managing some production centers. They are mobilizing the masons and materials for constructing the toilets. There is very little support from the government. In Maharashtra the state and district authorities have claimed to have opened a large number of RSMs and PCs. Only few PCs are functional and only about 59% of the selected Gram Panchayats have reported the availability of RSM/PC. But most importantly, only 16% of the households have said that any RSM/PC is available in their locality. It indicates that RSM/PC has not been very successful in Orissa and Maharashtra. (Annex-5).

In the three states i.e. Bihar, Jharkhand and West Bengal it is the NGOs who are operating and maintaining the RSMs and PCs in most cases. In Maharashtra and Uttar Pradesh the Gram Panchayats and in Kerala and Gujarat the SHGs are taking the leading role in managing the RSMs and PC. In rest of the selected states it is the NGOs who have been given this job. (Annex-6)

The area covered by an RSM does not depend on the number of RSMs opened in the states since all the villages have not been covered by RSM/PC. There are no guidelines for the number of RSM and PC to be opened in a state/district. But it appears that funds are available for maximum10 RSMs and PCs in a district, though, there is provision for mini RSMs and PCs. On an average one RSM/PC covers about 60 villages. RSMs/PCs in West Bengal

cover maximum number of villages. Here the RSM is generally situated at the block level. A few blocks are not having any functional RSM/PC. In such cases, the adjacent blocks cover such blocks.

If we analyze the accessibility it appears that in Jharkhand most of the PCs are located closest to the households. About 70% of the households have told that the RSM/PCs are available within 2 kms. Though, the average number of village covered by an RSM/PC is the least in Bihar. It may be kept in mind that in Bihar and Jharkhand the production centres are opened temporarily as "mobile PC". West Bengal which fully adopts this mechanism lags behind these two states in this respect. (Annex-7)

In almost all RSMs (86%) toilet seats are available except in West Bengal where almost half of the selected RSMs did not have toilet seats. Non-availability of toilet seats in West Bengal is due to the fact that the main jobs of the RSMs have been to construct toilets for BPL households. After the construction of toilets they get the payments from the block office. Once the work of construction of toilets for BPL households is over or there is no demand from BPL households the RSMs have no work to do. Some RSMs have stopped producing toilet seats as a large amount of payment is still due with the block office and they cannot run the RSMs. In all the states RSMs (76%) are keeping ceramic pans except in Rajasthan and West Bengal. In Rajasthan RSMs are selling HDPs pans while in West Bengal RSMs had mosaic pans. Soakage materials are available in all RSMs in Haryana, Tamil Nadu and Meghalaya. In West Bengal half of the RSMs are having soakage materials. In Haryana and Meghalaya all RSMs have material for vermin composting and in Gujarat most of the RSMs (83%) have the material for vermin composting. While, in Karnataka, Rajasthan, Uttar Pradesh not a single RSM have the material for vermin composting. In Rajasthan and Tamil Nadu all RSMs deal in material for washing platform while in Uttar Pradesh and West Bengal not a single RSM deal in material for washing plate form. In Haryana, Tamil Nadu and Uttar Pradesh 50% RSMs also deal in certified domestic water filter

As it is stated above it is the responsibility of the district implementing agencies to train the managers of the RSM/PC. Our study has found that managers of 61% of RSMs & PCs have got any type of training from the district implementing agencies. In Bihar, Karnataka, Rajasthan and Uttar Pradesh all the managers of the RSM/PC have received training from the district agencies. In Bihar, Jharkhand and West Bengal where most of the villages are covered by the RSM/PC more than 90% managers of the RSM/PC have received training from the district agencies.

Signing of MoU between the RSM/PC is also essential. But only 59% RSMs/PCs have signed MoU with the district implementing agencies. In West Bengal which is the pioneer in adopting RSM/PC model, only 36% RSMs/PCs have signed MoU with the district agencies.

Existence of quality certification process for the materials is also one of the essential conditions for the opening of RSM/PC. But, only 34% RSM/PC have reported to have this facility. Though there is no specific guideline about the type of quality certification method. About 58% of that RSM/PC which had reported of having quality certification method have reported that they deal in only ISI certified materials from the authorized dealers. About 19% have said that they themselves check the quality and about 14% have said that the district officials check the quality. It cannot be said whether availability of these methods satisfy the requirement of quality certification. (Annex-8)

4.3 Funding:

Up to five percent of the total Government outlay (maximum Rs. 35 lakh for one district) has been earmarked for the establishment of RSM/PC. The share for the Government of India and the State Government for this component is 80:20. For one RSM/PC a maximum amount of Rs. 3.5 lakh can be provided for construction of shed, training and as revolving fund. Once the RSM/PC attains sustainable position, the revolving fund is to be refunded to the Government. One district can be provided maximum amount of Rs. 35 lakh and an additional amount up to Rs. 50 lakh can also be provided as revolving fund.

It appears that funds have been made available in excess of the prescribed limit in some states. It may be due to the two reasons. First, the RSMs/PCs have also been given some other works like creating awareness, and funds have been made available for this purpose also. Secondly, in some states like in West Bengal the RSM/PC has to construct the toilets in the BPL households and submit the bill to the block office. After verification the block office makes the payment. Some RSMs/PCs have reported this amount as their fund availability. At the national level one RSM/PC has got Rs. 2.5 lakhs on an average. The maximum amount Rs. 27.5 lakh was given to one RSM in Gujarat while the minimum amount Rs 10 thousand was given to the one RSM in Maharashtra. Among the three states performing well in this respect, Rs. 3.09 lakh was given to one PC in Bihar, Rs. 3.35lakh was given to one PC in Jharkhand and in West Bengal one RSM has got Rs. 2.16 lakh. (Annex- 9)

Out of the available fund, the largest component is used as revolving fund, which has not yet been refunded to the government by 42% RSMs and 24% PCs. The second biggest component is used for the purpose other than the prescribed ones. As we have already discussed RSMs have also been involved for the awareness programmes and in some cases instead of paying incentives to the beneficiaries the RSMs/PCs have be paid for the cost of construction of BPL latrines. (Annex-10 &11).

4.4 RSM/PC as an Enterprise: Commercial Venture with Social Objective

The sustenance of the RSM/PC depends on its commercial performance. They are to "demonstrate success as an enterprise and function in accordance with the objectives of the programme."[1] Though there are provisions of financial support and training by the government, the RSM/PC has to sustain on its profitability.

The profitability of RSM/PC depends on demand for its material and services in the area, the sale price fixed by the government and the cost involved. Demands for the sanitary materials depend on the social marketing done during the awareness programme.

In some states like West Bengal, which is the pioneer in the alternative delivery mechanism, the RSM/PC has the monopoly in the area specially for providing latrines for BPL households. The BPL households get the subsidized toilets instead of incentives. After constructing the toilet the RSM submits the bills with the entire relevant document to the block/district office and gets the payment for the subsidies. The RSMs have to collect the beneficiaries' contribution from the households. The Gram Panchyats also helps in collecting the beneficiaries' contribution through their own network. Mostly this work is performed by the motivators recruited by the Gram Panchayats/RSM. They have to motivate the households without any sanitation facility to construct the latrine through the RSM. If the household agrees and a latrine is installed the motivator will get a commission from the RSM and/or the Block Development Office. Motivator's incentive is paid by the RSMs from their own fund or from the Block Offices from the IEC fund. In some cases our field teams have found that the motivators' commission is deducted by the Gram Panchayats from the collected beneficiaries' contribution and then the collected fund is given to the RSMs. The price ceiling is fixed by the government for different models. So this makes the situation like monopoly with price control. In such a situation monopolist RSMs can maximize their profit by increasing output which again depends on the demand generated for the sanitary materials. It is also observed that very few APL households approach these RSMs for the toilets without any subsidy. So the RSMs deal only in subsidized latrine for BPL households and they have the monopoly given by the implementing agencies. Construction of institutional toilets has been the contentious issue. The gram panchayats/school authorities/villagers want to have right to select the agency for the construction of institutional toilets and the RSMs argue that if they don't have monopoly over the construction of institutional toilets they are unable to survive only on construction of IHHL for BPLs.

State wise average profit earned by a RSM/PC during 2004-2008 with the number of toilets produced is tabulated in Annex-12. This profit is arrived by deducting cost of the production from the sale value of toilets. We can find no trend over the years and no correlation with the volume of production. Hence,

we may conclude that the profit of the RSM/PC depend on other factors like demand generated through the awareness campaign, price fixed by the government etc.

4.5 Sustenance of RSM/PC

It is expected that with the initial support from the government the RSMs/PCs would sustain and hereby a network of RSMs/PCs would be created. This would manage the supply side of the programme. As we discussed in the previous section the sustenance of RSM depends on its commercial performance, that is, its profitability. We have also seen that the profitability is not ensured in the business of RSM and PC.

All the states have not adopted this mechanism uniformly and the functioning is quite different in states. As we have seen except in Bihar, Jharkhand and West Bengal in no other states this mechanism is fully adopted**. Sikkim** has achieved the target and become "Nirmal Rajya" without adopting this mechanism. In **Kerala**, the concept of RSM/PC has become irrelevant due to lack of demand of their product. The toilets produced by the PCs are not liked by the people. Most of the PCs set up initially are defunct or diversified into manufacturing of other cement products. Material of good quality and workers are available in the rural areas. People prefer to use branded closet and other sanitary wares. Many RSMs which have been set up and are financially assisted, are trading sanitary materials, pipes, taps etc as private enterprises. In **Orissa**, mostly the SHGs and Gram panchayats are mobilizing masons and materials. In **West Bengal** RSMs are the implementing agencies of TSC at the Gram Panchayat level. But they are fully dependent on the government. Their main work is to construct IHHL for the BPL household and institutional toilets and get the subsidy portion from the government. They have monopoly over the construction of toilets for BPL household but everything is fixed by the government agencies. Though, 57% of the RSM said that they also offer services after the construction, most of them accepted that there is no much demand for this service if it is also not financed by the government. They will have virtually no work once all BPL households and educational institutes get the toilet or the scheme is over.

Only 17% of the RSM offer services of repair and maintenance after the construction of toilet. It was expected that the revolving fund would be returned by the RSM/PC once they achieve sustenance. But only 6% RSMs and 22% PCs had returned the revolving fund at the time of visit. In Andhra Pradesh and Manipur most of the RSMs/PCs have returned the revolving fund but they don't think they can operate independently without any govt. grant. In Bihar 50% PCs have returned the revolving fund and 29% are of the view that they can operate without any government grant. The best state in this regard appears to be Jharkhand where this mechanism is fully functional. In this state all the selectd

RSMs had already returned the revolving fund and 31% RSMs/PCs opined that they can operate without any govt. grant. (Annex- 13)

4.6 Conclusion:

It appears that this mechanism has not been adopted in true spirit by the states. Many states have not adopted this at all. In some states, after their establishment, with the government support in the initial phases, many RSMs/PCs have become non-functional. Of course, we cannot say there is strong correlation between the success of RSM/PC and achievement of physical targets. For example, Sikkim has achieved the targets and got the "Nirmal Rajya" award without adopting this mechanism. Most of the states which hjave performed well regarding the other components of TSC, like the southern states, do not have good network of RSM/PC. In Jharkhand and Bihar the Production Centres are opened temporarily for limited role i.e. constructing the individual household latrines. But, they are accessible to maximum percentage of households and available in maximum number of Gram Panchayats. Still the two states lag behind other states in rural sanitation.

But, while implementing TSC it appears that the implementing agencies are stressing only on creation of toilet facilities, and sustenance and ecological safety aspects are ignored. Furthermore, solid and liquid waste management is still to be undertaken in many districts. We cannot ignore the importance of an alternative delivery system which ensures affordable, accessible and locally suitable sanitary facilities and works under the government control and support.

Chapter- 5

Role of Panchayati Raj Institutions (PRIs)

a. Introduction:

One of the main objectives of the TSC is to bring about an improvement in the general quality of life in the rural areas and to accelerate sanitation coverage in rural areas to access to toilets to all within 2012 by motivating communities and Panchayati Raj Institutions (PRIs) in promoting sustainable sanitation facilities through awareness creation and health education. The project is being implemented in the rural areas taking districts as a unit of implementation.

The role of PRIs has become very much dominant in the execution of the programme and the institutions involved in different levels are the Zillaparishad, the Directorate of Panchayati Raj, the TalukPanchayat/ Block Panchayat/ Block Development office and the village Panchayat/ Gram Panchayat.

b. PRI as the Nodal Agency

The table given in Annex- 14 indicates the percentage of GPs where the specific PRIs institutions are functioning as nodal agencies for TSC Programme.

It is found in this table that the Block Development office/ Taluk Panchayat are functioning as nodal agencies on TSC Programme in respect of 11% of the Gram Panchayats out of the total number of 1207 selected GPs located in 20 sample states. But the Taluk Panchayat is acting as nodal agency for all (100%) GPs in Karnataka and 87% GPs of West Bengal. The Director of Panchayat Raj is the Nodal officer of 8% of the total GPS in 121 districts of the sample States, whereas the same is 43% in Haryana and 93% in Uttar Pradesh. The table also shows that Zilla Parishad is also performing as nodal agency for 100% of the GPs in Madhya Pradesh and Maharashtra.

Altogether there are more than 10 departments performing as nodal agencies on TSC programme in various States. The important among these departments are the District Rural Development of Agency (DRDA), Block Development office, Taluk Panchayat, Director of Panchayati Raj, Director of Water and Sanitation mission, Project Management unit, Rural Water Supply and Sanitation, Public Health Engineering and ZillaParishad etc. Not only the nodal agencies, the implementing agencies on TSC Programme are also different in the respective districts and GPs. The prominent of among the implementing institutions performing under the different nodal agencies in the

sample States are the village Panchayat, District project of Management Unit, DRDA, self Help Groups (SHG), NGO, Rural Water Supply and Sanitation, Block Development Office and Rural Sanitary Marts etc.

5.3: PRI as the implementing agency

The percentage of GPs in the sample States covered by the separate implementing agencies on TSC Programme is explained in the table given in Annex-15.

It is established from the table that although the programme is implemented by a number of agencies at the grass root level, the Gram Panchayat itself is implementing the TSC Programme in 39% of the total GPs. In some of the States like Gujarat, Karnataka, Kerala, M.P, Maharashtra and U.P almost all, viz, 100% of the GPs are implementing of the programme themselves. Even 95% of the GPS in Sikkim are implementing the programme of their own whereas in the State like Uttarakhand only 25% of the GPs are implementing the programme. In a few states, the Block Development Office is also implementing the programme in the GPs. The percentage of such GPS is 40% in Haryana and 100% in Tamil Nadu. It is also noticed that the nodal agencies and the implementing agencies are not the same at GP level.

5.4: PRI involvement in institutional arrangement

Under the TSC programme, the State Governments have assigned specific functions to the Zilla Parishads, Block Panchayats and the Village Panchayats. Some of these functions are the community mobilization work for total sanitation, safe disposal of garbage, maintenance of Community Sanitary Complexes, monitoring the various activities and contribution of funds for conducting these activities.

The table given in Annex-16 highlights the performance or PRIs in regard to the institutional arrangements for the above mentioned activities in the sample states.

The following information has been emerged from this table.

i) Out of 1207 Gram Panchayats of the 20 Sample States, 84% of them have informed that the Government has assigned specific role to be played by them in the TSC programme.

ii) 82% of the Panchayati Raj Institutions of the Sample States are engaged in mobilizing the villagers towards the different received benefits under sanitation and use of safety toilets. In the States like U.P., M.P., Karnataka, West Bengal, Manipur and Sikkim 100% of the Gram Panchayats are involved in social mobilization with regard to total sanitation whereas only 19% Gram Panchayats of Bihar are involved in the social mobilization work. In case of Punjab, 59% of

the Gram Panchayats are motivating the villagers towards sanitation and its benefits. So far as safe disposal of garbage is concerned, 42% Gram Panchayats in the sample States are doing this work. It is understood from the table that 99% Gram Panchayats of Rajasthan and 97% Gram Panchayats of Karnataka are disposing the garbage of their areas safely in the proper places. The States, like U.P., Odisha and Assam are doing very bad in respect of safe disposal of garbage, because the Gram Panchayats engaged in these States for this purpose are only 7, 4 and 3 percent respectively.

iii) One of the most important functions of the Gram Panchayats is the maintaining the Community Sanitary Complexes. Almost all the Sample States have miserably failed in this respect. The field investigation indicates that only 11% of the Gram Panchayats are maintaining the Community Sanitary Complexes of the areas under their jurisdictions.

iv) The ZillaParishads and the Village Panchayats are assigned the task of monitoring and supervising the various works under Total Sanitation Campaign, such as organizing intensive campaigns, supervising the performance of the NGOs, Self Help Groups, Sanitary Marts and the Production Centres etc.. It is revealed during the field work that 69% of the Gram Panchayats of the Sample States are fully devoted to maintaining the above activities.

v) 36% of the Gram Panchayats are contributing funds from their own source of income for strengthening the Total Sanitation Campaign programme of the Government. Mainly the Gram Panchayats are spending such fund in various construction related activities of the Programme.

5.5 Village Water Sanitation Committee (VWSC):

The guidelines of Total Sanitation Campaign programme say that there should be Village level Water Sanitation Committee in each village under the control of the concerned Gram Panchayat. The PEO field investigation teams found the existence of Water Sanitation Committee in 65% of the Gram Panchayats of the Sample States. Generally the Village Water Sanitation Committees are engaged in doing the following works :

i) Conducting the Gram Sabhas to discuss on sanitation;
ii) Organizing campaigns for total sanitation;
iii) Managing the bank accounts;
iv) Procuring construction materials for RSMs and Community latrine complexes;
v) Collection of fund through a tariff for maintenance of Community Sanitary Complexes.

vi) Empowering of women to take part in the sanitation related decisions; and
vii) Organising the IEC Campaigns within the Gram Panchayat.

The table given in Annex-17 explains the extent of involvement of the Village Water sanitation Committees in the above mentioned activities.

It is shown in the table that that 65% of the Gram Panchayats in the Sample States have the Water Sanitation Committees at the village level. But only 7% of the Village Water Sanitation Committees have discussed issues relates to Total Sanitation Campaign in the Gram Sabha meetings.

Moreover, it is also found that the VWSCs are a somewhat active in repairing and maintenance of Community Sanitary Complexes in the Sample States (53% of them are engaged in the collection of tariff for this purpose), but their performance is quite poor in the activities like awareness campaigns organized by Gram Panchayats for the purpose of total sanitation, procuring of construction materials to the RSM and Community Latrine Complexes etc. Similarly, their effort is also invariably nil in all the Sample States with regard to the empowering of women for taking sanitation related decisions and in the IEC activities of the Gram Panchayats.

Chapter6
Individual HouseholdLatrines: Coverage, Constructionand UsagePattern

6.1 The Backdrop for the analysis: the Goals and the Guidelines

In this Chapter we present an analysis of the status of individual households in rural India. The Total Sanitation Campaign aims at accelerating the sanitation coverage in rural areas so as to ensure access to toilets to all by 2012. Also important is the fact that one of the Millennium Development Goals is to halve the proportion of people without sustainable access to basic sanitation by 2015. As per the Census Data, the proportion of rural households not having toilets has decreased from 78.1% in 2001 to 69.3% in 2011, recording a slow decadal decline rate of only 8.8%. This rate of decline, which takes into account the impact of Total Sanitation Campaign which was being implemented through the decade, clearly falls short of the desired rate. It is against this backdrop that we have in this chapter examined the issue from the individual household's point of view and tried to draw conclusions that might be relevant while drawing the future road-map for the Total Sanitation Campaign program.

We begin by referring to the Government of India's TSC guidelines on the issue, since this would serve as our reference point in our assessment of the status of toilets in rural India. A duly completed household sanitary latrine was expected to comprise a Basic Low Cost Unit with a super structure. The program is aimed to cover all the rural families. Incentives as provided under the scheme may be extended to Below Poverty Line (BPL) families, if the same are considered necessary for full involvement of the community. It was proposed that ideally, the construction of household toilets should be undertaken by the BPL household itself and on completion and use of the toilet by the BPL household, the cash incentive could be given to the BPL household in recognition of its achievement. The guidelines for the financing pattern were as follows:

TABLE 6.1: Incentive Pattern for IHHL as per GOI Guidelines

Basic Low Cost Unit Cost	Contribution Percentage					
	GOI		State		Household	
	BPL	APL	BPL	APL	BPL	APL
Model 1: Up to Rs. 1500 (including superstructure)	60	Nil	20	Nil	20	100
Model 2: Between Rs. 1500/- and Rs. 2000/-	30	Nil	30	Nil	40	100
Above Rs.2000/-	Nil	Nil	Nil	Nil	100	100

Other guidelines on financing and construction of IHHLs were as follows.

1. The incentive given by the Central Government would be admissible with reference to the cost of the basic low cost unit as given in the above Table and in no case will the overall quantum of Central incentive exceed the admissible amount.
2. As per the above table the maximum incentive per toilet available to a BPL household will be Rs. 1200.00 (Center + State), irrespective of the model chosen by it.
3. State Government may provide for more incentive for household toilet than the amounts prescribed above from its own funds.
4. The BPL household may also contribute to value addition to the basic unit at its own expense.
5. All houses constructed for BPL families under Indira AwasYojana shall invariably be provided with a toilet under this program.
6. It is assumed that APL families, through motivation, will take up construction of the house hold latrines on their own. The IEC activities will however cover all the families in the district, without exceptions. APL families facing cash crunch may access the revolving fund.
7. Construction of bucket latrines is not permitted in the rural areas. The existing bucket latrines, if any, should be converted to sanitary latrines and the unit cost and sharing pattern shall be identical to that of construction of individual house hold latrines.

We would now examine the status of household latrines based on the data generated by the PEO in the light of the above Goals and Guidelines and also try to assess the coverage, usage and quality of individual household latrines and their impact on households.

6.2 Profile of Households:

Household Level Schedules were canvassed in 20 states of India, namely, Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal, Manipur, Meghalaya and Uttarakhand: 200 households each in Sikkim, Manipur and Meghalaya, 400 inUttarakhand, and 700 in from the rest of the states. 11 household data were lost in Assam and only 30 households were canvassed in Punjab. Thus, data is available on a total of 11519 households. In 15 out of 20 selected states schedules were canvassed to only those selected households which have toilets. However, during actual canvassing, some of the households from these states have reported non-availability of toilets. (There are 16 such cases in Assam; 1 in Kerala; 7 in Odisha; 1 in Uttar Pradesh 38 in Haryana; and 6 such households in West Bengal) These form the part of our sample population. Households were selected randomly in the rest of the five sample states of Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Maharashtra.

TABLE 6.2: Profile of Selected Households

6.2.1: SOCIAL PROFILE

Beneficiary HHs	Social category				Family type		Av. No of Family Members
	SC	ST	O B C	Others	Joint	Nuclea	
1	2	3	4	5	6	7	8
11519	3074	1199	4525	2713	2711	8789	5
	26.69%	10.41%	39.28	23.55	23.54%	76.30%	
Coefficient of variation across states	81.89	217.20	54.07	92.65	47.62	14.68	12.10

6.2.2: EDUCATIONAL PROFILE

Total Number of family members	Educational Qualification					
	Illiterate	Primary	Upper-Primary	High-School	HS & Above	Unschooled literates
1	2	3	4	5	6	7
55549	16806	14906	9381	8135	5012	777
	30.3%	26.8%	16.9%	14.6%	9.0%	1.4%
Coefficient of Variation across states	40.30	26.83	19.77	52.32	62.25	245.05
No response was received in 0.96% cases.						

6.2.3: FINANCIAL PROFILE OF SELECTED HOUSEHOLDS

Beneficiary HHs	Belong to the BPL category	Family Annual Income			
		Up to 10, 000	10, 000-50, 000	50, 000-100, 000	Above 100,000
1	2	3	4	5	6
11519	9693	1331	7616	1941	617
	84.2%	11.6%	66.1%	16.9%	5.4%
Coefficient of Variation across states	23.57	150.98	35.84	84.06	184.19

6.2.4: OCCUPATIONAL PROFILE OF THE MEMBERS OF SELECTED HOUSEHOLDS

Family members	Unemployed retired/ ex-service/	House-wife	student/ minor	salaried/ job earners	Agriculture	Petty business	others	Work-force participation ratio
1	2	3	4	5	6	7	8	9
55549	5995	6517	15974	16938	4725	1735	3665	
	10.8%	11.7%	28.8%	30.5%	8.5%	3.1%	6.6%	48.7%
Coefficient of Variation across states	98.54	53.82	35.84	29.13	91.14	100.73	152.29	13.84
Others include non-reported cases where as the percentage of working population has been calculated excluding non-reported cases.								

*6.2.5: MAIN OCCUPATION OF THE SELECTED HOUSEHOLDS**

Beneficiary HHs	Main occupation of Household							Own agri. land	Own livestock
	Unemployed	Agriculture	Govt. job	Private job	Wage earner	Petty business	Others		
1	2	3	4	5	6	7	8	9	10
11519	22	2433	295	836	6593	831	484	4809	5407
	0.2%	21.1%	2.6%	7.3%	57.2%	7.2%	4.2%	41.8%	46.9%
Coefficient of Variation across states	149.12	72.09	144.60	64.13	30.46	95.44	112.18	48.09	31.47
* Not strictly comparable with Table 7.2.5 where 51.3% household members are out of workforce and also occupation classifications are different across the two tables.									

6.2.6: TYPE OF RESIDENTIAL ACCOMMODATION

Beneficiary HHs	Houses By Type				Houses By Ownership	
	Pucca	Semi	Kachha	Others	Own	Rented
1	2	3	4	5	6	7
11519	4263	2995	4249	10	11429	86
	37.0%	26.0%	36.9%	0.1%	99.2%	0.8%
Coefficient of Variation across states	78.19	66.61	76.07	165.04	0.93	115.10

Table 6.2 above gives the social, financial, educational and occupational background of the households and their coefficients of variation across states. This is important to understand the sample set we are working with so that our analyses and findings can be put into proper perspective.

In order to study the variations across states coefficients of variation have been calculated based on the percentage values of the parameters considered in this Chapter. Since there is no standard parameter to compare their variability, their relative variability has been assessed on the basis percentile distribution of coefficients of variation of all the 133 parameters considered in this Chapter. Accordingly, Chart I below has been prepared which gives the percentile values based on all parameters. These have been used as a reference point to assess the relative variability of various parameters. Lower the value of the coefficient of variation, lower is their variability across states.

CHART I

Reference points for Percentile distribution of Coefficients of	
5 percentile	13.98
10 percentile	23.90
20 percentile	40.52
25 percentile	48.03
Median (50 percentile)	83.41
75 percentile	128.70
90 percentile	195.99

Table 6.2.1 shows the social profile of the population and compares it with the available statistics on these parameters. As per 2001 census, the proportion of SC/ST population to total population was 16.2 and 8.2 respectively. Proportion of SC/ ST/ in the sample population is slightly higher than the all India proportions. This is because sample selection procedure stipulated that at least 2 out of every 10 household selected from each GP should belong the SC/ST category. Majority of households covered (76% at the all India level) are nuclear families. The proportion is maximum in Rajasthan at 99% and lowest in Gujarat at 61% (See Annexure Table 7.2.1 for state wise variations). The average number of members per household for our sample comes to 5 which is slightly less than the all India average of 5.4 for rural households as per the 2011 census.

It may be mentioned that since we have a fairly large sample set, the proportions arrived at in this chapter are good representatives of the population proportions. Using the standard procedure for finding confidence intervals for population percentages based on our data, i.e.

Population Proportion = Estimated Proportion ±SE × 1.96 (for 95% confidence interval)

And

Population Proportion = Estimated Proportion ±SE × 2.58 (for 99% confidence interval),

Where SE=√ (p × q / N).

***It can be seen (using maximum (p X (1-P)) value of 0.25 (½ X ½), that the range cannot exceed ± 0.91% and ± 1.2% for 95% and 99% confidence intervals respectively for the national level estimates* that are based on 11519 sample households. Confidence intervals (95%) for proportions based on Gram Panchayat level data would be ±2.82 percentage points. However they may vary (increase) if there is some data loss while making cross tabs or whena specific subset of data has been used to estimate a ratio.**

Confidence limits for state level proportions understandably would be much wider. For example, for states with a sample size of 700, the range would be ± 3.5 percentage points.

It is from this angle that we have felt that an analysis of coefficients of variation across state would be useful so as to give an idea of the relative variability of various parameters across states.

Confidence intervals for a few variables have been shown below to illustrate this point.

Illustrative Table on Confidence Intervals

Illustrative Parameters	Hand pump is the main source of water in the house	Toilets that neither have walls nor roofs	Toilets are cleaned daily in HHs having toilets	Money as a reason for OD in HHs not having toilets
Estimated Proportion	41.20%	20.00%	40.80%	70.70%
N	11519	9939	10002	1046
	Confidence Interval: 95%			
Range (+)	42.38%	20.79%	41.76%	73.46%
Range (-)	40.02%	19.21%	39.84%	67.94%
	Confidence Interval: 99%			
Range (+)	42.38%	21.04%	42.07%	74.33%
Range (-)	40.02%	18.96%	39.53%	67.07%

It can be said that most of the households in our sample are nuclear families with about five members. Coefficient of variation in these two cases (family type and number of family members per household) is lower than the 5th percentile value of 13.98 (Reference Chart I).

Table 6.2.2 gives the educational profile of the sample population. Approximately 70% of 55549 sample population is literate This is slightly less than the 74% literacy rate arrived at on the basis of the Census 2011 figures. Approximately 24% of the sample population has high school or higher degrees. State wise variation across states is quite low for education levels up to high school level and increases after that.

Table 6.2.3 above provides a glimpse of the financial profile of the households. It can be seen that 84.15% population belong to the BPL category. This is probably a result of conditional sampling. It is the households belonging to the BPL category which are entitled to central financial assistance under the scheme, though states were free to extend benefits to others as well**.** And as have been pointed out above, in 15 out of 20 selected states, schedules were canvassed to only those selected households which have availed facilities under the scheme to construct toilets, and hence the households mostly belong to the BPL category.

The annual family income is less than 50,000 per annum in 78% cases. There are large variations across states in terms of income levels. Predictably, in the states like Karnataka and Tamil Nadu 96% and 69% households have recorded annual family income of more than Rs. 50,000. In contrast, it is less than 1% in Andhra Pradesh, Madhya Pradesh, and Rajasthan.

Tables 6.2.4 and 6.2.5 give the occupational profile of the households while the Annexure Tables 6.2.4 and 6.2.5 record the state wise details. Majority of households at 57.24% have recorded wage earning as the main livelihood of the family. Though only 21% of households record agriculture as their main occupation, 41.8% of households own agricultural land. This implies that households having agricultural land, incuding small and marginal farmers have taken up wage earning and often wage earning has emerged as the more dominant occupation of the household. Fifty percent of the population is out of the workforce. The work participation ratio of the sample population at 48.7% is marginally higher than the census 2001 work participation ratio, which was 47%. Proportion of housewives is 12% of the total sample population, which is marginally lower than the all India census 2011 figure of 12.8%.

Table 6.3.1 shows the types of residential dwellings of the sample population and Annexure Table 6.2.6 records its state wise variations. 63% households stay in kachcha or semi-pucca houses and only 37% houses are pucca. However, 99% households have their own house, and the associated coefficient of variation is also lowest in our set.

Which households constituted our sample?

Our sample thus consists of rural households where the average sample household is poorer than an average Indian household. The majority of these households earn wages. Less number of households has permanent constructions than the all India average. Education levels are also slightly less than the Census 2011 estimates.

6.3 Household latrine and Water Supply, Location, Structure and Usage Patterns

Of the selected households, 86.8% households have toilets. As pointed out earlier, this should not be confused with the all India average, rather a product of conditional sampling. Rather we should look at the latest Census 2011 estimates on households without toilets. For rural India as a whole, the Census 2011 pegs the percentage of households not having toilets at a staggering 69.3%**.** *It is this statistics that we have used in the course of our analysis.*

6.3.1 Toilets and source of water

Table 6.3.1.1 gives the source of water for toilets in the households. We can see that the coefficients of variation for main sources of water other than drinking water are quite high across states. Annexure Table 6.3.1 may be seen for state wise variations. This is because the availability of different source of non-potable water in the houses varies widely across states. In the state of Andhra Pradesh, Gujarat, Haryana, Karnataka, Punjab, Sikkim, and Tamil Nadu more than 65% of selected households have recorded Tap as their main source of water. In Sikkim, Karnataka, and Tamil Nadu, the percentages are as high as 99.5%, 97.7%, and 91% respectively. In contrast, in the states of Assam, Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh and West Bengal, households have recorded Hand Pump as their main source of water. Wells are the main source of water in Kerala.

TABLE 6.3.1.1: Toilets and source of water

Beneficiary HHs	Houses wherein Toilet facility available	Main source of water in the house				Tap as a source of water where toilet facility is available	Where source of water is Tap, Water pipes connected to HH latrines
		Tap	Hand Pump	Well	Others		
1	2	3	4	5	6	7	8
11519	10002	4225	4740	1311	1233	3145	416
	86.8%	36.7%	41.2%	11.4%	10.7%	31.4%*	13.2%
Coefficient of Variation across	21.75	100.34	89.17	107.71	207.46		117.54

Source: Household Level Data.
State wise details available in the Annexure to the Chapter.
Coefficient of Variation based on percentage values.
*percentage is based on houses having toilets

It is found that, even the households that have reported tap water as their main source of water, only in 13.2% households taps are connected to latrines. This can perhaps be explained by the fact that in most of the households, it is the community tap that is the source of water and hence the question of connectivity to the latrines does not arise. The coefficient of variation across states is 117.54. But if we consider only those states where taps predominate as the main source of water as per our sample, the coefficient of variation comes down to 83.5, close to the median value. Sikkim is an outlier, where 37% of households having tap connection reported that water pipes are connected to their latrines. Karnataka, where 98% households have reported to have tap water, less than 2% households get tap water in their toilets. Overall, the percentage of households recording availability of tap water to latrines (including households that do not have tap water connectivity) is a mere 3.61%.

6.3.2 Location and type of toilets

Table 6.3.2.1 provides an idea about the location and type of rural toilets. Once again, state wise details would be available from Annex-24. Expectedly, this being a survey of rural households, toilets are situated outside the house in the majority of households (73%). However, in 12.3% households, toilets are situated inside the household as well as in the front portion of the house. *This is an unsuitable part for construction of toilets and should be discouraged.*

TABLE 6.3.2.1: Location and type of toilets

HHs where in Toilet facility available	Location of Toilets							Latrine Type	
	Inside	Outside	Front	Back	Inside and front	Outside and Back	Bucket toilet	Single pit	Double pit
1	2	3	4	5	6	7	8	9	10
10002	2705	7291	3361	6633	1233	5164	445	8541	997
	27.0%	72.9%	33.6 %	66.3%	12.3%	51.6 %	4.4%	85.4%	10.0%
Coefficient of Variation across states	91.58	34.25	71.73	36.59	164.19	48.10	502.97	30.89	175.43

Source: Household Level Data.
Coefficient of Variation based on percentage values.
HHs with incomplete/inconsistent information ignored.

Also most toilets are Single pit type. Coefficients of variations across states associated with these parameters are also lower at less than the 20th percentile value. Notable exceptions are Rajasthan and Haryana where latrines are situated inside the house as well as in the front portion of the house in more than 64% households. Though in 72.2% households toilets are situated inside the houses in Assam, 98% of them are at the back of the house. These choices are often the result of availability of space and sometimes that of local custom.

At the all India level, only 4.4% of rural households still have bucket type toilets. But in Manipur 198 out of 200 households visited had bucket type toilets. 12 to 16% households of Andhra Pradesh, Odisha and Tamil Nadu still have Bucket type toilets. Proportion is negligible in rest of the states and UTs. *It is necessary that steps are taken to convert these toilets to single or double pit ones, which is the guideline under TSC as well.*

6.3.3 Structure and construction of Toilets

Table 6.3.3.1 is on structure of toilets. Annex-25 may be referred to for state wise details. It can be seen that only 59% households have toilets that are both covered on all sides and have a roof.Coefficients of variation being near the 20th percentile mark, the estimate may be considered fairly similar across states.

TABLE 6.3.3.1: Structure of toilets

HHs where in Toilet facility available	Toilet is covered * and has roof	Toilet is covered but does not have roof	% of people reporting inconvenience due lack of roof	Neither covered nor has a roof	% of people reporting inconvenience due lack of roof and side walls	Drainage Provision available (% is that of total HHs)
1	2	3	4	6	7	8
10002	5854	1670	97.9%	1991	99.0%	3517
	58.9%	16.8%		20.0%		30.5%
Coefficient of Variation across states	47.85	108.71	7.99	110.69	8.42	114.68

Source: Household Level Data.
* covered with 3 side walls with a front door. Coefficient of Variation based on percentage values.
HHs with incomplete/inconsistent information ignored.

The percentage ranges from only 12.3% in West Bengal to 99 % in Sikkim. The same is more than 90% in the states of Gujarat, Karnataka, Kerala, and Maharashtra and the Meghalaya.

However, with the availability of better quality of latrines under TSC in many cases and under other schemes including IAY, and also with a general improvement in the standard of living of the rural households, resentment was noticed about the use of low cost latrines. As have been analyzed later in this Chapter, lack of adequate government incentives has been recorded as the most important cause of dissatisfaction by the households. 75% Households having toilets and 92% Households not having toilets have recorded this factor as a cause of discontent. Regional variations across states are also quite low. The coefficients of variation across states come to 34 and 8.05 respectively (Tables 6.6.2A and B). Naturally, better construction figures prominently in their wish list.

The following table analyses suggestions received from households on construction of toilets. It can be seen that there is a demand for better toilets in quite a few states. Most of these states have problems with the depth of the pit as well.

TABLE 6.3.3.2: Requirements listed by Households on Structure of toilets

	HHs reporting requirement of at least one of these (wall/ roof/ door) as a percentage of all HHs having toilets	require all: Walls, door and roof	Column 3 as a percentage of houses having toilets	require all: Walls, door and roof and also have problems with pit depth	Column 5 as a percentage of Column 3
1	2	3	4	5	6
All HHs	43.1%	3443	32.2%	2618	76.0%
Coefficient of Variation across states	78.9		117.3		47.7
Correlation (across states) between Column4 and Column 6: 0.68					
Source: Household Level Data. Coefficient of Variation based on percentage values. HHs with incomplete/inconsistent information ignored.					

It would be contextual now to examine the requirements listed by households on construction of toilets. Table 6.3.3.2 is an analysis of the same. It can be seen that in most states there is a high incidence of toilet-structure related issues. 43% of all households having toilets have voiced such requirements. It was noticed in West Bengal that in most households toilets have been covered with cheaply available materials which are often not to their satisfaction. Hence there is this need for construction of complete toilets, instead of simply installing toilet pits. 32% of households having toilets have reported the need for walls, doors, as well as roofs for their toilets. Such problems were non-existent in the states of Karnataka, Kerala, Sikkim Tamil Nadu, Haryana and Gujarat. All households in Manipur and Meghalaya have issues with roofs, walls, doors as well as the depth of the pit. Moreover, as noted earlier, Manipur also has many bucket type toilets. Thus the perception of construction related deficiency seems to be the maximum in these two states.

It can further be seen that most of the households having issues about doors, roofs and walls, also have problems with the depth of the toilet pit. 76% of those households who have expressed the need for walls, roof, as well as door are also dissatisfied about the pit-depth. The coefficient of correlation between 'the requirement of wall, door and roof' and 'the requirement for better pit-depth is 0.68 across states indicating that these two variables are fairly correlated across states.

In the course of our canvassing in the state of West Bengal, it was noticed that a specially constructed low cost toilet is used here. Though its design is scientific, low pit-depth associated with these toilets often causes scepticism among users.

It is necessary that installation of such toilets be suitably backed-up by adequate awareness exercise about their efficacy.

6.3.4 Usage of toilets and Open Defecation

Table 6.3.4 is an analysis of non-usage of toilet by rural households and extent of open defecation in rural India. This exercise is based on only those households who have toilets in their house. A rural household is considered as practicing OD if at least one member of the household is doing so.

It can be seen that toilets are not being used by all family members in spite of availability. 20% of households having toilets reported that at least one of the family members resort to open defecation. High default rates are associated with high coefficients of variation across the states.

TABLE 6.3.4.1: Usage of toilets

HHs where in Toilet facility available	expressed unwillingness to use in spite of toilet availability	Toilet not being used daily in spite of availability	% of HHs where men are not using toilets in spite of availability	% of HHs where women are not using toilets in spite of availability	% of HHs where children are not using toilets in spite of availability	Additional toilet requirement for HHs already having toilets
1	2	3	4	5	6	7
10002	13.5%	19.8%	18.4%	11.6%	14.5%	11.4%
Coefficient of Variation across states	95.49	85.22	91.25	91.24	82.83	110.84
Source: Household Level Data. Coefficient of Variation based on percentage values. HHs with incomplete/inconsistent information ignored.						

The incidence of open defecation is less than 1% in case households in Sikkim and Kerala. Percentages are quite low in the states of Assam (2.3%), Meghalaya (4.0%) etc. On the other hand, high incidence of open defecation was noticed in the states of Jharkhand,Uttar Pradesh, Bihar, Madhya Pradesh and Odisha. Clearly, concerted awareness campaign is required in the states with high default rates.

However the incidence of open defecation is highest among men, followed by that of the children, which is more than that of women. As will be seen later in this Chapter, this mindset is also reflected in the perceived benefits reported by the Households and while campaigning for better sanitation in rural India, this factor may be reckoned with while trying to convince households on spending money on toilets and sanitation.

A) Estimating Open Defecation in Rural India***:*** Past lessons have taught us that it is more important to ensure ODF (Open Defecation Free) habitations, than simple physical construction of household toilets. It is commensurate with the present demand driven approach of the TSC towards sanitation and it is from this standpoint that awareness becomes the key issue. In our sample of 11519 households, 3639 households have reported that at least one member of their family resorts to open defecation. But this percentage of 31.7 cannot be taken as the all India estimate since in fifteen out of the twenty selected states only those households were selected that have toilets.

In order to arrive at the all India and state level estimates, we have used the percentages of households where at least one member of the household resorts to open defecation out of households having toilets and that of households not having toilets based on our data. We have then taken the latest Census 2011 figures on households with no toilets. Open Defecation (OD) estimates have been calculated by using the open defecation rates available from our sample on the Census 2011 data on availability of toilets.

The formula used is:
Estimated household OD% in Rural India= (Achievement % X Percentage of HHs resorting to OD out of HHs having toilets) + ((100-Achievement %) X Percentage of HHs resorting to OD out of HHs not having toilets)

The estimated open defecation percentage in rural India(only including the sample states) thus comes to 72.63%. State wise estimates are available from the Annex-38.

B) The two components of Open defecation: It is necessary to understand at this point that open defecation in rural India clearly has two different components, namely,

(1) Open defecation due to non-availability of individual or community toilets; and

(2) Open defecation in spite of availability of toilets. This again would have two components, namely, (a) Mindset and age-old practices, and (b) inadequacy of toilets vis-à-vis requirement.

As can be seen from the Table 6.3.4.4A, 15% of households having toilets and reporting open defecation have quoted not having sufficient number of toilets as a reason for open defecation. Using the same Census 2011 data and the proportions of OD estimated from our data, we may differentiate between these two components of OD. As can be seen from the Annex-38, out of the 73 households per 100 households that practice open defecation, 66 households are forced to do so due to unavailability of individual household or community toilets, and 7 household do so in spite of having toilets. Moreover, some of these households may be doing so due to inadequacy of toilets vis-à-vis requirements. Using the 15% estimate of Table 7.3.4.4A, this would imply that

1 out of these 7 households are forced to resort to open defecation due to the inadequacy of the number of toilets in the household. The estimates are summarized below:

Thus, according to our estimates, out of the 73 households per 100 rural households where at least one member of the family practices open defecation, 66 households are forced to do so due to unavailability of individual household or community toilets, 1 household is forced to resort to open defecation due to the inadequacy of the number of toilets in the household and 6 households do so in spite of having toilets. Clearly, out of the two component of open defecation, non-availability or inadequate availability of toilets is by far the more important issue.

Table 6.3.4.2 indicates the relative position of the states in terms of the availability of toilets and open defecation in spite of having toilets. The states that fall in the upper-left corner are the better performing ones and those that fall in the lower-right corner are the ones that require most attention on both counts.

TABLE 6.3.4.2: Relative Position of States in terms of availability of toilets, and open defecation in spite of having toilets

	OD<10%	10%<OD<20%	20%<OD<30%	30%<OD<40%	40%<OD
Toilet	Kerala				
80%<Toilet facility<90%	Sikkim Manipur				
70%<Toilet				Punjab	
60%<Toilet					
50%<Toilet facility<60%	Assam Meghalaya	Uttarakhand	Haryana		
40%<Toilet	West Bengal				
30%<Toilet facility<40%	Gujarat Maharashtra	Andhra Pradesh	RURAL INDIA		
20%<Toilet facility<30%	Karnataka	Tamil Nadu			Uttar Pradesh
10%<Toilet facility<20%			Rajasthan	Madhya Pradesh Odisha	Bihar
0%<Toilet					Jharkhand
Source: Census 2011 data on availability of toilets & HH level schedule data on OD in spite of having toilets					

The following conclusions emerge.

1) Given that 67 out of the 73 households practicing open defecation are forced to do so due to unavailability of individual household or community toilets, or insufficient number of toilets, availability of toilets stands out as a much larger issue.
2) Notwithstanding considerable regional variations, given the availability of toilets, less than 10% households practice open defecation in 9 out of the 20 states.
3) Open defecation is the highest in the heartland of India: in the states of Uttar Pradesh, Bihar, Jharkhand, and Madhya Pradesh, as well as Odisha.
4) While in Rajasthan, we found OD to be slightly lower than other poor performers, availability of toilets is one of the lowest in Rajasthan.

C) On DDWS/TSC data on availability of toilets: As on March 2012, ratio of achievement to target of construction of rural household toilets as per the tsc.gov.in data comes to 68.1%.This figure is at great divergence with the census data of 30.7% rural households having toilets**.** Perhaps the most probable reason for this is non-revision of target figures. Indeed the tsc.gov.in data comes with a disclaimer that:"Percentage (%) shown on the basis of Target fixed under TSC program".The actual number of households may have increased from the number of households being used as target figure in the tsc.gov.in data. For example, in Sikkim, achievement (58 thousand) exceeds target (51 thousand). In contrast, census figures show that toilets are available in only 84% of rural households in Sikkim. This is possible when BLS targets have not been revised over the years or there were problems with the BLS itself it the first place.

TABLE 6.3.4.3: Status of Surveys on Toilet Requirement

Number of GPs from where BLS survey data was available			Number of GPs from where estimates from a later survey was available		
HH Latrine needs of BPL	1057	89.0%	HH Latrine needs of BPL	709	59.7%
HH Latrine needs of APL	1013	85.3%	HH Latrine needs of APL	684	57.6%
Source: GP level Schedule * Excludes Sikkim since achieved cent percent sanitation.					

In the course of our data collection, we had encountered this incidence of non-revision in many of our sample districts.Table 6.3.4.3 may be seen in this context. It can be seen that the BLS survey figures were available from the majority of the 1207 Gram Panchayats to whom the GP level schedules were canvassed. However, revised figures were available from 60% (BPL) and 58% (APL) of the Gram Panchayats only. Census estimates show that number of households have increased from 13.8 crores in 2001 to 16.8 crores in 2011, recording a 21% percent growth. Once again this factor is required to be taken

into account while talking of achievements. The requirement of immediate revision of targets is clearly brought out from this exercise.

D) On CWC Usage when Individual toilets are not available: Another point to note here is that, a small percentage of HHs in the states of Gujarat, Tamil Nadu, and Haryana are using community toilets as an alternative to open defecation. The percentage is an impressive 25% in the State of Maharashtra. The success of Maharashtra was the result of a strategic mix of constructing community toilets for the access to the very poor and financial incentive to each family to construct its own toilet. While this model was successful in Maharashtra, the idea of using community toilets as an effective alternative for the poorest section has not really caught up in the rest of the states.

In fact the Maharashtra model of Community Led Total Sanitation (CLTS) demonstrated a policy departure to show that an Open Defecation Free (ODF) campaign that exhorted communities to end this practice and attain ODF status instead of an emphasis on individual toilet construction and counting toilets as a measure of progress, gave notable results such as achieving a spurt in coverage. This is one measure of eradicating open defecation that needs to be seriously pursued in all the states.

E) Reasons for OD for Households having Toilets: The following two tables, Table 7.3.4.4A and 7.3.4.4B attempt to analyse the reason for open defecation across our sample households. Expectedly, lack of awareness and established age old practice stand out as the predominant reasons in case of households where toilet facilities are already available. Clearly, spreading of awareness is the only weapon in our hand to counter this mindset.

TABLE 6.3.4.4A: Reasons for OD for Households having Toilets

Sl. No.	States	Households reporting OD	Monetary Reason	Lack of Awareness	Established age old practice	No existence of CSC in the village/ inadequate IHHL	Insufficient no. of latrines in times of increased demand
1	2	3	4	5	6	7	8
	Total	**2233**	**237**	**1166**	**1152**	**800**	**336**
			10.6%	**52.2%**	**51.6%**	**35.8%**	**15.0%**
Coefficient of Variation across states			109.98	58.67	57.32	66.51	147.03

Source: Household Level Data. State wise details available in the Annexure to the Chapter.
Coefficient of Variation based on percentage values.

Columns 7 and 8 give an indication about the gap between availability and adequacy of toilets. 36% of households reported that they are forced to resort to open defection due to lack of CSC/adequate household latrine, which is further corroborated by the assertion of 15% of households, that availability of latrines are inadequate during hours of increased demand for the same. 11% of the households having toilets have actually mentioned that there is a requirement of additional toilets in their households (col7: Table 6.3.4.1)

Households not having toilets have quoted monetary reasons and non-existence of Community latrines as the two most important reasons for open defecation. Non-availability of HH toilets, coupled with non-existence of Community latrines effectively leaves no other option for these Households.

TABLE 6.3.4.4B: Reasons for OD for Households not having Toilets

Sl.No.	States	HHs reporting OD	Monetary Reason	Lack of Awareness	Established age old practice	No existence of CSC in the village
1	2	3	4	5	6	7
	Total	1406	994	475	515	1055
			70.70%	33.80%	36.60%	75.00%
Coefficient of Variation across			46.54	88.30	77.95	20.44

Source: Household Level Data. State wise details available in the Annexure to the Chapter.
Coefficient of Variation based on percentage values.
Analysis of only those Households that have said 'yes' to OD and 'No' to having a toilet.

F) Education levels and Open defecation:

TABLE 6.3.4.5: Education levels and Open defecation

Education Levels of family members (age 10 and above)	Open defecation
	Percentage of individuals residing in Households where at least one member is practicing OD
0-Illiterate	33.12%
2-Primary	24.98%
3-Upper Primary	21.99%
4-Higher School	15.97%
5-Higher Secondary & Above	12.93%

Source: Household Level Data.
Incomplete data ignored.

Intuitively however, level of education in general appears to be a very important factor determining the open defecation rates. Indeed the spread of education is closely associated with spread of awareness. In order to examine the link between the two, individual family members' education data was grouped as per their level of education. The percentage of family members belonging to those households where at least one member was practicing open defecation was calculated.

The results are presented in Table 6.3.4.5 and they are obvious. As expected, there is strong positive relationship between decrease in open defecation and general level of education of the households**.** This is a very important finding that we have used while advancing our recommendations on the issue.

G) Open defecation: An analysis of Census Data

Before we move on from our analyses of open defecation in rural India, we present a comparative analysis of data available from the Census since 1991. Data on household toilets were not available prior to that. Annex-39 provides data on availability of rural household toilets for all states and Union Territories as available from the three Censuses. Columns 3, 4, and 5 present the actual census data on percentage of rural households having toilets. Columns 6 and 7 indicate the rate of growth and Column 8 indicates the change in the rate of growth during these two decades. Now, it can be assumed that the 1991-2001 rate of growth reflect a situation prior to impact of the TSC, and the 2001-2011 rate of growth captures the post TSC scenario. Hence Column 8 reflects the improvement or otherwise after the introduction of TSC. Similarly, in absolute terms, Columns 9 and 10 indicate the increase in absolute numbers and Column 11 indicates additional number of toilets added during the second decade. Once again, it can be assumed that the addition in rural toilets in 1991-2001 reflects a situation prior to impact of the TSC, and that in 2001-2011 captures the post TSC scenario and Column 12 reflects the improvement or otherwise after the introduction of TSC.

As can be seen from the table below, at the all India level rate of addition of new toilets have been slower by 3.6% in the post TSC decade. This finding may apparently appear shocking and contrary to popular expectations. However this is a very crude comparison and various factors are involved here. Firstly, such a comparison is based on an underlying assumption of linearity, which, in all probability, is not true. Secondly, this factor hides the growth of number of households over the two decades. Indeed, if actual numbers are considered, there has been an increase in the actual number of toilets added during 2001-11, as compared to the previous decade.

To conclude, there has been an increase in the actual number of toilets added in the post TSC decade, though the rate of addition of new toilets has been slower in percentage terms.

The only problem states, as identified in our preceding analysis as well, are, Bihar, Jharkhand, Uttar Pradesh, etc. Negative rates of addition in the states of Kerala, Manipur, Nagaland, Tripura, Sikkim etc are acceptable since they either have very high proportion of rural toilets to begin with, and/or they added a considerable number of rural toilets in the previous decade itself. This leaves us with the state of Assam. Even after adding 1499 thousand toilets in the decade 1991-01, only about 60% rural households had toilets in Assam. However, only 688 thousand rural toilets were added in Assam during the post TSC period.

6.4 Household latrine: Cleaning and maintenance

This section analyses the cleaning and maintenance of toilets by households. 85% Households having toilet facilities have reported that they clean their toilets at least once a week.

TABLE 6.4.1: Cleaning of toilets by Households having Toilet Facility and adequacy of Water Supply

Houses wherein Toilet facility available	Cleaning latrine/bathroom						Whether water supply is adequate for flushing (all Households)		Percentage of HHs who have adequate water for flushing among those who have Toilets
	Daily	Weekly	Monthly	Rarely	Not using due to demolition	Irregular	Yes	No	
1	2	3	4	5	6	7	8	9	10
10002	3953	4255	410	196	582	293	5288	4239	
	40.8%	43.9%	4.2%	2.0%	6.0%	3.0%	45.91%	36.80%	55.3%
Coefficient of Variation across states	80.90	62.40	145.70	175.07	155.12	211.01	76.54	95.46	80.82

Source: Household Level Data.
Coefficient of Variation based on percentage values. HHs with incomplete/inconsistent information or non-response cases ignored.
Analysis of only those Households that have said 'yes' to having a toilet.

The coefficient of variation for daily cleaning is less than the median value. If we combine the data for daily cleaning and weekly cleaning, coefficient of variation comes down to 20.1, which is less than the 10th percentile value. Thus based on our data it can be said that households across the country have reported to be cleaning their toilets fairly regularly, that is, at least once a week. The states that can be called outliers in this respect are, Bihar (only 29% of

households reported to clean at least once a week), and Jharkhand(only 38.41% households reported to clean at least once a week). Madhya Pradesh (33%) and Rajasthan (24%) have high percentage of unused toilets due to demolition of existing toilets.

A matter of concern is that only about 46% Households have reported to have adequate water for flushing. As is well known, water supply and sanitation must go hand in hand and it is important that proper attention is given to availability of adequate water to Households. The percentage is slightly higher for households that have toilets, but even for these Households the percentage comes to only about 55%. Understandably, the percentages for those having toilets and those Households who do not have toilets are similar in states where only households having toilets are included. But these vary considerably in states where Households have been selected randomly irrespective of whether or not they have toilets.

Table 6.4.2 gives an idea about difference in the adequacy of water between households having toilets, and those who do not. In this table we have considered only those states where households were selected randomly.

TABLE 6.4.2: Adequacy of water supply for flushing in states where households were selected randomly

Adequacy of water supply for flushing	Andhra Pradesh	Tamil Nadu	Maharashtra	Gujarat	Karnataka	Average for these states
As a percentage of only those Households that have toilets	66.1%	96.0%	97.6%	98.9%	100.0%	92.5%
As a percentage of all Households	33.4%	41.4%	66.6%	68.3%	59.0%	53.7%
Source: Household Level Data.						

It can be seen that the percentage of households having adequate water for flushing is much higher among those households that have toilets. This indicates that in the states where only those Households that have latrine have been considered, a high percentage of Households having adequate water supply does not reflect the true picture. If we juxtapose this finding (as in Table 6.4.2) on the overall percentage of 46%, it will be clear that the actual availability for the country as a whole will be much lower than 46%.

As per the indiawater.gov.in website, the percentage of actual Households covered against the 20-Point target as on 08.03.2011, was 62%.It can be said that villagers' perception in terms of availability of water for flushing toilets is way lower than this figure**.** It is therefore imperative that the issue of adequacy

of water receives necessary attention so as to ensure proper utilization and cleaning of toilets

From Table 6.4.1 it can be seen that once again the coefficients of variation on adequacy of water have large values reflecting relatively high interstate disparity. The variations are apparently lower in case of Households having toilets but that is largely due to conditional sampling. Less than 10% Households have reported to have adequate water for flushing in the states of Bihar, Jharkhand, Manipur and Madhya Pradesh and Meghalaya. In Jharkhand and Bihar, such facilities are non-existent. The percentages are 0% and .1% respectively.

TABLE 6.4.3A: Maintenance: The Household Standpoint

Toilets available	trained manpower available	In absence of trained manpower way of keeping latrine functional				
		Self	Maintenance not required	Searching trained manpower to reinstall toilet	Toilet damaged	Others
1	2	3	4	5	6	7
10002	3950	4671	187	68	247	324
86.83%	39.5%	85.0%	3.4%	1.2%	4.5%	5.9%
Coefficient of Variation across	99.08	38.05	689.90	197.40	521.33	153.10

Source: Household Level Data. State wise details available in the Annexure to the Chapter.
Coefficient of Variation based on percentage values.

Table 6.4.3.A looks at the maintenance aspect of the toilets from the villagers' point of view. Majority of Households reported to be maintaining their toilets themselves. The figure comes with low coefficient of variation as well. But what are the implications? Are they really maintaining the toilets themselves or is it that toilets are normally durable enough to require no maintenance. It may be noted from table 6.6.2A that more that 27% Households having toilets have complained about the durability of toilets constructed. Similarly, as per Table 6.6.2 on suggestions, 46% Households have voiced the need for provision of regular maintenance of existing toilets.

TABLE 6.4.3B.1: Maintenance: The RSM/PC Standpoint

RSM/PCs that provide maintenance support							
RSMs Providing maintenance support	Repair of school latrine	Up-gradation of IHHL models	When the pit is filled the mart shift to another place	Trained masons are there for repair maintenance services after construction	Removal of blockage, composting	SHG/ others maintain	Others
1	2	3	4	5	6	7	8
22	2	2	2	2	3	1	10
28.6%	2.6%	2.6%	2.6%	2.6%	3.9%	1.3%	13.0%

TABLE 6.4.3B.2: Maintenance: The RSM/PC Standpoint

RSM/PCs that don't provide maintenance support							
RSMs not Providing maintenance support	No repair required/no complaints received under guarantee period	Due to lack of demand	No demand from individual households for repair and maintenance	Fund is not available for repair of institutional toilets	No provision in this regard/RSM does only selling under TSC	Others	No reason stated
1	2	3	4	5	6	7	8
55	1	5	9	2	9	12	15
71.4%	1.8%	9.1%	16.4%	3.6%	16.4%	21.8 %	27.3%
Source: RSM/PC Schedule and Household level schedule. HHs with incomplete/ inconsistent information ignored.							

We may now have a look at the maintenance services provided by the RSM/PCs. Data is available in Table 6.4.3B1&2. From the information available from the RSM/PC level Schedules, it was seen that out of 77 RSM/PCs surveyed, only 22 centers, i.e., only 29% of RSM/PCs have replied to have something to do with maintenance of HH toilets**.** Only 2 (2.6%) RSM/PCs have informed that trained man-power is available for repair and maintenance. Moreover, there is a clear divergence between HH and RSM/PC views on need for such maintenance. As noted above, 46% Households inform that there is need for provision of regular maintenance of existing toilets. As against this, 27.3% RSM/PCs feel that there is no demand or requirement for maintenance of Households latrines.

The conclusion that emerges therefore is that there is a genuine need for trained personnel in the villages, or respective marts to provide maintenance services. In the absence of that, the villagers themselves undertake

repair and maintenance jobs. Surely, that leaves much to be desired. Also, given this disconnect between the perception of the villagers, and the RSMs, adequate awareness needs to be spread in this regard. There may actually be a market for such repairs which would be in the interest of the RSM/PCs to tap. This can be created by making the RSM/PCs aware of this need of the Households for maintenance and making the Households aware, in turn, of the availability of such facilities in the nearby Marts.

The whole idea behind a RSM, as envisaged by the Govt., was to ensure an effective supply chain and develop alternate delivery mechanisms to meet community needs by providing for stronger backup systems such as trained masons and building materials through rural sanitary marts and production centres. As noted in the Chapter on Working of RSM/PCs, it appears that this mechanism has not been adopted in true spirit by the states. More on this issue has been discussed in the concerned Chapter.

6.5 Perceived socio-economic benefits

TABLE 6.5.1: Perceived Socio-Economic Benefits

Households having toilets	Time to go for employment	More time available for income	Reduced medical expenses due to illness *	Improved general wellbeing	women feel more secure with the construction of household and
1	2	3	4	5	6
10002	5523	6361	7520	8800	9570
	55.2%	63.6%	75.2%	88.0%	95.7%
Coefficient of Variation across states	57.96	41.38	31.29	14.12	6.08

*during the period since TSC was implemented in the village
Source: Household Level Data.
Coefficients of Variation based on percentage values.
Analysis of only those Households that have said 'yes' to having a toilet.

This section seeks to analyse the impact of TSC on rural households. Table 6.51 summarizes the responses of the Households having toilets on their perceived social benefits.

It can be seen that an improved sense of well being is associated with availability of toilets. It has often been argued in various studies and reports that construction of toilets simply for the sake of achieving targets without concurrent creation for awareness and for their use may not actually reduce open defecation to the desired extent.

While there is no denying this contention, the result that emerges from our study is that an overwhelming majority of households associate availability of toilets with a better quality of life. As can be seen from the table 6.5.1, the associated coefficient of variation across states is close to the 5th percentile value, indicating that the sentiment is common across states.

A) Sense of well-being and Open Defecation: Table 6.5.2 correlates improvement in the sense of well-being with open defecation. States that have been considered here are those that have high percentage of open defecation in spite of having toilets.

TABLE 6.5.2: Sense of well-being and Open Defecation

Improved sense of well-being among	Bihar	Haryana	Jharkhand	Odisha	Rajasthan	Uttar Pradesh	Total (all states)
	1	2	3	4	5	6	7
Households that have toilets and do not resort to open defecation	99.2%	96.3%	96.2%	100.0%	99.6%	76.0%	95.9%
Households that have toilets but some of the family members resort to open defecation	91.0%	72.4%	89.1%	100.0%	95.3%	57.4%	72.5%
Source: Household Level Data. Analysis of only those Households that have said 'yes' to having a toilet. NA dada ignored while making Cross-Tabs							

As we have seen above, and has been brought out by various other studies as well, age-old practices and mind set accounts for open defecation in a significant number of cases. Understandably Households that have stopped the practice of open defecation have a higher perception of well-being. But even in Households having toilets where some of the family members still resort to open defecation, having or owning a toilet brings about a sense of well-being, perhaps as an indication of a better quality of life**.**

Another important sentiment that emerges is that women feel more secure with availability of toilets. 96% Households feel that security of women improves with availability of toilets. The associated coefficient of variation across states is also quite low at 6.1%. Correlating this finding with availability of toilet facility, it was noticed that 99% of Households that have toilets which are being used by women and 99.1% of Households which do not have toilets, felt that availability of toilets was positively related to security of their women. Even among the Households that have toilets which are not being used regularly

by women, 87.4% of Households admitted that women feel more secure with availability of household latrines.

B) Availability of toilets and Income: 63.6% and 55.2% Households have reported that time available for income-generating-activities as well as time to go for employment has increased after construction of household latrines Table 6.5.1). Though not as low as in case of general sense of well being or security of women, coefficients of variation are not very high for these parameters. Less than 20% in Bihar, Kerala Jharkhand and Uttarakhand feel that availability of toilets has had any significant contribution to improvement in the time to go for employment, while more than 90% of respondents in Tamil Nadu, Karnataka, Meghalaya, Rajasthan and Manipur think so.

As one would expect the correlation of coefficient between these two parameters, namely, time available for income generating activities and time to go for employment is quite high at 0.79. But coefficient of variation associated with pursuance of other income generating activities is lower at 41.38%, which is close to the 20th percentile value of our reference frame at Chart I. Significant exceptions are the states of Uttarakhand and Uttar Pradesh, where though 87% and 63% households have mentioned that they have increased time to pursue other employment generating activities, only 20% and 34% Households have reported that availability of toilets have improved their time to go for employment.

Verifying whether there has been any actual improvement in their income due to TSC is difficult since our data is primarily cross-sectional. However we have tried to look at the issue from two angles.

Firstly an attempt has been made to compare the average annual incomes of those Households who have toilets and are regularly using them with that of those who either do not have toilets or not are regular in using them. The other approach is to compare the average annual incomes of those households that belong to NGPs with those who do not. It may be kept in mind the average income used here has a component of arbitrariness in terms of the mid-value of the highest income group. However since the said arbitrariness should cancel out across groups, the tables below may be taken as a fairly good estimate of the relative level of different households groups.

Annex-40 gives the state wise average annual incomes of those Households who have toilets and are regularly using them with that of those who either do not have toilets or not are regular in using them. It can be seen that in all states estimated mean annual income of those who are using toilets is more than that of those who do not have toilets.

Moreover, if we consider only those states where only those households were selected that have toilets, namely, Assam, Bihar, Haryana, Jharkhand, Kerala, Madhya Pradesh, Manipur, Meghalaya, Odisha, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, and West Bengal, in most states, barring Haryana, Uttarakhand, Punjab and Rajasthan, the estimated mean

annual income of those who are regularly using toilets is more than that of those who are not using toilets regularly. Of these Punjab may be ignored since only 30 Households from Punjab are part of our sample set. Difference in Rajasthan is marginal. Haryana and Uttakhand are the only two states in our sample where the average annual income of households practicing open defecation is higher than those who do not resort to open defecation.

Karnataka and Tamil Nadu are truly outliers in terms average annual income levels, where annual average incomes are way higher than the rest of the state. 669 out of 697 households of our sample from Karnataka fall in the highest income bracket. It is because of the high annual income of even those Households that do not have toilets in these states, the average estimated annual income of the high-income group for the sample as a whole has a bias, and at the all India level, Households not having toilets seem to have a higher estimated annual income. But as can be seen from the table, in each of the selected states, the estimated annual incomes of Households not having toilets are less than that of those having toilets and are using them regularly. As can be seen from the same table, once we remove the high performing state of Karnataka from the sample set, the result holds true at the all India level as well.

Thus the following results emerge:

1) In each of the selected states, the estimated annual incomes of Households not having toilets are less than that of those having toilets and are using them regularly.
2) In most states, barring (Haryana, and Uttarakhand) the estimated mean annual income of those who are regularly using toilets is more than that of those who are not using toilets regularly.

Though such a correlation cannot prove anything conclusively, nevertheless it would appear that TSC has perhaps been able to bring about a certain amount of improvement in the family incomes of the beneficiary Households.

TABLE 6.5.3: Annual Income of Households: NGP versus Non-NGP

Estimated Mean Annual Income	Up to Rs.10,000	Between Rs.10,000-50,000	More than Rs. 50,000
All Households	11.6%	66.1%	22.3%
Households not falling in NGPs	11.7%	66.1%	22.2%
Households falling in NGPs	3.0%	70.0%	27.0%

To strengthen this argument, we have compared the average annual incomes of those households that belong to NGPs with those who do not. Once again, it may be kept in mind that the average income used here has a component of arbitrariness in terms of the mid-value of the highest income group. However the table 6.5.4 should provide a fairly good idea the relative level of the two household groups mentioned here.

The findings once again strongly support our contention that Households with better sanitation facilities have higher income levels**.** Agreed, that this correlation does not establish any causality, that is, instead of higher incomes being the result of availability and use of toilets, it could just have been that toilets were made available to Households with comparatively higher income levels.

TABLE 6.5.4: APL/BPL Category of Households and Sanitation Coverage in our sample

Availability of toilets with respect to APL/BPL Category as per our sample population	
BPL Households not having Toilets as a percentage of all BPL Households	11.2%
APL Households not having Toilets as a percentage of all APL Households	23.2%

But as we have mentioned above, 84.3% Households in our sample belong to the BPL category and as can be seen from the Table 6.5.4, in our sample, percentage of Households not having toilets among APL Households is higher than that of the percentage of Households having toilets in the BPL category. If anything, this could have translated into a higher estimated annual average income for the Households not having toilets, since average income of APL households would be higher than that of the BPL households. But as have been shown above, the results are to the contrary.

Considering all these factors, it may perhaps be said that there has been a positive impact of the implementation of TSC on the levels of income of the rural households in India.

6.6 Households on TSC: Satisfaction, Complaints, and Suggestions

Table 6.6.1 tells us about the satisfaction perceptions of households and concerned GPs regarding the performance of the TSC Program. It can be seen that while the GPs have reported that 82% Households are either fully or partially satisfied, only 38% households have actually said that they are satisfied with the achievements and implementation of the Program.

TABLE 6.6.1: On General Satisfaction

Satisfied Households	Percentage of satisfied Households as per the Households	GP's Perception on Community satisfaction		
		Fully Satisfied	Partially Satisfied	Not Satisfied
Yes	38.3%	40.7%	49.4%	9.9%
No	61.7%	22.9%	54.1%	22.9%
Satisfaction percentages as per the GPs		29.7%	52.3%	18.0%

The fact that 62% of the households are not satisfied with the implementation of the Program should be a matter of concern**.** The reasons cited by them have been summarized in table 6.6.2A and 6.6.2B which enumerate the reasons separately for households that have toilets and for those that do not. State wise details are available in the Annex-33 & 34. It can be seen that lack of funds and incentives are the major reason for discontent in both the cases, expectedly, more so in case of households not having toilets. 75.3% of households having toilets and 92.3% of households not having toilets are dissatisfied because of lack of incentives. Thus this is not so much about the implementation but more about the policy on funding and incentives. We can see that the associated coefficients of variation are quite low, indicating that the views are similar across states. The coefficients of variations are quite high for the rest of the parameters indicating high regional diversities in expectations.

TABLE 6.6.2A: Reasons for dissatisfaction (Households having Toilets)

Reported dissatisfaction	Lack of funding	Lack of incentives**	Inadequate awareness campaign	Against cultural practice	Malpractices /favoritism	Community Latrines not available	Construction Related Problems@	coverage problem*	Lack of monitoring	No maintenance /renovation of old toilets#
1	2	3	4	5	6	7	8	9	10	11
5887	2124	4430	3409	341	600	28	186	53	182	1616
	36.1%	75.3%	57.9%	5.8%	10.2%	0.5%	3.2%	0.9%	3.1%	27.5%
Coefficient of Variation across states	102.2	34.04	64.8	133.2	115.5	386.4	122.9	469.7	133.5	127.2

*All BPL families not covered/ only BPL families covered
@ Durability, Height, water logging etc #(including non-provision of maintenance grant)
** Includes *additional* cases where 'inadequate incentive' has been cited as a reason in 'other reason for dissatisfaction'.
Source: Household Level Data..
Coefficient of Variation based on percentage values.
Analysis of only those Households that have said 'yes' to having a toilet and 'No' to Satisfaction.

TABLE 6.6.2B: Reasons for dissatisfaction (Households not having Toilets)

Reported dissatisfaction	Lack of funding	Lack of government incentives **	Inadequate awareness campaign	Against cultural practices#	Malpractices/ favoritism	Construction Related Problems @	coverage problems *	No maintenance / renovation of old toilets #
1	2	3	4	5	6	7	9	10
1196	892	1104	661	124	98	22	15	120
	74.6%	92.3%	55.3%	10.4%	8.2%	1.8%	1.3%	10.0%
Coefficient of Variation across states	43.72	45.41	52.88	116.86	147.36	163.24	213.67	310.08

*All BPL families not covered/ only BPL families covered
@ Durability, Height, water logging etc #(including non-provision of maintenance grant)
** Includes *additional* cases where 'inadequate incentive' has been cited as a reason in 'other reason for dissatisfaction'.
# Strictly speaking, not a reason for dissatisfaction per say, rather a reason for lack of use of toilets.
Source: Household Level Data.

Inadequacy of suitable awareness campaign emerges as a strong reason for Dissatisfaction, Lack of funds for renovation and maintenance of existing toilets is an important reason for discontent among the Households owning toilets. 10% of Households that have toilets and 8% of households that do not have toilets have complaints about favouritism and malpractices.

Strictly speaking, 'use of toilets being against cultural practices' is not really a reason for discontent. However this is significant reason for not using toilets in spite of availability of for the households not feeling inclined to construct toilets. In any case, the percentage Households claiming that use of toilets being against cultural practices is a reason for their discontent against TSC is not high, especially among Households having toilets. However while analyzing the reasons for open defecation among Households, this factor came out as an important cause for open defecation, especially among Households having toilets. Thus, while age-old cultural practices are important in explaining the incidence of open defecation, this parameter cannot be considered as an important cause of dissatisfaction. And hence it can be argued that this can be overcome through suitable awareness campaigns

TABLE 6.6.3: Suggestions received from Households

	Suggestions	No. of HHs	Percentage of total sample population (11519)
1	Effective IEC, motivation and awareness effort	7065	61.3%
2	Upward revision/ increase of the monetary incentive	6776	58.8%
3	Effective monitoring of scheme required	5402	46.9%
4	Regular measures for renovation/ maintenance of old toilets	5274	45.8%
5	Financial provision for renovation /maintenance	4904	42.6%
6	Dedicated and involved SHGs	4513	39.2%
7	Include APLs(particularly those who belong to the bottom most strata)	4448	38.6%
8	Problem of inadequate/ insufficient water supply needs to be tackled	3263	28.3%
9	Provision for reuse/distilling of waste water	3070	26.7%
10	GP should be given the responsibility to construct complete toilets	889	7.7%
11	CSC required in the village	435	3.8%
12	Revision of Survey is required	26	0.2%
13	Transparency and lack of favouritism/interference in distribution of money/incentive	21	0.2%

Table 6.6.3 summarizes the various suggestions received from the Households. Similar suggestions have been clubbed together and suggestions coming from very few Households (less than 0.2%) have been ignored. Suggestions enumerated in the table directly follow from the reasons for dissatisfaction of Households with the implementation of the TSC program. Effective intervention of IEC emerges as the most important requirement. The issues related to IEC have been taken up in a separate chapter.

Upward revision of the monetary incentives is a close second. It also emerges that there needs to be some kind of system in place associated with maintenance and renovation of old toilets. Inclusion of APL households by way of some kind of subsidy was another recurrent suggestion. Incidentally, our data revealed that not only the APL households, an equally large percentage of the BPL households came up with this suggestion. Provision for adequate water also featured strongly in the rural household wish list.

6.7 Seeking Answers to a Few Questions

6.7.1 The Debate on Incentive versus Awareness: Choosing the right mix

A question has often been raised about the right mix of incentive and spread of awareness. It has been said that it is more important to spread awareness about the ill-effects of lack of sanitation, thereby creating a need among people for hygiene and sanitation. This, it is argued that, would lead to a pro-active role of individuals towards building of toilets and decrease of open defecation. To begin with, let us try to examine the relationship between awareness and open defecation based on our sample. The variables that have been used as indicators of general awareness, are, (1) whether or not the household is aware of TSC, and (2) whether or not the household is aware of water-borne diseases arising out of incorrect disposal of faeces and other household waste. Table 6.7.1.1 gives an idea about the relative proportion of open defecation in relation to these two awareness indicators. It can be seen that as expected, for both indicators of awareness, that open defecation percentage is less when the household is more aware.

TABLE 6.7.1.1: Awareness vis-à-vis Open Defecation

Indicators of awareness: *More Aware households*	Percentage of Open Defecation	Indicators of awareness: *Less Aware households*	Percentage of Open Defecation
Households aware about ware-borne diseases	19.81%	Households not aware about water-borne diseases	40.07%
Households aware about TSC	19.86%	Households not aware about TSC	51.57%

We now proceed to examine the relationship between awareness and willingness to pay more for toilets/ better sanitary facilities. We have seen that an over-whelming majority of households have reported lack or inadequacy of incentives as a major source of discontent. Clearly, in our poorer rural pockets, importance of lack of fund cannot be undermined. To examine the role of IEC

in this regard, we have tried to analyze the relationship between awareness and individual's willingness to pay more for improved sanitation. Once again, the two parameters used above, namely, whether or not the household is aware of TSC, and whether or not the household is aware of water-borne diseases arising out of incorrect disposal of faeces and other household waste, have been used as indicators of awareness. uch households have been cross tabulated against their willingness to pay more for improvement. It can be seen from Table 6.7.1.2A that willingness to pay is more when the household is more aware.

TABLE 6.7.1.2A: Awareness vis-à-vis Willingness to pay more

Percentage of households that expressed willingness to pay more			
For households *reporting awareness* about water-borne diseases	50.58%	For households *reporting unawareness* about water-borne diseases	34.16%
For households *reporting awareness* about TSC	51.53%	For households *reporting unawareness* about TSC	19.65%

Now, if a household expresses awareness in both, it can be considered more aware than those that have expressed awareness of either of the two, or none of them. An Awareness Index was therefore prepared using information on awareness regarding existence of IEC and on awareness of water-borne diseases arising out of incorrect disposal of faeces and other household waste.

Households that have responded positively to both the parameters, have been assigned a value of 'two'. Those who have said yes to at least one of them have been assigned 'one', and the rest of the Households have been assigned zero value. Thus, the awareness index measures their relative awareness on a scale of zero to two.

Table 6.7.1.2B presents the relationship between awareness and the willingness to pay more.

TABLE 6.7.1.2B: Awareness Index vis-à-vis Willingness to pay more

Awareness index vis-à-vis Willingness to pay	*Awareness Index=0*		*Awareness Index=1*		*Awareness Index=2*	
	% of HHs with index=0	*% of HHs agreeable to pay more for improvement*	*% of HHs with index=1*	*% of HHs agreeable to pay more for improvement*	*% of HHs with index=2*	*% of HHs agreeable to pay more for improvement*
1	3	4	5	6	7	8
	5.7%	15.6%	14.2%	40.5%	80.1%	52.2%
Coefficient of variation across states	175.72	277.04	75.93	88.73	21.66	58.43
Correlation (across states) between awareness index and the willingness to pay for each group	*-38.4%*		*-16.5%*		*25.2%*	

Source: Household Level Data.
Computation of the Awareness Index is available in the Annexure to the Chapter.
Coefficient of Variation based on percentage values.
HHs with incomplete/inconsistent information ignored.

The table above compares the relative willingness of the Households with respect to their level of awareness. Once again it can be seen from the table, that willingness to pay more for better sanitation facilities clearly increases with awareness level. Admittedly, there is wide variation across states. For example, in the states of Maharashtra, Andhra Pradesh, Tamil Nadu, etc sample population includes a large chunk of Households that do not have toilets. Awareness about availability of incentives is bound to increase their desire to avail of similar incentives first, and immediate reaction to spending would be negative.

Within each group, the correlation between the percentages of households whose awareness level is the least, with their desire to spend more on improved sanitation, is expectedly negative. Similarly, the correlation between the percentages of households whose awareness level is at the highest levels, with their desire to spend more on improved sanitation is positive. Values are low, once again, due to huge state level variations.

Though the data is cross-sectional, given the nature of variables, an assumption of causality from the direction of awareness to open defecation and willingness to pay would appear reasonable here.

Thus overall the picture that emerges is that, better awareness probably improves the willingness to pay for better sanitation, but the link is associated with low level of correlation and wide state level variations.

Let us at this point revisit our Section on open defecation once again. We may recall that open defecation in rural India has two different components, namely, (1) Open defecation due to non-availability of individual or community toilets; and (2) Open defecation in spite of availability of toilets which in turn includes (a) Mindset and age-old practices, and (b) inadequacy of toilets vis-à-vis requirement.

We may also recall our estimates that out of the 73 households per 100 households that practice open defecation, 66 households are forced to do so due to unavailability of individual household or community toilets, and 7 household do so in spite of having toilets. Moreover, 1 out of these 7 households is forced to resort to open defecation due to the inadequacy of the number of toilets in the household. Thus at the all India level, the availability of toilets stands out as a much larger issue.

Let us now combine this to our earlier result that 75% households having toilets and 92% households not having toilets have recorded lack or inadequacy of sufficient fund as a cause of discontent.

Also, note that major reason for open defecation in households having toilets is, lack of awareness and Age old practice, where as in households not having toilets, major cited reason for open defecation is monetary.

We may also take into account our results from Table 6.3.6, that shows that there exists a strong positive relationship between education levels and the incidence of open defecation.

Lessons from the past: It is also necessary to assimilate the lessons learnt from the past with these results. Lessons learnt from Central Rural Sanitation Programme (CRSP) implemented in India during 1986-1998 made it clear that subsidy for toilet construction does not automatically result in desired sanitation coverage and the resultant public health benefits. This was amply borne by the fact that even after more than a decade of CRSP being in place, rural sanitation coverage in India remained a meager 22%, as per the Census of India 2001. We must recall that it is in this context the innovative idea of participatory approach was introduced in the country. As is clear from census and other data, there has been a remarkable improvement in the construction of toilets since the launch of TSC. Thus, whatever be our policy regarding incentives and support, it is necessary that the movement primarily remains demand-led, spread of awareness being the most important component.

Based on these findings and observations it can be concluded, that though spread of awareness would increase the desire of the rural populace to strive for better sanitation, spread of general education is the surest way of spreading this awareness. And in the course of these efforts, fund is seen as

definitive road-block as far as building of toilets is concerned, that IEC alone cannot overcome.

It is from this perspective that there is a need to have a relook at the Government of India GuidelinesIncentive Pattern for individual household latrines.

6.7.2 The Debate on Inclusion of APL Households:

While analysing the suggestions received from the households, it has already been noted that the inclusion of APL households by way of some kind of subsidy was a recurrent suggestion figuring in the list of 38% households. The data further revealed that not only the APL households, an equally large percentage of the BPL households came up with this suggestion. Let us also recall that 23% APL households belonging to our sample do not have toilets.

TABLE 6.7.2.1: Money as a reason for Open Defecation: APL versus BPL

		BPL				APL			
Sl. No.	States	Households Analysed	No OD and Have CWS in the village	Money as reason for OD	Column 5 as a percentage of (Column3-Column4)	Households Analysed	No OD and Have CWS in the village	Money as reason for OD	Column 8 as a percentage of (Column6-Column7)
1	2	3	4	5	6	7	8	9	
1	Andhra Pradesh	306	5	115	38.2%	76	1	19	25.3%
2	Gujarat	334	0	259	77.5%	3	0	3	100.0%
3	Karnataka	56	6	38	76.0%	173	7	108	65.1%
4	Maharashtra	268	1	264	98.9%	13	0	7	53.8%
5	Tamil Nadu	75	18	32	56.1%	149	36	86	76.1%
	Total	1094	35	731	69.0%	416	44	224	60.2%

To probe further on this issue, we have tried to examine the link between open defecation and the felt need of the households for monetary assistance separately for these two categories. Table 6.7.2.1 tabulates those cases where either (1) there are no toilets in the household as well as in the community, ***or*** (2) the households that do not have individual toilets and have reported open defecation.

Our sample consists of 1517 households that do not have toilets. Seven households were lost as BPL/APL category was not specified. Of the rest, 1094 households belong to the BPL category and 416 to the APL category. While there are a few such cases in other states as well, the households primarily are from the states where households were selected randomly. Hence details of only those five states have been shown. The total figures include the rest of the states as well. It can be seen that a large percentage of households from both the categories that do not have toilets have quoted lack of money as

the reason for open defecation. There is a difference of 9% between the APL and BPL groups. This gives a 'Z' value of 3.1, and we have to reject the null hypotheses that the requirements stated by both the groups are same. But it can definitely be argued that the difference is not highly pronounced.

Approaching this issue from another angle, we have tried to look into the link between need for incentive and its mode of payment for each of these categories. It can be seen from table 6.7.2.2 that 76% APL and 88.2% BPL households not having toilets have sought some kind of monetary assistance for construction of toilets. The corresponding 'Z' value is 1.84. We therefore accept the null hypothesis at 95% confidence level that the differences in the requirements of the two groups are not statistically significant**.** Even in case of households having toilets, need for incentives figures strongly in the wish list of both groups. The 'Z' test value for the difference between the two groups in this case is 2.33, which is once again less than the critical value at 5% significance level.

TABLE 6.7.2.2: Incentive and Satisfaction: APL versus BPL

Incentive as a reason where households do not have toilets		Z value
BPL	88.20%	1.84
APL	75.70%	
Incentive as a reason for households having toilets		
BPL	73.0%	2.33
APL	60.8%	
Only those households that have toilets and are dissatisfied have been considered. NA data ignored for Cross Tab purposes.		

Does this then make a case for some sort of support to selected APL households as well? The following Table may be seen in this context. Table 6.7.2.2 cross tabulates reported income levels of the households with their APL/BPL status and availability of toilets. According to the data supplied by the households, quite a large proportion of households belonging to the APL category have reported an income of less than Rs. 50,000 per annum. In fact, among the households not having toilets, there is no significant difference between the percentages of households earning less than Rs. 50000 in the respective groups, the percentages being, 60.5% and 60.8% respectively.

TABLE 6.7.2.3: Reported Annual Income levels: APL versus BPL

	less than Rs. 10,000	Between Rs. 10,000 and 50,000	Between Rs.50,000 and 100,000	Between 100,000 and 300,000	Between 300,000 and 500,00	Above Rs 500,000
1	2	3	4	5	6	7
BPL	13.0%	69.3%	14.7%	2.7%	0.1%	0.0%
BPL households having toilets	12.5%	72.5%	12.5%	2.2%	0.1%	0.0%
BPL households not having toilets	17.3%	43.2%	32.0%	7.1%	0.2%	0.1%
APL	3.7%	49.2%	28.5%	13.9%	3.6%	1.2%
APL household shaving toilets	2.8%	47.7%	28.8%	15.0%	4.1%	1.4%
APL households not having toilets	6.7%	54.1%	27.2%	10.1%	1.7%	0.2%

Based on the above analysis, we may conclude that if subsidy is made available to the BPL households, given that 60.8% APL households not having toilets have reported an income of less than Rs. 50,000 per annum, a desire for some sort of subsidy/ incentive for some the households belonging in this group seems justified.

In other words, our data suggests that simply belonging to the BPL group should not be the criteria for availability of incentive or otherwise. The concept and definition of "the poorest of the poor" needs to be revisited and a more rigorous criterion is required to be put in place. This of course, as is well known, concerns the larger issue of more rigorous and suitable definition of BPL category and their identification, an issue we also encountered during our field visits. In the context of TSC, this indicates the need for suitable revision in the Government of India Guidelines on Incentive Pattern for Individual Household Latrines.

6.7.3 Mobiles/TVs/Fans or Toilets – A debate on Priorities, or the Changing face of necessity?

This section analyses the relationship between the assets owned by the households, trends in practice of open defecation and their felt need for assistance for construction of toilets.

To do this, we have first considered the availability of different assets by the households separately for three groups; Group1 consists of households that have toilets and do not practice open defecation. Group2 consists of those households that have toilets and yet some of the family members practice open defecation. And Group3 includes households that do not have toilets and practice open defecation. The results are shown in the Table 6.7.3.1. What is immediately clear is that, a considerable number of rural households own various modern amenities and assets, irrespective of availability of toilets and its usage**.** The commonest asset is a Bicycle, which can certainly be considered a necessity and we have refrained from considering bicycles while comparing the preferences of the rural households. A close second is a television, followed by a radio and then by a cell phone. Radio again can be ignored since it costs much less than the construction of a toilet. Now in this age of information dynamics, and the requirement to stay connected, Televisions and cell phones would be playing an increasingly important role. To that extent it is required to increase the penetration of these assets in rural India**.** Indeed the various policy directives of the Government of India address the growing need for such penetration. In the context of TSC, this implies that radios, televisions and cell phones can be effectively used to spread sanitation awareness. This is already done in case of agriculture related awareness programs.

TABLE 6.7.3.1: Assets and Open Defecation

Percentage of households owning assets *within* in each group	Group1: Toilet-Yes, OD-No	Group2: Toilet-Yes, OD-Yes	Group3: Toilet-No, OD-Yes
1	2	3	4
Bicycle	44.4%	60.8%	27.9%
TV	41.8%	23.2%	53.2%
Radio	25.3%	19.8%	21.2%
Cell Phone	18.4%	18.6%	4.2%
Motor Bike	9.7%	4.7%	7.0%
Fan	6.5%	5.5%	9.3%
Fridge	4.2%	1.1%	0.7%
Tractor	0.8%	0.5%	0.8%
Computer	0.6%	0.0%	0.0%
Car	0.5%	0.2%	0.0%
Source: Household Level Data. HHs with incomplete/inconsistent information ignored.			

But these assets require money. With its limited resources, where should the rural household invest first; in owning a television, or paying the household contribution part for construction of toilets? What are its preferences? In this connection, we may take a look at Group: 3, (Column4 of Table 6.7.3.1B) that is, households that do not own toilets. It can be seen, that 53.2% of such households own a TV. It clearly brings about the preferences of rural Indian households.

To examine this issue further, we may look at Table 6.7.3.2, where we have linked open defecation, owning of assets, and lack of money/incentive as a reason for dissatisfaction of the households. This analysis is based on only those households that practice open defecation.

It can be seen that 34% of such households own a television and 13% have a cell phone. Approximately 50% of these households owning cell phone and/or television have mentioned that lack of incentive and/or lack of funds are one of the reasons for their dissatisfaction. There are considerable regional variations the details of which are available in the Annexure to this Chapter. 90% households in Tamil Nadu, 41% households in Karnataka and Andhra Pradesh, 67% households in Kerala have televisions in their houses and practice open defecation. In this context, it may be noted that the Census 2011 data also reveals a similar picture. According to the Census data, 48% of rural households have cell phones, 46% have bicycles, and 33% have TV sets in their houses.

TABLE 6.7.3.2: Assets and Open Defecation and lack of incentive/ money as reason

	Practices OD and own a TV	Lack of money as a reason for dissatisfaction when the HH owns a TV and practices OD	Lack of incentive as a reason for dissatisfaction when the HH owns a TV and practices OD	Practice OD and own a Cell Phone	Lack of money as a reason for dissatisfaction when the HH owns a Cell Phone and practices OD	Lack of incentive as a reason for dissatisfaction when the HH owns a Cell Phone and practices OD
1	2	3	4	5	6	7
	34.8%	53.0%	66.1%	13.0%	34.4%	57.6%
Coefficient of variation across states	82.0	63.8	58.6	197.3	97.2	71.5

Source: Household Level Data.
Coefficient of Variation based on percentage values.
HHs with incomplete/inconsistent information ignored.

Moreover, as can be seen from the Table 6.7.3.1 in case of quite few assets, for example, television, radio, fans, motorcycles, etc, the percentage is much higher in case of those households who do not have toilets. Cell phone

here is the only notable exception. These households from Kerala however have no dissatisfaction regarding lack of money for toilet construction. On the other hand, 89.6% such households in Karnataka, 72% households in Andhra Pradesh and 66% households in Tamil Nadu belonging to this category have recorded money as a reason for their dissatisfaction. On the other hand, states like Bihar, Jharkhand, Odisha, where open defecation is among those households that have toilets (as per our sample selection), 25 to 33% households have televisions. 55% of such households in Bihar and 42.4% in Jharkhand mentioned lack of money as a reason for dissatisfaction. However, only 2.6% of households in Odisha felt so. Thus, there is a lot of divergence across states. But, on the whole we can perhaps derive a conclusion here that rural households often prioritize these assets over availability of toilets.

Given the need for spread of information and awareness, can we really question such choices? On the contrary, it would be prudent to use these findings to our advantage by using televisions radios and cell phones as powerful and effective means of spreading awareness on sanitation.

Chapter 7

School and Anganwadi Toilets: Coverage, Construction and Usage Pattern

7.1 Introduction:

Besides Individual Household Latrines, School and Anganwadi sanitation is the main area of intervention under TSC. TSC guidelines states that "toilets in all types of govt. school i.e. Primary, Upper Primary, Secondary and Higher Secondary and Anganwadis should be constructed." [1]Hygiene education in schools has also been an integral part though the expenditure has to be made from the IEC component.

7.2 **School Sanitation**

7.2.1 Pace of the work

Construction of school toilets could not pick up in northern states like Bihar, Jharkhand, and Rajasthan and in northeastern states like Assam, Sikkim, Meghalaya and Manipur during the starting phase (during 2001-05). In Meghalaya and Manipur no school toilet could be constructed under TSC till 2006. Southern states of Karnataka, Tamil Nadu, Kerala and West Bengal have started well in the construction of school toilets. In most of the states except in the three southern states (Karnataka, Tamil Nadu and Kerala), Sikkim and West Bengal major part of the work in school sanitation was carried out during 2007 and 2009. (Annex- 49)

7.2.2 Availability, use and functionality of school toilet

The study found that there were many schools without toilets at the time of the visit. As we can see in the table in Annex-41, in Manipur, 38% schools of the selected Gram Panchayats were still without any sanitary facility. The selected households were asked about the availability of toilets in the village schools. Only 19% of the households have reported that sanitation facilities are available in the village schools in Manipur**.** The situation of another north eastern state Meghalaya is also poor where 20% schools are still without toilet. Among the rest of the states the performance of Bihar is the worst where one fourth of schools are without toilet. Though 86% households have reported sanitation facilities in the village schools, in Bihar only 3% have reported it remains functional throughout the year. Jharkhand is only the other state besides Bihar where the most of the school toilets are not functional throughout the year in maximum number of cases. Only 4% of the households have reported that the toilet facilities remain functional throughout the year. It also appears from that mostly there are separate toilets for girls wherever school toilets were constructed except in Madhya Pradesh and Manipur. (Annex-45) As expected the best state in this regard is Sikkim where all schools have toilets. During the discussion with the various stakeholders, the following factors were quoted as main reasons for non-availability of toilets in schools:

1. Many schools have no land to spare for the construction of toilet. The School Management/ PTA/GP could also not arrange the land.

2. The unit cost for the construction of school and anganwadi was fixed till 2009. This has been too low a cost to construct the toilets, especially in hilly and interior areas, where transportation cost is too high. The district authorities also reiterated the issue of inadequate unit cost.

3. In the earlier guidelines, a contribution (10% of the cost) was expected from the SMC/VEC/PTA/GP. This could not be arranged in many cases.

The poor performing states are north eastern states –Manipur, Meghalaya, Assam and the two Hindi States- Bihar and Jharkhand. In many states (Jharkhand, Manipur, Assam, Bihar etc.), separate toilets for girls were not available in many schools.

7.2.3 Has NGP scheme made any difference

The scenario in the NGP awarded Gram Panchayats is quite different. Very few Gram Panchayats have reported any school(s) without toilets. It appears that the agencies have made good effort in providing school sanitation and making the GPs eligible for NGP. In the states like Andhra Pradesh, Assam, Orissa, Uttar Pradesh and West Bengal, major portion of school sanitation was contributed by the TSC. **(Annex-41)**

7.2.4 Sustainability

Funding for school sanitation in TSC had to be provided by Central Govt., State Govt. and Parent-Teachers Association in the ratio 60:30:10. The idea behind the ten percent contribution from SMC/VEC/PTA/GP was that if the village communities were really interested in this facility, they would mobilize themselves and make part contribution which will also help long-term sustainability and operation and maintenance of the facilities. (Though in March 2006 Government of India agreed to bear the 10% cost and accordingly TSC guidelines were modified.) Only 29% of the selected Gram Panchayats have reported that Parents-Teachers Associations have made the required contribution for construction of school toilets. In case the PTA has not made the required contribution, in 33% cases, the school toilets have been constructed from the TSC fund only. This may include the construction of school toilets as per the revised guidelines when no PTA etc. contribution is required. 17% Gram Panchyats reported that the required contribution has been made by the PRIs (GP/ZilaParishad).

It can be seen that in the southern states of Kerala, Karnataka and Tamil Nadu and in Orissa, greater proportion of Gram Panchayats have reported to having made PTA's contribution. In Karnataka, Tamil Nadu, Sikkim and Uttar Pradesh, the GP has been the biggest contributor in case the contributions have not been received from PTA. In Punjab and Haryana it was the School Management. In rest of the states the toilets have been constructed mainly by TSC fund. State wise details can be seen in **Annex-47.**

7.2.5 Hygiene Education in Schools

The district authorities in the selected district were asked about the training programmes on hygiene education. District authorities in 64% of the selected districts have said that such training programmes are being conducted by the respective state govts. 96% of the selected households have also agreed that hygiene education is being imparted by the village school teachers in the schools.

7.2.6 TSC & SSA

TSC & NRDWP of Department of Drinking Water Supply and SSA of Department of Elementary Education and Literacy had the mandate for providing water supply and sanitation facilities in the rural govt. schools. Selected Gram Panchayats have reported that the major role in providing school toilets is being played by TSC. SSA is the other flagship scheme which has provided toilets to the rural schools. It can be seen in the **Annex-48** that TSC and SSA are two major flagship schemes of the Govt. of India providing sanitary facilities in rural schools.

7.3 Anganwadi Sanitation

"In order to change the behavior of the children from very early stage in life, it is essential that Anganwadis are used as a platform of behavior change of the children as well as the mothers attending the Anaganwadis."

-from the Guidelines of TSC

7.3.1Pace of the work

It can be seen from Annex-49 that many states could not construct any anganwadi toilets till 2006-07. In many other states it started with a very slow speed. Only Tamil Nadu is an exception where most anganwadis have been covered during2001-05.

7.3.2 Availability, use and functionality of school toilet

Nearly half of the selected Gram Panchayats have reported that there exist anganwadis in their GPs which have no sanitary facilities. Among the selected states, all the selected GPs from Manipur have reported anganwadis without toilet. Bihar, Assam, Jharkhand and Orissa are the other states where in most of the GPs, anganwadis are present without any toilet facilities(Annex-42). From Annex-44, it can be seen that even many district authorities have reported many anganwadis without toilets.

Information collected from the selected households has been tabulated in Annex-46. This cannot be compared with the data given in table 2, 3 and 4 since the information collected from the GP are factual while that from household is based on their perception and awareness. The table shows that the people in Karnataka, Kerala and Punjab (sample size is only 30) think that almost all

anganwadis have separate toilets for girls and for the use of the children and these remain functional throughout the year. Separate toilets for the girl child are available in Bihar, West Bengal, Sikkim and Haryana. Almost all the anganwadi toilets are functional. These remain functional throughout the year in most of the anganwadis except in Bihar and Jharkhand.

7.3.3 Role of TSC in anganwadi sanitation

It appears that TSC is the only scheme by which anganwadis sanitation could be provided in some states. For example in Andhra Pradesh and Karnataka, all the anganwadis, whether situated in Govt. building or Pvt. Buildings have been provided sanitation by TSC. In Tamil Nadu, 100% anganwadis in govt. buildings have got toilet from the TSC fund. Orissa, Jharkhand and Maharashtra are the other states where TSC appears to be the single largest scheme as far as provision of anganwadi toilets (both govt. as well as pvt. Building) is concerned (Annex-42 &43).

7.3.4Anganwadis in Private Buildings

A big challenge in providing anganwadi sanitation is to provide toilets to the anganwadis situated in private buildings. To achieve the target of 100% sanitation, the owners of the private buildings where the anganwadis are functioning are to be advised to construct the toilets and recover the cost of construction by charging an enhanced rate. This strategy appears to be a total failure as none of the Gram Panchayats have reported this scheme to be effective except in the Bharatpur district of Rajasthan where owners of the buildings has been receiving enhanced rent under this scheme. Most of the anganwadis situated in the pvt. Buildings have not yet been covered. Sometimes local arrangements were made to solve the problem. For example in West Bengal, the cheap model of IHHL has been provided to these anganwadis.

7.3.5 Has NGP scheme made any difference?

We have discussed in the chapter on "Nirmal Gram Puraskar" that nearly 17% of the NGP awarded gram panchayats have reported anganwadis without toilet. Though TSC is the main scheme for providing anganwadi sanitation (besides ICDS), in most of the selected states (as we discussed in the previous section), no special efforts have been made to make the GPs eligible for NGP in connection with the construction of anganwadi toilets. This is in contrast to work done in school sanitation where the situation in NGP awarded GPs is much better than the rest of the GPs (Annex -43).

Chapter-8
Community Sanitary Complex and Women Sanitary Complex

8.1. Introduction

Community Sanitary Complex and Women Sanitary Complex form one of the important components of the TSC. These complexes are built when there is no space available or when there are financial constraints for constructing an IHHL. It takes care of safe disposal/reuse of human waste, enhances privacy and dignity of the users in addition to maintaining the health status of the village. It is used, owned and maintained by community members and usually located within the community, where people reside. A community toilet may also have other utilities such as a bathing facility or a place for washing clothes, depending upon the needs of the community.

8.2. Costs Involved

8.2.1. Two types of costs are involved for CSC/WSC:-

1. Capital costs are the expenses which are incurred only once to make the facility operational and ready for use. These include:-
    a) Land: Gram Panchayat, rich landowners or the community itself can be a source of land for construction of the CSCs/WSCs.
    b) Labour: Skilled labour from an outside agency for construction, supervision and management may be hired whereas the community may contribute in terms of providing unskilled labour.
    c) Materials and equipment: Construction material such as cement, sand, gravel, bricks, steel, etc., as well as equipment and sanitary fittings, depending on the type of technology used forms another part of the cost component.
    d) Project management and promotion: This includes cost on training and capacity building of community facilitators, village motivators, local masons and plumbers. Other costs involved are that on sanitation and hygiene promotion, IEC campaigns, supervision of construction and management etc.

2. Operation and Maintenance Costs are the expenses incurred in running the facility on a daily basis which includes materials such as toilet cleaning brush, toilet cleaning powder/solution, disinfectant, provision of water and soap for hand washing, locks in bathrooms for safety, water for flushing and so on. Wages of a watchman or safaikaramchari forms the labour component of O &M costs.

As per the guidelines of the Central Ministry, the maintenance cost of CSCs/WSCs can be met by the panchayats/voluntary organizations/charitable trusts/Self Help Groups. The users may be asked to contribute a reasonable monthly user charge for cleaning & maintenance. The maximum unit cost prescribed for constructing a community complex is Rs 2 lakhs. The National Scheme Sanctioning Committee (NSSC) approves the construction of CSCs based on the detailed design and estimates. Fund sharing pattern amongst Central Government, State Government and the community is in the ratio of 60:20:20. The community contribution, however, can be made by the Panchayat out of its own resources, or from any other fund of the State duly permitted by it. Up to 6 per cent of the total Project Cost can be used for construction of Sanitary Complex for Women. The total expenditure proposed on Community Sanitary Complex and Individual Household Toilets should be within the ceiling of 60 percent of the total Project outlay.

8.3. Finding from the Study

8.3.1. Status of Construction/ Functionality of CSCs/WSCs under TSC in rural areas

The targets which were set in view of Base Line Survey (BLS) conducted as part of the start-up activities of the campaign had a timeframe of achievement till 2012. Data collected from the state authorities implementing the programme in the states during the study show that till March 2009 (end of the reference period of the study), only 50% of the target for construction of CSCs/WSCs was achieved when an overall figure of the 20 sample states was taken (Annex-50). Figures corresponding to states like Andhra Pradesh, Tamil Nadu and Sikkim show over achievement, which may possibly be due to revision of targets during the course of time after the BLS based targets were set. Gujarat, Haryana, Kerala, Uttar Pradesh were faring well with completion of more than 65% targeted number by 2008-09. Assam, Bihar, Jharkhand, Manipur, Meghalaya, Odisha, Punjab, Rajasthan, Uttarakhand were the lowest performers in this regard with below 25% success. However, as per the data taken from official website of M/o DWSS, these 9 states, with the exception of Manipur and Meghalaya (to a certain extent), have made up for the lag by the end of March 2012. The percentage achievement of construction of CSCs/WSCs by March 2012 over all the sample states fail to be close to 100% (just 70%), though some states have overshot their previously set BLS based targets (e.g. AP, Gujarat, Sikkim, Tamil Nadu and UP).

While the study focussed on construction of the CSCs/WSCs, functionality of these toilets was also covered. Most of the sample states did not have information on this aspect of the study. With the limited information that was collected, it can be seen that the authorities in Haryana, Jharkhand, Kerala, Maharashtra, Manipur, Odisha, Punjab, Sikkim and Uttarakhand were taking

stock of the constructed CSCs/WSCs as well as making efforts for their upkeep to ensure that the assets created are benefitting the target population.

8.3.2. Role played by PRIs/NGOs in Maintenance of CSC/WSC

Based on the experience of the study team who visited the sample districts in the selected States, and the data collected thereon, it can be seen from Annex-51 that only 56% (approx.) of the selected districts reported involvement of the PRIs in maintenance of the CSCs/WSCs. A limited role of NGOs (only in 12% of the selected districts) was observed. Clearly, without any proactive role by PRIs/NGOs/ SHGs etc. in maintaining the existing CSCs/WSCs, the already constructed ones are reported to be locked or being used for other purposes. The team which visited various districts in **Haryana** found that one of the major reasons for non-functionality of CSCs was the non-payment of community contribution by the GPs and non-collection of any user charges in any of the panchayats for maintenance, making the sustainability of complexes a big challenge. In Bhiwani district **of Haryana**, it was found by the field team that the CSC in Sumerakhera was locked and lying unused. It was only being used as a common toilet on occasions such as marriages. In **Odisha**, the field team observed that the demand for Sanitary Complexes is gaining momentum especially in the tourist cum market areas. In Moga district of **Punjab**, the district authorities themselves accepted that the community sanitary toilets were constructed in the absence of BLS and PIP and the four CSCs constructed till date were defunct due to non- maintenance and water shortage. They expressed that no CSC will be planned in future as no one takes responsibility to maintain these CSCs. Other districts too, in **Punjab**, reported that the maintenance of such toilets was a major hindrance in construction of such toilets. Unlike in other states, the PRI representatives from the **Punjab** expressed that there was no need of CSCs for households in view of problems of maintenance of such complexes. They instead suggested that such CSCs may be constructed only at places, like mandis, bus stops and dharamshalas.

In comparative terms, **Sikkim, Karnataka and Kerala** fare well as far as role of PRIs in maintenance of community toilets is concerned. In these states, busy public places like bus stations, worship places, market places etc. have the facility of CSCs, constructed under TSC which are functioning as “pay and use toilets”. Due to this arrangement, these toilets are being maintained properly, ensuring clean environment in the areas where they are located as well as higher revenue generated.

Assam and Bihar are two such states where no role of PRIs/NGOs has not been reported at any of the administrative levels where our field team visited (viz. State, districts, blocks, GPs). A deeper probe, however, revealed lack of convergence between PRIs and the nodal departments in the two states (viz. PHED). It may be due to fact that the nodal departments in these states

have tried, since start, to retain the authority and power to themselves rather than sharing it with the PRIs and NGOs for larger public good.

8.3.3. Availability of CSC/WSC in the GPs and their maintenance

(i) The Table in Annex-51 reflects the views of the authorities at the District level on the maintenance of the CSCs/WSCs, wherever these have been constructed with TSC funds. However, it will be more prudent to get into insights at the ground level where the physical units of CSCs/WSCs exist. An idea of the number of selected GPs reporting existence of CSCs/WSCs in the GP can be taken from the Annex-52. Out of 1207 GPs for which the field work for the study was done, only 211 GPs reported to have CSCs/WSCs i.e. less than even 6%. GPs surveyed in **Assam, Bihar and Jharkhand** had none which reinforces the callous attitude of the implementing authorities. In the light of this observation, the veracity of the argument presented in para8.3.2.3 regarding the conflict between the PRIs and the nodal department is re-confirmed.

(ii) Punjab is a state which is a victim to the apathy of its own government. In spite of being one of the richest states of the country, sanitation coverage is very poor. The PRIs are not involved in the programme and the subject of sanitation is being treated like a ping-pong ball with the Rural Development & Panchayat Deptt. and the Deptt. of Water Supply & Sanitation, Govt. of Punjab throwing the responsibility in each other's court after every few years.

Annex-52also reveals the roles of GPs, SHGs, Users etc. in maintenance of these community toilets, as ascertained from the GP level authorities. It can be seen that out of the 211 CSCs/WSCs reportedly constructed in the selected sample GPs, only about 42% were being maintained by the PRIs. Here, it is again brought to light that the District level authorities too reported involvement of the PRIs in only 49% of the selected sample districts (Annex-51). Some exceptions can be observed from the details presented in the Table below showing active role played by the Users and the Users association in Maharashtra, Self Help Groups in Tamil Nadu. One can see from col. 10 of the following table that 11 out of 28 GPs having CSC/WSCs in West Bengal have reported the role of "Others" in maintenance in those GPs. On detailed study, it was found out by the study team that the community toilets constructed in these GPs were mostly located in the markets areas and the market associations (Traders' association/Bazaar Samity/Market Committee) were playing active role in its maintenance. Here the "Pay & Use" model for the community was found to be contributing not only in revenue generation but also in keeping the surroundings in the busy market areas clean. In Kumun GP of Bardhman district of WB, the local SwajalDhara committee was found to be responsible for maintenance of the complexes.

8.3.4. Availability of CSC/WSC in the village and their Uses

To have an idea about the awareness level of the villagers in the selected GPs in addition to their perception on usage of these CSCs/WSCs, they were asked if there existed a CSC/WSC in their village and if yes, was it being used by them as well as their family members, other villagers and the SC/ST population of the village. The responses received have being tabulated in the Annex-53. Information from only those Households have been tabulated in which existence of CSCs/WSCs have been reported at the GP level.

Differences have been recorded between the responses received from the GP level authorities (to whom the study schedules were canvassed) and those received from the selected Households of those GPs. While the GP level authorities reported that there does not exist any CSC/WSC in that GP, the Households reported their existence in case of GP Sardarpura-Khalsa of Hanumangarh district, Bhadsoda GP of Chittorgarh district of Rajasthan, GPs Rania and Gurugaon of Kanpur Dehat district of Uttar Pradesh. The differences could be because the reported CSC/WSC (as reported by the Households) in the GP were not constructed with funds of TSC, which the households were not aware of. Another reason could be that the GP level officials were ignorant about the existing infrastructure in the GP.

As per the information available in Annex-53, 28% of the Households, who were asked about the existence of CSC/WSC, were not aware of its existence even though the GP level authorities informed our field team that such community complexes existed in the GP. About 27% of those Households who reported CSC/WSC existence also reported that the community toilets were used by the SC/ST population of the GP as well.

8.3.5. User Charges

The Households in the selected GPs (where CSCs/WSCs were reported at GP level during the field visit) were asked about user charges being paid by the users of the community toilets, if any and its details in terms of usage charges per member/per family/per use, as the case may be. From Annex-54, it is clear that out of those GPs which have CSCs/WSCs, only 15.6% have reported collection of user charges. Hence, it can be concluded that GPs where no user charges are being collected are either being solely maintained by the GPs/NGOs etc or else not being maintained at all. This data brings out a very poor picture of provision for maintenance of the existing community sanitary complexes in the selected GPs.

The study team who visited the selected GPs probed further into the matter to find out the amount of user charges. It was found that it ranged from Rs. 2 per member in **Gujarat & Rajasthan**, Rs. 0.50 per member in **Karnataka**, Rs.5 per use in **Manipur**, Re. 1 in **Sikkim**, Rs.10-20 per family in **Tamil Nadu**, Rs. 0.5- Rs.1 per use in **West Bengal**.

8.4. Problems of CSCs/WSCs in rural areas and some suggestions for bringing about some change

8.4.1. Operation and maintenance: O&M of CSCs/WSCs often become a problem as these facilities are used by many, but not owned by the users. In case the number of users is low on a daily basis, the cost of maintaining the facility ends up being high. Gram Panchayats lack adequate income to spend on the upkeep of such complexes. Given the various issues in O&M of CSCs/WSCs, it is necessary to ensure ways and means for O&M at the planning stage before the facilities are designed or constructed involving the community during the consultation process. Given the limited ability and willingness to pay amongst the users who are mostly BPL families, the O&M costs may be recovered through a 'pay for use' basis. However, any charge for use should be reasonably low to promote social benefits rather than profit from the system. Any charge should be fixed by the concerned Gram Panchayat in consultation with community members. In addition, regular sweepers may be appointed for repair and maintenance along with the provision for funds for repair and maintenance of existing Community complexes.

8.4.2. Water shortage has been cited as a major hurdle in maintenance of these complexes during the field visits in most of the states. Choice of technology which does not use water or uses limited water may be considered in the design phase in such villages. A hand pump is one of the most suitable options if the installation of piped water supply is not possible. Alternative approaches, such as a forced lift hand pump, could also be considered. Moreover, Government should ensure the availability of water before embarking upon the programme of toilets.

Sanitation systems differ greatly based on a complex set of factors such as technical, environmental, financial, institutional, politico-legal and socio-cultural. There is no 'One size fits all' sanitation system that can be built and used anywhere and at any time. There should be more flexibility on the **model** depending on the local needs in the Community Toilet Complex rather than the model fixed.

8.4.4. Land is a limited resource and also scarce in many pockets of the rural areas. Splitting of joint families and sharing of accommodation with the available space over decades has resulted in non-availability of space for toilet construction in villages. It is suggested that construction of Cluster Toilets (not really Community Complex) and giving lock & keys to user families may address this issue.

8.4.5. Socio-cultural issues in the use of community toilets because of caste and class distinctions also pose a big problem. The Gram Panchayat should understand and discuss such points before constructing a CSC/WSC in the area.

It is important to involve the village community in planning to ensure that any infrastructure created meets their needs in terms of the location etc. Only when the toilet meets their needs, they would be amenable and there would be willingness to use and maintain it.

Since sanitation is a crucial issue and affects many aspects of village life, some funds can also be taken for community toilets from other rural schemes of the central government such as the National Rural Employment Guarantee Scheme (NREGS), the Backward Regions Grant Fund (BRGF), etc. States should have detailed operational guidelines delineating clearly, the roles of different stakeholders in the district.

8.5. A note on importance of sanitation for Women-A Gender Aspect:

Any sanitation programme without providing women a lead role cannot achieve a holistic and lasting impact. Sanitation is critical to women's health and is a matter of dignity. Lack of sanitation facilities often forces women to restrict themselves by reducing and controlling their diet, which leads to nutritional and health impacts. Women across cultures, especially in Indian context are known to have restricted mobility which reduces their access to sanitary facilities, further leading their defecating openly, distant from home. Seeking privacy to defecate, further exposes women, especially adolescent girls, to the risk of sexual assault. This risk is also increased in the absence of sex-separated facilities, particularly in schools. Moreover, during puberty, menstrual hygiene is affected in the absence of proper sanitation facilities which may result in serious reproductive problems at a later age. The perceptions of women are essential in early planning for sanitation. As mothers, caring for and toilet training infants and as the primary users and caretakers of new latrines, their preferences and opinions must be considered.

A strengthened role for women is imperative to promoting sustainable sanitation. Therefore, it is imperative to have women participate to find workable solutions for their situation not just in the design, building and maintenance of sanitation but also representation at the policy level decisions and management of the programmes. In this regard, a success story from Tamil Nadu is presented to highlight the need and importance of sanitary facilities for females and how with some initiative, things can be changed.

"Integrated Women Sanitary Complexes with sanitary napkin incinerators are widely seen in all panchayats and are very popular among women in Tamil Nadu. The complexes consist of latrines, bathrooms and washing platforms with piped water supply facilities and at many places, sanitary napkin incinerators. For safe and hygiene disposal of sanitary napkins, incinerators are found to be a simple, easy to operate, low-cost method installed in many Women Sanitary Complexes (WSCs) and girls' school toilets. The entire incinerator is attached to the outer wall of the toilet. The waste gets

converted into ash and other non-hazardous residues. A smoke vent is provided for the disposal of gaseous substances while firing the sanitary wastes. This helps to solve the problem of clogging of toilet traps and other components. Some complexes also have latrines for the disabled, old age and latrines for children and are run by local women's SHGs. There is usually a woman caretaker appointed/ selected by the SHG, who takes care of the daily maintenance of the complex. The lady is paid around Rs. 300 to Rs. 500 a month. Funds towards this and other materials like phenyl, bleaching powder, etc. for day-to-day maintenance is raised from the users on a monthly basis ranging between Rs. 5 to Rs. 10 per household per month. This simple addition to the school toilets is highly appreciated by girls and teachers. It has removed the inhibitions among girls and has brought them back to school**."**

Chapter- 9
Information, Education and Communication (IEC) Activities: Coverage and Effectiveness

9.1 Background

Central Rural Sanitation Programme (CRSP) had been looked upon as a supply driven, target oriented and top down programme focused mainly on toilet construction. In order to remove the anomaly of the previous programme, Total Sanitation Campaign (TSC) emphasizes more on Information, Education and Communication (IEC) to increase awareness among rural people and generation of demand for sanitary facilities. In the new format, CRSP moved towards a "demand driven" approach.

IEC intends to create demand not only for acquiring the sanitary facilities but also for their use and maintenance. IEC is also to educate the rural households for adopting critical hygienic behaviour. It is not a one time activity but supposed to be implemented continuously and persistently.

9.2 Strategy for IEC: Social Mobilisation/ Motivation

Formulation of strategy for IEC is appeared to be influenced by two concurrent developments.

1. Intensive Sanitation Programme (ISP) initiated in the Medinipur district of West Bengal
2. Successfully concluded Total Literacy Campaign (TLC)

It is said the ISP of Medinipur district of West Bengal became the foundation for IEC component of TSC. ISP followed the strategy of activating the market of sanitary facilities by way of awareness building and demand generation. TLC had also focused on massive social mobilization. The programme focused on all the rural households (BPL and APL). For demand generation, motivators were recruited and trained. These motivators were linked to the production centres. "There were many districts where the existing TLC infrastructure was significantly used in TSC implementation."[2]

As a part of the strategy under TSC, motivators are to be engaged at the village level for demand creation and taking up behavior change communication. The motivators can be given suitable incentives from the fund earmarked for IEC.

But it appears that this strategy has not been adopted by many project districts. Only 46% of the selected Gram Panchayats have reported that motivators had been recruited for this purpose. No motivators have been recruited in Assam, Punjab, Sikkim and Meghalaya and in only few Gram Panchayats, motivators are present in Andhra Pradesh, Madhya Pradesh and Manipur. Only in Bihar, Jharkhand, Rajasthan and Tamil Nadu, most of the Gram Panchayats have recruited motivators.

Quality of motivators is also important. Motivators are required not only for demand generation for sanitary latrines but also for educating the people about toilet technology, operation and maintenance of sanitary facilities and hygiene promotion. In most of the states especially in Tamil Nadu, Uttar Pradesh, West Bengal, Manipur and Maharashtra, the role assigned to the motivators is to contact people individually and persuade them to construct latrines. Though in Haryana, Rajasthan and Uttarakhand, the role of motivators also include collecting information from the households, motivating people about sanitation, water purification and hygiene besides construction of latrines. **(Annex-55)**

9.3 Medium of Communication

The national communication strategy developed for sanitation and hygiene promotion focuses on interpersonal communication at the village level and mass media campaign at the national and state level.

All the selected households have been interviewed about their awareness of TSC. About 90% of the households have said that they are aware of TSC. But, in Bihar, Jharkhand and Andhra Pradesh about 57%, 45% and 24% rural households respectively are not aware of TSC.

Interpersonal communication appeared to be most successful medium. More than half of the selected households have been made aware of TSC through meetings, NGO/SHG and PRI head at the Gram Panchayat level. In some of the states though, people got to know about TSC through other sources. In Assam, maximum households are aware of TSC through self. In Sikkim most of the households got awareness about TSC through TV, Radio and News Paper and in Tamil Nadu, the children have made their parents aware of TSC. (Annex-56)

9.4 IEC Action Plan

It is expected that each district will prepare a detailed IEC Annual Plan with defined strategies to reach all sections of the community. Though all the selected districts (except one in Jharkhand) have reported that IEC Action Plan is prepared, only 70% of the selected states have reported that IEC Action Plans have been prepared in all the districts.

9.5 Other issues/Conclusion

The following points analyzed in chapter 6 (Individual Household Latrines: Coverage, Construction and Usage Pattern) are again highlighted here

1. Estimated open defecation percentage in rural India comes to 72.63%. Even 20% of households having toilets reported that one of the family members resort to open defecation and have accepted that “lack of awareness” and “established age old practice” are the main culprits for this practice.

2. 92% households not having toilet have recorded “lack of incentive” as a major cause of dissatisfaction. And, 27% of the households having toilets are dissatisfied since there is no fund for the maintenance and renovation of old toilets.
3. It was found that 85% households have single pit toilets. (One pit lasts for 4-5 years if used by a family of 5-6).
4. Only 59% households have toilets that are both covered on all sides and have a roof.

Changing the centuries old behavioral pattern of rural people cannot be an easy task. To reach out to almost all rural households either for motivating them for constructing latrines or educating them for adopting critical hygienic behavior has been a major communication challenge. But in TSC a well thought-out IEC strategy has been chalked out. But it appears that for the government machinery which so far used to implement target oriented, supply driven, top-down programmes, the radically different strategy for TSC has been difficult to digest. They are implementing the IEC activities in a routine administrative fashion as more of a fund utilization exercise, and not originally linked to awareness creation and demand generation process.

Interpersonal communication as enshrined in TSC need persistent efforts so many project tried to avoid this. This resulted in making “incentive” as sole attraction for the rural households for constructing latrines. It must be kept in mind that in TSC only BPL households are being given cash incentive to construct the toilets. APL households have to be motivated through social mobilization and communication efforts.

Post-construction awareness campaign is also needed for sustainability of the programme. Awareness is required regarding emptying the pit when it get filled up without which people will find it difficult to use the toilet. It is expected that by the time the pit gets filled the behavior change due to continuous use of toilet would induce households to upgrade the single pit toilet into double pit. Hence it is also important to educate the people about the salient features of the toilet technology like upgradation. Otherwise there is risk of reverting back to open defecation once the latrine is filled. If the toilets are not covered on all the sides and have roof, people are not using it in all weathers and at all times (day/night).

Even the targeted households are not happy with the effectiveness of IEC activities. Only 21% of the selected households feel that “effectiveness” of IEC activities is good. People of Kerala and Maharashtra appeared to be happier with the IEC activities than the other states. (Annex -57)

Chapter-10
Solid and Liquid Waste Management

10.1. The Danger

The primitive methods of excreta disposal, especially in rural areas causing most of the leading diseases in our country are deeply rooted in the environment. Many diseases result from the careless disposal of night soil. Water borne diseases like diarrhoea, dysentery, typhoid, cholera, etc., mainly spread through water collected by the excreta of patients suffering from those diseases. These diseases spread in an epidemic form in villages. The watery portion of the night soil containing the germs causing the diseases soaks into the ground and may finally reach water sources like wells, tanks and streams. The people drinking this infected water can contact the disease easily. The waste water generated from various households and other activities in rural area overflows into open surface drains and is ultimately disposed of into village ponds, thereby contaminating them. Seepage from pit latrines is also likely to affect the underground water.

Accumulated solid waste clogs drains, causing water stagnation and flooding. Pools of mixed solid and liquid waste, often combined with human faeces, create breeding grounds for pests such as rats, mosquitoes, dogs, flies, fleas, and cats. These pests serve as vectors that spread diseases such as malaria, polio, chikungunya, dengue, cholera, typhoid, and schistosomiasis. India's high infant mortality rate is due largely to poor sanitation. According to the Ministry of Rural Development, approximately 88% of the total disease load is due to lack of clean water and sanitation, and the improper management of solid and liquid waste. Burning mixed waste creates toxic by-products and noxious fumes. The production of waste is expected to increase dramatically. In 2001, scientists estimated that in India, "the total waste quantity generated in 2047 will be approximately above 260 million tonnes—more than five times the present level. For e.g. it is estimated that rural people in India are generating liquid waste (grey water) of the order of 15,000 to 18,000 million litres and solid waste (organic/recyclable) of about 0.3 to 0.4 million metric tons per day respectively.

10.2. Types of Waste

(i) Solid waste**:** Solid waste in rural areas generally includes-house sweeping, kitchen waste, garden waste, cattle dung & waste from cattle sheds, agro waste, broken glass, metal, waste paper, plastic, cloths, rubber, waste from markets & shopping areas, hotels, etc. It can further be classified as Biodegradable and Non-biodegradable in terms of its property of getting decomposed or not. Waste

which cannot be decomposed by biological processes are further categorised as Recyclable and Non-recyclable waste.

(ii) Liquid waste**: -** This used and unwanted water is of two types, (a) Black Water: Waste water generated in the toilet which contains harmful pathogens and (b) Grey water: Waste water generated in the kitchen, bathroom and laundry.

10.3. Ways to overcome the menace

The only answer to stop such spread is by a two pronged strategy of;-

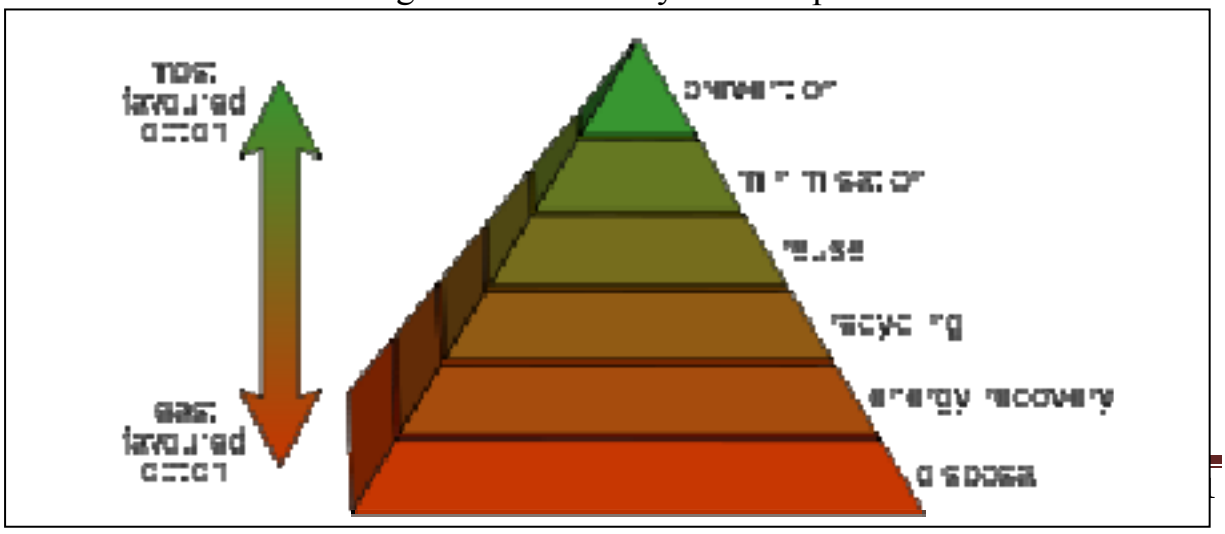
(i) Using sanitary latrines, which mean any type of latrine constructed for protecting the health of the Community. In rural areas, non-service type of sanitary latrine like pit latrine hygienically constructed, will surely control the outbreaks of these fatal diseases.

(ii) Waste management which is primarily the collection, transport, processing or recycling or disposal, managing and monitoring of waste materials, usually ones produced by human activity, in an effort to reduce their effect on human health or local aesthetics or amenity.

Changes in the environment, especially with regard to disposal of waste and human excreta, are of vital importance to keep diseases away as well as keep the environment clean. The first step in the right direction is to recognize that waste, if managed properly, is a resource of considerable economic value. The cooperation, support and involvement of community, the willingness of the villagers to segregate waste at its source will determine the extent to which rural areas will begin to reduce, reuse and recycle.

There are a number of concepts about waste management which vary in their usage between regions. One concept is that of “Waste hierarchy”. The waste hierarchy refers to the "3 Rs"- reduce, reuse and recycle, which classify waste management strategies according to their desirability in terms of waste minimization. The waste hierarchy remains the cornerstone of most waste minimization strategies. The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste.

Picture 10.3: Waste management: Hierarchy of concepts



10.4. Management of Solid Waste

(i) Household Level: The best scenario would be that the household level waste is sorted out and segregated at the household level itself into bio degradable and non bio degradable waste so that zero or minimum community waste is generated. There are simple technologies which can be adopted by the Household to treat the segregated bio- degradable waste and reuse the treated products. These technologies are Composting, vermi-composting, Biogas plant etc.

(ii) Community Level Solid Waste: When waste cannot be managed at household level, segregated household waste has to be brought to the community bins at the village level or to the treatment plant sites at community level where household level bio degradable waste can be treated by community treatment plant. The recyclable and non bio degradable waste can be sorted out and sold to the kabadiwalas by the GPs.

10.4.1. Popular options for treatment of solid waste:

(i) Composting**:** In this process, the organic matter breaks down under bacterial action resulting in the formation of humus like material called compost. The value of compost as manure depends on the quantity and quality of feed materials poured into the compost pit. The main advantages of composting are that the biodegradable waste gets converted into good quality organic manure, which not only prevents vector breeding and breeding of rodents but also results in destruction of pathogens and weed seeds by generation of considerable heat during the aerobic composting process. Added advantage in this process is that the insanitary conditions arising out of solid waste are removed making the environment clean.

(ii) Vermi-Composting**:** Vermi-composting involves the stabilization of organic solid waste through earthworm consumption which converts the material into worm castings and is the result of combined activity of microorganisms and earthworms.

(iii) Biogas Technology: Biogas (a gaseous mixture of Methane (CH4) and Carbon-dioxide (C02)) can be produced when biodegradable organic solid waste is subjected to anaerobic decomposition under favourable conditions. The process involves a series of reactions by several kinds of anaerobic bacteria feeding on the raw organic matter.

Toilet Linked Biogas Plant: For generating one cubic meter biogas per day in a toilet linked biogas plant, excreta of 25-30 persons per day is required. For community toilets, where the number of users per day is more, this is a viable method for generation of biogas from human excreta. At present, human excreta treatment is a major sanitation problem in the country. It can be used as the feed material to the biogas plants making it an asset instead of a nuisance. In most rural areas, people are dependent on fire wood for cooking since Liquefied

Petroleum Gas (LPG) is rarely available. Under such conditions, biogas will prove a boon for the community. Initially, people may hesitate to use biogas for cooking but, since it has direct economic benefits, perceptions can change.

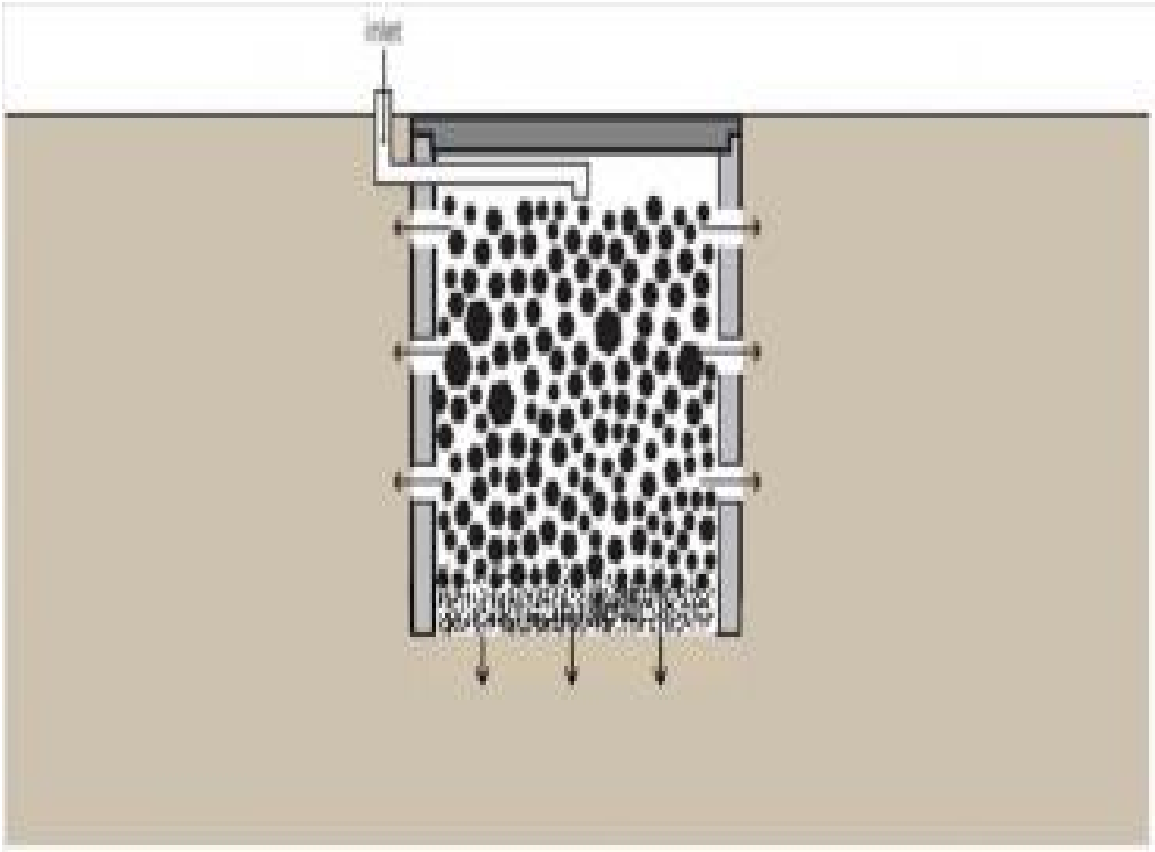
10.5. Management of Liquid Waste

10.5.1. *Reuse of grey water:* Waste water is a dangerous breeding place for mosquitoes, which results in spread of diseases like dengue, malaria and filaria. Hence, disposal of waste water is a major public health problem in rural areas. Grey water management involves reuse of water for a variety of purposes including irrigation, domestic purposes and toilet flushing after appropriate treatment. The best option is to manage waste water at household level itself. This can be done by constructing a leach pit or a soak pit, using the waste water in the kitchen garden etc.

Box 11.5

A Soak Pit/ leach pit, is a covered, porous-walled chamber that allows water to slowly soak into the ground. Pre-settled effluent from a Collection and Storage/Treatment or (Semi-) Centralized Treatment technology is discharged to the underground chamber from where it infiltrates into the surrounding soil. The pit can be left empty and lined with a porous material (to provide support and prevent collapse), or left unlined and filled with coarse rocks and gravel. The rocks and gravel prevents the walls from collapsing, but provides adequate space for the wastewater.

Picture 11.5.1. Diagrammatic Representation of a Soak Pit



Picture 10.5.2. Actual Photo of Soak Pit

10.6. Institutional Reform under TSC

During the first 6 years of its implementation, TSC programme suffered from the limitation of not focussing on solid and liquid waste management. Though there was strong demand from proactive state governments like Kerala and Maharashtra since many years, the need of introducing SLWM was fully accepted and its inclusion as a new component of TSC took place only in March 2006.

With the change in the programme guidelines, Government of India has now earmarked ten percent of the project funds under the Total Sanitation Campaign for Solid and Liquid Waste Management for meeting capital costs. To bring about an improvement in the general quality of life in rural areas, PRIs are required to put in place mechanisms for garbage collection and disposal and for preventing water logging. Sharing pattern between the Centre, State and Panchayat / Community is in the ratio of 60:20:20. Under this component, activities like common compost pits, low cost drainage, soakage channels/ pits, reuse of waste water, system for collection, segregation and disposal of household garbage etc. may be taken up.

10.7. Findings of the study

The district level implementing authority of the selected sample districts, during the field visits of this study, were asked if there exists a plan to locate villages that have been successful in implementing the proper garbage disposal & processing norms. If so, whether they have been able to replicate the success story elsewhere in the district?

The table in Annex-58 tabulates responses of the districts selected for this evaluation study. It reveals very clearly that the overall response received from the districts has been poor. Sample districts of Assam, Bihar, Rajasthan, Manipur, Meghalaya, and Tamil Nadu reported that no such plan existed. In other states also, only one or two districts out of 7 sample districts reported that such plan relating to SLWM was in place. Response on the same question was sought from the State level nodal office implementing TSC. It is surprising that states like AP, Haryana, Jharkhand, and Karnataka did not report of such plan of SLWM even though few districts, visited in these states, reported existence of SLWM plan. It exhibits poor flow of information from districts to State level and vice versa. In addition, it leaves room for doubt on responses received from district level on their efforts towards SLWM. Sikkim and West Bengal fared better in this regard with about 50% of the selected districts reporting that efforts in this direction have been made.

Some observations made by the field study team, during their visits to the sample districts, with regard to SLWM have been listed below:-

- Many NGP awarded GPs in the district Shimoga in **Karnataka** have reported to have prepared an action plan for the utilization of NGP award fund and are awaiting the release of NGP fund to be utilised for solid and liquid waste management in those GPs.
- In several districts of **Kerala** viz. Malappuram, Palakkad, Wayanad, it was reported that steps have been initiated by the state to address the issue of waste management but these initiatives were in their early stages and will take lot of time to gain momentum. The initiatives included introduction of Biogas plants, sewerage systems, soakage pits, etc. District authorities in Ernakulam district reported that two Biogas plants have been constructed in the market area and in the high school for the safe disposal of solid waste generated there.
- The field team who visited the 7 sample districts in **Madhya Pradesh** viz.Panna, Sagar, Ashoknagar, Chhatarpur, Shivpuri, Guna, Khandwa observed that no progress in the field of Solid and Liquid waste management has been made.
- In **Haryana**, though all the districts were allotted funds were under this head, these funds were mainly reported to be utilised for construction of drainages. However, no efforts were made to make drainage construction a low cost affair. Kurukshetra and Rohtak districts informed the field team that the SLWM funds were also provided for general cleaning of

villages @ Rs. 1000 to GPs. Whether such works should be part of SLWM is a question worth deliberating upon. Officials in Bhiwani district informed that under SLWM, finance has been provided to 35 villages in the district, but the field team observed that in majority of the villages (i.e. 24 villages) the only work done was Garbage Collection which mainly aimed at presenting a rosy picture to the visiting NGP teams. The compost pits constructed in 2 of the villages were found non-functional. On the whole, funds under the Solid Liquid Waste Management have not been spent fully and the impact is negligible since the funds mostly have been spent for drainages. Due to inadequacy of funds, the entire village could not be covered with drainage system.

- The field team observed that the efforts in the field of solid and liquid waste management had not started in any of the 7 sample districts in **Odisha**.
- Since, the SLWM component was introduced in later stage of 2007-08, **Punjab** state authorities reported that some projects under this head were at planning stage. The state sponsored scheme i.e. Punjab Nirman was also taking care of this activity. In villages such as Nanak Pindi and Puranpur, underground sewerage system had been constructed for the whole village by the efforts initiated by GP and villagers themselves. In Seechewal, underground sewarage, pucca roads, trees alongside the roads, trees at samashanghat and a water treatment plant had been installed out of efforts of EkOnkar Trust.

District officials in the selected states, during the field study, were also asked if there existed any plan of dovetailing the issues of 'garbage disposal and cleanliness norms' into other ongoing Rural Development Programmes in the district. Responses to this have been presented in Annex- 58.

More than 40% of the sample districts in Gujarat, Haryana, Kerala, Maharashtra, Punjab, Sikkim and West Bengal replied in affirmation on this issue.

Findings of the field team on the above subject are as follows:-

i. As reported by the field team, Solid and liquid waste management is at its nascent stage in the state of **Kerala**. However, the state govt. has set up Clean Kerala Mission under the same nodal agency which implements TSC for providing technical support and financial assistance for local self-governments in the state to set up solid waste management systems. Kudumbasree, a self-help group for women has been engaged for collection and segregation of domestic garbage. Clean Kerala Mission has identified 55 local self-government institutions for setting up solid waste processing facility and supported them with an amount of Rs.248.80 lakhs for solid waste management activities. In rural areas, the Gram Panchayat is engaging households to make own soakage pits for

liquid waste disposal and compost pit for safe disposal of biodegradable waste under various ongoing schemes so as to contain the waste within the homestead without creating any environmental hazards.

ii. **Punjab** Government has taken initiatives in developing and demonstrating workable and low cost sewerage system in the form of small bore sewerage system and cost effective sewage treatment technologies. It has been implementing schemes like "Small Bore Sewerage System" and "Rehabilitation of Ponds" with the assistance of Gram Panchayats and Non Resident Indians (NRIs). The project has a provision to finance, on pilot basis, construction of small bore sewers and sewerage schemes in about 100 villages which already have good household sanitation coverage. The provision also includes rehabilitation of village ponds in 100 villages where sewerage schemes would be taken up to improve water disposal systems and reduce environmental degradation.

iii. (a) In **Haryana**, grants received under the Twelfth Finance Commission have been dovetailed for management of waste water in the villages. State Government has launched "Scheme for Financial Assistance to the Gram Panchayats for improved sanitation" from the year 2007. The objective of the scheme is to improve and maintain the general cleanliness in the villages. Annual budgetary provision of Rs.45 crores has been made under the scheme. Under the scheme, Gram Panchayats are given financial assistance for deployment of Safai-karmis. The Safai- karmis are deployed in all the villages on the basis of their population. One Safai-karmi is deployed per village below the population of 2000; two Safai-karmis are deployed with the population between 2000-5000, four per village with population between 5000-10000 and six Safai-karmis per village having population above 10000.

(b) An award Scheme has been announced by the Govt. of **Haryana** to promote the role of Gram Panchayats in sanitation and to add vigour to TSC implementation by accelerating the coverage of sanitation facilities in villages. Under the scheme, the Gram Panchayats which fulfil the laid down criteria gets cash award at the block, district and state level every year. Accordingly, the Development Department of the State launched the Scheme as 'State Incentive Scheme on Sanitation' (SISS) and implemented it from the financial year 2007-08. The main objective of the scheme is to motivate and create a sense of competition among the Gram Panchayats to promote accelerated sanitation coverage, to eliminate the practice of 'open definition' in rural areas of the state and to encourage the masses to deposit 100% electricity bills.

iv. A number of State level Programmes for sanitation & cleanliness are being implemented in **Maharashtra** viz. i) SantGadgebaba Gram Sawachatta Abhiyan& Rastrasant Tukdoji Maharaj Clean Gram

Panchayat Competition, ii) Sane Guruji Clean School and Savitribai Phule Clean Anganwadi Competition, iii) Rastrapita Mahatma Gandhji Clean Zilla Parishad and Panchayat Samiti, iv) Late Shri Vasantrao Naik Drinking Water & Solid Liquid Waste Management etc.. There are provisions for awarding the GPs by the State Govt. under these schemes for good work in village sanitation.

v. District Development Committees in one of the districts in **Gujarat** have developed a convergence model involving funds from TSC, NREGA and beneficiary Contribution. The model has been shared with other districts and is being implemented in 260 GPs across the state with 10 GPs in each district. Issues related to construction and creating infrastructure for garbage waste disposal are being dovetailed under NREGA/ BRGF (Backward Region Grant Fund) and State Programme of "Nirmal Gujarat".

While canvassing the schedules of this evaluation study, the selected households were asked whether they were using some mechanism for proper disposal solid and liquid waste, like Common Compost Pit, Appropriate Drainage, Soakage Channels/pits for household grey water runoff, Reuse of waste water, Vermi-composting etc. The responses have been presented state wise in Annex-59. The table also summarises responses of these households on regular cleanliness of drains & sewers and whether help from manual scavengers is taken to dispose off the night soil.

It is evident from the Table 11.2. that states like Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Tamil Nadu have made some efforts in adopting some or the other mechanism for Solid and Liquid Waste Management.

Our study team made the following observations during the field visits:-

- Majority of the households in **Tamil Nadu** have dug a pit in the backyard of their houses. They collect their solid wastage in the pit and allow it to become compost which is then used in their farms. However, no mechanism is in place to manage household waste water, which is allowed to drain out in the streets and consequently causes water stagnation in some places.
- In **Kerala**, it was observed that the households use local methods for disposal of wastes like burning solid wastes and using the same in the kitchen garden. However, it was also reported that there have been no intensive and organized effort by the panchayats to address the problem of domestic liquid waste.
- Going by the observations from Annex-59, steps in this direction seem to be lacking on the whole in Assam, Bihar, Jharkhand, Madhya Pradesh, Odisha, Punjab, Rajasthan, Sikkim, Uttar Pradesh, West Bengal, Manipur, Meghalaya and Uttarakhand.

- In spite of its being outlawed and punishable with a prison term, manual scavenging (the removal of human excreta by human beings) continues across the country because of a lack of water-serviced latrines. Our data below supports this dark fact. It can be seen that selected households in Andhra Pradesh, Haryana, Kerala, Tamil Nadu etc. have reported that they take help from manual scavengers to clean up the night soil.
- **Gujarat** had declared itself as a "manual scavenging free state" since 1992. Our data supports this fact. None of the 700 households, which were selected for the study in Gujarat, reported use of manual scavengers.

Table in Annex-60 gives details of responses received from the selected households on other aspects of SLWM like maintenance and participation of the households in cleaning up the village. In some of the better performing states like Andhra Pradesh, Gujarat, Karnataka and Maharashtra, it can be seen from the data presented below that Gram Panchayats are playing an active role in the maintenance of sewers, garbage pits etc. In other states viz. West Bengal, Kerala, Madhya Pradesh, Rajasthan, Sikkim, Tamil Nadu, majority of the selected households reported that they themselves have been looking after maintenance of the sewers, garbage pits etc.

10.8. Best Practices

Three out of many successful stories in the field of SLWM have been presented below in context of Sikkim, Himachal Pradesh and Punjab. One can find many more of such encouraging efforts on the Ministry's portal viz. ddws.gov.in. These cases demonstrate that the community, as a resource, can play an active role in taking responsibility for their garbage and liquid waste. The experiences also show that waste has economic value for a community.

(A) **Sikkim:** - A Waste Management Project covering eight rural cluster villages has been started by the RMDD, Govt. of Sikkim to achieve a zero waste society with zero disposal and discharge by adopting reducing, reusing and recycling the waste material. The aim is to provide a garbage collection vehicle and a compost-cum collection centre/shed for each of these targeted rural clusters.

A fully decentralised approach has been adopted, whereby the GPU Panchayats runs the project by evolving institutional mechanisms for collection and disposal of bio-degradable and non-biodegradable waste separately under the guidance of the BDO concerned. The Panchayats have been instructed to immediately identify suitable land for the construction of SLWM centre, comprising a compost centre, store, toilet facility etc. This Solid Waste initiative taken up by the government is supplemented with the grants from the 13th Finance Commission, NGP Award money and other grants. Locals as well as the government authorities in Sikkim have realised that Sikkim being a major tourist destination, only a clean environment in the villages would give a fillip

to the Nirmal-Rajya status of the state. Panchayats namely, Gerethang, Mellidara, Yangang, Namthang, have already made considerable progress in this direction.

(B) **Himachal Pradesh**: - Though Himachal Pradesh was not under the coverage of the present study, nevertheless it was considered apt to present the efforts undertaken by the local Government of the state in promoting this often neglected aspect of sanitation.

There was no system for management of solid waste in rural areas and suburbs in HP. Due to their weak financial position, panchayats in villages were not able to handle such problems. A special scheme for solid waste management to maintain hygienic living condition in villages has been initiated by the state government by setting up a special Incentive Fund of Rs 40 crores for giving a grant to those panchayats that evolve a system for management of solid waste and its scientific disposal. Government would reward double the money spent by Panchayats annually. The incentive is to be equally distributed under a two-pronged strategy for additional resource mobilisation and raising resources to undertake the statutory function of sanitation, liquid and solid waste management and lighting of village streets and other public places. The Gram Panchayats are expected to generate new resources of revenue by either a fresh levy or by way of increase in the existing rates of various taxes, fees or levies already being imposed by the Gram Panchayat.

(C) Village Life Improvement Foundation (VLIF), **Punjab: -** Open drains, accumulated water in potholes and near the water sources, stinking village ponds and heaps of garbage and human excreta in periphery of villages was a common scenario in villages of Punjab. Despite being a high income state, Punjab falls in high morbidity zone in the country. It is well known fact that inadequate water, sanitation and hygiene are among the 10 top contributors to overall burden of diseases. Realising the gravity of the situation and exposed to high quality amenities of the western world, a number of Punjabi NRIs embarked on a mission of developing integrated sustainable development of modern civic amenities in their ancestral villages. Modernisation of village Kharoudi in Hoshiarpur by 2 NRIs began to be cited as a role model for many others. The initial efforts by the two led to the institutionalisation of village life improvement programme and establishment of village life improvement foundation (VLIF), comprising NRIs and representatives from the panchayat to monitor the progress. The VLIF is currently replicating the Kharoudi model of integrated development in many other villages in the state. Modernisation includes installation of deep tube well for piped supply of safe drinking water, construction of water facility in each household, beatification of lanes by tree plantation, painting all walls facing streets and construction of 6 feet high wall around the village to cover the unpleasant scene created by dumps of garbage and also to block the intrusion of disease vector originating from animal dung

and bio waste. VLIF has employed sweepers to clean the village streets each day.
(D) SEMASS, a waste – to – energy facility in Massachusetts in United States, uses 1 million tonnes of municipal solid waste to generate 600 million kilowatt hours of electricity every year and recycles 40,000 tonnes of metals. The annual toxic emission is less than half a gram annually. This is a win-win situation for everyone.

10.9. Suggestions

There is a significant gap in financing of sanitation infrastructure. One way is to find funds in government plan and budget allocations, the other is to look for public and private financing, including public and private international funds. These are complementary and non competing sources. Research in economics has shown over past several decades that in many situations, especially in infrastructure and facilitating investments, public investments can crowd in and increase private investments. Sanitation has both public good and private good aspects to it. It should be funded by both public and private finances. It might be prudent for the government to realise the fact that it alone is not capable of managing the pressing need of providing quality sanitation to masses and therefore, realises the urgency of adopting a more efficient model. Although every model has its limitations, an objective and meaningful public-private partnership model might be worth experimenting with.

10.9.2. *Utilisation of labour component in other schemes* like NREGS: - Panchayat Presidents and in certain cases, District Collectors in Andhra Pradesh have endorsed the need to earmark certain percentage of NREGS Funds towards undertaking sanitation works other than Individual Sanitary Latrines such as constructing waste water drains, leveling of mud roads, cleaning the piled up garbage, application of sanitary sprayers and disinfectants, collection of house hold garbage and animal waste, etc.

10.9.3. *Documenting and disseminating best practices*: There is a need for a structured approach to identify best practices from within the country as well as those in other parts of the world, document the process involved and disseminate them. Women-managed community facilities, the role of banks, micro-credit and sanitation, appropriate technologies, sanitation related business opportunities, are few of the approaches, which merit replication. The sanitation sector is in need of such intervention to upscale these initiatives. The best practices along with all success factors and gaps have to be documented and disseminated and consciously encouraged for upscaling.

One key to efficient waste disposal is the *public attitude* towards waste. A campaign to educate middle and high income neighborhoods of the benefits of

effective and efficient waste management is essential for the success of any good effect as waste management.

A World Bank study found that the composition of Indian waste is such that close to 55% is organic and can be converted into compost and another 15 percent is recyclable. If properly managed less than a third of the waste needs to be disposed of. However, an *efficient disposal* of this garbage would require creation of an extensive and efficient infrastructure catering to collection, storage, transport, treatment and disposal of the waste.

There is possibility of claiming *carbon credits* also as proper waste management will reduce dumping of the garbage in the open, saving Green House Gas (GHG) emission (carbon dioxide and methane) from dumping or landfill sites. All organic waste may be decomposed in a suitable biogas plant to extract methane for use as energy. Such projects can earn carbon credits (CERs) which can meet the investment cost partly. (See note on Carbon Credits at the end of the chapter)

Due to the topographical and population distribution in hilly states like Sikkim, Meghalaya, Manipur, the prevalent system of point wise garbage collection system followed is not feasible. Solid waste generated in Households and institutions in rural areas needs to be managed at site. Feeding of biodegradable wastes like kitchen waste to cattle, poultry and other farm animals must be encouraged.

10.9.8. *From waste to revenue*: There is scope for generating revenue from the waste and some successful experiments in revenue generation from community toilets include:

- Sale of treated waste water**:** The water from baths and washing areas can be treated and can be sold at a nominal cost to those who require large amounts of water such as rich farmers having large tracts of land for irrigation or to industries, if available nearby.
- Production of biogas**:** Production and utilisation of biogas from human waste for cooking, lighting and even for electricity generation have good economic potential in rural areas. Biogas production requires regular maintenance which requires skills; it should be ensured that such skills are available within the community. Also, in addition to the faecal material put in the plant, additional organic material may also be required to be added. Financial support for building a toilet based biogas plant may be sought from the Ministry of New and Renewable Energy, Government of India, which provides central financial assistance under its biogas programme. The effluent as well as sludge of the biogas plant has good nutrient values and can be used as compost for agriculture in rural areas or sold commercially in the neighbouring city areas where the demand for such organic products is high.

10.10. A Concluding Remark

Economic growth produces prosperity as well as garbage. The faster the economy grows, the more its people consume, and the more garbage they generate. When economic growth is sustained over a long period of time, garbage starts to pile up at a faster pace. Garbage just cannot be wished away even as some of us can move around it with eyes wide shut. An efficient disposal of this garbage would require creation of an extensive and efficient infrastructure catering to collection, storage, transport, treatment and disposal of the waste. Efficient disposal is costly but essential for public safety, health, quality life and the environment. The cost of garbage management and disposal therefore has to be compared to its social benefits.

CARBON CREDITS

Carbon credits are a tradable permit scheme, also called emission permit. It is a simple, non-compulsory way to counteract the greenhouse gases that contribute to climate change and global warming. Carbon credits create a market for reducing greenhouse emissions by giving a monetary value to the cost of polluting the air such as carbon emitted by burning of fossil fuels. These are the new currency and each carbon credit represents one tonne of carbon dioxide either removed from the atmosphere or saved from being emitted. Carbon credits are certificates awarded to countries that are successful in reducing emissions of greenhouse gases.

Carbon credits are a part of international emission trading norms. They incentivise companies or countries that emit less carbon. The total annual emissions are capped and the market allocates a monetary value to any shortfall through trading.

Value of carbon credits: Carbon becomes a cost of business and is seen like other inputs such as raw materials or labour. Carbon credits are measured in tonnes of Carbon Dioxide.

1 credit = 1 tonne of CO_2.

Chapter 11
An Assessment of Nirmal Gram Puraskar (NGP) Scheme

11.1 Introduction

To give fillip to the Total Sanitation Campaign, Government of India launched Nirmal Gram Puraskar (NGP) in October 2003. NGP is a post achievement award-cum-fiscal incentive scheme, that (1) seeks to recognize the efforts made by PRIs and institutions who have contributed significantly towards ensuring full sanitation coverage in their area of operation and also (2) aims at encouraging Panchayati Raj Institutions (PRIs), block and districts to take up sanitation promotion. The main purpose of NGP scheme was to give incentive to PRIs to sustain the initiative taken by them to eliminate the practice of open defecation from their respective geographical area by way of full sanitation coverage and to increase social mobilization in the implementation of TSC.

The first award was given in 2005. Since then there has been a rapid increase in application and NGP awardees.

The eligibility criteria for the PRIs to apply for NGP include:

1. 100% sanitation coverage of individual households
2. 100% school and anganwadi sanitation coverage.
3. Free from open defecation
4. Resolution adopted in the GP to ban open defecation
5. Clean environment maintenance (solid and liquid waste management)

11.2 Stakeholders for the Puraskar

All PRIs (Gram, Intermediate and District Panchayats) and organizations (NGOs, SHGs etc.) which fulfill the prescribed criteria are eligible for this puraskar. Once a Gram Panchyat is declared a Nirmal Gram, the Panchayat is felicitated with the certificate and the award money. Till date Govt. of India awarded 28002 Gram Panchayats, 181 Block (intermediate) Panchayats and 13 District Panchayats[1]. There is no report of any organization receiving this award. In this section we will try to see who is actually implementing the scheme at the grassroots level and whether it is justified to give recognition to only the Gram Panchayats for the achievements.

All the selected Gram Panchayats have been asked to give the names of the implementing agencies in the Gram Panchayat. 40 percent of the selected Gram Panchayats have said that TSC is being implemented by the Gram Panchayats themselves. The responses of the respective chairman/secretaries of the GPs are tabulated in Annex -61. It can be seen that in Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra and Uttar Pradesh, TSC is being implemented by the Panchayats themselves at the GP level. On the other hand, in Bihar and

Jharkhand, the NGOs are working at the grass root level. West Bengal also comes in this category where the Rural Sanitary Marts run by private NGOs are implementing the scheme at the village level. In Assam, Punjab and Tamil Nadu, the govt. departments/agencies are implementing agencies even at the village level. We can see in Annex-62 that even in the selected NGP awarded gram panchayats, the program is being implemented by the Panchayats only in 43.9% cases.

Thus it is clear from the above in more than half of the GPs, TSC is being implemented by some other agencies. Now we will find out whether the Gram Panchayats have been assigned a role in the implementation. 84% of the selected Gram Panchayats have said that they have been assigned role in the implementation of TSC. Hence it may be concluded that most of the Gram Panchayats have been assigned roles in the implementation process. In case of Gram Panchayats that have got NGP, 89% of Gram Panchayats have been assigned roles in the implementation. But in the states of Bihar and Jharkhand, most of the Gram Panchayats have reported that even govt. has not assigned any role to the panchayats in the implementation. State wise details can be seen in Annex-63.

The selected households have also been asked the same question about support being provided by the PRI or ZilaParishad. 75% of the selected beneficiaries have said the PRIs/ZilaParishads are providing support. This percentage is 86% in case of NGP awarded Grams. Among the selected households who have got sanitary latrines installed under TSC, 48% have said they have received assistance from Gram Panchayats. (Annex-64).A comparison was made between the selected Nirmal grams and non-Nirmal grams in Annex-65. Here we can find that the Panchayats of the Nirmal Gram are contributing more than those of non-Nirmal grams. The Gram Pnchayats have also been asked what types of roles they are playing. Most of the GPs have said that they monitor the implementation of TSC in their respective Gram Panchayats and they also mobilize the society. But regarding other expected roles like maintenance of the sanitary facilities already created, recruitment of motivators etc, many garampanchayats have not been involved. This can be seen in the Annex-65.

Role of the Gram Panchayats is given in a separate chapter. Here we just want to analyse the relative role of GPs in the context of achieving NGP status. And it is in this context that we note that in more than half villages the programme is being implemented by some other agencies. Two issues are involved here. **First**, if the achievements are due to efforts made by some other agency, the agency should be given due recognition. **Second**, if the programme is not implemented by the Gram Panchayats, then who will take the ownership after the declaration of NGP, since sustenance is extremely important here.

11.3 Amount of Incentive

The incentive amount given in Nirmal Gram Puraskar should be based on a population criterion. The criterion is given in Annex-66. Our studies show that the amount is not always based on the population criterion. It can be seen in the Annex-66 that the GPs having less population have received more amount.

As we can see in Annex-67, except in Kerala and Rajasthan (where almost all selected NGP awarded GP have got equal amount), the gram panchayats have received different amount. Hence there must be some consideration while distributing the NGP award to the GP in different states. In Rajasthan all the selected NGP awarded GP have been awarded on the same date. Hence it appears that the money was distributed equally without any consideration. But in Kerala, date of declaration are different.

11.4 Utilization of the Award money

PRIs should use the award money for improving and maintaining sanitation facilities in their respective areas. 32% of the selected GPs have said that they have yet not received the award money. 90% of the selected NGP awarded Gram Panchayats in Kerala had not received the money till the date of the visit. 14% of the Gram Panchayats have said the award money is still unutilized. Thus nearly half of the Nirmal Grams have not yet received or utilized the award money. 13% have said they have used the award money for the construction of drainage. 6% have reported use of award money on the construction of toilets/latrines. Maximum number of selected NGP awarded Gram Panchayats in West Bengal (56%) have used the award money for the construction of toilets/ drainage. And five percent have reported to use the money for repairing culvert/drainage/tube wells. State wise details of utilization of award money is given in Annex-68.

11.5 Post NGP Scenario

It is interesting to know what the PRIs were doing who had been awarded with NGP. PRIs are expected to act as custodian of the assets such as community complexes, environmental components, drainage etc. Community complex constructed under the TSC are to be maintained by the Panchayats/ voluntary organizations/ charitable trusts etc. Out of 247 selected GPs, 68 GPs have reported to have any CSC in their village. 47% GPs among them have reported that maintenance of CSCs is their responsibility.

There are growing concern around the veracity of ODF status of GPs with NGP awards and its sustainability. A large number of NGP villages are neither (ODF) nor fully sanitized, which is one of the qualifying criteria for NGP application. The households have been asked whether any one of their family members are still resorting to open defection. 13.8% households of the GPs who have been awarded NGP have reported that some of their family members still

resort to open defecation. The maximum percentage is in Bihar (44%). The situation in Jharkhand, Uttar Pradesh and Orissa is also very poor. (Punjab is not considered here due to respectively less sample size). These are states the states where households having toilets have been selected. The estimate for the open defecation by the all types of households is bound to be the higher in these states. Only 88.3% of Gram Panchayats (of NGP awarded GP) have said that remarkable decrease in open defecation is apparent.

As stated in chapter VI, the main reason for open defecation is non-availability of the toilets. That is why there is high percentage of households reported open defecation in the states where households have been selected randomly. (viz. Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu). Gujarat, Maharashtra and Tamil Nadu have performed well on other aspects of sanitation like school and anganwadi sanitation.

Now we will see whether the rural people have been motivated and demand for sanitation has been created. Surprisingly enough, there is a great demand for sanitation in Meghalaya where all the selected households are willing to pay for the improved sanitary facilities. Karnataka, Orissa and West Bengal are the other states where there is a great demand for the better sanitary facilities. A little systematic effort by the implementing agencies may do a miracle in these states. We can see in Assam, Bihar, Jharkhand, Kerala, Rajasthan etc., not many people are willing to pay for sanitation. If adequate awareness campaign is not undertaken in these states it will be risky for the sustenance of the sanitation.

In all 247 selected Nirmal Gram Panchayats, only there were only 11 schools in 7 GPs which are without toilets. We can see that in all the selected states almost all the schools have got toilets. But in 172 NGP awarded Gram Panchayats, 42 (17%) are having anganwadis without toilet. Surprisingly, Uttar Pradesh and North Eastern states have done much better than the other states in anganwadi sanitation.

Karnataka, where households have been selected randomly (with or without toilet) emerged as the best state where all the NGP awarded Gram Panchayats are open defecation free and all the schools in NGP awarded GPs have got toilet facility. But this state has failed to performed well on anganwadi sanitation. About 37% of the NGP awarded GPs have reported that there exist angawadis in their respective GPs without toilet.

Sustenance is the most important aspect for any programme. There is need for continuous supply of sanitary materials to the households in the villages. The provision of RSM/PC is for this purpose. But RSM/PCs exist only in 33% of Gram Panchayats awarded with NGP. Similarly in 66% GPs awarded with NGP, no mechanism has been adopted for the grievance redressal.

(Annex- 69)

We may conclude here that the NGP scheme has been quite successful for individual household and school sanitation. We have seen above that in NGP awarded Gram Panchayats in most of the states, open defecation has been

restricted to a minimum level and all schools have been provided with toilets. If we compare the situation with the rest of the Gram Panchayats, we will see a significant difference. As a result of this, there has been a visible change in the peoples' hygienic behavior and incidence of water borne diseases in these Gram Panchayats. 95.1% of the selected Gram Panchayats who have been awarded NGP have opined that there has been remarkable change in the hygienic behavior of community people. The Gram Panchayats which opined the same in non-NGP awarded GPs is 78.7%. But at the same time it has remarkably failed in providing anganwadi sanitation and community toilets.

Chapter 12
An Analysis of Status of Health and Health Awareness

12.1 Sanitation and Health

One of the main objectives of the TSC was to "bring about an improvement in the general quality of life in rural areas." Sanitation is one the basic determinants of quality of life. Good sanitary practices prevent many infectious diseases that are still the number one threat to public health in developing countries. Consumption of contaminated drinking water, improper disposal of human excreta, lack of personal and food hygiene, and improper disposal of solid and liquid waste have been the major causes of many diseases in India. The combined effects of inadequate sanitation and unsafe water supply and poor personal hygiene are responsible for 88 percent of childhood deaths from diarrhoea. Poor sanitation and unsafe drinking water cause intestinal worm infestations, which lead to malnutrition, anaemia and retarded growth among children.[2]

Sanitation facilities interrupt the transaction of faecal- oral diseases at its most important source by preventing human faecal contamination of water and soil. It is said that most of the deaths due to diarrhoea can be prevented through required interventions which include provisions of safe water and sanitation.

In the absence of appropriate toilet facilities, women in rural India, as in most parts of the world often suffer from lack of privacy & harassment and are required to walk large distances to find a suitable place for defecation. In several cases they have to wait till early morning or night before venturing out in open, causing health problems such as reproductive tract infection, skin infection and urinary tract infection. Exposing one in open, especially during menstruation also affects their dignity and self esteem.

12.2 Economic benefits of sanitation

The first set of benefits is the reduction in cost involved due to illness. The related benefit accrues to both health sector and the patients themselves. Cost savings in health care are mainly due to reduced number of treatment of diarrhoea cases. Also, patients can avoid cost incurred in seeking treatment including expenditure on care, drugs and transport. Second set of benefits relate to reduction in number of man-days lost with respect to formal and informal employment, other productive activities in the households or school attendance. These benefits are both on account of gains related to lower morbidity and less deaths.

[2] The Situation of Children in India, A Profile; Unicef India, May 2011

In India, an annual loss of 180 million man-days can be saved for the economy owing to reduced sanitation related diseases.[3]In India; there occurs an average of three episodes per annum of water and sanitation-related diseases resulting in minimum medical expense of Rs. 100 per capita per annum. There could be an annual saving of Rs. 12 trillion on this account. Water and Sanitation Program's (WSP's) Global Economics of Sanitation Initiative (ESI) estimated the "Economic Impact of Inadequate Sanitation in India" and found that the *total economic impact* of inadequate sanitation in India amounts to Rs. 2,180 per person per annum in 2006 in India.[4]

12.3 Impact of TSC

There are two most effective ways to prevent the transmission of the agents of infection.

1. Safe disposal of faeces
2. Washing of hands with soap

TSC has not been very successful on either of the fronts. It was estimated that there are approximately 73% of households who reported that one or more of their family members still defecate openly *(see chapter VI).* It was found that though nearly 100% households have said that they wash their hand before/after having food but nearly 55% have said they wash only with water. The situation in the GPs who got NGP is only little better where 47% households have said they wash their hands with water only.

Data were collected from the households on method of washing their hands before and after having food and number of time their family members become ill because of not observing proper hygiene and from water borne diseases. A cross tabulation is presented in table1.

Table 12.3.1

Method of washing hands	Average number of times family members becomes ill per family		
	2006	2007	2008
Only water	0.87	0.76	0.62
Soil	0.32	0.33	0.24
Ash	0.08	0.11	0.07
Soap	0.12	0.10	0.09

(Source: Data collected through Household Level Schedule)

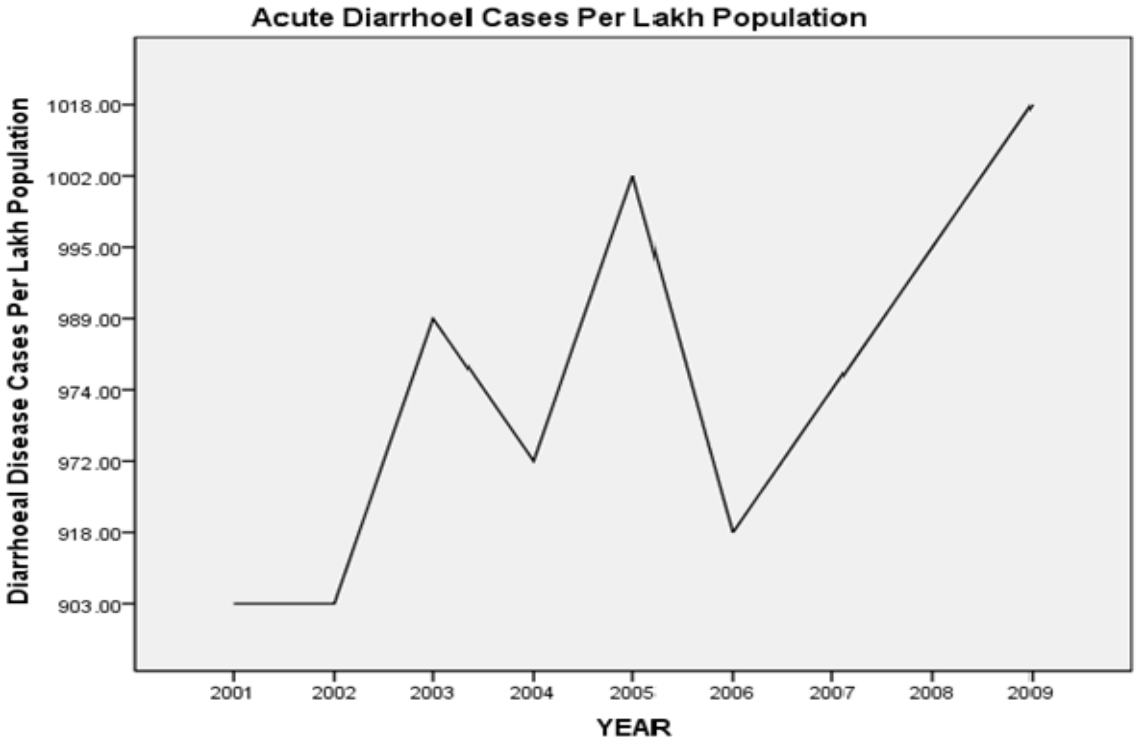
[3] Kumar Alok, Sqatting with Dignity, Sage Publication

[4] The Economic Impacts of Inadequate Sanitation in India, Water and Sanitation Program, World Bank Web site: www.wsp.org

It is clear from the above table that the households which wash their hands with only water have been highly affected by the water borne diseases and those which use soap for washing their hands have been least affected.

During the survey all individual households have been asked whether they think that improved sanitation condition due to TSC has enabled them to reduce medical expenses. 69.4% households have replied in affirmative. (Annex-71)

To see the impact at the macro level we have used the morbidity data of CBHI. The morbidity trend (2001-2009) compiled by CBHI in National Health Profile 2010 show increasing trend in the reported cases of "Acute Diarrhoeal Diseases" per lakh population. Though the data is for the urban and rural India, we can certainly say that TSC has not been able to impact the morbidity trend at macro level since majority of our population live in rural areas.



To know the impact of TSC we can compare the morbidity status in Nirmal and non-Nirmal Gram Panchayats. The information is summarised in table 12.3.2.

Table 12.3.2

	Average number of times family members become ill in a family		
	2006	2007	2008
GPs with NGP award	0.24	0.22	0.17
GPs without NGP award	0.63	0.55	0.46

It is clear from the above table that on average, morbidity is higher due to improper hygiene and increased water borne diseases in non-Nirmal Gram Panchayats than in Nirmal Grams. Secondly, the rate of decrease (during 2006-07) in the occurrence of diseases is more in Nirmal Grams.

While data collected from the CBHI shows no improvement at the macro level, the finding from the evaluation study indicates that achieving the criteria for the NGP also have positive impact on the morbidity. There may be two reasons for this. First, NGP is the latest phenomenon and its significant impact at the national level is yet to be realised and secondly, diarrhoeal diseases are also caused by disasters like floods, earthquakes etc. TSC has still to address the impact on sanitation at the community and household level due to such disasters and also creation of awareness of such disaster risks.

It is also said that NGP award is being given only on the basis of physical construction and behaviour change aspects of sanitation are being ignored and manipulated. We again compare the hygienic behaviour of Nirmal and non-Nirmal Gram Panchayats.

Table 12.3.3

	Method of washing hands			
	Only Water	Soil	Ash	Soap
GPs with NGP award	47.1%	5.7%	4.6%	42.0%
GPs without NGP award	59.1%	3.7%	4.9%	32.0%

The percentage of households who use soap for hand wash before and after the food is more in the gram panchayats awarded with NGP. Hence we may say that the hygienic behaviour of the households in the Nirmal Gram is better.

State wise households' hygienic behaviour and their morbidity status are given in Annex-70. Here we must keep in mind that in some states only those households were selected that have toilets within their house premises while in some states households were selected randomly, ignoring whether they have toilet or not. It is apparent that the states where people are adopting good hygienic practices are doing better. Karnataka, Manipur, Orissa, Jharkhand and Bihar are the states that witness high morbidity and they are also poor in hygienic practices. Andhra Pradesh and Maharashtra are the states where households with and without latrines both are selected and included in the table. These two states have less morbidity which is only due to better hygienic practices performed by the people.

Again, it is also said in several reports/articles that focus on school sanitation without adequate emphasis on hygiene education as a part of SSHE component of the programme has not resulted in required behaviour change in

most of the places. During the study the selected households were asked whether hygiene education is being imparted in the village schools or anganwadis. More than 95% selected household have said hygiene education is being imparted. Hence the study found that SSHE component is being addressed while implementing the scheme. But the quality of SSHE being imparted in schools and anganwadis may be the matter for concern. And also, it is not clear whether such education is actually percolating up to the household level, as assumed.

The Solid and Liquid Waste Management component of the programme is yet to pick up as they have been largely neglected in most of the states. Out of 1207 selected Gram Panchayats, only in 14% Gram Panchayats, any waste management system has been adopted. In all selected North Eastern States (including the Nirmal Rajya Sikkim), Bihar, Madhya Pradesh, Uttar Pradesh, and Uttarakhand, any type of waste management system is not in place in any GP. This is bound to have negative impact on health.

IEC is extremely important to ensure sustained use of the sanitation facilities created. It is said that IEC activities have been implemented in a state led and target driven fashion without any conscious effort to create required awareness at the community level. In this category IEC activities have been undertaken in a routine administrative fashion as more of a fund utilisation exercise, not organically linked to awareness creation and demand generation processes. Only 20% of the selected households feel that "effectiveness" of IEC activities is good though 89% households said that they are aware of TSC and 86% of the selected household are aware of water borne diseases. But there is a demand for effective IEC. For example many people carry this perception that smaller pits would fill up quickly and hence toilet pits should be wide and as deep as possible. There is emerging evidence that deeper pits are quite likely to cause faecal contamination of sub-surface water source making things even worse in certain cases. This underscores the need to educate people and present to them a range of safe technology options for toilet construction as per local conditions and context. In Sikkim around 80% of the households have connected their toilets to a septic tank. A septic tank is usually a dug out pit covered by bamboos, wood, and soil etc. and is not necessarily a RCC septic tank. There are substantial number of households that dispose their toilet (human) waste in the open field and jhoras. The sustenance of the programme depends on the effectiveness of IEC.[6]

12.4 Conclusion

Some studies have concluded that in TSC the thrust is only on coverage. All the indicators designed for monitoring at the state or national level are based on coverage and do not capture usage or behavioural change which are the stated thrust of the programme. Overall the focus has been to ensure latrine

coverage and the promotional strategy has omitted the linkage between improved sanitation leading to improved water quality and improved health.

At the macro level it appears to be true because a large number of populations still defecate openly and more than half of the rural households have yet not adopted hygienic hand wash. But the situation in the Gram Panchayats which are declared as Nirmal Grams is better than the rest of Gram Panchayats. These Gram Panchayats are mostly open defecation free, have adopted better hygienic practices and enjoying a healthier life.

The perception that the thrust is only on coverage is based on the indicators which is being monitored by DDWS. Usage of latrines, behavioural change in the general public and the outcome (morbidity and mortality) are not being monitored.

We may conclude that in GPs where TSC has been successfully implemented definite behavioural changes in terms of hygienic practices and positive impact on health were noticed. However, needless to say, a lot is yet to be done. We should impress upon the implementing agencies that increasing coverage will not automatically bring the desired outcome. Evidence supports that sanitation is a holistic approach. There are hardware and soft ware components of it. Solid and liquid waste management is still not taken up in most of the districts. Approximately 50 per cent of the population in the country are women. Though extremely important, menstrual hygiene is not included as a part of the TSC. IEC needs to focus more on establishing a link between improved sanitation and its impact on the collective health to ensure sustained use of the sanitation facilities created programme design. It must be kept in mind that to achieve significant reduction in avoidable morbidity and mortality, we need to have safe pathogen free environment and not only the sanitary latrines.

Chapter 13
Monitoring and Supervision

13.1 Inspections

Monitoring through regular field inspections by officers from the State level and the district levels is essential for the effective implementation of the Programme. The inspection should be to check and ensure that construction work has been done in accordance with the norms, the community has been involved in construction, the latrines are not polluting the water sources and also to check whether there has been correct selection of beneficiaries and proper use of latrines after construction. Such inspection should ensure that the sanitary latrines are not used for any other purpose. Inspection should be done to check whether TSC information of a Gram Panchayat has been displayed transparently in Gram Panchayat (by wall painting or special hoarding). Project authorities should constitute a team of experts in the district who should review the implementation in different blocks frequently. Such review should be held at least once a quarter. Similarly the State Governments should conduct review of projects in each district periodically and for this purpose they should constitute a panel of experts available in the state. In addition, Government of India will send its review missions to the states periodically to assess the quality of implementation.

13.2 State Review Mission

Now that scaling up of TSC has taken up considerably, it is essential that Review Mission arrangements at the State Government level are made mandatory. States are advised to set-up a panel of experts at State level for conducting reviews into various TSC districts periodically. Based on the reports of the State Review Missions, if the State govt. is satisfied for release of 2nd or subsequent instalment(s), the proposal for release of funds should be sent to the Government of India. While submitting proposal(s) for release of funds, a copy of the review mission report may also be enclosed by the State Government.

13.3 Monitoring

Monitoring of the TSC project should be carried out at all levels. Block PRI and Block level officials must review progress in each Gram Panchayat. The CEO of the District Panchayat / Secretary of the DWSC must review the progress of the project with Block Officials on a monthly basis. Similarly, Secretary in-charge of rural sanitation in the State must review progress with the District Officials on a quarterly basis.

13.4 Monitoring and Supervision at block and district level

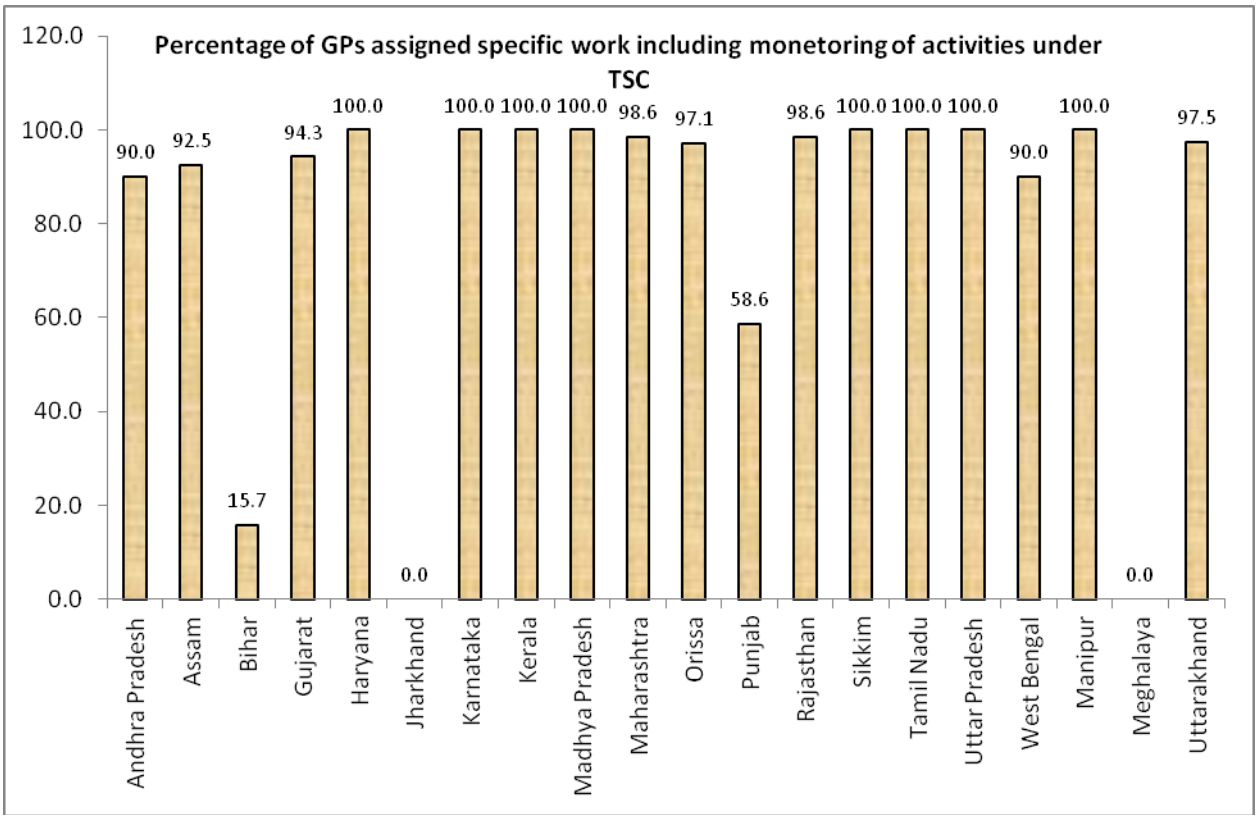
According to TSC guidelines, monitoring and supervision of the TSC project should be carried out at all levels. PRIs and Block level officials must review progress in each Gram Panchayat (GP). The CEO of the District Panchayat/ Secretary of the DWSC must review the progress of the project with Block Officials on a monthly basis. Similarly, Secretary in-charge of rural sanitation in the State must review progress with the District Officials on a quarterly basis.

Monitoring and supervision of TSC work is being done by GPs/VWSCs at village level. Block level Development Officer (BDO) coordinates the work with GPs/VWSCs. District level TSC cell, Department of Water Sanitation Management (DWSM) or Executive committee of Zilla Parisad reviews and monitors the entire project in the District and prepares the district plans with supporting departments/agencies like education, health, NGOs, etc. This approach of monitoring and supervision was followed in 43.44 percent districts at all India level. States which mainly follow this approach of monitoring includes Gujarat, Haryana, Kerala, Madhya Pradesh, Andhra Pradesh and Orissa.

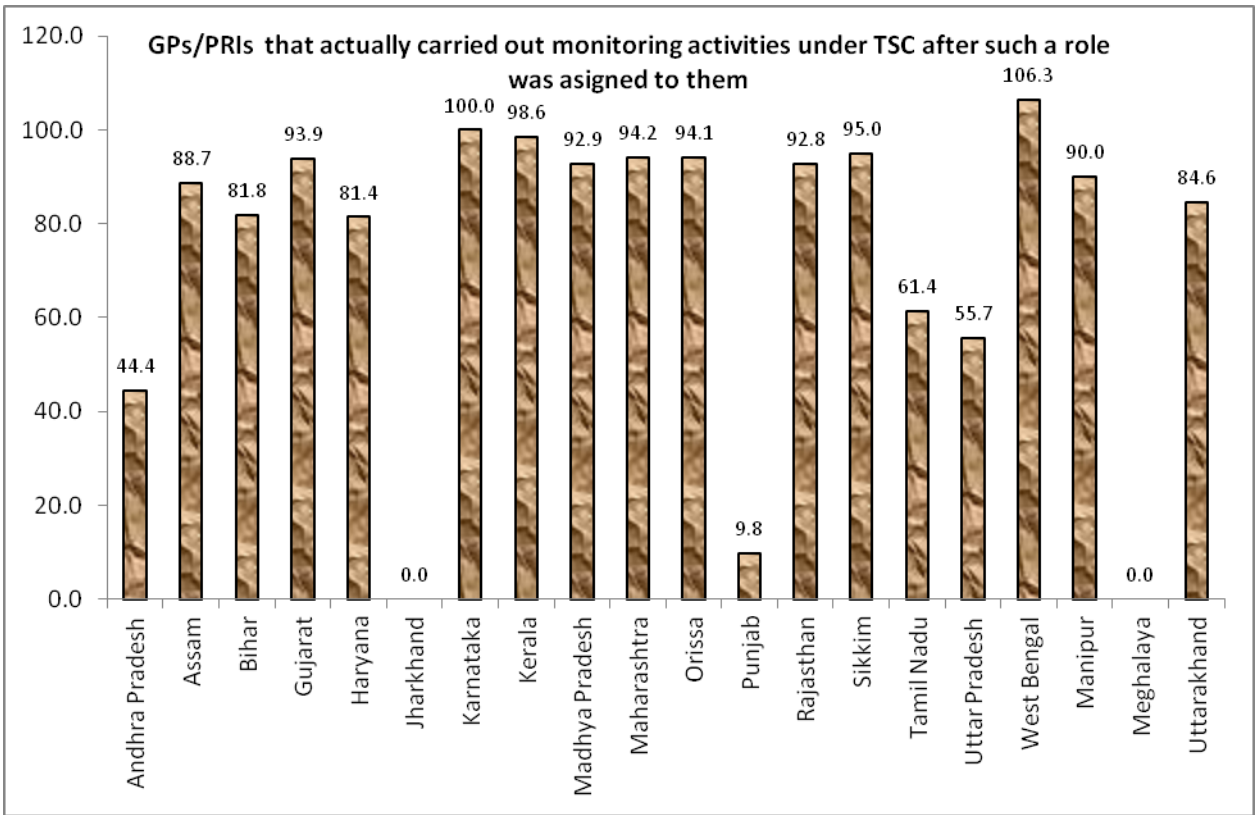
Another approach for monitoring the TSC work is Junior Engineer, Department of Rural Water Supply and Sanitation (RWS&S)/ Primary Health & Education Department (PHED) monitors TSC work at GP level. BDO at block level monitors the TSC work. Executive Engineer (RWS&S) monitors the work at district level. Then monthly progress reports are submitted by district level officers to State level Committee/officers responsible for TSC. States which are following this approach of monitoring include Bihar, Jharkhand and Punjab. However, in some states both the approaches are followed such as Karnataka, Madhya Pradesh, Orissa and Rajasthan. Other states follow mix of these two approaches.

13.5 Monitoring and Supervision at GPs/PRIs & VWSSCs level

Out of the total sampled GPs, almost 84 percent GPs are assigned specific tasks including monitoring under TSC. In some states, GPs have not been assigned any role under TSC. In fact in such states, blocks & GPs are not functional or block level offices are non-existent. States that have not given any role to GPs/PRIs include Jharkhand and Meghalaya. Even in Punjab, around 41 percent GPs/PRIs have not been assigned any role under TSC. Other states where GPs are not assigned any role include Andhra Pradesh (10% of total sampled GPs are not assigned any role under TSC), West Bengal(10%), Assam(7.5%), Gujarat(5.7%), Orissa(2.9), Uttarakhand (2.5%), Maharashtra (1.4%) and Rajasthan(1.4%).

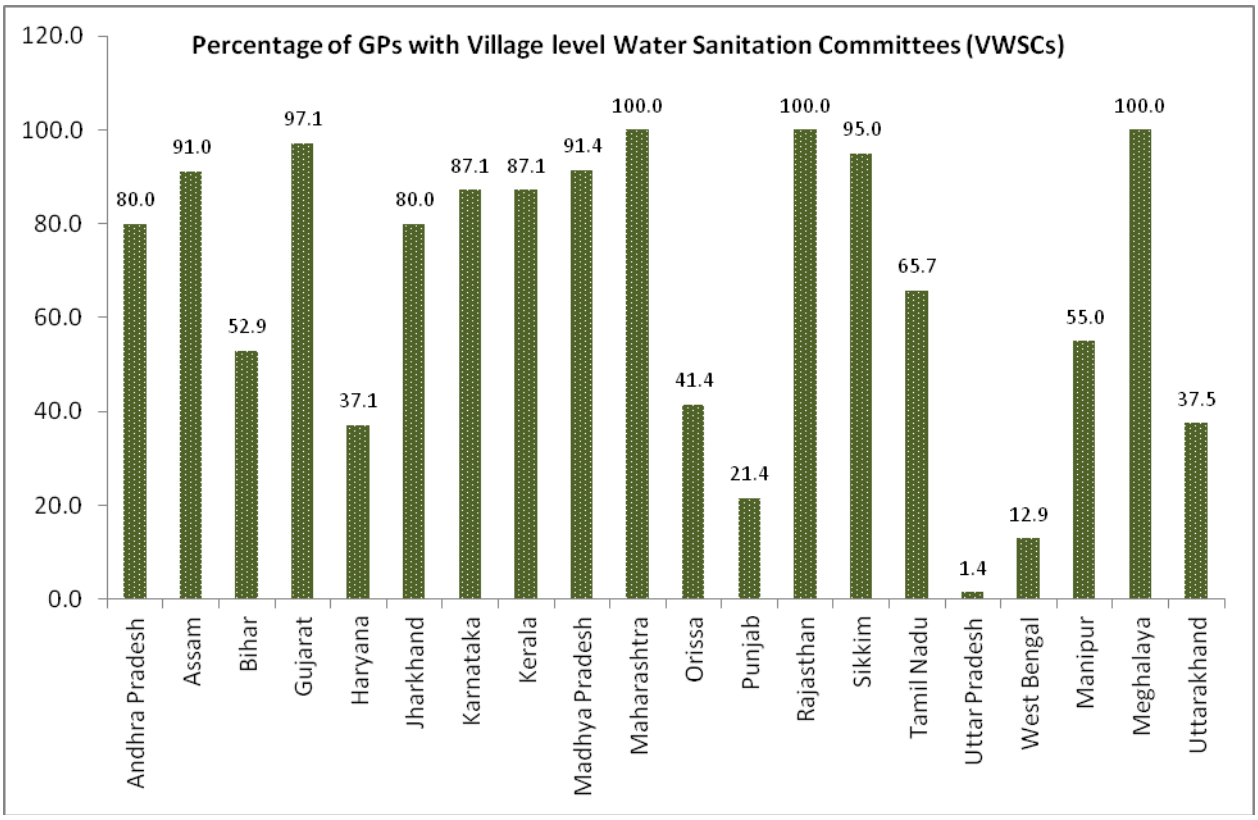


If PRIs are assigned the work of monitoring of activities under the TSC, most PRIs have performed it. Out of total GPs which were assigned specific tasks under TSC including monitoring; around 82 percent of GPs were involved in monitoring various activities. However, in some states PRIs have not performed the assigned role of monitoring activities under TSC. These states include Punjab (where as much as 90.2 % PRIs did not perform monitoring activities, even though government specifically assigned them this role), Andhra Pradesh (55.6%), Uttar Pradesh (44.3%), Tamil Nadu (38.6%), Haryana (18.6%), Bihar (18.2%), Uttarakhand (15.4%), Assam (11.3%),Manipur (10%), Rajasthan(7.2%), Madhya Pradesh(7.1%), Gujarat(6.1%), Orissa(5.9%), Maharashtra(5.8%) and Sikkim(5%).



The Village Water Sanitation Committee (VWSC) is an important implementation agency, whose one of the main tasks is to prepare a Gram Plan for work under TSC which includes providing for all public water and sanitation services in GPs. Other functions performed by VWSCs are collection of funds through a tariff system for operation & maintenance of sanitary works, opening & managing bank accounts for depositing and arranging community contributions. It is believed that in the absence of GPs/PRIs and Block offices, VWSCs have been assigned larger implementation and monitoring role.

Out of total sampled GPs, 65.2 percent GPs have VWSCs. In some states VWSCs are present in all GPs and in some in most of the GPs and in some presence of VWSCs is medium to low. For example, in states such as Meghalaya(100%), Rajasthan(100%) and Maharashtra(100%) VWSCs are present in all GPs. In states such as Gujarat (97.1%), Sikkim(95%),Madhya Pradesh(91.4%), Assam(91%), Karnataka(87.1%), Kerala(87.1%), Andhra Pradesh(80%) and Jharkhand(80%), majority of GPs have VWSCs. However, in some states such as Uttar Pradesh (1.4%), West Bengal(12.9%) and Punjab(21.4%), presence of VWSCs in GPs is very low. In other states VWSCs is present around half of the GPs which includes Tamil Nadu(65.7%), Manipur(55%), Bihar(52.9%), Orissa(41.4%), Uttarakhand(37.5%) and Haryana(37.1%).



In states such as Jharkhand and Meghalaya, where GPs are not functional or non-existent, VWSCs were established and given larger implementation role than VWSCs in states with functional GPs. Even in Bihar where only 15.7 percent GPs were assigned specific role under TSC, VWSCs in Bihar were established in almost 53 percent GPs. Another point that can be inferred from above discussion is that in Punjab both GPs and VWSCs are not present or if present very less number of them performing monitoring role. As can be seen from above, in Punjab only 9.8 percent GPs performed monitoring work and VWSCs were present in only 21.4 percent GPs.

Chapter 14
Funding Pattern

14.1 Project Funding

The table below gives the percentage share of the allocation (i.e. the total approved TSC project cost) for different components of a TSC Project, the GOI/State share and the beneficiary contribution towards each component. In the case of Union Territories, the State share under the TSC will be borne by the Govt. of India.

Table 14.1- TSC Component-wise earmarking and funding pattern

S.N.	Component	Amount earmarked as percent of the TSC project outlay	Contribution present		
			GOI	State	Beneficiary hh/Community
a.	IEC and Start Up Activity, Including Motivational Awareness and Educative Campaigns, Advocacy etc.	Upto 15%	80	20	0
b.	Alternate Delivery Mechanism (PCs/RSMs)	Up to 5% (Subject to a maximum of Rs. 35 Lakh per district for PC/RSMs and additional Rs.50 Lakhs as revolving fund for group lending activity)	80	20	0
C.	(i) Individual Latrines for BPL/ disabled households (ii) Community Sanitary Complexes	Actual amount required for full coverage	60	20	20
d.	Individual house hold latrines for APL	Nil	0	0	100

e.	Institutional Toilets including School and Anganwadi Sanitation (Hardware and Support Services)	Actual amount required for full coverage	70	30	0
f.	Administrative charges, including training, staff, support services, Monitoring & Evaluation etc.	Less than 5%	80	20	0
g.	Solid/Liquid Waste Management	Up to 10%	60	20	20

In case the amount sought for / utilized for under any component of the TSC is less than the earmarked percentage, the balance percent is adjusted for construction of individual household latrines. In no case, the percent earmarked for components relating to start-up activities and administrative charges should exceed 5 percent of the project outlay.

14.2 Release of Funds

The Central assistance shall be released to the Implementing Agency in four instalments (30, 30, 30, and 10). The first instalment will be released immediately after approval of the project proposal by the National Scheme Sanctioning Committee subject to receipt of details of the Implementing Agency at District level and name of the bank, IFSC Code and A/c. No. etc. All bank accounts shall be Saving Accounts. The release of further instalments will be subject to the following conditions:

i. Release of State share: The State share must be released to the concerned project district at least in the same proportion as central share has been released within a fortnight of release of the central share.

ii. Household / Community contribution: For all the hardware activities executed, the corresponding household / community contribution, including

APL households must be taken and reflected appropriately in the progress report.

iii. Expenditure and Utilization certificate: At least 60% of the total available funds under central share as well as State share, including interest must have been properly utilized. There should be more than 60% utilization under central and State share separately. Separate utilization certificate for the central fund and the state fund should be submitted. The Utilization certificate should be furnished for each financial year since the year in which the project was sanctioned and fund released. All utilization certificates should be countersigned by Chairman DWSM/ DRDA/ District Collector or CEO of District Panchayat as the case may be. (Annexure - VIII)

iv. Audit Certificate: The accounts of the TSC project should be audited annually by a Chartered accountant. At the time of submission of the proposal for release of further instalments, the audited statement of the preceding financial year should be submitted. It should be duly countersigned by the Chairman DWSM/DRDA/District Collector or CEO, District Panchayat as the case may be. In case two instalments of funds are claimed in the same financial year, the accounts should be audited for the part of the financial year (up to the period for which utilization certificate is submitted). The audit report of the Chartered accountant should cover the issues as given in Annexure - II and should be submitted in the format annexed (Annexures - III to VII).

v. A Certificate regarding not purchasing any in-admissible items: A certificate must be given by the Chairman of the DWSM/DRDA/District Collector or CEO, Zilla Parishad as the case may be, certifying that no expenditure on any inadmissible item as mentioned in these Guidelines has been made.

vi. The proposal for release of second or subsequent instalment should be sent by the District Implementing Agency through the concerned administrative Department in the State Government dealing with Rural Sanitation.

vii. The last instalment will be released only if the expenditure is at least 80% of the available funds (separately for centre and state) and on submission of the Utilization Certificate and AG Certificate/Chartered Accountant Certificate of previous year.

viii. Other conditions that may be prescribed from time to time.

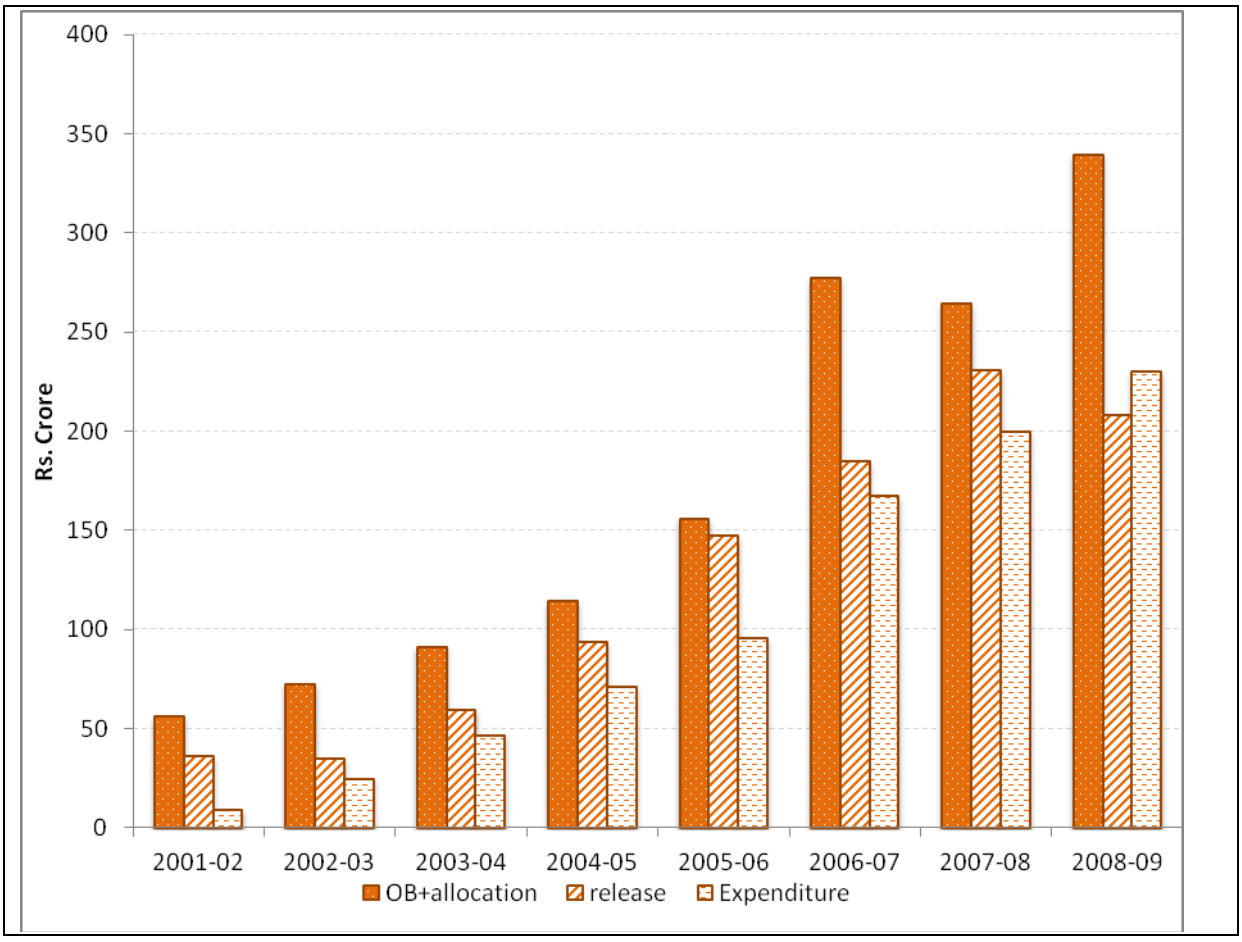
2. The implementing Agency shall be required to transfer the funds for the works to the Gram Panchayat (VWSC in States where GPs do not exist) with 15 days of receipt of funds.

14.3 Flow of Funds

Following figure-1 shows fund allocation, opening balance (OB), fund release and expenditure under TSC during 2001-02 to 2008-09. As can be seen from the chart, in the last three years of the reference period of the study, fund

allocation, release and expenditure was significantly increased compared to the first five years of the scheme. In 2001-02 fund release was Rs. 36 crores and expenditure was merely Rs. 9 crores. This was substantially improved over the time to reach at Rs. 208 crores (fund release) and expenditure was increased to Rs. 230 crores in 2008-09. Excess of expenditure over fund release could be contributed to funds received from other schemes like IAY, state government sometimes releases funds from their own funds with the motive to reimbursed the same from government of India from the next year's allocation, etc.

Figure 14.3 -Year-wise Fund Allocation, Release & Expenditure under TSC (Rs. crores)

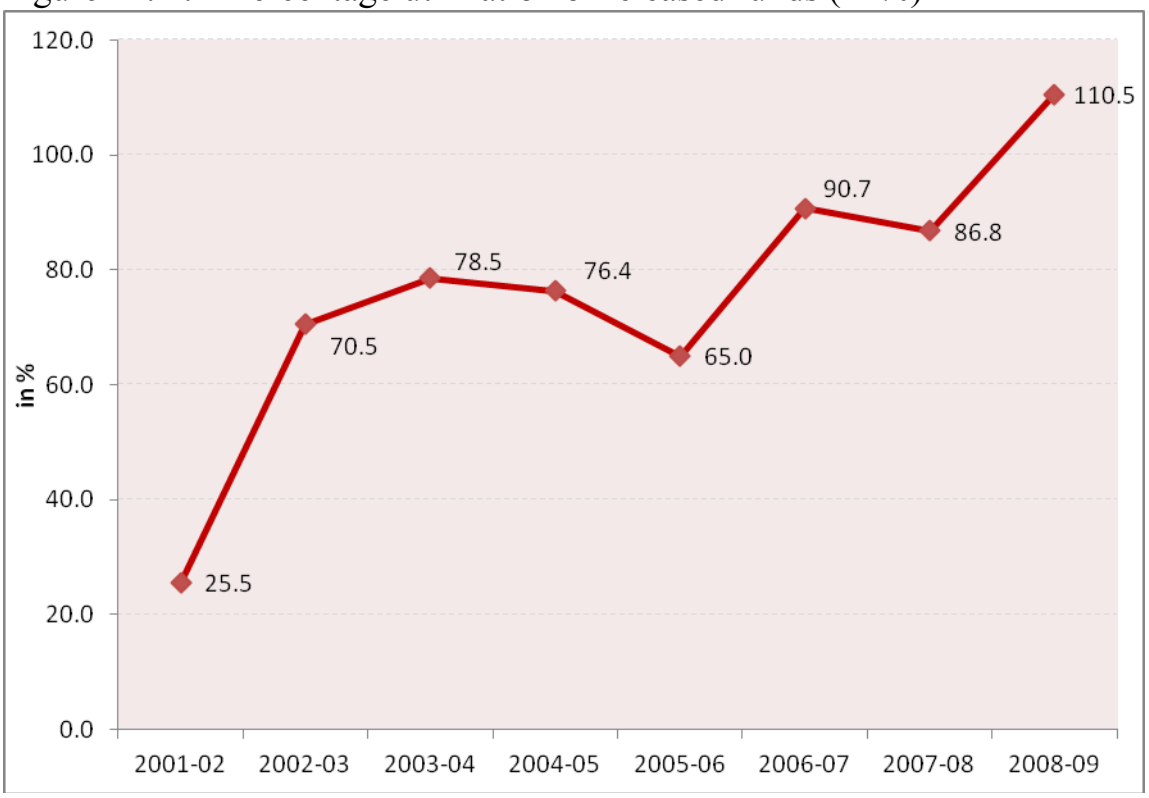


14.4 Utilization of Funds

Utilization of released fund has also improved during last three years of the study reference period;it was above 85 percent in the period. During the first five years of the scheme, the utilization of the released fund was between 65 percent to 80 percent except in 2001-02 where utilization of the released fund was very low (25%). In 2008-09, utilization of the released fund was 110.5 percent. This means expenditure was more than fund released during the year. Possible reasons are already mentioned above. Following figure-2 gives

percentage utilization of released funds i.e. how much was spent out of total released funds.

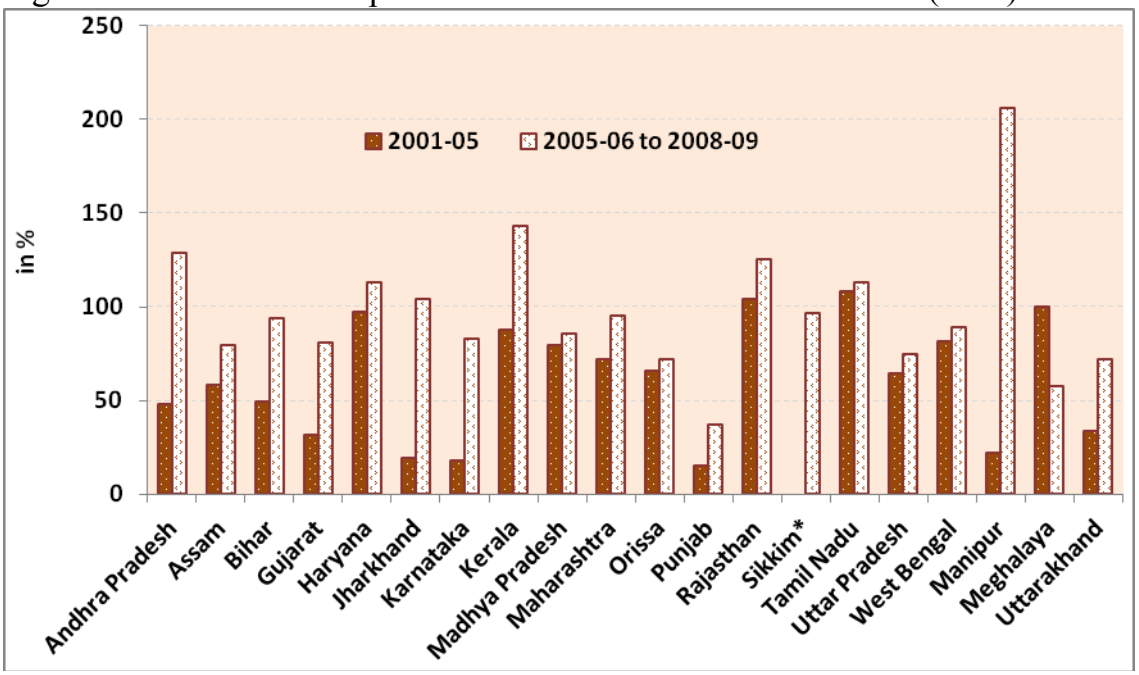
Figure 14.4 .1 Percentage utilization of released funds (in %)



As can be seen from the figure-3 below, in terms of utilization of released funds states have not performed well in first five years (2001-05) of the study reference period compared to last four years (2005-06 to 2008-09), except few states such as Tamil Nadu, Rajasthan and Haryana, which have been performing well throughout the period. Meghalaya is the only state, which utilized 100 percent of its funds during the first five years (2001-05), but failed to keep up with its utilization of funds in the last four years (2005-06 to 2008-09). Meghalaya's utilization of funds was only 58 percent in the last four years.

States that showed remarkable improvement in utilization of funds in the last four years (2005-06 to 2008-09) compared to the first five years (2001-05) are Manipur, Jharkhand, Andhra Pradesh, Karnataka, Kerala, Gujarat and Bihar. States such as Madhya Pradesh and Orissa have shown marginal improvement in utilization of funds from first five years to last four years. However, Punjab has failed to utilized funds released for the scheme as its utilization in the first five years (2001-05) was only 15 percent and in the last four years (2005-06 to 2008-09) it was 37 percent.

Figure 14.4.2 State wise pattern of utilization of released funds (in %).



Note: *data for Sikkim is not available for 2001-05.

14.5 Sharing of cost of construction

Funds under TSC were one of the two major sources of funds for the latrines constructed under TSC, other being households' own fund. Annex-72 below displays share of cost in construction of latrines by various stakeholders. If we considered the figure for overall country, it would be clear that contribution from households and contribution under TSC were almost equal i.e. 48.52 percent and 48.74 percent respectively.

State wise figures of cost sharing by various stakeholders give different picture. In some states such as Tamil Nadu, Punjab, Karnataka, Maharashtra, Haryana and Kerala households contributed more than 75 percent of the cost of construction of latrines under TSC. Moreover, in Tamil Nadu, Punjab and Karnataka, latrines were built mostly by households using their own funds, only 6-8 percent of the total costs in these three states were received under TSC funds.

In states such as Assam, Jharkhand, Bihar and Uttarakhand major source of funds for construction of latrines was from funds under TSC. In these states, households only contributed 10-20 percent of the total cost of construction of the latrines and remaining funds came from TSC funds. Contributions from other stakeholders such as Gram Panchayats and NGOs were none or insignificant. Gujarat was an exception as GPs contributed around 40 percent of the cost of construction of latrines (49% was contributed by households and only 11 percent came from TSC funds in the state). Kerala was only other state where GPs contributed almost 10 percent of the cost.

There were some states such as Rajasthan, Manipur, Meghalaya, Andhra Pradesh and Orissa where contribution from both household and government was significant. For example in Rajasthan, households contributed around 55 percent of the cost of construction of latrines and remaining 45 percent came from TSC funds. In Manipur it was exactly opposite - around 45 percent came from households and around 55 percent came from funds under TSC.

Chapter 15
Suggestions and Recommendations

1. **Concerted Awareness Campaign**: A concerted awareness campaign is required, especially in poor performing states. As is observed, rural households often prioritize assets such as televisions, radios, cell-phone etc over availability of toilets. It has often been argued in various studies and reports that construction of toilets simply for the sake of achieving targets without concurrent creation for awareness and for their use may not actually reduce open defecation to the desired extent. In this study also lack of awareness stands out as the predominant reason in case of households where toilet facilities are already available. While analyzing suggestions received from the households, effective intervention of IEC emerges as the most important requirement.

2. **Do Away With the Distinction between Eligible-Non Eligible for Incentive:** Simply belonging to the BPL group should not be the only criterion for availing the incentive. Inclusion of APL households by way of some kind of subsidy was a recurrent suggestion by 38% households including large proportion of BPL households. Households not having toilets have quoted monetary reasons as the most important reasons for open defecation. 75.3% of households having toilets and 92.3% of households not having toilets are dissatisfied because of lack of incentives. In its rechristened version, Nirmal Bharat Ahiyan (NBA) has already widened the provision for incentive to cover other needy (SC/ST, small and marginal farmers, landless labourers, physically handicapped and women headed households) besides BPL households. The draft 12th Five Year Plan also recommends doing away with the APL-BPL distinction and focusing on habitation saturation approach. Identification of such eligible households will be the major challenge for the implementing agencies.

3. **Right Mix of incentive and awareness:** It is necessary that the movement primarily remains demand-led, spread of awareness being the most important component. But, fund is seen as a definitive road block as far as building of toilets are concerned, that IEC alone cannot overcome. Thus there should be right mix of incentive and awareness. (See- Chapter VI)

In some states the low cost toilets had been introduced. For a very low-cost toilet, a squatting plate having a mosaic pan with inbuilt P-trap is placed over the pit. It can be covered with cheap locally available material like bamboo mat, jute cloth, old sari etc. The cost of installation of such toilets is Rs. 500-700. This is affordable by everyone and people can be easily motivated to accept, adopt and use toilets. One pit lasts for 4-5 years if used by a family of 5-6 persons. By the time this pit fills up, it is expected that the household will be induced to upgrade it due to behavioural change. We have observed during the field study that there is great resentment among households (especially among those who have received subsidised latrine) for the low cost latrines. Only 59% households have toilets that are both covered on all sides and have a roof. People think government should provide toilet with big squatting area and good superstructures. People are not ready to spend from their own pocket for up gradation or superstructure. In many states the unit cost for IHHL has been revised several times. Draft 12th Five Year Plan recommends revising it to Rs. 10000. This helps in achieving the target for those who are eligible for incentive. But certainly it does not help in motivating non-eligible households. Secondly, some eligible households also feel that govt. gives more incentive to those who delay construction of toilets. Only enhancing the unit cost will not solve the problem. Installation of toilets should be backed-up with adequate awareness exercise.

Lack of funds for renovation and maintenance of existing toilets etc are other causes of dissatisfaction.

4. **More effort for CSC:** The idea of using community toilets as an effective alternative for the poorest section needs to be seriously persuaded. Again, an open defecation free environment is difficult to achieve as such community toilets are not there at public places, markets etc. Since very few Gram Panchayats have these facilities, there is a need to give some emphasis to it. Operation and maintenance, water shortage and scarcity of land are the main problems in this regard. In the later versions of TSC (NBA) and in the recommendation in 12th Five Year Plan, this issue have been properly addressed. There is a need to converge schemes to provide water and conduct massive public mobilisation programmes for arrangement of land and community contribution.

5. **Availability of Water:** Proper attention should be given to the availability of water (other than drinking) to the households. Sanitation and drinking water are being implemented by the same department in many states. Even at the village level, the Village Water and Sanitation Committee are supposed to look after the provision of drinking water and sanitation of the village. But the problem faced by the households is lack of water for flushing. 54% households have reported that they do not have adequate water for flushing. It is also observed that percentage of households having adequate water for flushing is much higher among those households that have toilets. Hence we may say availability of adequate water in also a determining factor in preventing open defecation. Lack of adequate water is a major problem for institutional and community toilets. The draft document of 12th Five Year Plan also recommends convergence with piped water scheme. Evaluation Study on Rajiv Gandhi National Drinking Water Mission (RGNDWM) found that only 14.6% of all the households were found to be having tap connections.

6. **No Bucket Latrine:** Though bucket latrines are not permitted under the TSC, we have found that 4.4% households are still using bucket latrines. The bucket type toilets should be converted into sanitary toilets.

7. **The Facilities Created Must Also be Sustainable:** Majority of Households have reported to be maintaining their toilets by themselves. 27% households having toilets complained about the durability of the toilet constructed and 46% households have voiced the need for provision of regular maintenance. Availability of trained manpower and material is required after 4-5 years in case of single pit low cost latrines. In some cases the pits are also get damaged by the rodents, rains or floods. Similar problem can arise in institutional and community toilets. But, only 2% RSM/PCs have informed that trained man-power is available for repair and maintenance and 27% RSM/PCs feel that there is no demand or requirement for maintenance of household latrines. These pose question marks on the sustainability of achievement. The 12th Five Year Plan recommends convergence with National Rural Livelihoods Mission for

the smooth operation and maintenance work. But here is need to generate demand for maintenance through adequate awareness campaign.

8. **The Toilets should be Fined Tuned with Local and Ecological Considerations:** The 12th Five Year Plan visualises that "the toilet design will be fined-tuned in accordance with local, social and ecological considerations". But this is possible only with a strong and regulated delivery mechanism up to the grass root level. RSMs/PCs are expected to serve as alternate delivery mechanism. But RSMs and PCs are accessible to only 29% GPs. Physical targets have been achieved without having the alternate delivery mechanism (RSM/PC). The issues of sustenance and ecological safety need to the taken care of. 12th Five Year Plan also stresses the need to revitalise the RSM/PCs. But, the sustenance of RSMs/PCs depends on their commercial performance. Minimum amount of profit should be ensured to the RSM/PC by way of technical and marketing support. At the same time the function of RSM/PC should also be monitored.

9. **Provision of Toilets for Anganwadis situated in Private Buildings:** 38.4% Gram Panchayats have reported existence of anganwadis without toilet facilities. Providing toilets to the anganwadis situated in private buildings has been the biggest challenge. Only 18% anganwadis in private buildings could be provided toilets by TSC. There is a provision to construct the toilet and recover the cost of construction by charging enhance rent. Alternatively, the toilet can be constructed from revolving fund and suitable deductions may be made from the monthly rental paid. This strategy appears to be a total failure as none of the GPs has reported this scheme working except one in Bharatpur district of Rajasthan. Suitable changes should be made in the strategy to achieve the 100% target in case of anganwadi toilets.

10. **Strong VWSC**: VWSC should be strengthened, oriented and given responsibility of managing sanitation in respective villages. The study has found existence of VWSC only in 65% GPs. Still many VWSCs are not very active. Their role is limited as they look mainly into the financial aspects like opening of bank accounts and collection of training. The 12th

Five Year Plan also expects active role of VWSCs to ensure community participation.

11. **Recognition of Efforts Made by Organisations**: The stated main objective of NGP is to recognise the efforts made by PRIs and institutions. But, only PRIs (Gram Panchayats in most cases) have received the award. The evaluation study has found that in more than 60% cases, the Gram Pachayats are not implementing the scheme. There is no denying the fact that the target cannot be achieved without active support from the Gram Panchayats. But, the efforts made by other agencies are not being recognised. Furthermore, granting NGP to those Gram Panchayats where the programme is being implemented by other agencies and hence the ownership of the programme is not with the GPs put question mark on post NGP sustenance. Govt. should consider recognizing and rewarding other agencies/organizations contributing well in accelerating sanitation coverage and at the same time ensure that the GP/VWSC take the ownership.

12. **Evaluation of the verification process for the NGP award:** There is a provision of survey of all GPs that apply for NGP by independent agencies and cross verification by the officials from other states on sample basis. Still, the study has found 14% households are practicing open defecation in NGP awarded GP and anganwadi sanitation has been overlooked in many cases. The verification process for the NGP needs to be evaluated.

13. **NGP 2 on Outcome Indicators:** It may be said that the eligibility criteria for NGP award is based on output indicators. Govt. should introduce one more scheme "NGP 2" for the GPs having achieved outcome indicators like decrease in incidence of diseases and behavioural change in the villagers.

14. **Identify the Potential Nirmal Grams:** The GPs very close to ODF should be identified to draw attention of the authority. If possible they should also be rewarded. The 12 Five Year Plan also suggests to give priority to those GPs where IHHL coverage has reached higher milestones.

Chapter 16

Regression Results – Total Sanitation Campaign Evaluation

16.1. Objectives of the Study:

The objective of our statistical exercise is to ascertain the impact of the ongoing Total Sanitation Campaign (TSC) programme (now known as "Nirmal Bharat Abhiyan") of the Government of India. The following are the variables of: interest

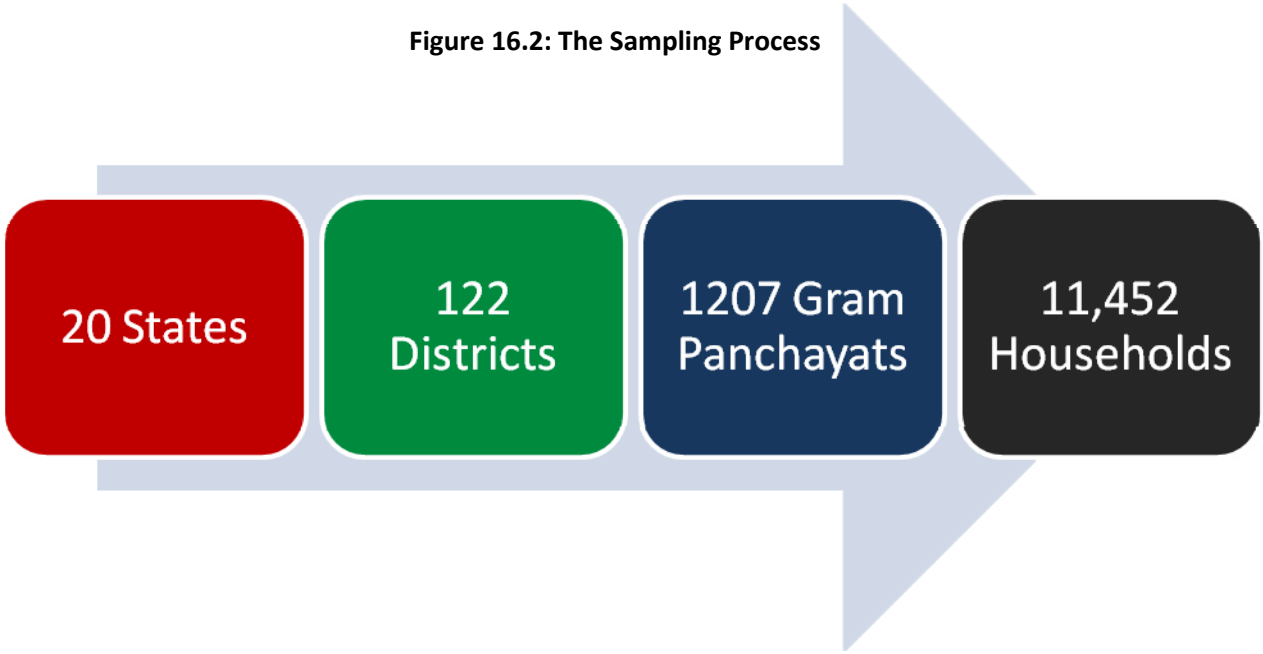
- Output Indicator – in terms of build-up of toilet facilities due to the TSC initiative
- Outcome Indicator – measured in terms of reduction in open defecation

This statistical note is expected to better align the present evaluation study so that the latter can be used as a cogent instrument for better country-wise implementation of the TSC. Furthermore, our recommendations and justifications in this direction may be substantiated by our statistical findings.

16.2 Database:

Household Level Schedules were canvassed in 20 states of India, the selection of which were done purposively based on their performance vis-à-vis sanitation coverage into four strata, viz. Very Good, Good, Average and Poor. Districts being the units for the implementation of TSC, of the 593 districts where TSC has been implemented, 122 districts (around 20%) have been selected. A constant number (7) of districts are allocated to each state and the selection of these 7 districts in each state is done randomly following the probability proportional to size (PPS) scheme based on number of Gram Panchayats (GPs) in the district as the size parameter. From each of the selected districts, 10 Gram Panchayats have been selected with 2 GPs having awarded the Nirmal Gram Panchayat (NGP) status, wherever available. 10 Households, represented by a woman, have been selected purposively from each selected GP, of which 2 Households from SC/ST categories have been included (wherever available). Based on the above, a total of 11,452 households have been surveyed on 133 variables.

Figure 16.2: The Sampling Process



In 15 out of the 20 selected states, schedules were canvassed to only those selected households which have toilets. However, during actual canvassing, some of the households from these states have reported non-availability of toilets. (There are 16 such cases in Assam; 1 in Kerala; 7 in Odisha; 1 in Uttar Pradesh 38 in Haryana; and 6 such households in West Bengal). These form the part of our sample population. Households were selected randomly in the rest of the five sample states of Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Maharashtra. Overall, our dataset is cross-sectional with 11,452 observations. Reference period of the evaluation study is from April 2001 to March 2009.

However, our dataset is beset with the following problems:

- It is not exhaustive as there exist large number of missing observations due to non-reporting, ignorance, conceptual difficulties and so on.
- Mixed selection of states (100% coverage in 15 states of those HHs having sanitary facilities versus random selection of HHs with/without toilets in the remaining 5 states) has been undertaken in view of the importance of a deeper probe into the problem of open defecation despite toilet facilities and having a comparative glance of HHs having and not having toilets. Albeit justified for the reasons mentioned above, it makes the dataset unbalanced which may engender specific problems in our analysis.

Notwithstanding these limitations we make an attempt to capture the disaggregated household -level details to draw meaningful patterns and useful insights into household sanitation dynamics as a result of the TSC initiative.

In our statistical exercise, we intend to assess the impact of several explanatory variables on the aforesaid variables of interest, viz.

1) Open defecation
2) Availability of toilet facilities

16.3. Variables:

It may be mentioned that all the variables used in our analysis (both dependent and explanatory) are categorical variables, with the exception of "Number of grassroot workers recruited by Gram Panchayat" that is a cardinal variable. The dependent variables used in our analysis are as follows:

1) Open defecation (OD*)* – It assumes the form of a binary, nominal variable with values/realizations 0 (=OD) and 1 (= No OD) for each household.

2) Availability of toilet facilities**-** – Similar to OD, it is a categorical variable that takes two values 0 (=Toilet Facility available) and 1 (Toilet Facility not available).

Let us now briefly summarize the explanatory variables that we have used in our regression analysis.

1) *Family Size* **-** It is an ordinal variable with values 1, 2 and 3.

1: Up to 3 members
2: 3-5 members
3: *Above 5 members*

2) BPL Category - It takes two values 0 (= BPL) and 1 (= APL).

3) *HH Occupation* **–** It takes values from 1 to 13, with the following definitions:

1: Unemployed
2: Agriculture
3: Govt. Job
4: Private Job

5: Wage Earner
6: Petty Business
7: Others (Silk Weaver, Goldsmith, Priest, depends on social security scheme, cattle rearing etc.)
8: Retired Teacher/Pensioner
9: Old Age Pension
10: Ex-Serviceman
11: Ration Shop/Fair Price Shop/Grocery Shop
12: Maidservant/ Domestic Worker/Cattle Rearing
13: Driver

4) *Availability of adequate toilet facility:* It takes two values 1 (=adequate toilet facility) and 2 (=No adequate toilet facility).

5) *Adequate Water supply (for maintenance and flushing in toilets):* It takes two values 1(= Adequate water) and 2 (=Inadequate Water).

6) *Awareness of TSC:* It takes two values 1 (=Aware) and 2 (= Not aware).

7) *Awareness of water-borne diseases (emanating out of improper sanitation):* It takes two values 1 (=Aware) and 2 (=Not Aware).

8) *Household Education level:* The information on educational qualification was collected member-wise in each household. In our study, we have taken the representative educational qualification of each Household as the highest level of educational attainment among all the members of that particular household.

This construction also has a theoretical underpinning. Professor Kaushik Basu's idea of "proximate illiteracy" suggests that in assessing the literacy status of a society, it is important to reckon with the intra-household externality arising from literacy. Basu et al. opine that that the distribution of literates across households matters due to the external effects of literacy–the benefits that illiterate members of a household derive from having a literate person in the family. Based on this, we may assume that the most educated member of a family may have positive influence on the mindset of the rest of the members, inducing the rest to practice good manners and improved personal, collective and social behavior, including good hygienic practices.

Household Education level is an ordinal variable assuming three values viz. 1, 2 and 3.

1: Illiterates
2: Primary, Upper Primary, High School and Unschooled literates
3: Higher Secondary & Above

9) *Incentive (availed for installing toilet):* It takes two values 0 (=Incentive Availed) and 1 (=Incentive Not Availed).

10) *Assistance (for TSC installed toilet):* It takes two values 0 (= Assistance received) and 1 (= Assistance not received).

11) *BPLIncen* – An interaction term between the variables BPL Category and Incentive, with values 0 and 1.

12) *Number of grass root workers in GP:* It is a scale (quantitative) variable with taking integer values ranging from 0 to 70.

13) *Presence of Village Level Water & Sanitation Committee (WSC) in the GP:* It takes two values 1 (= WSC formed) and 2 (= WSC does not exist).

14) *Motivators at the village level:* It takes two values 1 (=Motivators have been recruited) and 2 (=Motivators have not been recruited).

15) *Grievance Redressal Mechanism at GP:* It takes two values 1 (= Mechanism exists) and 2 (=Mechanism does not exist).

16) *Rural Sanitary Marts/Production Centers at GP:* It takes two values 1 (=RSM/PC exists) and 2 (= RSM/PC does not exist).

17) *PRI Role in monitoring and funding of TSC activities:* It takes two values 1 (= PRI Role exists) and 2 (=PRI Role does not exist).

16.4. Methodology:

Since the dependent variable/predicted outcome in our model is binary and all the explanatory variables are categorical, we have run binary logistic regressions using SPSS software package in our analysis.

Logistic regression techniques resolve inconsistencies associated with dichotomous dependent data and the assumptions of ordinary sum of squares regression methods. The independent variables that are used for outcome prediction may be dichotomous, categorical or continuous. Logistic regression

is based on the logit transformation of the dependent variable. The logit transformation generates a continuous logarithmic curve from non-continuous data so that a regression model can be developed. The logit transformation is necessary since dichotomous dependent data violates ordinary least squares assumptions. Another issue with dichotomous data is that the error terms are not normally distributed, thus ordinary sum of squares regression and all normality tests are invalid. Logistic regression is less restrictive than ordinary sum of squares regression. It does not require normally distributed dependent data or homogeneity of variance.

The first task in model estimation is to transform the independent variable and determine the coefficients of the independent variables. The basic logistic regression analysis begins with logit transformation of the dependent variable through utilization of maximum likelihood estimation. This is done using the odds ratio. The odds ratio for an event is represented as the *probability of the event outcome / (1 - probability of event outcome).*

The odds ratio can be described as

$$\text{Odds}_i = [\, pi/ (1 - pi)] = e^{bo + b1x1 + \ldots\ldots + bnXn}$$

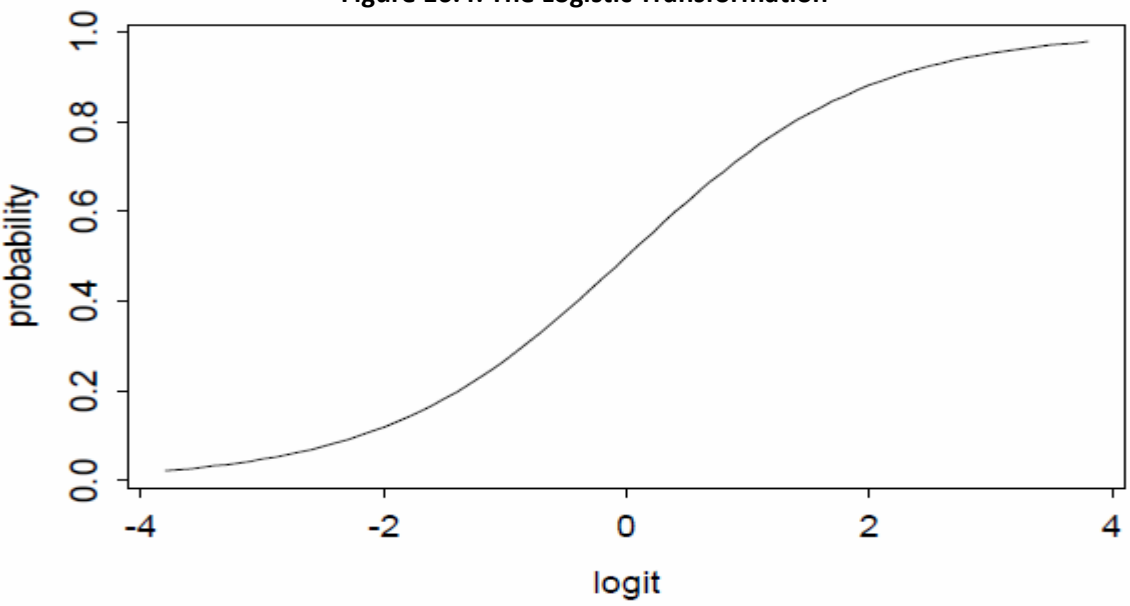
where
pi is the probability of an event i,
b0 + b1x1 + …. bn Xn represents the regression model.
It represents all event probabilities, relationships and their exponential nature. The odds ratio has numerous advantageous properties. It clearly portrays the increased or decreased likelihood of an event outcome occurrence. If the odds ratio is less than one there is a decreased likelihood of an event occurring and if the odds ratio is greater than one then there will be an increased likelihood of the event occurring. The odds ratio provides an intuitive foundation for any sensitivity analysis of interest between the dependent and independent variable. The odds ratio is based on the probabilities that a specific binary outcome will occur when using particular model estimation. It is converted to a continuous function through the logit transformation. The new plot of the transformation of the independent data into probabilities versus the dichotomous dependent data will be continuous ranging from infinity to negative infinity. The log of the odds ratio is known as the logit.

For each data point, logit_i is represented by

$$\text{logit}_i = \ln [\, pi/ (1 - pi)]$$

The maximum likelihood estimation (MLE) is now used to estimate the coefficients (β_o, β_1, ..., β_p) from the logit transformation. MLE is similar to the ordinary least squares used in multiple regression analysis. The likelihood is the probability that the observed values of the dependent variable will be predicted by the observed independent variable data. The log likelihood (LL) is the log of that likelihood and is in the range of infinity to negative infinity. The logistic curve simplifies the coefficient estimation. The maximum likelihood estimate seeks to maximize the LL value and estimate the coefficient found at that maximum point. It is determined through an iterative process that is normally handled by computer softwares such as SAS, Minitab, SPSS etc. One point worth noting is that MLE is extremely accurate for large sample sizes.

Figure 16.4: The Logistic Transformation



Further, it is worth mentioning that the conventional measure of goodness of fit, R^2 is not specifically meaningful in binary regressand models and its importance should not be overplayed in such models. Although variety of alternative measures like pseudo R^2 , count R^2 etc. are available in dichotomous response models, the goodness-of-fit is of secondary importance, even more so when the dataset is cross-sectional in nature. What matter in count models are the expected signs of the regression coefficients and their statistical and/or practical significance. For these reasons, John Aldrich and Forrest Nelson contend that "use of the coefficient of determination as a summary statistic should be avoided in models with qualitative dependent variable."

Justification for using logit model over other models:

We could have also used alternative estimation techniques commonly employed in qualitative data analysis such as the Linear Probability Model (LPM) and the probit/normit model. However, there are certain problems associated with the estimation of LPMs such as non-normality and heteroscedastic variances of the disturbances and the possibility of the predicted outcome (which is the probability of the event occurring or not) lying outside [0,1]. Logit analysis, on the contrary allows transformation of the dichotomous dependent variable to a continuous variable ranging from -∞ to +∞ so that the problem of out of range estimates is eliminated. Further, logit analysis produces statistically sound results which can be easily interpreted and parameter estimates which are asymptotically consistent, efficient and normal , so that the analogue of the regression t-test can be applied.

The chief difference between logit and probit is that the logistic has slightly flatter tails. Qualitatively, logit and probit models give similar results though the parameter estimates may not be directly comparable. An approximate relationship between logit and probit coefficients is given by

$$Probit_{coeff.} \times 1.6 \approx Logit_{coeff.}$$

The logistic -regressions are run on SPSS software package and we estimate our models for different specifications.

Let us now examine the results of our regression analysis in the next section.

16.5. Total Sanitation Campaign and Household Sanitation Dynamics: Results from Econometric Analysis:

(a) Effect of TSC on Open Defecation (mixed sample, 20 states, observations = 11,452):

In our model, Open Defecation (OD)/Toilet Facility at HHs is explained by a vector of independent variables viz. ,

OD/Toilet Facility = f (Family Size, BPL category, HH Occupation, Adequate toilet facility, Adequate Water Supply, Awareness of TSC, Awareness of water-borne diseases, HH Education , Incentive, Assistance, BPL*Incen, number of grassroot workers, Water Sanitation Committee, Motivators, Grievance Redressal Mechanism, Rural Sanitary Marts/Production Centers, PRI Role).

Role of Panchayati Raj Institutions (PRIs), presence of Village level Water Sanitation Committee , access to Rural Sanitary Marts/Production Centers, number of grassroot workers, motivators and Grievance Redressal Mechanism are a number of policy variables at Gram Panchayat (GP) level used in our analysis.

We had estimated the model with HH Occupation as one of the explanatory variables but since HH Occupation turned out to be insignificant in all our model specifications, we present the results for our model without HH Occupation. Further, in all the models described below, we find that the Chi—Squared (χ^2) statistic is significant at the 1% level of significance, implying that the joint hypothesis ($\beta_o = \beta_{1=} \ldots\ldots\ldots\ldots = \beta_p = 0$) of the overall model being unacceptable is to be rejected. Taking different specifications (to avoid multicollinearity), we list the regression results with OD as the dependent variable in the following tables:

Specifications:

1) OD = f (Fam_Sz Bpl adeq_toi enuf_wat awareDis aware_TSC HH_Educ BPLIncen grassrrot_worker wsc_formed Griev_Red PRI_Role)

Table 1: Dependent Variable OD

Variables in the Equation	Coefficient(B)	S.E.	Wald	df	Sig.	Odds Ratio Exp(B)
Fam_Sz			81.267	2	.000	
Fam_Sz(1)	**.937*** **	**.109**	**73.885**	**1**	**.000**	**2.552**
Fam_Sz(2)	**.408*** **	**.070**	**34.377**	**1**	**.000**	**1.504**
Bpl(1)	.155	.112	1.919	1	.166	1.167
adeq_toi(1)	**1.110*** **	**.085**	**170.783**	**1**	**.000**	**3.035**
enuf_wat(1)	**.431*** **	**.069**	**38.973**	**1**	**.000**	**1.539**
awareDis(1)	**.346*** **	**.090**	**14.868**	**1**	**.000**	**1.413**

aware_TSC(1)	**1.134*** **	**.103**	**121.745**	**1**	**.000**	**3.109**
HH_Educ			86.176	2	.000	
HH_Educ(1)	**-1.266*** **	**.137**	**85.320**	**1**	**.000**	**.282**
HH_Educ(2)	**-.423*** **	**.080**	**27.819**	**1**	**.000**	**.655**
BPLIncen(1)	**-1.310*** **	**.259**	**25.644**	**1**	**.000**	**.270**
grassrrot_worker	**.043*** **	**.005**	**64.563**	**1**	**.000**	**1.044**
wsc_formed(1)	**.864*** **	**.064**	**183.689**	**1**	**.000**	**2.373**
Griev_Red(1)	**.611*** **	**.087**	**49.792**	**1**	**.000**	**1.842**
PRI_Role(1)	**.193*** **	**.074**	**6.775**	**1**	**.009**	**1.213**

N	11,452	*** *denotes significance at both 1% and 5% level of significance*
Chi-Squared	**1489.832 ***(df 14)**	
Nagelkerke R Square	0.259	

As is seen from the above regression table, family size, adequate toilet provision, enough water in toilets, awareness of water-borne diseases, awareness of TSC , HH Education level, BPLIncen, grassroot workers, Water Sanitation Committee, Grievance Redressal Mechanism and PRI role are important variables in explaining OD in the full sample with 11,452 observations, the coefficients being significant at both 1% and 5% level of significance.

The coefficients of all the aforesaid explanatory variables are positive with the exception of HH_Education and BPLIncen. The above table indicates that compared to the reference category HH_Educ (which is Higher Secondary and above having odds ratio =1) , HH_Educ(1) category representing illiterates is less likely towards no OD (odds ratio = 0.282) or more likely towards open

defecation. Also, HH_Educ(2) comprising Primary, Upper Primary, High School and Unschooled literates are more likely than HH_Educ (Higher Secondary and above) towards OD and less likely than HH_Educ(1) (Illiterates) towards OD (odds ratio = 0.655).Thus, as expected, OD seems to come down with education.

Regarding family size, with reference to the base category viz. Fam_Sz (Above 5 members), Fam_Sz(1) and Fam_Sz(2) , i.e. families with size up to 3 and between 3-5 members are less likely towards OD (both have odds ratio >1 or positive regression coefficients).Also, Fam_Sz(2) (odds ratio 1.504) is more likely towards OD than Fam_Sz(1) (odds ratio 2.552) since Fam_Sz(2) has more members (3-5 members) compared to Fam_Sz(1) (up to 3 members) .Hence, our data clearly shows that OD may go up with larger family sizes, as is expected.

Similarly, with rise in adequate toilet facilities, enough water for flushing in toilets, awareness of sanitation related diseases and TSC awareness, probability of OD comes down. Each of these variables has odds ratio exceeding 1, implying an decreased likelihood of open defecation. These variables are instrumental policy variables in our TSC study. By infusing greater awareness through IEC activities and providing operational toilet facilities with adequate water supply, we may significantly bring down open defecation in rural India.

BPLIncen is a variable denoting interaction between "BPL category" and "Incentive availed for building toilets", obtained by multiplying the values in both the above categories for each HH entry in the dataset. Since only the BPL HHs get the incentive, they may go in for more toilet construction to avail the incentive and hence the tendency towards OD may be lower in such families. In fact, in our dataset, out of 9638 BPL HHs surveyed, 7956 have got incentive for toilet installation under one scheme or the other. Hence, the predominant part of the BPL HHs surveyed have availed incentive. Hence, in our results, BPL Category is insignificant, i.e. we do not see an expected higher likelihood of OD in BPL families. Moreover, BPLIncen is significant with negative coefficient that implies there is greater likelihood of OD for APL families not receiving incentive for toilet construction as compared to BPL HHs getting incentive.

Also, all the Gram Panchayat (GP) level control variables such as role of Panchayati Raj Institutions (PRIs), presence of Village level Water Sanitation Committee , number of grassroot workers and Grievance Redressal Mechanism are significant at both 1% and 5% level of significance. Further, their coefficients are all positive implying the potential of the Gram Panchayat to

control these variables and setting up the effective institutional mechanisms for effecting reduced OD. In particular, the role of Grievance Redressal set-up(s) and Water Sanitation Committee cannot be overemphasized. Also, the role of PRIs as implementing agencies for TSC funding and monitoring in the villages deserve equal merit.

(b) Effect of TSC on Open Defecation (random sample, 5 states, observations = 3,499):

In our specification, Open Defecation (OD) is modelled as below:

2) OD = f (family_size bpl_category noof_t_adequate w_supply_enough awareness_diseases awareness HH_Educ BPLIncen grassrrot_worker wsc_formed motivators Griev_Red rsmpc_GP)

Table 2: Dependent Variable OD

Variables in the Equation	Coefficient(B)	S.E.	Wald	df	Sig.	Odds Ratio Exp(B)
family_size			28.923	2	.000	
family_size(1)	**1.118*** **	**.211**	**28.156**	**1**	**.000**	**3.059**
family_size(2)	**.454*** **	**.150**	**9.182**	**1**	**.002**	**1.575**
bpl_category(1)	.058	.203	.080	1	.777	1.059
noof_t_adequate(1)	**1.124*** **	**.306**	**13.525**	**1**	**.000**	**3.078**
w_supply_enough(1)	.379	.240	2.497	1	.114	1.461
awareness_diseases(1)	**1.787*** **	**.259**	**47.715**	**1**	**.000**	**5.974**
awareness(1)	-.321	.706	.207	1	.649	.725
HH_Educ			17.513	2	.000	
HH_Educ(1)	**-1.107*** **	**.265**	**17.448**	**1**	**.000**	**.331**
HH_Educ(2)	**-.435** **	**.175**	**6.197**	**1**	**.013**	**.647**
BPLIncen(1)	**-.775** **	**.383**	**4.101**	**1**	**.043**	**.461**
grassrrot_worker	.012	.040	.088	1	.767	1.012
wsc_formed(1)	**2.683*** **	**.201**	**177.728**	**1**	**.000**	**14.627**
motivators(1)	**.498*** **	**.163**	**9.366**	**1**	**.002**	**1.645**
Griev_Red(1)	**.986*** **	**.314**	**9.847**	**1**	**.002**	**2.681**
rsmpc_GP(1)	.272	.213	1.634	1	.201	1.313
N	3,499	*** denotes significance at 1% level of significance; ** denotes significance at 5% level of significance				
Chi-Squared	**770.228 ***(df 15)**					
Nagelkerke R Square	0.467					

For the random sample drawn from 5 states with 3,499 observations, we find that the coefficients of the variables namely, family size, adequate toilets, awareness of water-borne diseases, HH Education level, BPLIncen, Water Sanitation Committee, Motivators and Grievance Redressal Mechanism are significant in explaining OD at 5% level of significance. Education and awareness of water-borne diseases are negatively related to prevalence of OD.

Also, OD may be higher in large family sizes. Improving infrastructure for providing adequate toilet facilities is likely to reduce OD. BPLIncen is significant due to interaction between Incentive and BPL HHs as explained earlier.

In case of the Gram Panchayat level variables, we find that the coefficients of Village level Water Sanitation Committee, Motivators and Grievance Redressal Mechanism are positive and significant in explaining OD at 5% level of significance. This again confirms the enhanced role of the Gram Panchayat and village level institutions to bolster institutional mechanisms for greater outreach of the TSC programme.

(c) Effect of TSC on Toilet Availability (random sample, 5 states, observations = 3,499):

In our specification, availability of toilet facility to a HH is modelled as below:

3) Toilet facility = f (family_size bpl_category awareness_diseases awareness HH_Educ Incentive Assistance BPLIncen grassrrot_worker wsc_formed rsmpc_GP PRI_Role)

Table 3: Dependent Variable Toilet Facility

Variables in the Equation	Coefficient (B)	S.E.	Wald	df	Sig.	Odds Ratio Exp(B)
family_size			6.542	2	.038	
family_size(1)	**-.557****	**.219**	**6.494**	**1**	**.011**	**.573**
family_size(2)	-.158	.156	1.024	1	.312	.854
bpl_category(1)	-.591	.570	1.076	1	.300	.554
awareness_diseases(1)	-.057	.394	.021	1	.885	.945
awareness(1)	**-2.149*****	**.409**	**27.651**	**1**	**.000**	**.117**
HH_Educ			39.945	2	.000	
HH_Educ(1)	**1.038***	**.547**	**3.602**	**1**	**.058**	**2.823**
HH_Educ(2)	**1.007*****	**.160**	**39.567**	**1**	**.000**	**2.738**
Incentive(1)	**-5.568*****	**.336**	**274.315**	**1**	**.000**	**.004**
Assistance(1)	.007	.179	.002	1	.969	1.007
BPLIncen(1)	**1.489****	**.595**	**6.264**	**1**	**.012**	**4.432**
grassrrot_worker	-.023	.026	.775	1	.379	.977
wsc_formed(1)	.064	.251	.064	1	.800	1.066
rsmpc_GP(1)	-.233	.177	1.731	1	.188	.792
PRI_Role(1)	**-.301***	**.157**	**3.701**	**1**	**.054**	**.740**

N	3,499
Chi-Squared	**1153.030*** (df 14)**
Nagelkerke R Square	0.565

**** denotes significance at 1% level of significance;*

*** denotes significance at 5% level of significance;*

** denotes significance at 10% level of significance*

For the random sample drawn from 5 states with 3,499 observations, we find that the coefficients of the variables namely, family size, awareness of TSC, HH Education level, Incentive, BPLIncen and Role of PRIs are significant in explaining existence of toilet facility at the HHs at 10% level of significance. Education and awareness of TSC are positively related to construction of toilets at the HH level. Also, higher incentives may induce more toilet construction at the HH level. Thus, as policy variables, awareness and incentives stand out from the point of view of greater toilet availability to families/households. The role of PRIs is also found to be conducive from the point of view of inducing, funding and monitoring toilet construction at the Household level.

16.6. Summary and Key Findings:

Government of India's flagship program, the Total Sanitation Campaign, in vogue since 1999, is now rechristened Nirmal Bharat Abhiyan. It is a demand-driven and people-centered sanitation program. It evolved from the limited achievements of the first structured programme for rural sanitation in India, the Central Rural Sanitation Programme, which had minimal community participation. The main goal of the TSC is to eradicate the practice of open defecation by accelerating sanitation coverage in rural areas. This objective is to be met through provision of adequate toilet facilities, both at the individual and community level as well as generating awareness of the ills of open defecation for improved health, income and quality of life.

Using household data from field surveys, we zeroed in on the logistic estimation technique to determine the coefficients of our qualitative explanatory variables in our cross-sectional dataset. The data set consists of 11,452 observations in the mixed sample with 20 selected states and 3,499 observations in the random sample with 5 selected states. The reference period for the evaluation study is from April 2001 to March 2009. Due to misreporting, interpreters' subjectivity and conceptual issues, our dataset is limited by missing observations and other definitional problems. Despite these limitations, we make a humble attempt at capturing the disaggregated household -level sanitation dynamics to draw meaningful patterns and suggest policy interventions in the TSC initiative.

Our study tried to assess the impact of the ongoing TSC programme on certain variables of interest – outcome variable (in terms of reduction in open

defecation) and output variable (measured in terms of a physical build-up of toilet facilities at the household level). If we consider a household as a household practicing open defecation if at least one member of the family practices open defecation, the estimated percentage of open defecation in rural India comes to 72.63%. This is a stupendous figure and we need to reorient our policy variables namely awareness, incentive and functional toilet facilities with adequate water supply to converge towards our target of eradicating open defecation.

Also, we have incorporated key Gram Panchayat level institutional variables in our study so that these controls can be tweaked in the right direction for meeting the broad objectives of the TSC. In this connection, Role of Panchayati Raj Institutions (PRIs), presence of Village level Water Sanitation Committee, access to Rural Sanitary Marts/Production Centers, number of grass root workers, motivators and Grievance Redressal Mechanism are used in our analysis. Our study finds that the role of Rural Sanitary Marts/Production Centers as alternative delivery mechanism to "encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation" is insignificant. This point has also been reiterated earlier in our report where it was stated that a strong correlation between the success of RSM/PC and achievement of physical targets was unfounded, e.g. in case of Sikkim. Also, it appeared that the RSM/PC mechanism has been adopted in letter but not in spirit in most states, with many states not even opting for this mechanism.

Notwithstanding the data problems, we however find that policy variables such as TSC awareness and awareness of water-borne diseases due to squalid sanitary practices emerge as significant factors impacting the HH level OD and toilet availability. With greater awareness, HHs are likely to exhibit improved sanitary and hygienic behavior, construct toilets and reduce OD. The effect of incentive on HHs' toilet availability is also found to be positive and significant for the random sample of HHs collected from 5 states.

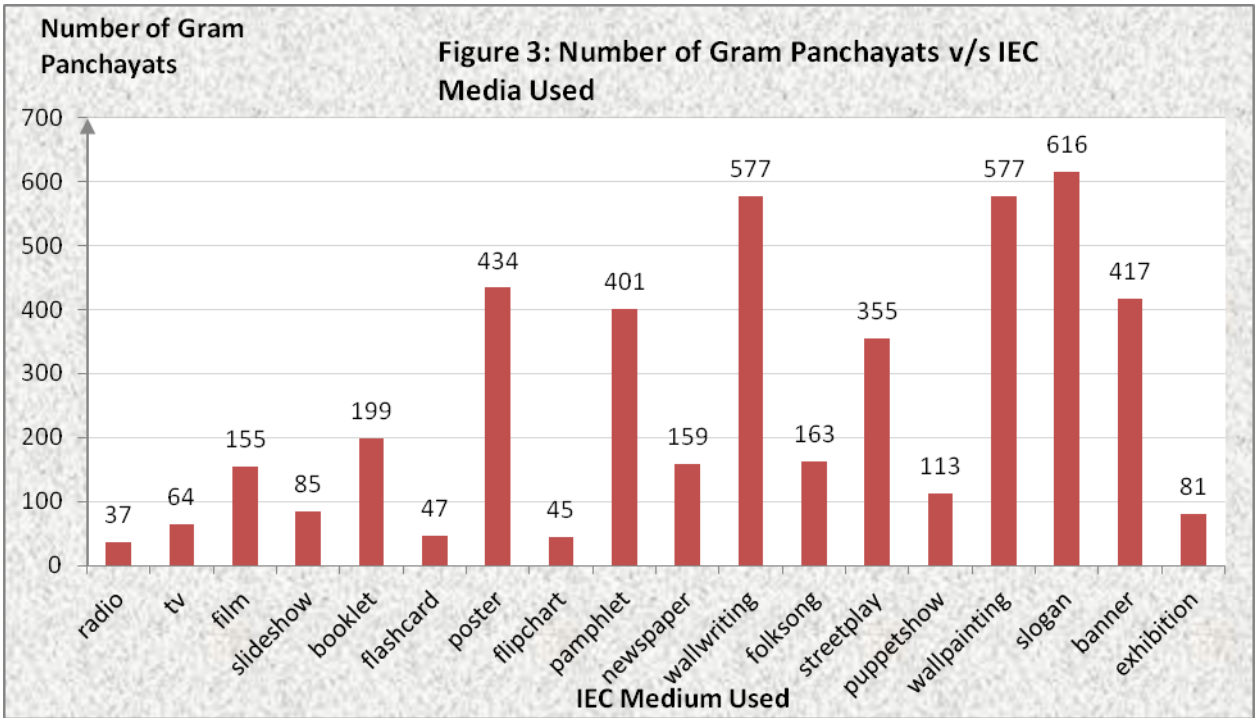
Moreover, well designed, functional toilet facilities are also a step ahead in reducing open defecation, which is a very straightforward and expected outcome. Other variables like water availability and education are important determinants of availability of HH toilet provision and open defecation. Our study also finds that educational attainment is an important determinant of sanitation practices and hygienic behavior. Families with better levels of educational attainment are more likely to refrain from open defecation. Also,

adequacy of water in the area where the toilet is to be constructed is a prerequisite for effecting reduced open defecation.

Although in general, we may expect the practice of open defecation to come down with higher income households, our study finds that APL families with higher income may have a greater tendency towards open defecation vis-à-vis BPL families. This is because our study establishes the interaction effect between BPL households and TSC Incentive given for toilet construction. Hence the former may have a higher proclivity towards toilet construction to avail the incentive and hence the tendency towards OD may be lower in such families.

From a policy point of view, however, tweaking in important policy variables is necessary to engender desired outcomes. Predominantly a massive surge in awareness campaigns about the TSC program and educating the masses of the ills of poor sanitary habits is the first important step in this direction. This may be done through IEC initiatives, garnering increased community participation and ZP and/or SHG support, among others. Further, since household education may forestall obnoxious sanitary practices and unhygienic behavior, the most educated HH member(s)/representative(s) may be separately trained on this initiative so that the positive spillovers can trickle down to the less-educated family members.

In fact, the role of Gram Panchayat level policy variables such as PRI role , Village level Water Sanitation Committee , Motivators and Grievance Redressal Mechanism cannot be overemphasized. PRI involvement in institutional arrangement for monitoring and supervising the various works under the TSC as well as contributing funds for construction released activities is also found to be important. IEC activities for motivating households to construct latrines and induce healthy and sustainable sanitation outcomes with the help of various aids like wall graffiti, street plays, folk media, GP meetings and rallies, development of micro plan in GP, hoardings, demonstration activities etc. deserve attention. The chart below shows the number of Gram Panchayats resorting to various such IEC media to bolster the TSC Campaign.



Some significant explanatory variables, in the case of both OD and toilet facilities, are clearly outside the purview of TSC, for example, family size, level of education and availability of water. Here arises the importance of the concerted effort of a number of government agencies to make a program succeed. However, going strictly by the mandate of TSC, combining awareness with education to harness the spillovers and deploying other zealous measures such as display of graphics,

circulation of pamphlets etc., OD may be significantly brought down. The established age-old norm of defecating openly may thus be reversed through better awareness and an attractive incentive structure.

16.7. Conclusion :

The present study attempts to cull out key policy variables that affect the objectives of the ongoing Total Sanitation Campaign (TSC), rechristened Nirmal Bharat Abhiyan. The dependent variables used in our analysis are – outcome variable (in terms of reduction in open defecation) and output variable (measured in terms of a physical build-up of toilet facilities at the household level).

Table 4: Important TSC Variables

Variable	Important from point of view of meeting TSC objectives	Whether the Variable is within the TSC mandate
Family Size	✓	✗
BPL category	✗	✗
HH Occupation	✗	✗
Adequate toilet facility	✓	✓
Adequate Water Supply	✓	✗
Awareness of TSC	✓	✓
Awareness of water-borne diseases	✓	✓
HH Education	✓	✗
Incentive	✓	✓
Assistance	✗	✓
Number of Grassroot workers	✓	✓
Water Sanitation Committee	✓	✓
IEC Campaign/Motivators	✓	✓
Grievance Redressal Mechanism	✓	✓
Rural Sanitary Marts/Production Centers	✗	✓
PRI Role	✓	✓

Using the logistic regression model on Household level data, our study finds that awareness , monetary incentive for building toilets , presence of adequate toilets at the Household level ,role of Panchayati Raj Institutions, Village level Water Sanitation Committee and Motivators (representing IEC initiatives) emerge as significant policy variables impacting the TSC objectives.

Other key variables, such as education, family size and water availability that fall outside the scope of TSC also have a significant bearing on the success of the TSC. It seems here that mere provisioning of toilet facilities is not enough; it has to be supplemented by other infrastructural investment, as in water supply or combining awareness with education. Moreover, population growth can erode gains from this programme. Hence, population control is necessary in long run. Thus, a concerted effort is indicated from several government agencies in this direction to make TSC a success.

Chapter 17

Grouping of States on the basis of Impact Variables

17.1 Introduction:

In this chapter, we have attempted to group the 20 states selected for the evaluation study on the basis of five impact variables, data for which have been collected at the Gram Panchayat level. These five impact variables are:

i. NGP Award received by any village in the Gram Panchayat in last three years (preceding 2009)
ii. A remarkable decrease in Open Defecation in the Panchayat
iii. Change in hygienic behaviour of community people
iv. Overall satisfaction of the community with the improved sanitation condition of the Panchayat
v. Peoples' understanding of the linkage between hygiene and diseases

Based on the above, we have classified the 20 states into four clusters to delineate the best and worst performing states on the basis of the aforesaid five impact variables.

17.2 Methodology:

On the basis of our sample, we find that at the Gram Panchayat (GP) level, 156 Gram Panchayat authorities out of a total of 1207 surveyed, have responded in affirmative and 101 have reported negative responses to all of the above 5 impact variables. In other words, 156 GPs have remarked that there has been an across-the-board improvement in all the 5 parameters, viz. they have been awarded NGP status, have registered a significant decline in Open Defecation and also reported a perceptible change in peoples' hygienic behaviour coupled with awareness of water-borne diseases emanating out of improper sanitary conditions as well as community satisfaction due to improved sanitation. These 156 best-performing GPs are distributed over 17 (out of 20) states, as shown in

Table 1. Similarly, none of the parameters has shown any improvement in case of 101 GPs. These 101 worst-performing GPs are distributed over 13 (out of 20) states, as shown in Table 2. Thus, the following tables show the distribution of best and worst performing GPs across the selected states:

Table 1: Distribution of Best Performing GPs across States

State Code	Name of State	Number of Best Performing GPs	Best Performing GPs (out of 156) (%)
1	Andhra Pradesh	11	7.05
4	Gujarat	10	6.41
5	Haryana	10	6.41
6	Jharkhand	6	3.85
7	Karnataka	5	3.21
8	Kerala	26	16.67
9	Madhya Pradesh	7	4.49
10	Maharashtra	13	8.33
11	Orissa	6	3.85
12	Punjab	3	1.92
13	Rajasthan	2	1.28
14	Sikkim	17	10.90
15	Tamil Nadu	8	5.13
16	Uttar Pradesh	10	6.41
17	West Bengal	15	9.62
19	Meghalaya	2	1.28
20	Uttarakhand	5	3.21
	Total	**156**	**100**

Table 2: Distribution of Worst Performing GPs across States

State Code	Name of State	Number of Worst Performing GPs	Worst Performing GPs (out of 101) (%)
1	Andhra Pradesh	5	4.95
2	Assam	2	1.98
3	Bihar	10	9.90
5	Haryana	1	0.99
6	Jharkhand	12	11.88
7	Karnataka	11	10.89
9	Madhya Pradesh	16	15.84
10	Maharashtra	3	2.97
11	Orissa	9	8.91
12	Punjab	23	22.77
15	Tamil Nadu	2	1.98
16	Uttar Pradesh	6	5.94
19	Meghalaya	1	0.99
	Total	**101**	**100**

The pie-charts in the following page show the share of the states in the best and worst performing GPs.

Chart 1: Share of States in Best-Performing GPs

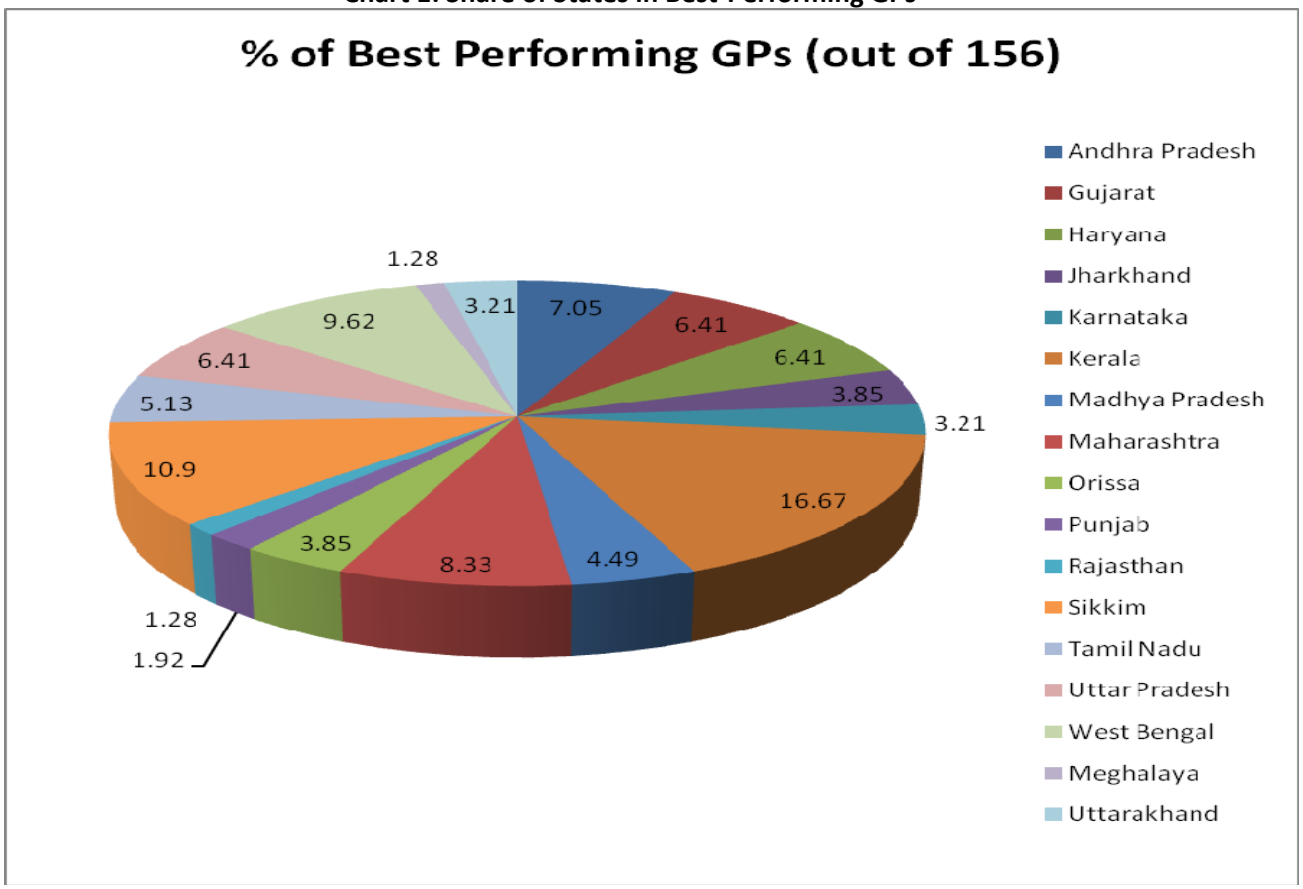
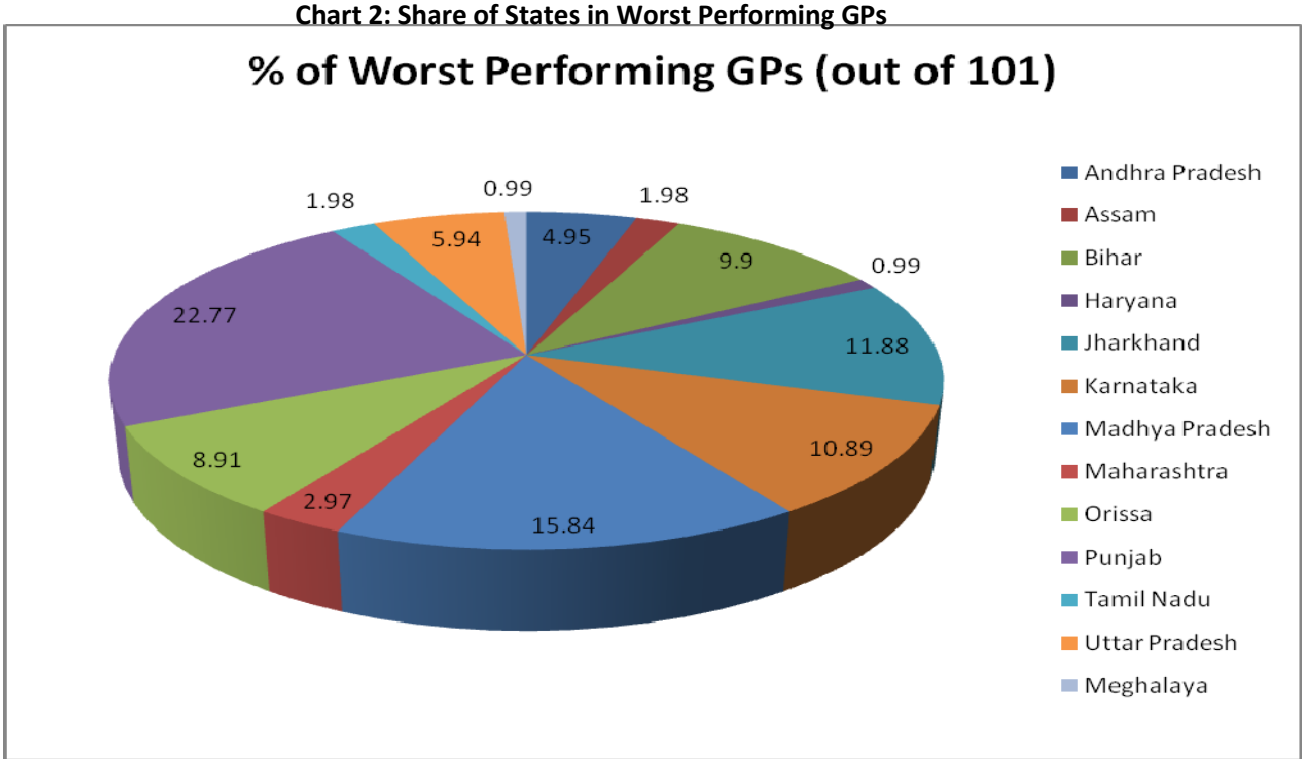


Chart 2: Share of States in Worst Performing GPs

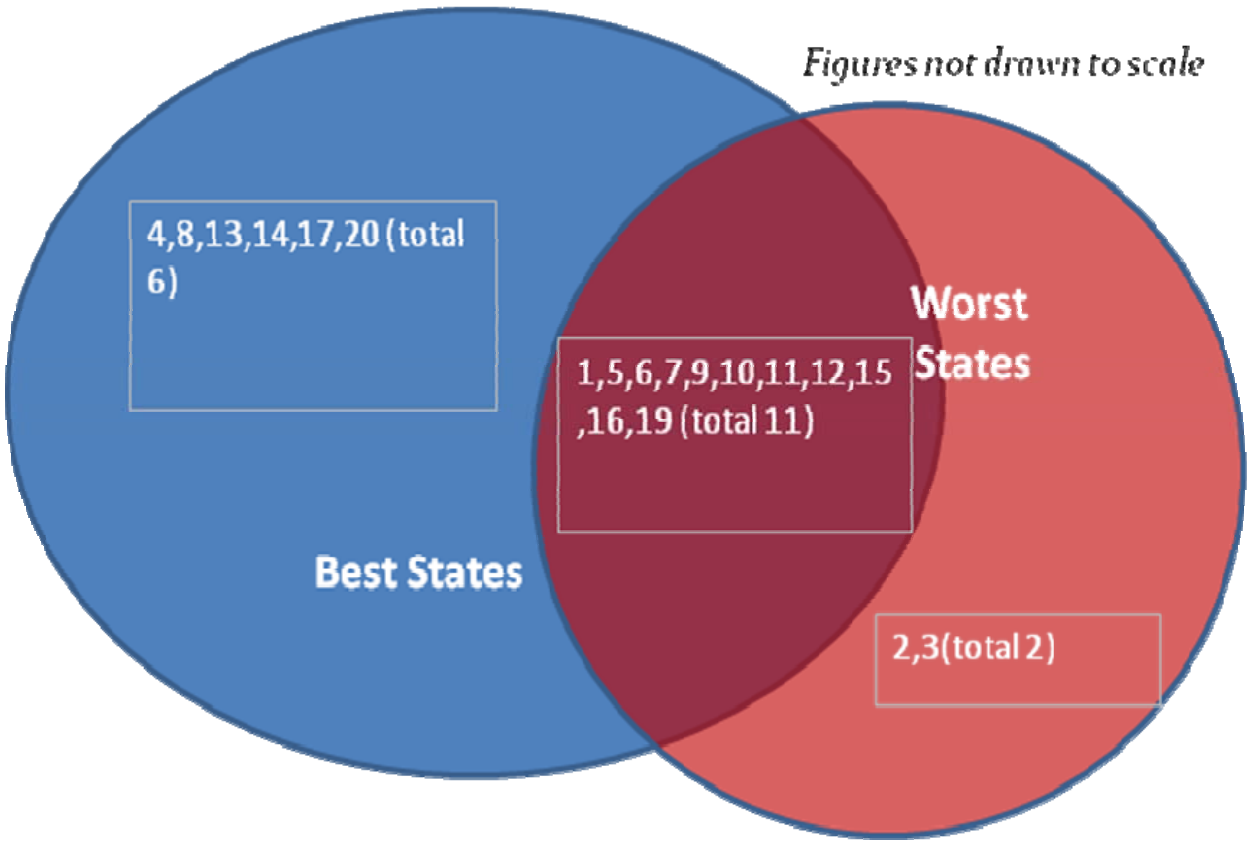


17.3 Venn-Diagram to delineate States having only Best and Worst Performing GPs:

In the following Venn Diagram, the two sets depicted by the two circles (in blue and red) are denoted "Best States" and "Worst States" respectively. As we can see, a total of 11 states (the intersection between the blue and red circle) consist of both best and worst performing GPs. As per our definition stated earlier, the best performing GPs are the ones that have shown improvement on all the five impact variables and the worst performing GPs are defined as those GPs that have shown improvement in none of the five impact indicators.

Further, out of 20 states , 6 have only the best performing GPs. These states have codes 4,8,13,14,17 and 20 ,i.e. Gujarat, Kerala, Rajasthan, Sikkim, West Bengal and Uttarakhand respectively.Also, 2 states comprise only the worst performing GPs – states with codes 2 (Assam) and 3 (Bihar).

Chart 3: Venn Diagram – States with Best and Worst Performing GPs



17.4 Clustering States based on Distribution of Best and Worst Performing GPs:

We rank the states on the basis of percentage of best and worst performing GPs (out of total number of GPs surveyed in the state).

Net Performance Indicator (NPI) of a State (%) = [(Number of Best GPs – Number of Worst GPs)/Total Number of GPs in the State] * 100, i.e.

[Percentage of Best Performing GPs – Percentage of Worst Performing GPs] in a state

The higher the Net Performance Indicator (NPI), the higher the performance of the state in terms of impacts of TSC and the better its rank.

The following table shows the computation of net percentage and rank of each state:

Table 3: NPI and Rank of each State Surveyed

State Code	State Name	No. of Best Performing GPs	No. of Worst Performing GPs	Total GPs surveyed	Best Perfoming GPs (%)	Worst Perfoming GPs (%)	NPI	Rank
1	Andhra Pradesh	11	5	70	15.71	7.14	8.57	8
2	Assam	0	2	67	0.00	2.99	-2.99	14
3	Bihar	0	10	70	0.00	14.29	-14.29	19
4	Gujarat	10	0	70	14.29	0.00	14.29	5
5	Haryana	10	1	70	14.29	1.43	12.86	6
6	Jharkhand	6	12	60	10.00	20.00	-10.00	17
7	Karnataka	5	11	70	7.14	15.71	-8.57	16
8	Kerala	26	0	70	37.14	0.00	37.14	2
9	Madhya Pradesh	7	16	70	10.00	22.86	-12.86	18
10	Maharashtra	13	3	70	18.57	4.29	14.29	4
11	Orissa	6	9	70	8.57	12.86	-4.29	15
12	Punjab	3	23	68	4.41	33.82	-29.41	20

13	Rajasthan	2	0	70	2.86	0.00	2.86	12
14	Sikkim	17	0	20	85.00	0.00	85.00	1
15	Tamil Nadu	8	2	70	11.43	2.86	8.57	9
16	Uttar Pradesh	10	6	70	14.29	8.57	5.71	10
17	West Bengal	15	0	70	21.43	0.00	21.43	3
18	Manipur	0	0	20	0.00	0.00	0.00	13
19	Meghalaya	2	1	20	10.00	5.00	5.00	11
20	Uttarakhand	5	0	40	12.50	0.00	12.50	7

Based on the NPI scores and ranks, we have clustered the 20 states into four groups.The four clusters describe the performance of the states with respect to the NPI, that indicates the net performance of the state in the five impact variables, as described before.The clusters are as described as below :

Cluster 1: Best Performers, NPI > 20%

Cluster 2: Good Performers, 10< NPI ≤ 20%

Cluster 3: Moderate Performers, 0 ≤ NPI ≤ 10%

Cluster 4: Poor Performers, NPI < 0

Based on the above criterion, Cluster 1 throws out three best performing states – Sikkim, Kerala and West Bengal.Similarly, Clusters 2,3 and 4 have four, six and seven states respectively.

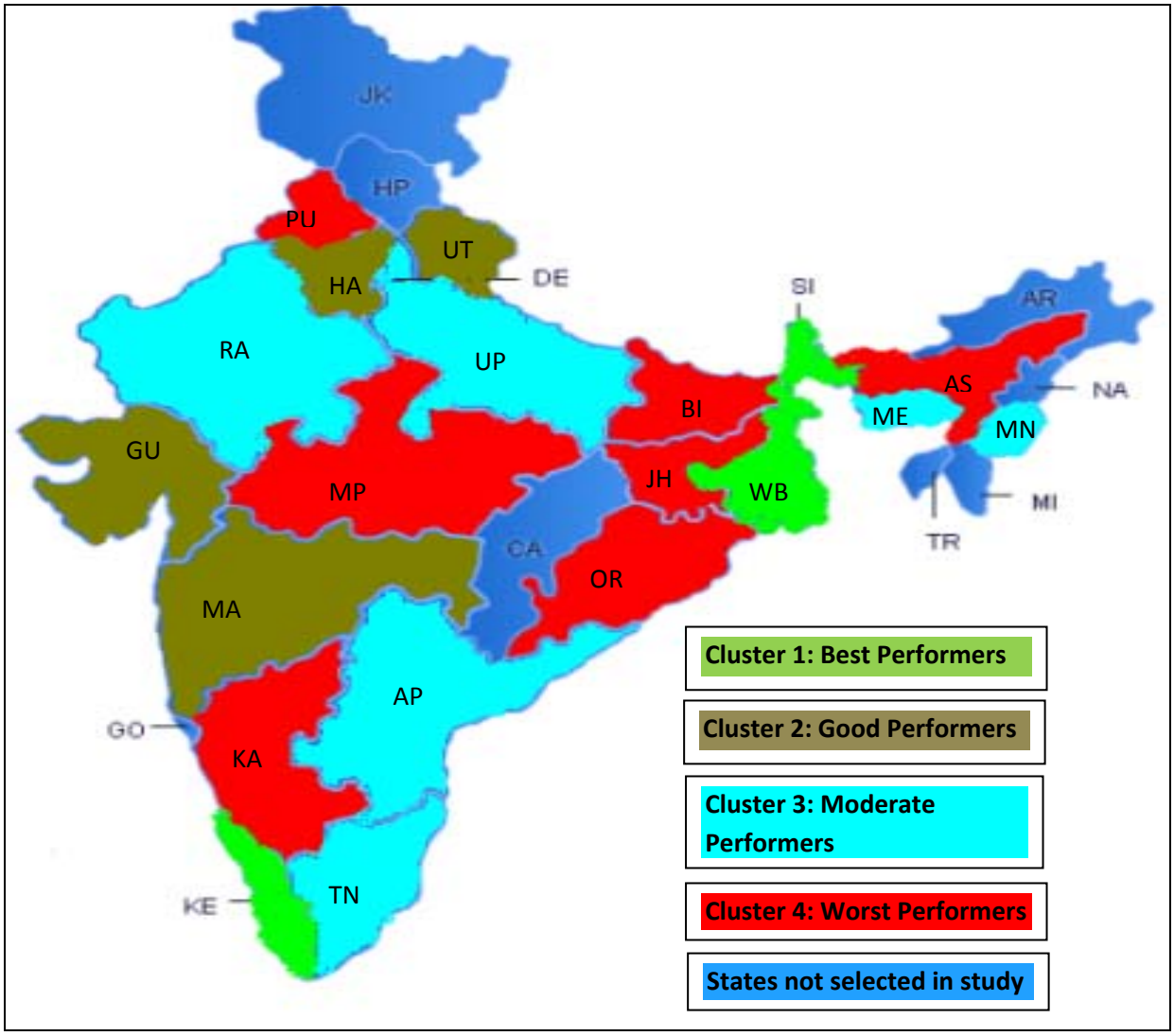
The clusters are illustrated in the following table and map.

Table 4: Clusters of States on the basis of Rank and NPI

State Code	State Name	Rank (based on NPI)	Cluster
14	Sikkim	1	Cluster1
8	Kerala	2	Cluster1
17	West Bengal	3	Cluster1
10	Maharashtra	4	Cluster 2
4	Gujarat	5	Cluster 2
5	Haryana	6	Cluster 2
20	Uttarakhand	7	Cluster 2
1	Andhra Pradesh	8	Cluster 3
15	Tamil Nadu	9	Cluster 3
16	Uttar Pradesh	10	Cluster 3
19	Meghalaya	11	Cluster 3
13	Rajasthan	12	Cluster 3

18	Manipur	13	Cluster 3
2	Assam	14	Cluster 4
11	Orissa	15	Cluster 4
7	Karnataka	16	Cluster 4
6	Jharkhand	17	Cluster 4
9	Madhya Pradesh	18	Cluster 4
3	Bihar	19	Cluster 4
12	Punjab	20	Cluster 4

Chart 4: Map of India depicting Clusters of States



17.5 Concluding Remarks:

In this chapter, we have made an effort at classifying the 20 selected states in our study on the basis of impact of TSC on 5 outcome variables (at GP level). This exercise helps us group the states on the basis of impact performance of the

programme and probe deeper into each group to discern patterns and cull out reasons for the same.

As already mentioned earlier in our report, the sample of states was purposively selected according to their performance vis-à-vis sanitation coverage into four strata, viz. Very Good, Good, Average and Poor. We find that among the 5 selected states falling into the 'Very Good' stratum, only 3 (viz. Sikkim, Kerala and West Bengal) finally emerge as 'Best Performers' on the basis of impact and broader objectives of the TSC.

Similarly, though Bihar was the only state originally included in the sample in the 'Poor' stratum, a total of 7 states viz. Punjab, Bihar, Madhya Pradesh, Jharkhand, Karnataka, Orissa and Assam stand out as the 'Poor Performers' on the basis of their impact-scores.

Thus, the key takeaway from this study is that mere sanitation coverage and extension of sanitation services is necessary but not sufficient to manifest into desired outcomes such as a long-term, sustainable improvement in hygienic behaviour and an overall feeling of well-being. Adequate interventions may be required at each level to ensure that the larger benefits of improved sanitation behaviour percolate to each and every member of the community, for improved quality of life and a sense of general well-being.

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Abbreviations

1. AAP: Annual Action Plan
2. AIP: Annual Implementation Plan
3. APL: Above Poverty Line
4. ARWSP: Accelerated Rural Water Supply Programme
5. ASHA: Accredited Social Health Activist
6. AWW: Angan Wadi Worker
7. BAC: Block Administrative Unit
8. BPL: Below Poverty Line
9. BLS: Base Line Survey
10. BRC: Block Resource Centre
11. BWSC: Block Water and Sanitation Committee
12. CBHI: Central Bureau of Health Intelligence
13. CBO: Community Based Organisation
14. CCDU: Communication and Capacity Development Unit
15. CEO: Chief Executive Officer
16. CRC: Cluster Resource Centre
17. CRSP: Central Rural Sanitation Programm
18. CSC: Community Sanitary Complex
19. DDWS: Department of Drinking Water Supply
20. DIP: District Implementation Plan
21. DWSM: District Water and Sanitation Mission
22. DRDA: District Rural Development Agency
23. DRDA: District Rural Development Agency
24. GOI: Government of India
25. GP: Gram Panchayat
26. GSRDC: Gujarat State Development Corporation
27. HH: Household
28. HRD: Human Resource Development
29. ICDS: Integrated Child Development Scheme
30. IEC: Information Education and Communication
31. IHHL: Individual Household Latrine
32. IPC: Inter Personal Communication
33. ISI: Indian Standard Institute
34. KRC: Key Resource Centre
35. MDG: Millennium Development Goal
36. MoRD: Ministry of Rural Development
37. MoU: Memorandum of Understanding
38. NGO: Non-Governmental Organisation
39. NGP: Nirmal Gram Puraskar
40. NRDWP: National Rural Driking Water Programme
41. NSSC: National Scheme Sanctioning Committee

42. O &M : Operation and Maintenance
43. PAC: Plan Approval Committee
44. PC : Production Centre
45. PHE: Public Health Engineering
46. PIP: Project Implementation Plan
47. PMU: Project Management Unit
48. PRI : Panchayati Raj Institutions
49. PTA: Parent Teacher Association
50. RMDD: Rural Management and Development Department
51. RSM: Rural Sanitary Mart
52. SC: Scheduled Caste
53. SHG: Self Help Group
54. SMC: School Management Committee
55. SWSM: State Water & Sanitation Mission
56. SSA: Sarva Siksha Abhiyan
57. SSHE: School Sanitary and Hygiene Education
58. SO: Support Organisation
59. ST: Scheduled Tribe
60. TSC: Total Sanitation Campaign
61. TSC: Total Sanitation Campaign
62. UNICEF: United Nations Children's Fund
63. UT: Union Territory
64. UN-WSP: United Nations Water & Sanitation Project
65. VEC: Village Education Committee
66. VEO: Village Extension Officer
67. VWSC: Village Water and Sanitation Committee
68. WSP: Water and Sanitation Programme
69. WATSAN: Water and Sanitation
70. WSSO: Water and Sanitation Organisation
71. ZP: Zilla Panchayat