

Addressing the world's worst sanitation problem: a programme re-design to use not just build toilets



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Institute of Applied Manpower Research
Planning Commission, Government of India

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Abbreviations

BPL	Below Poverty Line
CCBC	Community-led Collective Behaviour Change
CLTS	Community-led Total Sanitation
CRSP	Central Rural Sanitation Programme
DHS	Directorate of Health Services
DFID	Department for International Development
GDP	Gross Domestic Product
HP	Himachal Pradesh
HDI	Human Development Index
ICDS	Integrated Child Development Service
IEC	Information, Education and Communication
IHDR	India Human Development Report
IMR	Infant Mortality Rate
M&E	Monitoring & Evaluation
MDG	Millennium Development Goal
MDWS	Ministry of Drinking Water and Sanitation
MIS	Management Information System
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NBA	Nirmal Bharat Abhiyan
NCAER	National Council of Applied Economic Research
NGM	Nirmal Gram Puraskar
NGO	Non-Government Organisation
NGP	Nirmal Gram Puraskar
NSSO	National Statistical Survey Organisation
ODF	Open Defecation Free
PHAST	Participatory Hygiene and Sanitation Transformation
PRA	Participatory Rural Appraisal
PRI	Panchayati Raj Institutions
RRA	Rapid Rural Appraisal
SCs	Scheduled Castes
SHGs	Self-help Groups

SLTS	School-led Total Sanitation
SLWM	Solid and Liquid Waste Management
SSA	Sarva Shiksha Abhiyan
TSC	Total Sanitation Campaign
ULB	Urban Local Bodies
UNDP	United National Development Programme
UNICEF	United Nations International Children Education Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
WSP	Water and Sanitation Programme
WSSCC	Water Supply and Sanitation Collaborative Council

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Abstract

Sixty per cent of the world's population that defecates in the open is in India. Despite decades of government programmes, Census 2011 found that only 31% of all Indian households have access to a toilet, and the situation is much worse in rural areas. Government programmes are focused on subsidizing the building of toilets, but research shows that the toilets are not used. Without a mind-set change and the concomitant behaviour change, a focus on providing households subsidies to build toilets has been far from successful in ensuring behaviour change. This paper addresses all these issues, and offers a way forward for the 12th Plan strategy, based on the revised guidelines for the Nirmal Bharat Abhiyaan.

Although open defecation is a global problem but it is much more serious in India as approximately 60 percent of the world's population that defecates in the open live in this country (WHO, UNICEF, 2012). Even worse, a World Bank study revealed that in five states which received the Open Defecation Free (ODF) prize (called Nirmal Gram Puraskar), only 67 per cent of the toilets in the villages were actually being used, and this percentage was lower (46 per cent) in non-ODF villages.

A decade ago in 2002, the Government of India had indicated that less than 20 per cent of India's population in the rural areas have access to proper hygiene although since the mid-1980s we have a well-established sanitation scheme offering subsidies for individual and community households. Yet at the same time, India has more phone users (around 54 per cent households) and television access (33 per cent) in rural areas than people with access to tap water (31 per cent) and toilet facilities (31 per cent), according to Census 2011. This clearly points to the failure of the schemes implemented till now.

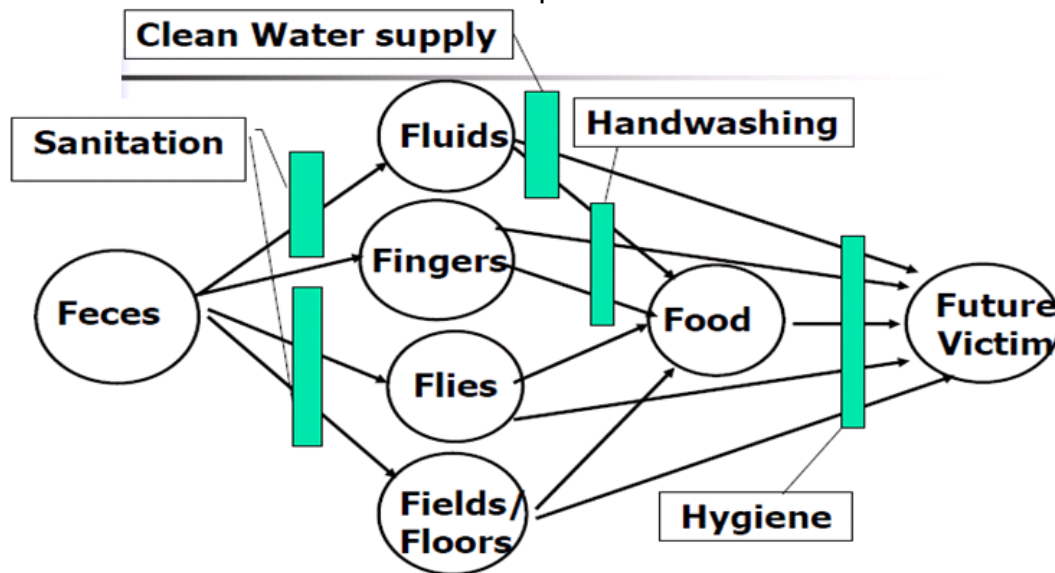
This paper is organized as follows. Section 1 presents the empirical evidence on the relationship between safe sanitation on the one hand, and nutritional, health and educational outcomes on the other. Section 2 examines the current state of India's sanitation problem. Section 3 discusses the various government sanitation programmes historically, and why they have been less than successful. Section 4 analyses the lessons to be learnt from international experiences and Section 5 discusses the way ahead for improving India's sanitation.

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1. Sanitation and its impact on nutritional and health status

Lack of sanitation defined as the improper management of human excreta, solid waste and drainage (toilets, conveyance and treatment systems), has substantial health effects. As seen in figure 1, open defecation affects even those who have household latrines on account of the negative externalities caused by the defecated area in that locality.

Figure 1: Faecal-oral disease transmission and primary and secondary barriers



Source: Water Sanitation Programme (WSP) (2008), ‘What do we know about the health benefits of WSSH investments?’¹

In communities where safe disposal is absent, the major part of diarrhoeal disease originates from the infection spread by open faeces which are first transmitted from faeces to hands and then to the mouth. Poor sanitation causes around 90 per cent of the diseases in developing countries and especially affects the poor who cannot afford proper sanitation (World Bank, 2012). This route to the human body can be taken by the pathogens directly or indirectly i.e. toilet surfaces or contaminated food or water. Figure 1 (known as the F-Diagram) is one of the many tools in Participatory Hygiene and Sanitation Transformation (PHAST) methodology that describes in detail the ‘faecal-oral’ transmission route. The diagram indicates that the transmission happens through flies which sit on the food, fingers with which we eat food, fluids (the drinking of contaminated water, washing of clothes with such water, bathing, and cooking with it). Further, improperly disposed excreta are a major soil and water pollutant, and deplete water of oxygen which is imperative to sustain aquatic life. This chain needs to be broken. Not only human faeces but animal faeces too can create similar nuisance and therefore equally

¹ Available at <http://www.wsp.org/sites/wsp.org/files/publications/wsp-HDNBBL-Jack-Molyneaux-ETWWP.pdf>, last accessed August 10, 2013

contaminate food and water supply too. Such water reaches fields where the food comes from, that cause a variety of diseases which become life threatening at times, due to the mixing of human excreta in the water table. These germs further harm growth and development especially of children without necessarily causing diarrhoea, although diarrhoea still remains the most common outcome.

Breaking this faecal-oral transmission route can be achieved by combining clean water, improved sanitation and good hygiene. Sanitation refers to managing excreta and hygiene refers to good practices by people. Good practices by people include not just hand-washing but the following: food hygiene (cooking, storing, preventing cross-contamination); ensuring safe water at the point of use; respiratory hygiene; safe disposal of faeces (both human and animal); general hygiene (laundry, surfaces, toilets, baths, sinks); and disposal of solid waste, control of wastewater and rainwater (WSSCC, 2012).

There are many wider and indirect cross-over effects of sanitation which exist at the micro level. Improved sanitation helps not only to ensure good health outcomes but also other important outcomes in the human development process. Individual health and hygiene is largely dependent on adequate availability of drinking water and proper sanitation. There is therefore a direct relationship between water, sanitation and hygiene and if any one of them is not in good condition then the effects of the other two are undermined.

Figure 2: Feedback Loops in the Human Development Process

Social services inputs/ processes	Human development outcomes/outputs				
	Knowledge	Family size	Health status	Nutritional status	Healthy living conditions
Education		↓	↓	↓	↓
Family Planning	↓				
Health	↓	↓		↓	↓
Nutrition	↓	↓	↓		
Water & Sanitation					

Source: Mehrotra and Delamonica (2007)

Figure 2 (It is the basic conceptual framework for human development feedback.) shows the relationship between the input variables like sanitation on the output variables like nutritional status of a person. It shows how improved sanitation has a direct impact on health leading to other positive externalities. It indicates that improved sanitation also directly impacts nutrition which then results in better health and healthy living conditions. Better sanitation would ensure that a disease like *Intestinal helminthes* does not affect the human body. This disease reduces the intestinal absorption of certain nutrients like vitamin A. Other effects of poor sanitation include

anemia caused by hookworms making the intestine's ability to absorb nutrients quite low (Hunt, 2006). Unsafe drinking water which causes diseases like cholera and diarrhea leads to excess water loss from the body, making the body lose nutrients.

Since malnutrition accounts for half of all child deaths, sanitation also impacts health outcomes. In an econometric evaluation which assesses the impact of India's Total Sanitation Campaign (TSC) over 2001 to 2011 on health using large District Health Surveys and Census data, Spears (2012a) found that TSC reduced infant mortality, on average, by 4 deaths per 1000 and increased height for age by 0.2. This evidence is further corroborated by international comparisons of sanitation coverage and height, using 140 Demographic and Health Surveys. Thus, Spears (2012c) finds that the number of years a country has open defecation affects how tall children are: country-years with less open defecation have taller children, a result that is not caused by fixed differences among countries and regions. In fact, people in Africa are taller than their level of economic development would predict, and Indians are much shorter. This mystery is not explained by international differences in genetic height potential: although the median Indian child is two standard deviations below the international reference population, the Indian children from better-off households meet international norms (Bhandari et al., 2002). Spears (2012b) found that international differences in open defecation offer an answer to the puzzle. He collapses each of the 140 DHS survey rounds with height and sanitation data into one observation, so a country-year is an observation. He then finds that sanitation coverage alone explains 54 per cent of the cross-country variation in the height of children under three years old. In India, open defecation may have especially adverse consequences because even in rural India population density is very high.²

Under-nutrition rate in India for 0-3 year olds is as high as 46 per cent. Therefore, it is important to understand the five A's for proper nutrition. The first two are the availability and access to clean food and next three relate directly to faecal infections are absorption, antibodies and allopathogens. This implies that when a person suffers from faecal infection of the gut, the absorption capacity decreases tremendously. The implication is that protein-energy under-nutrition often occurs because there is lack of *availability* of food for reasons of drought or flood in a location. Lack of *access* implies that even if food/micro-nutrients are available in the market, adults or children cannot access them. Adults' access may be limited by prices, while that of girls within poor households could be limited by unfair allocation within the household. Similarly, infants too may suffer from lack of access: less than 6 months old infants may find that their

² Spears (2012d) carries the argument even further. Health does not merely depend on whether one's own household defecates openly; it also matters what others do. So, he separates children in his own village surveys by the fraction of households in their village who openly defecate. This village-level factor adds explanatory power beyond the household's own behaviour: within both groups, children who live in villages where fewer households defecate openly are taller, on average. He admits this is only suggestive of a causal relationship, but it is merely corroborating other evidence that open defecation has negative externalities. So, it is not just that the household itself does not defecate in the open matters, but that other households also do not, matters too.

mothers cannot breastfeed as the latter themselves are under-nourished and therefore do not produce enough breast-milk to feed the infant adequately. Or the 6-9 month old infant cannot access solid, mushy food (in addition to breast-milk) if the mother does not possess the knowledge that the infant needs such complementary foods in order to grow. Moreover, if poor sanitation, unsafe water and/or poor hygiene practices cause infection, the result is that the antibodies that were to be used to building the body are now used to fight infections. Due to faecal infections, other pathogens with faecal-oral pathways (e.g. Hepatitis A, B and C or even typhoid fever) can attack the body. This is the reason that the focus should not only be diarrhoea but also other negative externalities caused by these faecal infections. All these infections are directly related to clean drinking water, safe sanitation and basic hygiene and thus can be avoided easily via behavioural changes (Chambers, 2010).

Water, Sanitation and Hygiene (WASH) (2012) reports that in developing countries approximately half of all primary schools do not have proper water and sanitation facilities, which further puts survival of children at a high risk. Practice of safe sanitation in school improves enrolment rates of girls. It induces girls who have attained puberty to remain in school, as with a toilet infrastructure within the school building, safety is ensured for growing school girls. Also, use of toilets in school inculcates good habits in children as they grow and teaches them not to defecate in the open.

The effects of improved sanitation go well beyond enrolment, and extend to actual learning and better cognitive skills. Just as Spears (2012) has shown that children who live in environments without open defecation are taller, he also shows that taller children score higher on learning tests in India (using India Human Development Survey data from NCAER of 1993-94 and 2004-05) with a much steeper association in India than in the US. Spears (2012) also shows, in an econometric evaluation of impact of TSC in India (2001-2003) on cognitive skills (using data from Pratham's Annual Survey of Education), that children exposed to more TSC latrines in early life recognized more letters and numbers at the age six.

All these effects demonstrate that the feedback loops in the human development process we discussed in Figure 2 really work.

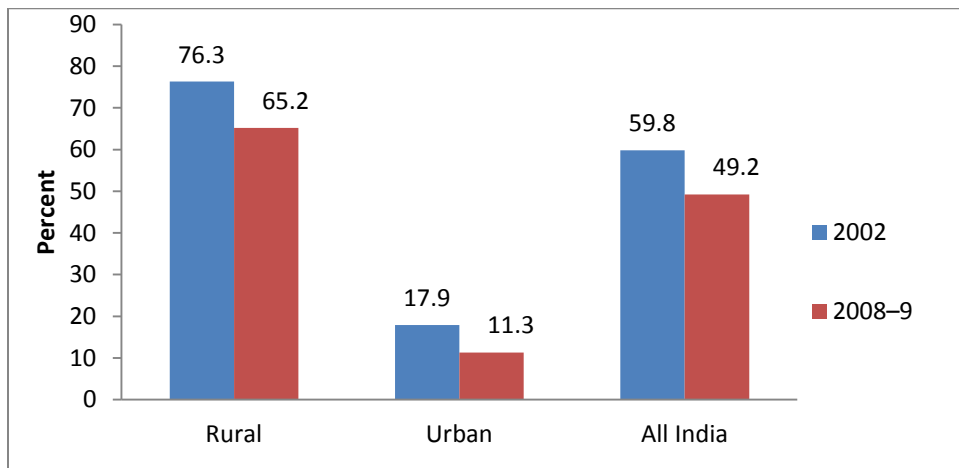
2. Sanitation: A situation analysis of India

Of the 626 million in the world who defecate in the open nearly 60 per cent are in India (i.e. 90 percent of total South Asia). This number is more than double the number of the next 18 countries combined where open defecation is prevalent (WHO, 2012). As per National Statistical Survey Organization (NSSO) data, the percentage of population who do not have any type of toilet facility was approximately 60 per cent in 2002 and improved very little by 2009 to 49 per cent (IHDR, 2011) (see Figure 3). Figure 4 shows the distribution of toilets by type (flush, pit or service).

The approximate economic loss due to lack of sanitation could be as huge as Rs. 2.4 trillion in a year, which is approximately 6.4 per cent of India's GDP in 2006 (World Bank, 2010). These costs are associated with death, disease, accessing and treating water, and losses in education, productivity, time, and tourism.

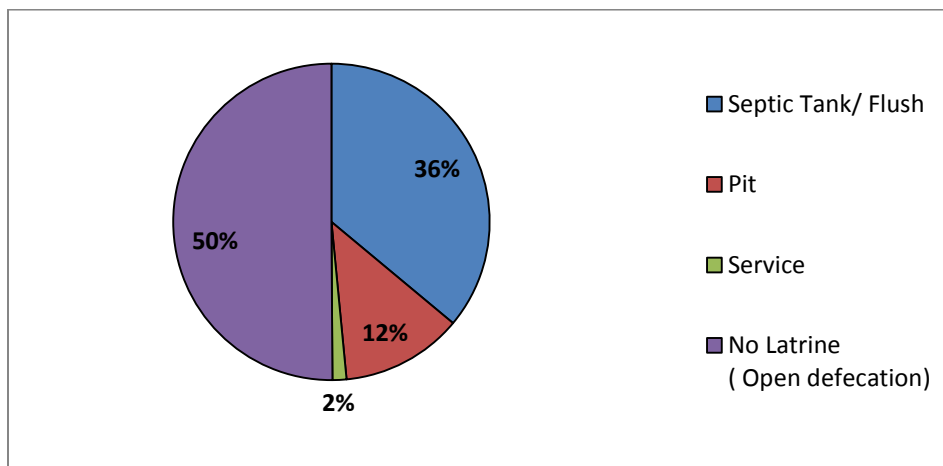
As emphasized before, good sanitation leads to good health which then translates into other better development indicators. In the human development index, India ranks at 134 for the countries across the globe (UNDP, 2013). A similar attempt to calculate the HDI by the IHDR 2011 indicates that over the years of 2000 to 2008, the HDI has improved due to education and income but health index which is defined in terms of life expectancy has less improvement with a percentage increase of only 13.2 over 2000-2008 which is way below the average of 20.7 improvement in the HDI over the same period.

Figure 3: Open defecation in India – no latrine facility



Source: India Human Development Report, 2011 based on NSS 58th and 65th Rounds

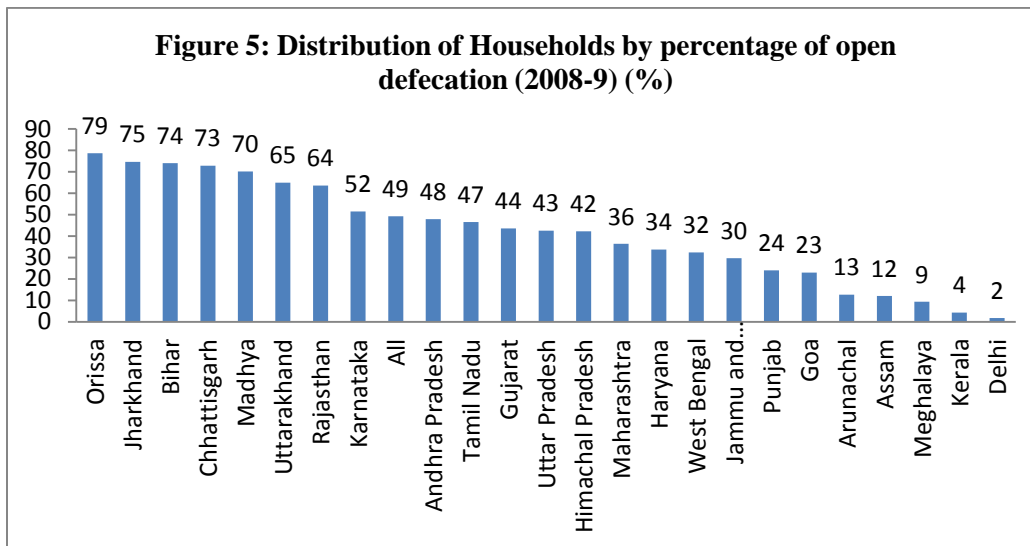
Figure 4: Type of toilet facility (in percent)



Source: India Human Development Report, 2011 based on NSS 58th and 65th Rounds

Sanitation: The variation by state in improvements over time

Except in a handful of states, the practice of open defecation is widespread across all states in India (Figure 5).

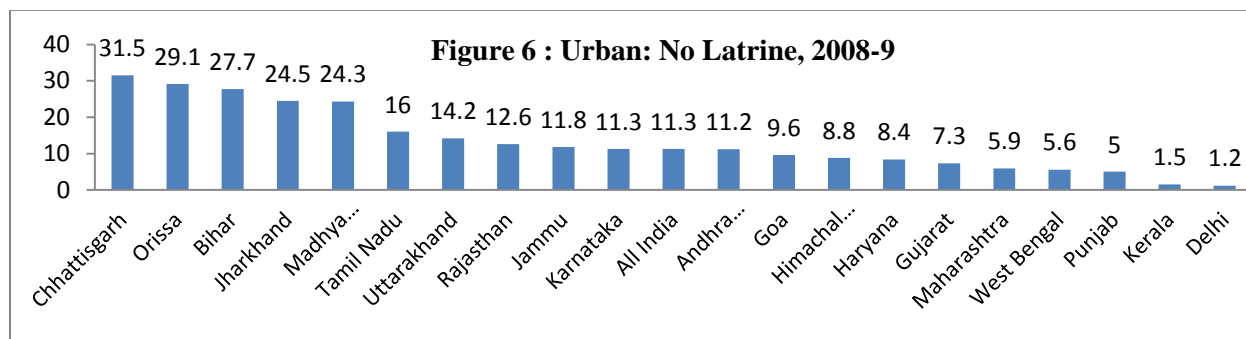


Source: India Human Development Report, 2011 based on NSS 65th Round

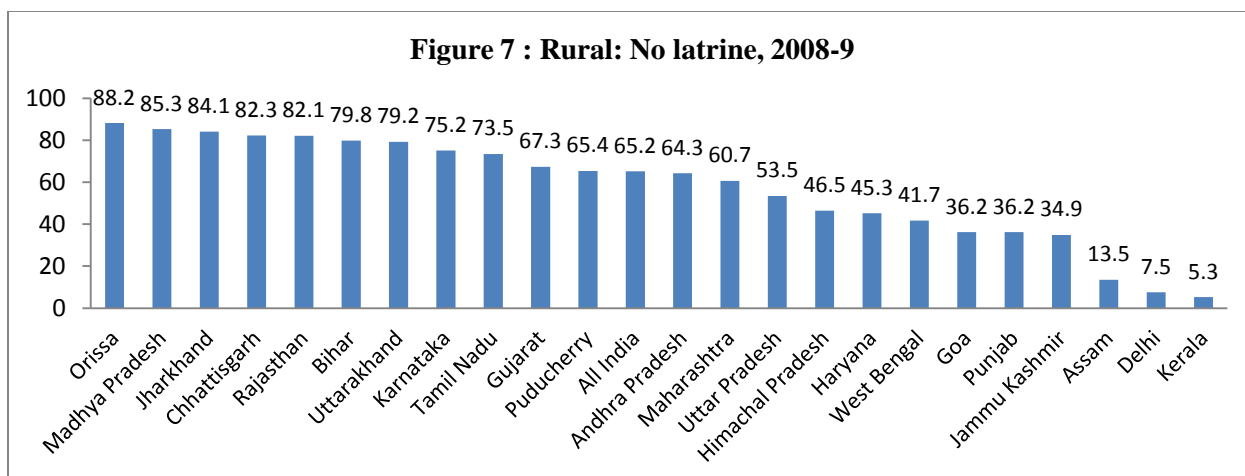
Most low income states are well below the national average for households with toilets: Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan and Uttarakhand, but even relatively well-off states have almost half of their population defecating in the open (eg. Karnataka, Tamil Nadu and Gujarat).

The rural-urban difference

The problem of poor sanitation is most evident in rural areas where around 35 per cent people have no access to latrines. The situation in urban areas is not as grave as about 88 per cent do have access to toilets. But due to the overcrowding of cities and formation of numerous slums which are not connected to the city's sanitation infrastructure, open defecation in these areas is still widespread (Figures 6 and 7).



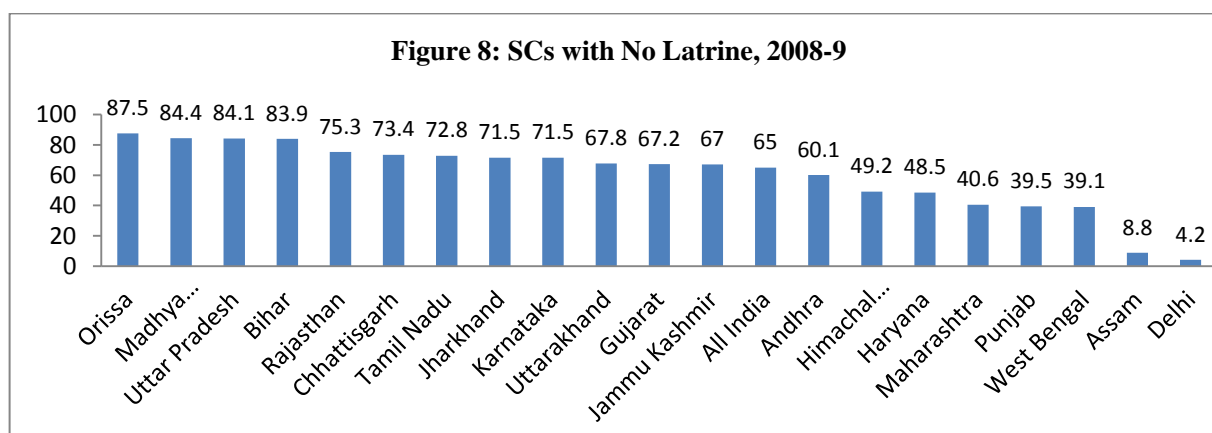
Source: India Human Development Report, 2011 based on NSS 65th Round



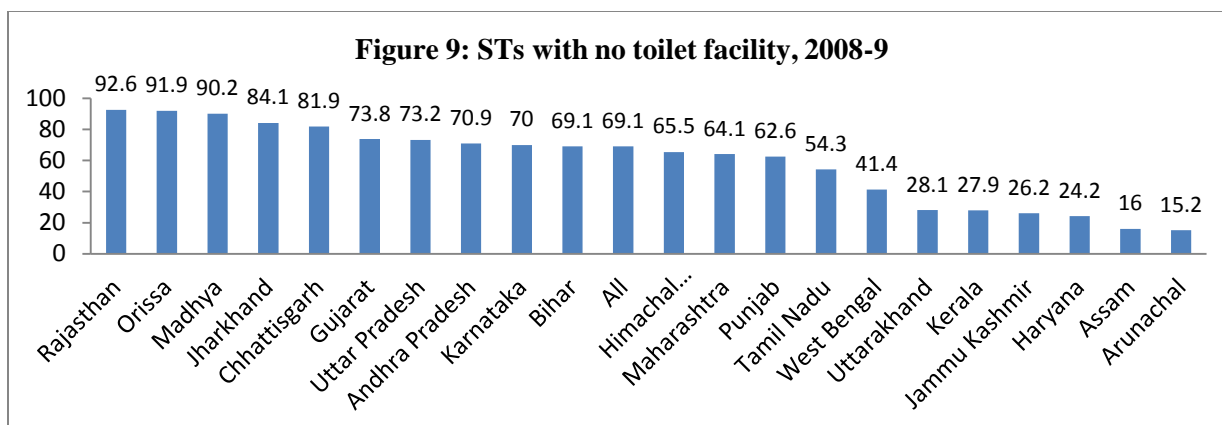
Source: India Human Development Report, 2011 based on NSS 58th and 65th Rounds

In cities the schools sometimes do not have this facility and children are forced to defecate in bushes or open areas. Therefore, while urban areas are attracting poor migrants, they have also increased the exposure to sanitation related diseases through overflowing cesspools,³ sewers and drains. Yet residents of unauthorised slums in cities continue with open defecation as the only solution. Overall, the stark reality remains that only 50 per cent have access to any sort of toilet facility with only 36 percent having proper flush tanks (IHDR, 2011). This is more problematic for women as finding a secluded place in congested areas becomes not only difficult, but also very unsafe and hence in rural areas the women have to wait till dark. This has had serious implications on their health.

Toilet access by caste



³ A cesspit, or cesspool, is a pit, conservancy tank, or covered cistern which can be used to dispose of urine and faeces.



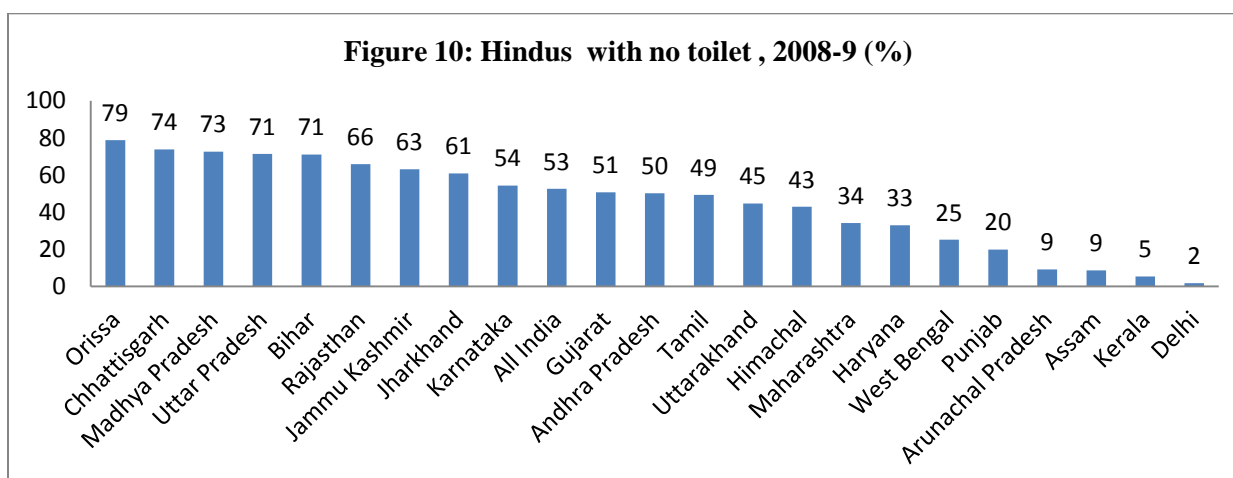
Source (for Figures 8&9): India Human Development Report, 2011 based on NSS 65th Round

The population with no toilet is around 49 per cent for India; for SCs and STs, it is as high as 65 and 70 per cent respectively (Figures 8 and 9).

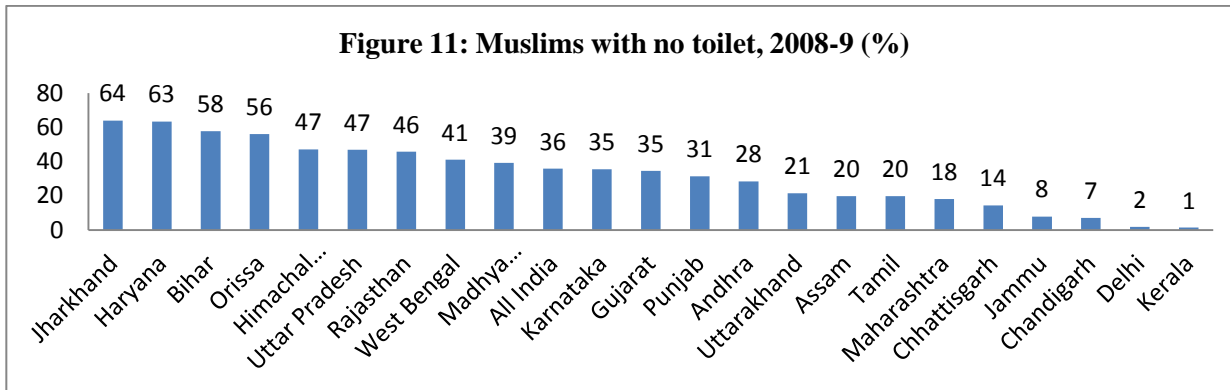
Toilet access by religious group

Similar to the urban-rural differences and the caste-wise differences in respect of access to toilets, there is a variation among the four major religious groups namely, Hindus, Muslims, Sikhs and Christians (Figures 10 and 11). Only 35 per cent of the Muslim population do not have a proper toilet whereas 53 percent Hindus do not have so. This is mainly because the Muslim population is predominantly residing in urban areas, where toilet access is better than the national average. This is consistent with the fact that Infant Mortality Rate (IMR) for Muslims is 52.4 whereas for Hindus it is 58.5 per 1000 live births.

The Millennium Development Goal (MDG) 7 is to ensure environmental sustainability. This will be achieved by decreasing the proportion by half of the population without sustainable access to safe drinking water and basic sanitation. The target is 59 per cent by 2015, but the shortfall at the current pace of improvement will have considerable impact on the set target.



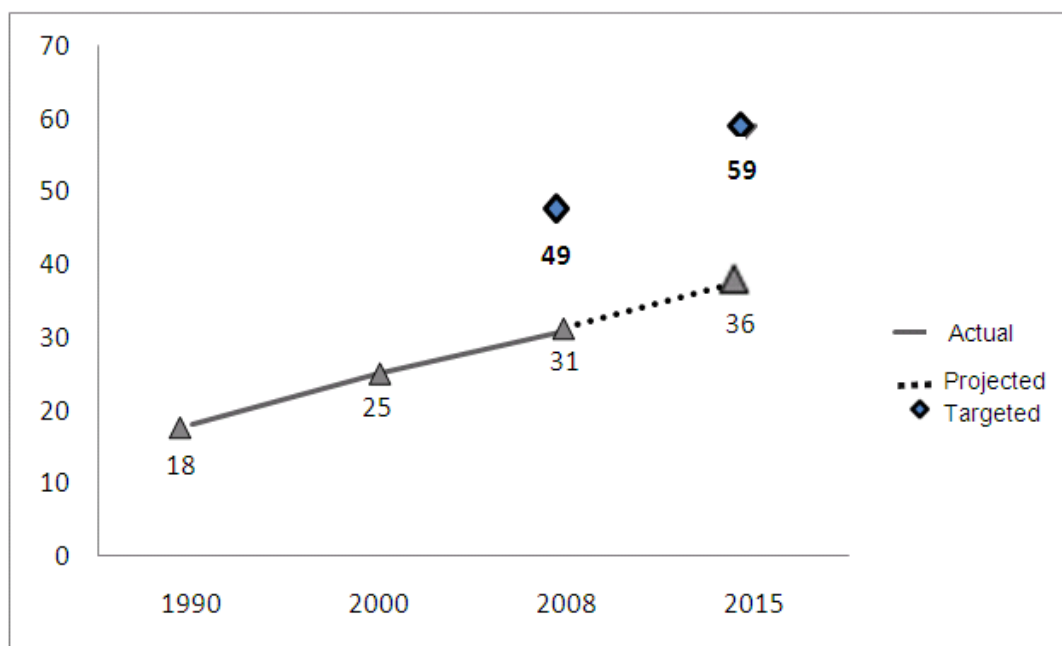
Source: India Human Development Report, 2011 based on NSS 58th and 65th Rounds



Source: India Human Development Report, 2011 based on NSS 58th and 65th Rounds

As per UNICEF, if we continue at this rate of improvement and provision then we would miss the target of 59 per cent of improved sanitation by a huge margin (Figure 12). The UNICEF claims that India would take time till 2054 and Orissa would take the longest time — till 2160. That means there are still 27 years to achieve an open defecation-free status in India. This, however, does not match with the NSSO estimates that the 50 per cent target has been achieved in 2008-9 although households without toilets in the rural areas are still as high as 65 per cent. Thus, there is a wide difference in the figures and the reason could be the difference in definition of a toilet. Of the total sum allocated to sanitation by the Government of India, 66 percent is spent on just household building toilets and just 6 per cent on Information, Education and Communication (IEC) for generating demand for sanitation (Table 1).

Figure 12: Progress towards the MDG sanitation target of use of improved sanitation facilities



Source: WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation (2012)

Table 1: Component-wise Expenditure against Approved up to 11-8-2013

Component	Expenditure in lakhs	Share in total expenditure
Individual house hold latrines total	936839.35	66.1
Sanitary Complex	33741.3	2.4
School Toilets	266779.96	18.8
Anganwadi Toilets	25586.05	1.8
Startup	5479.33	0.4
Adminstration	33458	2.4
Information, Education and Communication (IEC)	84201.13	5.9
RSM/PC	5847.8	0.4
Revolving Fund	1639.66	0.1
Solid Liquid Waste Management	23653.63	1.7
Total	1417226.21	

Source: Ministry of Drinking Water and Sanitation⁴

Further, analysing the actual expenditure done by various states against the approved amount, there is evidence to suggest that the IEC funds were used effectively by Himachal Pradesh, Haryana and Kerala in contrast to states like Bihar, Jharkhand and Orissa (see Figure 14).

The sanitation policy debate in India revolves around whether government should continue to subsidize building of individual household toilets (as under Total sanitation campaign)? Or community based collective action is sufficient to achieve ODF status in India, since once people are aware of the grave risks of OD they will build the toilets themselves.

3. Brief history of sanitation programmes in India and why they failed

Manu Samhita and sanitation

Manu Samhita, one of the ancient sacred texts of Hindus sets forth instructions for morning ablutions in a healthy, eco-friendly and safe manner. It mentions the places where defecation and urination were permitted and where it was not. The code was very rigid in maintaining environmental sanitation. There were a lot of open spaces and free areas where people could openly defecate without affecting health outcomes as such spaces were located far away from the homes, odours dissipated in the open and public or private toilets were an option.

Only few castes engaged in the disposal of faeces and the reason for such discrimination is deep rooted in *Manu Samhita*. The book emphasises how some castes were assigned rigid traditional occupations and labelled them as impure. They were outcastes from the rest of the

⁴ http://tsc.gov.in/tsc/Report/Financial/RptQueryStateWiseFinancialExpenditure_net.aspx?id=FIN, Last accessed on August 10, 2013.

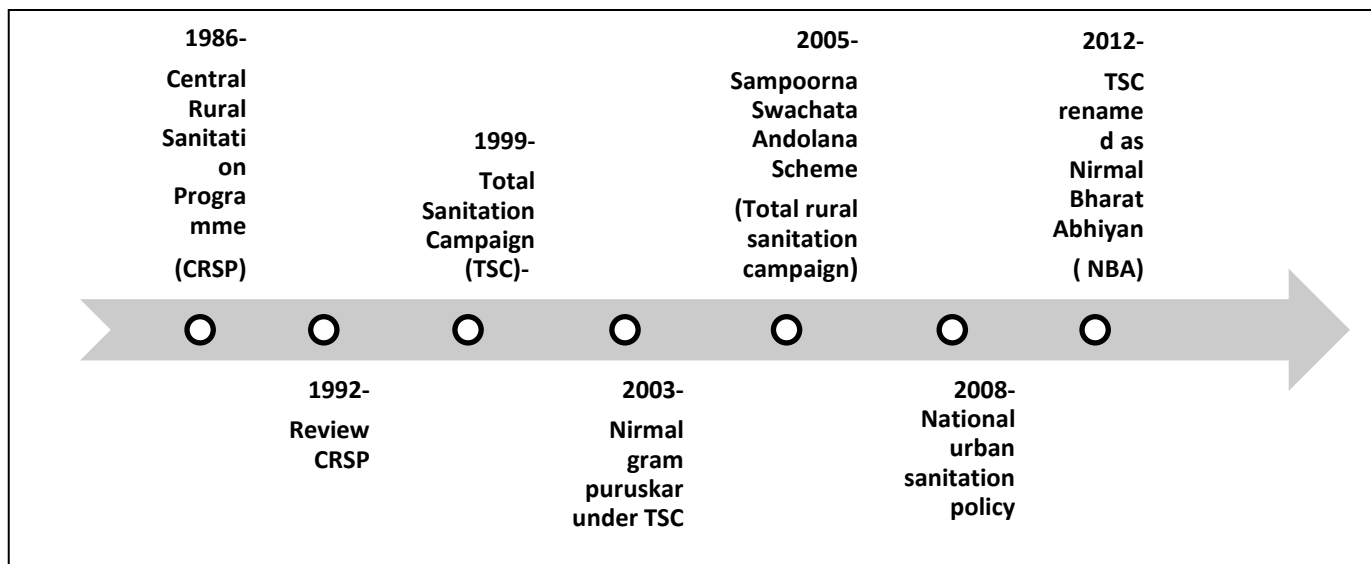
society and were severely punished if they treated themselves as equals. The Manu Samhita is the basic source of Hindu belief about sanitation (Bathran, 2011). Even in cities today in some places people have the provision of open pits as toilets and “scavengers” are responsible to clean them. As a result, the practice of manual scavenging by a certain caste among the Scheduled Castes (SCs) is still evident in our society. Despite the law prohibiting manual scavenging in 1993, progress on that front has been minimal. A million manual scavengers still carry head-loads of faeces (human and animal) and enter manholes/open sewers to carry out their maintenance.

The caste known as Bhangis or Valmiki have been traditionally engaged in basically three occupations: cleaning latrines, sweeping, and scavenging sometimes even dead bodies. They carried human waste in containers on their heads. A child born in this caste was forced to take up this profession and hence the whole caste gets trapped in the vicious cycle of poverty and discrimination.

The other part of the cultural mind-set is that defecation is something one does away from the house, not in or near the house. So, open defecation has been practiced for centuries, and such mind-sets are difficult to change. Even if a toilet is built, if there is no demand for it in the first place, it will not be used – which is exactly what is happening.

Water supply and sanitation is a state responsibility under the Indian Constitution. This function is with the Panchayati Raj Institutions (PRI) in rural areas or Municipalities in urban areas (Urban Local Bodies, ULB). However, the centrally sponsored scheme of the Union Government related to sanitation is implemented by the state governments and the PRIs and ULBs (since the local bodies are poorly resourced in terms of own sources of revenue. Figure 13 gives us a brief timeline about the sanitation programmes in India.

Figure 13: Timeline of sanitation programmes in India



The phase of Central Rural Sanitation Programme (CRSP)

It was during the first five year plan that it was realized that the availability and quality of drinking water supply is a serious concern, and access to safe drinking water needed proper attention. In fact, drinking water improvements were emphasized in the first three decades after independence but sanitation remained neglected.

It was not until the 1980s, which was also considered as the International Water and Sanitation Decade, a nationwide programme on rural sanitation was launched as the Central Rural Sanitation Programme (CRSP) in 1986 by the Ministry of Rural Development. The aim of this programme was to introduce the concept of proper defecation and also ensure privacy to women. This programme provided a subsidy of around US\$ 50 to build toilets for below poverty line (BPL) households and was mainly supply-driven in nature. This programme was supported by international organizations like UNDP, WHO and UNICEF and was reviewed after six years. The review showed that the heavy subsidy provided to construct toilets for the poor were not being used as people did not perceive the need for using toilets for defecating and continued with their earlier practice. The programme was hence revised. To start with, an important dimension of the failure of this programme was, it missed addressing the question why people defecate in the open in the first place. This programme assumed that open defecation is rampant in the rural areas because people are poor and cannot afford to build a toilet for the household and therefore the government provided subsidies for the identified poor, i.e. BPL households. This kind of thinking still heavily dominates the mind-set of the senior bureaucracy: “if they had the money they would build the toilets”. In other words, there is still no recognition, that if, for centuries people have defecated in the open, they are not suddenly going to change their practices on their own. The mind-set of the Manu Samhita will not change, even though the physical spaces, available for defecating even in rural areas have been shrinking as the density of population rises. Even in the 65 years since independence India’s population has increased four times.

The other reasons included that there was no community participation and the subsidy was seen as a mere cash transfer and not something which was to build something, the community felt they require. Also, the toilets that were recommended were not something that a poor household could afford. Further, there was little awareness regarding how sanitation and hygiene are important aspects of life and they are important for their own personal interest. It was therefore mainly a supply driven model as it was purely subsidy oriented and was seen by community as a requirement to build a toilet to have access to water supply (WSP, 2007).

The phase of Total Sanitation Campaign (TSC)

The poor progress under the Central Rural Sanitation Programme led to a revamp. The Total Sanitation Campaign (TSC) was launched in 1999 and aimed at eradicating the

practice of open defecation by 2010.⁵ It was meant to be demand driven and people centred in nature. This revised approach on sanitation emphasized information, education and communication (IEC), and capacity development activities to increase awareness of the rural people and generation of demand for sanitary facilities. Under this scheme, financial encouragement was provided to BPL households for construction and usage of individual household latrines in recognition of their achievements. Financial assistance was also given for constructing school toilet, Anganwadi toilets and Community Sanitary Complexes apart from Solid and Liquid Waste Management (SLWM). The main differences between CRSP and TSC are summarised in the table below.

Table 2: Difference between Central Rural Sanitation Programme (1986-1990) and Total Sanitation Campaign (2000-2011)

	CRSP	TSC
Technology choice	Limited	Range of options
Motivation	Individual subsidy	Creation of felt need for safe sanitation through awareness creation and health education, but subsidy for toilet construction continued.
Construction	Through local contractors	Households construct latrines on their own with help from trained local masons
Financial	Individual, upfront hardware subsidy given to below poverty line households for latrine construction	Latrine construction to be undertaken by the below poverty line household itself and on completion and use of latrine by them, cash incentive of Rs. 1,200/-
Incentive	No incentive to reward communities for achievement of safe sanitation outcomes	Gram Panchayats eligible for a cash reward Nirmal Gram Puraskar – upon achievement of safe sanitation at community level
Monitoring	Focus on number of toilets constructed	Focus on meeting open defecation-free outcome at the community level

Source: WASH, 2008

The TSC, which was launched to make sanitation a demand-oriented strategy instead of purely supply-driven one, was one of the flagship programmes of the Government of India. Since its initiation and increasing budgetary allocation each year, there has been a significant increase in total number of toilets built. To strengthen the campaign a new incentive was put in place known as the “Nirmal Gram Puraskar (NGP)” in 2003 (see Table 1). The NGP or village free of open defecation is given to those Nirmal Grams which have become fully sanitized (ODF). This award increased competition among Panchayati Raj Institutions to hasten toilet construction. This incentive programme worked well initially but once the award was achieved by the villages,

⁵The programme was initiated under the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in the Ministry of Rural Development.

the practice of open defecation started again. For example, a study in 2008 by UNICEF which covered around 162 NGP gram panchayats in six states showed that only 4 per cent of 162 were following and were maintaining the open defecation-free (ODF) status. The NGP initiative gained immense popularity and contributed to bringing about a movement in the community for attaining the Nirmal status. However, the same study found that in the 162 Gram Panchayats in six states which received the Nirmal Gram Puraskar, of the 81 per cent households which had built toilets, only 64 per cent used them. About 6 per cent used the community toilets. The remaining was still defecating in the open. The toilets which were not used for defecating were seen to be used for storing, bathing, and other uses. Hence, once this award is achieved it becomes difficult to sustain that interest in keeping the locality clean. This approach has major limitations. It indicates the strong need for proper monitoring by external agencies in this regard.

There is evidence that the NGP prizes for achieving ODF status have encouraged village-level latrine construction. The NGP incentive amount per village increases with village population size: below a village population of 1000 (according to Census 2001) the prize is Rs.50,000; it is Rs.100,000 for a village with a population between 1000 and 1999; Rs. 200,000 between 2000 and 4,999; Rs. 400,000 between 5000 to 9999; and Rs. 500,000 for a population of 10,000 or more. Spears (2012a), using two different data sets he constructed,⁶ carried out an econometric test on the dataset: he regressed latrine construction per capita on that village's NGP incentive per capita, with controls for population and other village level characteristics. In both cases, he found that a higher NGP incentive encouraged village-level latrine construction. The most densely populated discontinuity in the prize is around 1000.

For our larger argument what is important is that the prize is a group collective prize given to the village as a whole for further development. Second, it is an *ex post* prize given after the monitors have observed actual ODF status. Third, to reiterate what we noted earlier, toilets once built were not being used; in other words, there was no collective behaviour change even with an *ex post* collective prize.

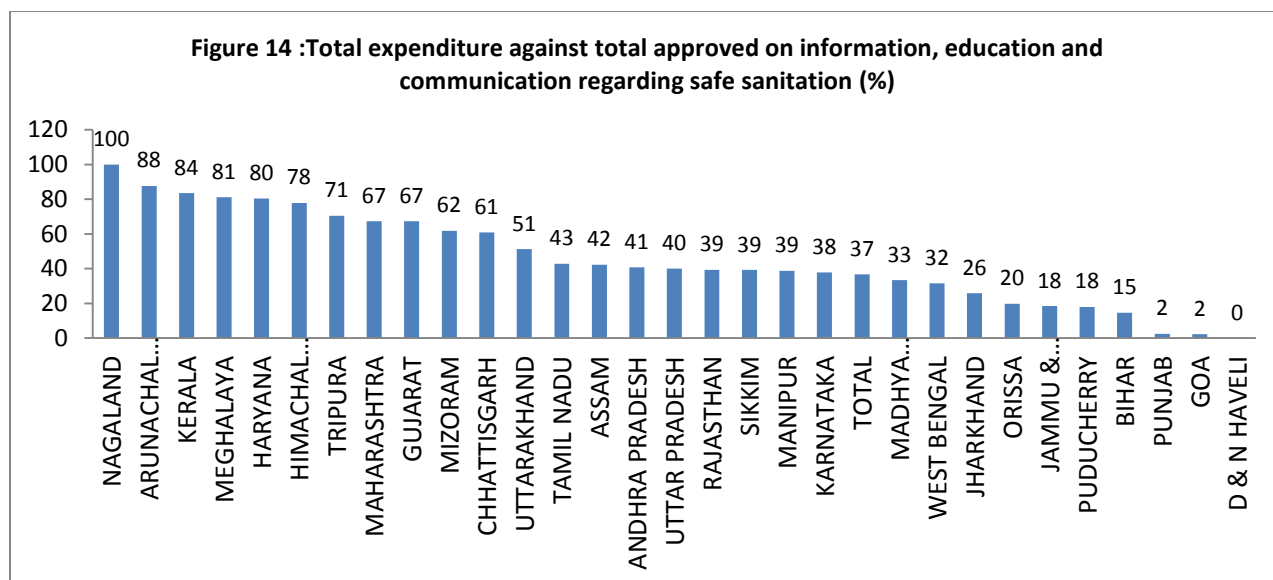
The implications are two-fold. First, even giving an *ex post* financial incentive to the village collectively does not guarantee that a village will remain ODF. Hence, financial incentives must be guarded against. Second, just because the increase in prize money from Rs. 50,000 per village to Rs.100,000 per village over the 1000 population seems to have led to greater latrine construction (a 100 rupee increase in the NGP incentive per capita was associated in the regression with a 20 percentage point increase in the household sanitation coverage),

⁶ Spears (2012a) constructed two data in order to test the idea that the NGP incentive motivated village pradhans to undertake TSC latrine construction in villages. He drew a random sample of villages from all states from the 2001 Census, from among villages with population within 100 people of the discontinuities of prize size by village population. Four hundred and sixty of these villages were able to match with TSC data, based on the village name. A second data set was constructed by matching the TSC toilet construction data to the TSC's own baseline survey for 50 districts. Entire blocks were randomly selected to be representative of the 280 districts used in the district-level analyses.

this does not imply: increase the incentive. Increasing the size of the NGP incentive may encourage village pradhans (chiefs) to game the system, unless much monitoring of ODF status is simultaneously assured.

The period from 2001-2007 saw a turnaround in terms of increased budgetary allocation and also extended help and inputs from international organizations such as International Water and Sanitation Centre, national non-government organisations, community based organisations, individual experts and the private sector. The NGP started incentivising panchayats to become ODF in 2003. Emphasizing rural sanitation, the Sampoorna Swachhata Andolan (total rural sanitation campaign) was launched in 2005. The campaign continued the financial subsidy to build toilets to the BPL households but also highlighted the other basic health and well being factors. The programme encouraged maintaining cleanliness, providing quality drinking water facility, providing toilets and latrines to the schools/anganwadi, in addition to individual houses.

Despite the revamp of the CRSP to TSC, and emphasis on information, education and communication, TSC has not been able to produce the desired result and has partly failed in its big attempt. Under the TSC guidelines, the gram panchayat (the village panchayat) was supposed to have an important role but unfortunately the whole idea of demand creation for toilets with the help of panchayat collapsed as the instruments to fulfil this responsibility were not provided. Effectively, the scheme was run by the line department and major funds were routed by the administrators (see chapter 15 for more on this issue, since this administrative approach to programme implementations affects the efficiency and effectiveness of all government programmes in a large and diverse country like India). The role of the panchayats was limited to raising awareness and assisting TSC staff to build toilets. This approach hence did not lead to any demand creation by the local people and this resulted in committing the same mistake again of making the campaign a subsidy-driven programme with toilet construction as its target. The second flaw was – it excessively focused on monitoring infrastructure i.e. toilet construction was treated to be the main indicator of progress. Even with Nirmal Gram Puraskar, it remained the same number game and could not sustain the behaviour change, and therefore villages reverted to open defecation (Aiyar, 2010). The expenditure on Information, Education and Communication (IEC) was not even utilised fully (Figure 14). In any case, the nature of the IEC activity that was envisaged was poorly conceived to bring out the collective behaviour change at the community level, which is a prerequisite for households feeling the need for a toilet themselves, and for sustaining ODF status once a community/habitation has achieved that status.



Source: Ministry of Drinking Water and Sanitation⁷

Nirmal Bharat Abhiyan: The rechristening of Total Sanitation Campaign

As India seems not to have achieved the 2010 target, the country has set a new target of ODF India by 2022, including a much larger budget and doubling of hardware subsidy to households and emphasising on decentralising funds to Gram Panchayat. A big difference between the earlier and the new approach is that the focus is now on ODF communities rather than toilet construction but the efficiency of the system still remains doubtful as the possibility of corruption is much higher (Chambers, 2010). The subsidy for individual toilet construction has been increased from Rs.1500 to Rs.10,000 per household. With the beginning of the 12th Plan, the Total Sanitation Campaign was renamed as “Nirmal Bharat Abhiyan” (NBA or the Clean India Campaign). The objective is to accelerate the sanitation coverage in the rural areas so as to comprehensively cover rural communities through a saturation approach. (TSC website, 2012):

- Provision of subsidy by Rs.4000 (up from the Rs. 1500 per household under TSC) for Individual Household Latrine of both BPL and Identified Above Poverty Line (APL) households within a Gram Panchayat, with the individual bearing only Rs.900 of the cost.⁸
- Gram Panchayats where all habitations have access to water to be taken up just for toilet construction. Priority may be given to Gram Panchayats having functional piped water supply.

⁷ <http://tsc.gov.in/tsc/Report/Financial/RptIECAApprovedExp.aspx?id=FIN> Last Accessed on August 10, 2013

⁸ If one adds in the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) labour input cost subsidy, the total subsidy for building an individual toilet rises to Rs.10,000.

- Provision of sanitation facilities in government schools and anganwadis i.e. the pre-schools that are universally found in India since 2012 (under the Integrated Child Development Scheme).
- Solid and liquid waste management for proposed and existing Nirmal Grams.
- Extensive capacity building of the stakeholders like Panchayati Raj Institutions, Village Water and Sanitation Committees and field functionaries for sustainable sanitation.
- Appropriate convergence with the national rural employment scheme with unskilled man-days and skilled man-days being provided (by MGNREGA) for toilet construction.

The success of Nirmal Bharat Abhiyan (NBA) therefore now depends on how efficiently panchayats are provided with financial and technical support to develop a holistic sanitation plan, including solid and liquid waste management for their regions. Further, another crucial element for its success is that the money released by the government is now used more for IEC and not just for financing toilet construction requirements. To enable panchayats to effectively plan and implement their strategies, technical expertise is essential. This new form should hence focus on training and developing a pool of engineers from district colleges that panchayats can hire. These engineers would then be accountable directly to panchayats and free them from being dependent on overworked government administrative staff.

Leakage of funds is an important factor underlying the failure of TSC, and could still undo the re-christened NBA. The source of this corruption is the large budget for sanitation, especially the hardware (i.e. toilet-building) incentives, and a supply-led, hardware-oriented programme with pressures to disburse (as with all such government programmes e.g. ICDS and count toilets). If anything the scope for leakage of funds was clearly increased by increasing the incentive (toilet building) for households.

The toilet subsidy system cannot be completely removed from the Indian system, so there has to be some innovative way to combine a community-led collective behaviour and NBA to achieve ODF. One such idea would be that the subsidy is released only once the whole village achieves the ODF status, hence, the extra money they would receive can be used to make additional toilets.⁹ Once these toilets have been built, a revisit should be organised in 15 days to check if the new toilets have in fact been built and they are being used for the intended purposes. We will discuss the way forward in the final section, partly drawing upon the international experience of strategies that have been successful in rapidly enabling communities to achieve ODF status (Section 3).

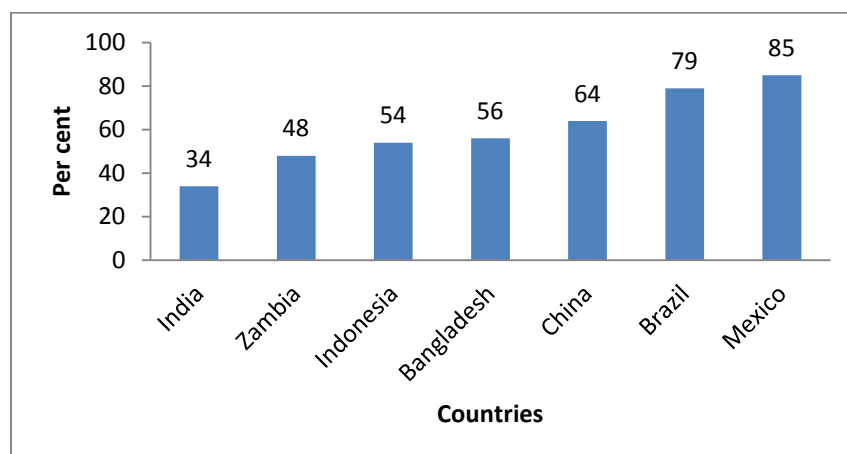
⁹ This was the intention under TSC as well, but was never achieved, so focused TSC was on showing toilets constructed in order to claim the individual toilet subsidy.

4. Lessons from international experiences

The goal of the Twelfth Plan remains that 50 per cent of the Gram Panchayats attain Nirmal Gram status (ODF) by the year 2017. On a reality check of the goal setting by the Indian government, it is worth reminding ourselves that it was initially planned in 2000 that India would be open defecation free by 2010. It is 2013 but still more than 50 per cent of Indian population defecates in the open (68 percent according to Census 2011). This strong commitment had led to the initiation of TSC with an outlay of Rs. 120 billion, claiming to be the world's largest sanitation campaigns but without achieving the desired results. Further, an important flaw in the programmes implemented in India is that there is no fool-proof way of following up on implementation. This is the very reason that India has around 60 million missing toilets which have been reported to be constructed but the actual structure is not there (Chambers, 2010).

A comparison of India with similar countries proves how India still has a long way to go (Figure 15).

Figure 15: Percentage of households with access to safe sanitation, 2010



Source: UNICEF, JMP-2010

Looking at the 2010 data of World Health Organisation the access to improved sanitation remains far lower in India as compared to the countries with similar or even lower per capita GDP, for example, Zambia, Mongolia, Nigeria and Pakistan. As according to the India Human Development Report 2011, using the NSS data the percentage improvement in use of sanitation facility (defined as use of Septic tanks and pit latrines) is only 11 percentage points (36 in 2002 to 47 per cent in 2009) and or about 10 percentage points between Census 2001 and Census 2011 (to 32 percent).

Introduction to community-led total sanitation

Following the lessons from other middle-income and low-income countries, community-led total sanitation campaigns have proved to be extremely effective in areas where constructing toilets alone was not seen as enough. Community-led collective behaviour change (CCBC)

(also known as Community-led Total Sanitation) or CLTS is a methodology which entails leaving the decision with the community without directly teaching them about sanitation as such. This methodology is inspired by participatory rural appraisal (PRA). It is also based on a family of approaches and methods to enable rural people to share, enhance, and analyze their knowledge of life which can be effectively utilized for increasing sanitation in a locality. This approach owes much to the Freirian theme that poor and exploited people can and should be enabled to analyze their own reality (Chambers, 1997). This method was first introduced as Rapid Rural Appraisal (RRA) by Robert Chambers following the dissatisfaction due to typical field visits and no implementation.

CLTS is based on having a collective sense of achievement and decision making characterised by innovative low cost toilet structures. It is therefore based on the community's own analysis of their sanitation condition and making them aware. This awareness of health risks of open defecation instils shame and embarrassment to inculcate a desire to end open defecation.

Such CCBC initiated in Bangladesh (in 2000) set an example to promote a participatory approach to sanitation rather than just top-down toilet construction through subsidy. This method was first applied to a small village in Bangladesh while evaluating a traditionally subsidised sanitation programme. This led the evaluators to convince and persuade a local NGO that toilet construction subsidy is a total failure. They promoted the idea that without a change in institutional attitude and local mobilization, the mammoth task of bringing sanitation and ending open defecation, which had been carried out for decades, was impossible. It was advocated that villagers needed to analyse and understand that maintaining sanitation is a collective effort to decide and defecate in the open. This approach spread rapidly across Bangladesh with the help of various NGOs and other non-informal organisations. This method then rapidly spread to India, Indonesia and parts of Africa under the Water and Sanitation Programme (WSP) of the World Bank. Later, Water Aid and UNICEF have become important promoters and it is being implemented in around 40 countries of Asia, Africa, Latin America and the Middle East, 15 of which have even adopted it as the official method for improving rural sanitation (Chambers, 2010).

Some international experiences have been discussed below to understand how this programme has been implemented under varied circumstances and what has been their success story till now.

1. **Sierra Leone:** This country has suffered a long period of war which destroyed much of its infrastructure. To improve conditions, Department for International Development (DFID) and UNICEF agreed to work for a five-year programme and improve water, sanitation and hygiene services. In this attempt, CLTS has been regarded as the basic mode of scaling up sanitation. The government and international agencies held participatory activities with key water and sanitation stakeholders and did a pilot exercise with 28 villages. The CLTS method in this country includes school-led sanitation programmes and then finally triggering these methods in nearly 800

villages in the country. The result was that very quickly around 169 of 754 communities were declared ODF and around 24,000 people lived in such environment. The CLTS methodology has been widely accepted in the country and by the government authorities.

2. **Zambia:** This country adopted CLTS by giving special significance to traditional leaders who worked in collaboration with the government. The significance of good hygiene was propagated from household level to district level and the concept of self reliance for self wellbeing was emphasised. The CLTS was viewed as a holistic sanitation campaign canvassing all areas of social upliftment and strengthening institutions. Although Zambia had many sanitation and hygiene related laws yet those were not enforced. It was through CLTS that the laws came into action. The results were astounding after their pilot implementation and when it was implemented throughout the country, of the 517 villages where this programme was triggered, 402 were verified as ODF. The sanitation coverage jumped from 38 per cent to 93 per cent in these areas although 300 villages were yet to be covered.

3. **Nepal:** The case of Nepal in terms of initiating CLTS has been very similar to Sierra Leone, wherein children were the main catalyst to propagate the message of good hygiene and cleanliness. This programme was implemented with the help of UNICEF in 2005 and since then school-led total sanitation (SLTS) has been the reason for its story. The SLTS approximately has reached about 90,000 households through 300 schools and 730 child clubs were established which are managing upkeep and cleanliness of toilets. The problem with Nepal's sanitation programme is similar to ours, i.e. it is subsidy-driven which is creating a problem in effective implementation of the programme.

4. **India:** CLTS in India was first implemented through the framework of TSC which provided subsidies to BPL households in rural areas. It was first introduced in two districts of Maharashtra in 2002 and today approximately 16 out of 35 states have implemented it benefitting over 5 million people. States of Himachal Pradesh (HP) and Haryana have implemented it in all districts. The approaches of HP and Haryana have been different to implement this. HP implemented it based on a no-subsidy principle and community ownership of the sanitation agenda.

In Himachal Pradesh it was a public policy that no subsidies would be given for the building of individual toilets in households. Instead, communities would only be rewarded on achieving an ODF environment. The whole process was undertaken in a campaign mode with clear involvement of the district administration, proper training and a monitoring structure focused on creating ODF communities and not counting toilets an approach based on the key principles of CLTS (Kar and Sanan, 2013).¹⁰ There was intense campaign including, for

¹⁰ Others have suggested that CLTS was not applied uniformly all over the state: "evidence suggests that it was deployed selectively" (p.7), for example, in communities that were slow to change. Chambers (2013) states that, it was little, if at all used, in the flagship district of Mandi.

example, popular street theatre that drove much of the change. Also important was high and middle level political and bureaucratic support. In any case, the fact remains that in Himachal Pradesh, household toilet coverage increased from 31 per cent as per Census 2001 to 68 per cent by Census 2011, which is way ahead from the 32 per cent average for India. In states like Haryana, Meghalaya and to some extent Maharashtra, subsidy was underplayed or withheld with some success. Haryana did not completely stop subsidy but restricted the provision to support those who had tried to make sanitation a community-led drive (e.g. in Panipat and Sirsa). It was seen that in both states there was around 60-70 per cent sanitation coverage increase during 2006-2010. In contrast to these states is Bihar where CLTS has not been implemented at all but the provision of subsidy has been given to both APL and BPL groups. In the same time period i.e. 2006-2010, the sanitation coverage of this state was only 20 per cent. The CLTS has been experimented in some urban areas as well, starting with Kalyani near Kolkata which has around 52 slums. The area has now been declared open defecation free.

Recently, the Union minister has announced the plan to set up a non-governmental organisation (NGO) forum for independent evaluation. This forum would comprise of 30 NGOs, which would serve as an independent agency for evaluation of progress under the Nirmal Bharat Abhiyan.

If we succeed in proper implementation of CLTS and India actually becomes ODF, India's health and disease related expenditure would reduce, this in turn will also lead to better manpower and faster GDP growth. There would be no faecally related problems and children would have better survival chances. All in all, the basic problem of growing poverty with growing population would decrease as the earning capacity of people would increase.

5. The Way forward for India

1. De-emphasising role of individual subsidies

The new (NBA) programme guidelines say: "A 'demand-driven approach' is to be continued with emphasis on awareness creation and demand generation for sanitary facilities in houses, schools and for cleaner environment" (Ministry of Drinking Water and Sanitation, MDWS) 2012)). This implies two major changes in programme design. First, subsidies for building toilets must only be given when whole communities (i.e. defined as habitations, not Gram Panchayat) have demonstrated ODF status after a minimum of 6 months from the date they self-declare themselves as ODF. The demonstration of ODF status will be checked/authenticated by State/National level monitors. The *ex post* subsidy could be given to the GP for operation/maintenance of toilets.¹¹ Second, a demand-driven and community-led approach means that triggering of behavioural change must precede toilet-building, and the corresponding hand-over of subsidies. Himachal Pradesh which has around 90 per cent

¹¹ The ODF villages will receive Rs.500,000 per 1000 people from the re-designed MGNREGA for solid and liquid waste management.

population living in the rural areas is a perfect example where CCBC has been adopted efficiently under the TSC. The state started exercises to educate people about practices of effective sanitation and putting end to open defecation by adopting safe solid and liquid waste management practices. The drastic change in Himachal Pradesh's sanitation condition was the result of three important decisions – downplaying individual subsidies and promoting community incentives; generating demand for sanitation through CCBC orientations across the state, and devising appropriate mechanisms for effective monitoring and follow-up. In Himachal Pradesh it was a public policy that no subsidies would be given for the building of individual toilets in households. Instead, communities would only be rewarded on achieving an ODF environment (Kar and Sanan, 2013). In Himachal Pradesh, household toilet coverage increased from 31 per cent as per Census 2001 to 68 per cent by Census 2011, which is quite higher than the 32 per cent average for India.¹²

2. Focus on triggering behavior change and training people who will trigger

The NBA Guidelines do recognise the importance of IEC activities and interpersonal communication and door to door contact. But the Guidelines don't really recognise the value of catalytic national leaders in each village triggering behaviour change. At habitation level, IEC should take the specific form of catalytic leaders "triggering" behaviour change at the collective level. Hitherto, IEC has meant posters in villages and radio spots and TV advertisements. This has proved less than effective in changing behaviour that is accepted by the community as normal i.e. open defecation. If open defecation has been practiced for centuries, it is suddenly not going to change unless people realise the serious health risks involved.

Since even one person or household that is defecating in the open is a risk to all the other individuals/households that are using their toilets, the triggering of behaviour change must happen at collective community level. The biggest challenge is to train the 'champions', who will trigger behaviour change at the habitation level. A budget line item should be provided in the Capacity Building budget for (a) training the 'champions' who will trigger behaviour change, and (b) training of trainers of 'champions' and community level leaders who will conduct the 'triggering' of behaviour change. Such training should be conducted at block level in every district of the country. States which have made progress with the community-led sanitation (e.g. Haryana, Himachal Pradesh, Maharashtra) should be prepared to serve as providing the initial master trainers. Currently, there is no incentive to work on collective behaviour change. High subsidies for households (Rs.10,000 per household in the NBA) reduce the incentive to focus on collective behaviour change.

¹²To accelerate rural sanitation, government of HP entered into an agreement with the Water and Sanitation Programme-South Asia (WSP-SA). This alliance further helped HP to provide large scale capacity building support of CLTS training and follow-up programmes for all districts in the state.

The CCBC, a concept based on changing people's mind-set requires knowledge of the effects of ODF. It therefore requires trained people, who are willing to work with communities to change mind-sets. To have trained people in this field India lacks institutions where such skills are imparted or people are trained.

Encouraging behavioural change not to defecate in the open is an objective that cannot be met without participation of women. It is women who are responsible for fetching water and maintaining hygiene at home and hence they have more stake for improvement of water and sanitation in their locality. The only time available for women and girls to defecate is after dark due to lack of toilets in their own homes. This causes discomfort and illness apart from the risk of being harassed on their way to the common field. The Maryada movement in Madhya Pradesh is pioneering women's empowerment as a force for rural sanitation. This and other women's movements should be studied (e.g. Mahila Samakhya which has engaged with sanitation and hygiene) to encourage cross-state learning.¹³

In order to succeed CCBC will need champions in the top echelons of the bureaucracy in each state. The frequent transfers of IAS officers have repeatedly implied that short-term gains have not been sustained. There is a suggestion that IAS officers who are convinced and committed should identify themselves as a temporary specialised cadre and apply for transfer immunity for at least two, if not three years (Chambers, 2013).

3. *Monitoring system*

A major problem of proper implementation of TSC-NBA remains that there is no proper monitoring system to ensure that villages which achieve open defecation-free status continue to follow the same path. The TSC has built a Management Information System (MIS) for the purpose of monitoring implementation, which monitors physical and functional progress. However, no data are collected on dysfunctional toilets built earlier under the TSC nor are any data been collected about actual use of toilets after they are built after the village has been declared as NGP winner (Mehrotra et al., 2013). Nor are there any data which check the ground-truth of actual toilets built as opposed to number claimed by the reporting officers. Funds should be allocated from the NBA under a Monitoring and Evaluation (M&E) budget head to specifically collect information about each of these subjects. Local researchers/university teachers could be mobilized for collecting such information on a yearly time-frame on a sample basis. Secondly, there is no authentication or verification of data collected on a routine basis

¹³ In Haryana, the approach was to appoint literate village motivators from the village. These village motivators who were appointed by the District Rural Development Agency (DRDA) were responsible for creating awareness about sanitation and informing women about TSC. These village motivators encouraged not only to build toilets but also to wash hands before eating and after defecating.

under TSC in each district, which then gets uploaded on the TSC website as its MIS. The Central Ministry for drinking water and sanitation should involve the National Sample Organisation to verify and authenticate the administrative data on a sample basis. The objective would be to ensure that wide variation do not emerge in future between MIS data reported on the ministry website on physical progress and outputs on the one hand, and Census or NSS data on the other. Whether a state is actually achieving its objectives/milestones of toilets constructed and toilets used should be verified by this means.

4. *Incentive system for collective behaviour change*

NBA financial assistance to states by the Central Government (under NBA) should have two parts. First, a normative grant to states based on population is to be allocated as per state priorities (infrastructure, communication, training, subsidy, etc.). Second, a performance grant to states to reward: (a) the proportion of rural population certified as ODF communities, and (b) improvements in critical health and nutrition related indicators.

Further, there are other changes in the NBA strategy that are needed:

- No priority selection of village Panchayats based on availability of piped water supply, unlike what is proposed in the 12th Plan document (Planning Commission, 2013).
- Piped water supply schemes to be prioritised for ODF gram panchayats.
- No direct linkage between toilets to be constructed and the amount to be given to a gram (village) panchayat.
- Funds for toilets in schools, anganwadi and public places should flow after verification of ODF status of the village and again this should be a normative allocation.
- Awards for best performing ‘Swachh’ gram panchayat in every block, district, division and the state.

Developing a menu of design options for hardware

The 12th Plan emphasises that the technology used by TSC is stereotyped and that it cannot be used under all geographical needs. This has basically resulted in rejection of these technologies by local communities, water pollution in shallow water regions, and ultimately, waste of public funds. Hence, region-specific technology needs to be implemented. There are in existence in states the Rural Sanitary Marts and Production Centres, which are outlets dealing with the hardware, materials and designs required for constructing sanitary latrines. However, experience suggests that our diverse states need improved different designs.

One function of a state level body above the rural sanitary marts and production centres is the development of a menu of designs for hardware (i.e. for a toilet itself, the slab platform and superstructure around the toilet). The soil conditions are different in different states, and even within states, which will influence the design of hardware. Hence there should be a menu of options for hardware type required in each state. Secondly, the state-level design approved by

the state-level body is then to be promoted for commercial production.. The 12th Plan may be right in suggesting that self-help groups (SHG) could be incentivised to undertake manufacture of the construction materials, but this is not a tested approach; better may be to encourage manufacture by small units in the state, while operation and maintenance may be entrusted to SHGs. A low interest loan can be provided by the state body for the commercial production of hardware designs that are among the menu of options. The focus of MNERGA fund utilization for the purpose of meeting the NBA objectives should be on using them for solid and liquid waste management rather than on building toilets for households. Households should themselves provide labour inputs for the purpose of building toilets in their own homes, as this will contribute to a sense of ownership.

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