

Sustainability Assessment Usage, Technology and Functionality of Toilets in Rural Bihar (July-November 2019)

SUSTAINING ODF OUTCOMES

The significance of safe water, sanitation and hygiene (WASH) is extremely critical and are essential for providing basic health services. Clean water and sanitation are fundamental human rights therefore, ensuring the equitable access to these services has been a priority for national governments and included in the Sustainable Development Goals (SDGs).India had one of the largest number of people practicing open defecation in the world. To address this sanitation challenge, the Govt. of India launched one of the largest sanitation programmes, Swachh Bharat Mission (SBM) on 2nd October, 2014. SBM witnessed unprecedented progress in the availability of toilets across the country. As a result, the sanitation coverage increased from 39 percent in 2014 to 99 percent in August 2019 with more than 10 crore toilets built. As a way forward, the Department of Drinking Water and Sanitation (DDWS) has launched a 10 Year Rural Sanitation Strategy (2019-29), which focuses on sustaining the user behavior along with ensuring access to sustainable solid and liquid waste management.

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One of the major concerns of the success of SBM is to sustain the outcomes with focus on consistent usage and environmental safety. The Mission's mode of implementing the SBM has also led to toilets that do not meet safe sanitation parameters and standard quality norms. However, there is no concrete assessment on the volume and scope of such gaps.

In order to understand the different barriers that affect toilet use and functionality, FINISH Society, supported by UNICEF Bihar, conducted a sustainability assessment of sanitation covering the technical, functional, financial and behavioral aspects in five districts of Bihar. The key objectives of this study were to understand and assess the status and functionality of toilets in individual households, institutions and public places and to understand the need for retrofitting/ up-gradation ensuring ODF sustainability.

RESEARCH DESIGN

The study was conducted by a mix of quantitative and qualitative tools. As Bihar has a diverse social and geographical background, the study tried to capture commonly prevalent toilet designs and gaps across different socio-geographical strata. With this objective, five districts were pre-selected in consultation with UNICEF, to cover different aspects of toilet technology with respect to suitability, safety and adaptability.

A total 2,422 households, 106 schools and anganwadis were covered along available toilets in health care facilities, bus stands, railway stations, highway hotels and petrol pumps from selected blocks. Villages and blocks were selected through random sampling and households were selected through proportionate sampling method.

SUMMARY OF MAIN FINDINGS



Figure 2 Chart showing availability of toilets in the sample population, n=2422

Availability of Toilets

Toilet coverage in the entire sample population was 89 percent.

This was also confirmed during the qualitative surveys where approximately 70-90 percent of participants confirmed having a toilet facility.12 percent (n=269) of the sample population owned more than one toilet, primarily to meet the needs of a bigger family size and gender segregated toilets. The most common reason for not owning an individual toilet was financial constraints (61 percent), similar views were also shared during the focus group discussions (FGDs).

Evidence shows that, rationale behind people not owning a toilet due to financial constraints is prevalent for two reasons:(1) Due to liquidity constraints where households without a toilet

agree with the costs and benefits of investing in a toilet but are not able to afford it, and (2) where households who potentially can afford investing in a toilet, but underestimate the returns or overestimate the costs, and hence do not feel the investment a necessity.



Although the GPs and blocks covered during the survey have declared 100 percent toilet availability, there is still a gap in universal coverage. The data suggests that provision of incentives for toilet construction has been effective for toilet uptake, but it is important that the key reasons for non-uptake are understood too (Augsburg et al., 2015). These reasons need to be addressed in policies and interventions going forward for ensuring ODF sustainability.

Toilet Functionality & Usage

98 percent households were found to have toilets functional and in use. Availability of toilet does not ensure that it is being used by all family members. The study also finds that toilets are perceived to be primarily for women's use.

86 percent (n=1854) respondents said that all members in their family use the toilet. However, after rephrasing the usage question to know if there is anyone in the family not always using the toilet, the responses revealed that in 26% households (n=569), at least one or more family members do not always use the toilets. The reasons of non-usage are primarily attitudinal issues.

Participants in various FGDs conducted, also shared that protecting the safety and dignity of women was one of the key reasons for owning a toilet. Interestingly, the lack of socializing space for women and anxiety of pit filling are also contributing for open defecation. IEC campaigns did not put enough focus on latrine use being equally relevant for both men and women, information of toilet technology, pit filling and cleaning etc. and should include these in future.

Toilet Models & Design

Overall 69 percent toilets were found to be unsafe or unimproved toilets.30 percent of the toilets were found to be single leach pits without a junction chamber, 27 percent of the toilets were found to be septic tanks without a soak pit and 9 percent toilets were twin leach pits without junction chamber.

Design and construction of toilets not only directly affects the containment and treatment of faecal matter and thereby, the environment, but also affects the unit's durability, comfort and accessibility which affects usage. For overall assessment of environmental safety and sustainability in this study, septic tank toilets with soak pit, twin pits with JC and single pits with JC are being grouped as **improved or safe sanitation systems** whereas septic tanks without soak pit, single pits without JC, twin pits without JC, toilets discharging into open drains and Shankar toilets are being grouped as **unimproved or unsafe sanitation systems**.

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Toilet Model	Gopalganj	Purnea	Rohtas	Sheikhpura	Sitamarhi	Total
Twin leach pit with junction chamber	15	13	8	5	12	11
Single leach pit with junction chamber	4	12	4	1	4	6
Septic tank with soak pit	16	5	12	10	32	12
Shankar toilet	0	0.4	11	0.8	0.8	2
Twin leach pit without junction chamber	7	9	12	11	9	9
Single leach pit without junction chamber	15	57	11	19	12	30
Septic tank without soak pit	44	4	37	51	29	27
Toilet discharging into open drains	0	0.0	3	0.4	0.0	0.6
Others	0.4	0.2	0.0	1	1	0.5

Table 1 District-wise Distribution of Toilet Models (in Percentage)



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Photo: Toilets with outlet in the open Safe & Unsafe Sanitation Systems

Depths of pits/tanks and volume of the sub structure (below the ground) are critical parts of a safe or sanitary toilet. The greater the depth, the greater the cost of excavation, lining and cleaning, along with the potential to contaminate the ground water. The study finds that 44 percent of the total leach pits are 1.8-3 meters deep, while only 3 percent of the pits were near the prescribed range of 1 meter. This was also confirmed by the results of the technical audit done for selected toilets. Only 10 percent of the septic tanks covered in the technical audit had two or more chambers. Except for Purnea, in all other districts, there are more cases where the distance between the pits and the water source is less than 10 meters. 27 percent of toilets were found to be septic tanks without soak pits with outlet into an open drain or built as sealed tanks. This clearly presents a threat to ground water contamination. Therefore, it is highly recommended that water quality tests should be carried out to understand whether the water possesses a health risk for some households/ communities.

We stand in need for retrofitting solutions to convert single-pits into double-pit toilets, converting holding or containment tanks into proper septic tanks to ensure sustainable management of faeces. However, identifying unsafe toilets, sensitizing users to convert existing unsafe toilets into safe toilets and more importantly, finding money to enable this, are going to be key challenges going forward.

Operations & Maintenance of Toilets



49 percent of the HHs clean their toilets once a week and the primary responsibility for toilet cleaning lies with the female members, 63 percent responding so.

The existing maintenance practices clearly put more burden on women of the households than men. 78 percent HHs use harpic or similar cleaning agents to clean their toilets.

Regarding the emptying and disposal of fecal sludge, only 8 percent (n=178) of 2166 HHs have emptied their pits/ tanks before. 26 percent households self-emptied their pits and disposed in a pit hole, followed by other 22 percent where pits/tanks were emptied by service providers and disposed in open fields or pits.

Photo: Assessment of sub-structure as part of the technical audit.

The existing practices highlight the lack

of awareness on safe faecal management practices, apathy amongst users as to what happens to the faecal waste after collection and lack of regulations at local level for faecal sludge management (FSM).



Financing of Toilets

44 percent of the HHs have constructed their toilets in the range of 12,000 to 25,000 INR.

The source of funds for toilet construction was categorized in four types: Govt. incentive, loan, self-financing and donation. Most of the households pooled money from different sources including incentive, own money and loans for constructing toilets. While overall reach of incentives as per the responses is 48 percent, many households invested their own money upfront and are waiting for incentives to be realized. The responses received are presented in detail in table 2 below:

Source of Funds	Through Self Financing	Through Loans	Through Govt. Incentive	Through Grants	Self-+ loan+ Govt. incentive	Self-+ Loan	Loan+ Govt. Incentive	Self-+ Govt. Incentive
Number and percentage of Responses	38 %	6%	5 %	0.23%	5 %	16 %	9%	29%
	(814)	(139)	(104)	(5)	(106)	(355)	(194)	(638)

Table 2 Table showing different sources of fund used for toilet construction

Factors Affecting Usage of Toilets (Based on observations)

Out of 2166 HHs with toilets, 1460 (68 percent) toilets were observed to be easily approachable and having a clean pathway towards the toilet, while 349 (32 percent) toilets were found to have difficult access. These challenges included dirt, mud or debris in the path, obstructed entry point, toilets located in a dark and secluded place etc. Despite, 98 percent electricity coverage, only 25 percent of the population has light connection in their toilet.

While the need for toilet cleaning has come out as the largest component for improvement in toilets, the need for repair of necessary infrastructure (e.g. doors, roofs) are also significant. These observations do not include the technical gaps and their retrofitting requirements. Challenges in accessing an existing toilet and their quality have direct implications on its functionality and in turn, the usage.



Hygiene Behavior

18 percent (n=959) responded that children below 5 years in the family always use toilets, while 10 percent HHs responded that feces of children are disposed in a pit while 9 percent HHs shared that the child faeces are disposed along with solid waste.





Photo: An ongoing FGD session in Rohtas

Based on the observations made by surveyors, only 64 percent of the HHs had soap kept for hand washing, in 26 percent households nothing was found available for handwashing. Pertaining to menstrual hygiene behavior, 62 percent of respondents who agreed to discuss menstrual hygiene behavior said that they use reusable clothes during menstruation, followed by 36 percent using sanitary napkins and 2 percent responded as not using anything.52 percent of respondents dispose of menstrual absorbents along with solid waste, which is a serious health hazard. Ignorance to these implications, misconceptions and lack of information are the root causes of poor hygienic behaviors.

Toilets in Institutions and Public Places



Photo: Unsanitary condition of toilets in Manjhagarh Railway Station

BUS STANDS, RAILWAY STATIONS AND HOTELS (BLOCK LEVEL)

- While availability of toilets itself seem to be a challenge, adequacy with respect to people visiting bus stands, railway stations and hotels on highways, are of concern too. Most of the toilet types are septic tanks without soak pits and safe emptying of waste could be a challenge in the future upon filling.
- Out of the 6 bus stands visited, toilets were found only in 2 bus stations in Rohtas district. Out of the 4 railway stations visited, only Manjhagarh in Gopalganj and Krityanand in Purnea had toilets; out of 9 line hotels visited, only 2 had toilets.
- Water availability was not observed to be a challenge but hand washing stations enabling access of hand washing after use of toilets was not available. Toilets visited were in use and fully operational but had poor quality and maintenance. Out of all surveyed toilets, disabled-friendly units were only found in petrol pumps (2 nos).

Name	Location	Avg Footfall	Functional M/F Blocks Available	No. of WC	No. of Urinals	Cleanliness Status Observed	Availability of Running Water	Availability of Handwashing
Bus Station 1	Dehri	250	Yes	12	3	Clean	Yes	No
Bus Station 2	Dehri	100	Yes	4	1	Clean	Yes	No
Railway Station 1	Gopalganj	150	No	1	0	Clean	No	No

A summary of the status of toilets covered in bus stands, railway stations and hotels are presented below:



Name	Location	Avg Footfall	Functional M/F Blocks Available	No. of WC	No. of Urinals	Cleanliness Status Observed	Availability of Running Water	Availability of Handwashing
Railway Station 2	Purnea	100	Yes	2	2	Extremely Dirty	Yes	No
Line Hotel 1	Gopalganj	150	No	1	0	Clean	Yes	No
Line Hotel2	Purnea	100	No	1	0	Dirty	Yes	No

PETROL PUMPS

In total, 7 petrol pumps were surveyed with toilets which were in use and operational. A summary with details can be referred below:

Name	Location	Avg Footfall	Separate M/F Blocks Available	No. of WC	No. of Urinals	Cleanliness Status Observed	Availability of Running Water	Availability of Handwashing
Petrol Pump 1	Gopalganj	500	No	1	0	Clean	Yes	Yes
Petrol Pump 2	Sitamarhi	800	No	2	0	Clean	Yes	Yes
Petrol Pump 3	Sitamarhi	500	No	1	0	Clean	Yes	Yes
Petrol Pump 4	Purnea	150	Yes	4	0	Clean	Yes	Yes
Petrol Pump 5	Purnea	600	Yes	3	2	Clean	Yes	Yes
Petrol Pump 6	Sheikhpura	200	No	1	0	Dirty	Yes	Yes
Petrol Pump 7	Rohtas	250	No	3	0	Dirty	Yes	Yes

HEALTH CARE FACILITIES

Out of the 13 health care facilities visited, 1 primary health care centre (PHC) in Parsauni, Sitamarhi and 1 sub-centre in Pahleza, Rohtas had toilets. In other districts, health care facilities at the block level were either closed or did not have a toilet. A lack of sustainable public toilet facilities, drainage system and waste management were highlighted as the key problems, also during the qualitative surveys.

These factors clearly hint that the universal access of toilets is not inclusive or adequate and might lead to open defecation even if someone has a toilet at home.



Photo: Ergonomic toilet seen in a petrol pump



SCHOOLS & ANGANWADI CENTERS (AWC)

In total 52 schools and 54 AWCs have been surveyed in 5 districts of the study area, out of which 104institutions had toilets operational.92 percent of them responded that toilets are used regularly by children. Others shared that main reasons for not using the toilets were unavailability of water and cleanliness status of the toilets. Based on the observation of the surveyors, the route to the toilet seemed to be major barrier in accessing the toilets. It has been observed that 32 percent of the toilets are connected to a septic tank without soak pit.

In 76 percent of the cases, nothing was seen at the handwashing stations and only in 21 percent, soap was seen. It was observed that primary source of drinking water is from personal tubewell / borewell. 35 institutions out of the 106 make an effort to purify drinking water through various means in order to make it safe for drinking.

Conclusion and Recommendations

Substantial improvement is witnessed in availability and usage of toilets however; the incentivedriven approach might prove to be challenge in addressing retrofitting needs going forward.

SBM has resulted in a substantial increase in the availability of individual household latrines, with figures claiming around 99 percent of India becoming ODF. However, a 'crowding out' phenomenon can be also observed with reduced inclination for personal investments in WASH due to Govt. spending on sanitation through incentive. One of the drawbacks of the incentive-driven approach as also observed during the study, is the lack of ownership by end-users. This also transcends into lack of willingness towards maintaining the toilets, spending in its upgradation and retrofitting.

Inclusive access of sanitation and hygiene facilities still remains a huge challenge.

For ODF to become sustainable, access to toilets in each and every household is not sufficient. For universal accessibility and consistent change in behavior, functional toilets must be available in public places such as schools, market areas, highways, bus stand etc. While availability of toilets at institutional and public places itself is inadequate, the functionality, maintenance and usability of existing units is a matter of serious concern. Inclusiveness also means that WASH is looked through the lenses of various life cycle stages covering children, elderly, disabled, women, etc. The sanitation policies and implementation plan at the state level must also consider WASH for everyone and everywhere to achieve ODF in its truest sense.

Communities and stakeholders are sensitized but not adequately aware.

One of the key stakeholders influencing the choice of toilet models and responsible for the delivery of the SBM program on the ground are masons and front-line workers. However, their knowledge regarding the type of toilet models and their suitability are not scientifically-backed. The concept of leaching, digestion of fecal matter and on-site treatment has not reached to the grassroots level. Issues like menstrual hygiene management, disposal of child feces and sanitary waste, faecal sludge management are all critical in sustaining ODF. While the connection of sanitation to health and dignity has been well established, awareness on basic technical aspects and its environmental impact need to be promoted in ODF++ phase.

Retrofitting gaps are huge and also present multi-fold challenges.

In the case of leach pit toilets, common challenges found are presence of single pits, very deep pits, distance between the pits and nearby water source, pits not lined properly, absence of junction chamber, etc. While in the case of septic tanks, most of the toilets found are more like holding tanks with outlet connected to drainage. Size of the pits and tanks are also largely primarily linked to the anxiety around pit/tank filling. Defective engineering designs and sub-standard quality face the risk of contaminating the ground water and being abandoned in future.

Last but not the least, capacity building of masons and front-line workers will be the key to implement retrofitting. User-friendly and contextualized knowledge-building tools and capacity building programs will need to be rolled out. A market-driven approach, where skilled masons not only create demand but are incentivized by the business opportunities and the Govt. could be a viable proposition.

Intensive advocacy on addressing sanitation comprehensively and integrating Safe Sanitation, Faecal Sludge Management, market-driven approach instead of incentive-driven, access to WASH in institutions and public places, operations and maintenance mechanisms, will be helpful in sustaining ODF status.



Estimation of Retrofitting Need

Based on the findings, an assessment of size and volume of retrofitting needs has been done covering conversion of existing structures into safe sanitation as well as structural improvements affecting functionality. The projection is not specifically accurate and is only indicative of the needs going forward. Overall investment projected for retrofitting is around 15 percent of the total investment in incentives for constructing toilets.

Particulars	Mix Based on the Survey Results	Number of IHHL need Retrofitting in Bihar	Unit Cost (Rs)	Total Cost (Rs)	In Million (Rs)				
Sub-Structure Improvements									
Single Pit with JC	7	1,115,106	2,500	2,787,765,750	2,788				
Single Pit without JC	30	4,779,027	3,000	14,337,081,000	14,337				
Twin Pit without JC	10	1,593,009	800	1,274,407,200	1,274				
Septic Tank without Soak Pit	26	4,141,823	2,000	8,283,646,800	8,284				
Total		11,628,966		26,682,900,750	26,683				
Super-Structure Improvements									
Door Repair	5	796,505	1,000	796,504,500	797				
Roof Repair	1	159,301	2,000	318,601,800	319				
Wall Repair	0.6	95,581	2,000	191,161,080	191				
Door+ Roof Repair	0.6	95,581	3,000	286,741,620	287				
Door+Roof+Wall Repair	0.04	6,372	5,000	31,860,180	32				
Total				1,624,869,180	1,625				

Grand Total (Including Super-structure and Sub-structure): 28,308 Million Rs.

*Extrapolated based on survey results and data available on SBM-G dashboard Total IHHL Number in Bihar (LOB+BLS) = 15,930,090

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Toilet with an unsatisfactory superstructure and without a door.



Hygienic and a well-ventilated toilet.



Toilet without a door and roof.



Distance between the two leach pits is less than 1 meter.



Toilet linked to a single leach pit.



A broken toilet pan with substandard super structure.

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