EXECUTIVE SUMMARY

SCHEME NAME: SHORT-TERM EMPIRICAL RESEARCH PROJECT
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INCLUDING ENVIRONMENTAL SANITATION IN SANITATION PROGRAMMES: EVIDENCE FROM SWACHH BHARAT MISSION IN SELECT AREAS OF TELANGANA, ANDHRA PRADESH AND ODISHA

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**The Importance of including Environmental Sanitation in Sanitation Program:
Evidence from Swachh Bharat Mission – Telangana, Andhra Pradesh & Odisha**

EXECUTIVE SUMMARY

1.   Introduction of the project

Environmental sanitation is a critical component of comprehensive sanitation programs, as it addresses the broader environmental aspects of waste management, water quality, and overall public health. SDG 6 urges all countries to "ensure availability and sustainable management of water and sanitation for all". Historically, sanitation programs have primarily concentrated on building sanitation infrastructure and improving access to toilets. The environmental sanitation is shaped by a combination of factors including evolving scientific understanding of sanitation, technological advancements, public health concerns, social and economic changes, solid waste management, wastewater treatment, gaseous waste management, and overall hygiene awareness. Environmental sanitation refers to the set of practices and measures aimed at maintaining a clean and healthy environment. It encompasses various aspects of waste management, water quality, hygiene, and urban planning, all of which play a critical role in disease prevention and public health. By addressing issues related to clean water, waste management, hygiene, and vector control, societies can safeguard the health and well-being of their populations, reduce the burden of disease, and promote sustainable development. The importance of environmental sanitation cannot be overstated, as it has been a cornerstone of public health efforts throughout history and continues to be a vital component in the fight against infectious diseases and to improve public health outcome.

Clean and safe drinking water is fundamental to public health. Access to clean water, as highlighted in the United Nations Sustainable Development Goals (SDG 6), is essential to prevent diseases such as cholera, typhoid, and dysentery. Several studies have emphasized the significance of improved water sources and adequate sanitation facilities in reducing the risk of waterborne diseases. It is in this context that the most recent sanitation programme, the Swachh Bharat Mission (Clean Indian Mission), launched in 2014 by the prime minister of India with the objective to reach universal sanitation coverage by 2019, attains importance. The Ministry in charge of the rural areas was the Ministry of Drinking Water and Sanitation (Ministry of Drinking Water and Sanitation, 2017). The main objectives of the SBM, world's largest countrywide programme is to eradicate open defecation, and also improve the cleanliness and

hygiene of rural and urban India. One of the main sub-objectives are the elimination of manual scavenging, and the improvement of solid and liquid waste management (Ministry of Housing & Urban Affairs, 2017). The programme is known for its focus on construction of toilets though it encompasses solid and liquid waste management too. The programme is widely recognised as a success and the Government of India reports construction of more than 106 million latrines across the country and around 603,177 villages have been declared Open Defecation Free since October, 2014 (Ministry of Drinking Water and Sanitation, 2020). This study looks at the success of the toilets not only in terms of availability of toilets but also the multiplicity of factors that could impede environmental sanitation as well as exclusion and uneven access to such programmes among most vulnerable groups.

2.   Research Methodology

The study covers three states namely Andhra Pradesh, Odisha and Telangana. Three districts from each state have been selected, based on the classification Urban, Semi-Urban, and Rural. The districts have been classified as aforesaid classification based on urban-rural population ratio, considering the fact that almost each of the districts has higher rural population than the urban population. Therefore, districts having ratio asymptotically equal as maximum ratio value may considered as urban district, and ratio having minimum values may considered as rural districts. Thus, the districts having ratio asymptotically equal to the average ratio may considered as Semi-Urban District. The calculation of ratio is based on the 2011 census data. In the process of district selection, it was identified that, Census 2011 reports only ten districts in Telangana and 13 districts in Andhra Pradesh. But at present, there are 33 districts created from the 10 old districts in Telangana and 26 districted created from 13 old districts in Andhra Pradesh. Each new districts are formed from some sets of mandals – that consists of rural and urban classified regions under 2011 census. Thus, using the mandals information - the new district formed with the rural and urban population has been obtained using census 2011. For example, in Warangal district, there were eight mandals (Dharmasagar, Elkathurthy, Kamalapur, Hasanparthy, Bheemadevarapalli, Kazipet, Inavolu, Velair) which were reported as rural region in the census – has been excluded from the calculation of urban population. The same process has been followed for all the districts of both Andhra Pradesh and Telangana state, to identify the rural and urban population district wise. Following the aforesaid methods of district selection, Krishna (Urban), Bapatla (Peri-urban), and Palnadu (Rural) from Andhra Pradesh; Warangal Urban/Hanamkonda (Urban), Nalgonda (Peri-urban) and Mulugu (Rural) in Telangana and Sundargarh (Urban), Bargarh (Peri-urban) and Boudh (Rural) in Odisha have been selected.

Figure 1: Data Collection Framework
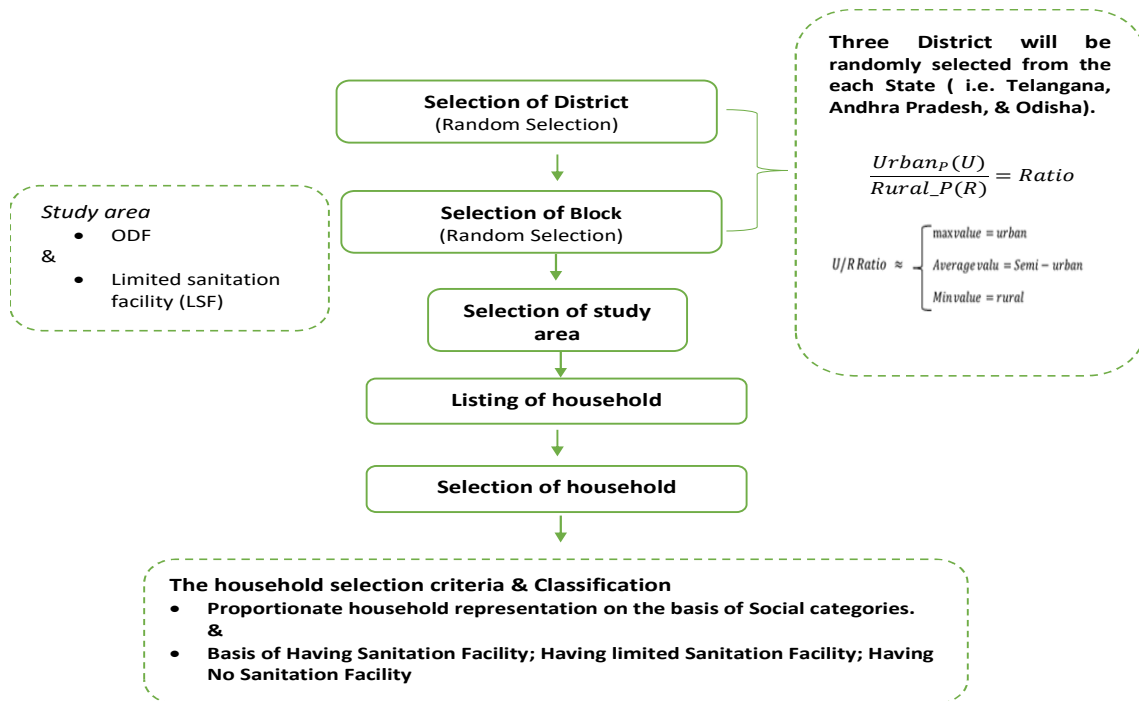
After considering sample districts from each state, one block has been randomly selected from each district. Information collected selected CD block office has been used to select study area. Unit of selection was villages for rural and municipal wards for urban & semi-urban area with a criterion - ODF and having limited sanitation facility (LSF) in the selected Block. These were selected in consultation with concerned officials at district and block level. After selection of villages/wards, census listing of households has been conducted and 300 households has been selected randomly using the criterion - Having Sanitation Facility; Having Limited Sanitation Facility (shared or community toilets); No Sanitation Facility (100 from each category if available) and also keeping in view the proportion representation of social categories from the census listing. Thus, around 300 households from each district have been covered, i.e., 2723 households from nine districts. Household Questionnaire and FGDs are used to obtain the household information and validation of information respectively (Figure 1). Along with primary data and information, the study also uses relevant secondary data sources such as Swachh-Bharat-Mission (SBM) MIS data for both first and second phase, periodic reports on SBM, 69th and 76th round of NSSO on Sanitation and Drinking water status in India (2018).

3.   Major Observations and Findings (1000-1500 words)

   From Secondary Source

Sanitation and hygiene have always been the one of the components of India's Five-Year Plan, but total sanitation campaign launched in the year 1999 by the government at that time was aimed to undertake larger coverage in both the rural and urban areas. Though the total sanitation campaign was a community-led, people centred, demand driven and incentive-based program to achieve total sanitation, it failed to translate in their outcome. We begin with an analysis of the scenario of sanitation in rural and urban areas of the selected states under study using NSS data. It is evident that 69.3% rural households and 85.6% urban households have access to exclusive use of latrine in year 2018 in comparison with 34.5% of rural households and 68.1% of urban households in the year 2012 in the state Andhra Pradesh. In Odisha, access to exclusive latrine has increased from 12.4% in 2012 to 41.6% in 2018 among the rural households whereas in the urban sector, in the year 2012, 49.7% of urban households had access to exclusive latrine, but in year 2018 it increased to 70.5%. In Telangana state, 74.2% rural households and 85.3% of urban households have reported access to exclusive latrine in year 2018. Therefore, obvious decline in open defecation has been observed among these three states in both urban and rural households. In Andhra Pradesh, open defecation declined from 54.3% in 2012 to 22.4% in 2018 among rural households. Among Urban households, the decline was 3.1% in 2018 from 8.1%. In Odisha, similar decline has been reported where, among rural households open defection declined from 81.4% to 52.4%. A similar comparison is not available for the state of Telangana because of state bifurcation.

The NSS data indicates that in Andhra Pradesh, the percentage of households belonging to the socioeconomic groups of SCs, STs, and OBCs having exclusive latrines increased in 2018 compared to 2012. This data also reveals decline in the common use of latrine in household, public/community latrine with/without payment. Further, it reports decline in open defecation from year 2012 to 2018 among all the social categories. The similar observation has been observed in Odisha where the number of households exclusive use of latrine increase- to 31.9% from 6.2% among ST households, 36.4% from 6.4% among SC households, 51.6% from 20.8% among OBC households and 65.6% from 37.6% among Others, thereby leading to decrease in open defecation from 84.5% to 62.2% household among STs, 87% to 57.6% among SCs, 68.1% to 42.4% among OBCs and 50.2 % to 26.4% among others.

The overall status of sanitation shows an improvement in all these three states during the SBM. Therefore, it is very important to study how these states have performed after SBM. To get a clear picture from the field, we have conducted a primary survey to understand the status of sanitation at the grassroot level in these states. The following chapter presents the result of the same.

From Primary Data

Socio-Economic Characteristics of the Sample Households

Socio-economic characteristics of sample households among the total respondents (926 from Odisha, 900 from Telangana and 915 from Andhra Pradesh) majority of the respondents from AP and Telangana were from Other Backward Classes (OBC) (48.0% from AP and 52.9% from Telangana) whereas for Odisha the same were from Scheduled Tribe (ST) category (38.0%). In Odisha, 35.2% of the respondents were from OBC, 21.3% were from Scheduled Castes (SC), and the rest were Others; In Telangana, 34.6% were SC, 5.2% were ST and rest were from Others. Whereas in Andhra Pradesh, 33.7% were from SCs, 5.5% were STs, and the rest were Others. Majority of the households were Hindu in all the states (78.5% - Odisha; 81.3% - AP; and 90.9% in Telangana); 12.7% of the households illiterate, whereas 24.9% were primary level in Odisha. In Telangana and Andhra Pradesh, the same were 18.4% and 32.4% for illiteracy and 22.7% and 0.1% for primary level education respectively. A large number of respondents in all the states were either casual labourers or agriculture was their primary occupation; In Odisha, 41.3% of the respondents lived in pucca houses, whereas 39.7% lived in kutcha houses. In Andhra Pradesh, more than 46.8% lived in pucca houses and 8.1% in semi-pucca houses. In Telangana more than 50% of the respondents lived in pucca house, 29.4% in semi-pucca and rest of the respondents lived in kutcha houses. More than 90% of the respondents in all the states possessed independent house.

In Andhra Pradesh, majority of the households (85.4%) have toilets for exclusively use of household while around 9.9% of households reported use of common toilets within the households building (mostly in the NTR district and Baptla districts). Only 3.6% of households reported having no latrine to use in their households.

Status of Latrines

Toilets are also considering one of the important structures of the house along with the trees. But still there are some sections of the toilet conditions being still needs to be improved where people do not have much money to build and people who have habit of going to defecate in the open areas. The difficult task is to regulate the human behavior where people who are having toilets but still prefer to go to open place to defecate. This has to do with individuals who acquainted with the local cultural practices and continue to make it as a cultural practice.

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Places for Open Defecation

In Andhra Pradesh, those households without toilets reported use of either agricultural fields (81.8%) or other fields (42.4%) or other open spaces (72.7%) or bushes (18.2%), or ditches (12.1%) or other surface water bodies (9.1%) for the purpose of defecation. As per the study in Odisha, in the wake of non-availability of toilets at household, the households reported that they defecate most usually in canals/ponds/rivers/other surface water bodies (46.2%), followed by in other fields (45.7%) or in streets (44.8%) or agricultural fields (44.2%) or other open spaces for defecation or bushes (around 13% each). In households that had no latrines available for use in Telangana, use of other open spaces available for defecation was reported by around two-thirds of the households. Around one-fourth each of households indicated use of agricultural fields to defecate or in other fields while one-third of households also indicated that they defecate in the bushes.

Environmental Sanitation Vulnerability Analysis

The distribution of environmental sanitation vulnerability among the household among social categories for each dimensions – Infrastructure Deficiency Vulnerability Index (IDVI), Hygiene Risk Vulnerability Index (HRVI), Unsanitary Micro Environment Vulnerability Index (UMEVI) and Disease Risk Vulnerability Index (DRVI) has been calculated.

Status of IDVI in Andhra Pradesh

The IDVI among the household across the social category and area type, shows that, in rural area, all most 100% SCs, STs, and OBCs household lies in the value between 0.01 and 0.20, indicating relatively high environmental sanitation conditions but still suggests the presence of vulnerabilities that require ongoing attention and intervention to ensure sustained improvements and better public health outcomes. However, the situation may not be as urgent as for lower index values, and improvements may be feasible with appropriate resources and interventions. More than 95% of the SCs household in urban as well as in semi-urban area have value between 0.01-0.20. The same trend has been found in the urban areas across all the social categories. However, the value lies between 0.61-0.80 in the case of 45.5% of the ST households in the semi-urban area. This indicates relatively moderate environmental sanitation conditions and suggests the presence of vulnerabilities that require ongoing attention and intervention to ensure sustained improvements and better public health outcomes.

Status of HRVI in Andhra Pradesh

The HRVI, across the social category and area type shows, irrespective of area and social category, the HRVI value lies in the range of 0.21-0.40, indicating household with moderately high environmental sanitation. However, the major challenges lie in the behavioural practices of the majority of the population in the state, highlighting the need for targeted interventions to raise awareness and address these issues effectively.

Status of UMEVI in Andhra Pradesh

The UMEVI of household across the social categories and area type states, irrespective of area and social category, the UMEVI value lies in the range between 0.10 and 0.20. In Semi-urban area, for 6.3% SC households, 36.4% ST households and 11.3% of the OBC households and 96.3% Other households, the UMEVI lies in the range of 0.21-0.40, indicating that interventions and improvements are feasible to address the critical environmental sanitation challenges and mitigate associated risks to public health and well-being.

Status of DRVI in Andhra Pradesh

The DRVI, among household across the social categories and area type represents, 34.2% SC households, 23.1%ST households, 24.7% OBC households, 41.7% Other households in rural area; 13% SC households, 25% ST Households, 30.2% OBC households and 16.3% Other households in urban areas; and 14.2% SC households, 45.5% ST households, 16.5% OBC households and 18.5% Other households in semi-urban area, the index value lies between the index value 0.21 and 0.40 indicating moderate environmental sanitation challenges that require attention and targeted interventions to improve conditions towards access to health facilities to reduce vulnerabilities.

Status of IDVI in Odisha

In rural Odisha, 27.8% SC household, 24.6% OBCs and 26.8% Other household lies in the value between 0.21-0.40, which indicates households are moderately deficient in environmental sanitation conditions of urgent nature. Moreover it suggests the presence of high vulnerability that requires attention and intervention in order to ensure sustained improvement and better public health outcomes. Similar to this, households with moderate environmental sanitation challenges—53.3% SCs, 47.4% OBCs, 34.10% Other in rural area, 52.9% SCs household, 44.4% STs household, 49% OBCs household in urban area, and 50.7% SCs household, 44.2% STs household, 50.4% OBCs household, and 54.5% Others household in semi-urban area—require attention and targeted interventions to improve conditions and reduce vulnerabilities. However, the situation may be as urgent as for higher index values, and improvements may be feasible with appropriate resources and interventions for infrastructure development.

Status of HRVI in Odisha

The Hygiene Risk Vulnerability Index across household of different social categories in the rural, urban and semi-urban area of Odisha indicates, there are 98.9% SCs, nearly 100% STs, 97.1% OBCs, and 92.7% Others households in rural areas, 82.4% SCs, 98.7% STs, and nearly 100% OBCs households in urban areas, and nearly 1% of all households across all social categories in semi-urban areas. These numbers indicate improvements in addressing the critical environmental sanitation challenges and mitigating associated risks through hygiene practices and wellbeing.

Status of UMEVI in Odisha

The Unsanitary Micro Environment Vulnerability Index for households in rural, urban, and semi-urban areas across several socioeconomic groups, illustrates that in rural areas, there are 40% of SC households, nearly 100% of ST households, 42.7% OBC households, and 48.8% Other households; in urban areas, there are 64.7% SC households, 35.3% ST households, and 47.1% OBC households; in semi-urban areas, there are 32% SC households, 47.5% ST households, 53.8% OBC households, and 54.5% Other households with a moderately unhygienic micro environment, despite of that there are significant scope of improvement while values are lies between the index range between 0.21 and 0.40.

Status of DRVI in Odisha

The Disease Risk Vulnerability Index for households in rural, urban, and semi-urban areas, spanning social groups, shows how important it is to improve hygiene and take control of unhygienic micro environments. Among all social groupings, the Disease Risk Vulnerability Index has a zero value. The Vulnerability Index shows that there are no vulnerabilities or defects found, indicating that the observed degree of cleanliness satisfies standards. Regardless of the kind of place, it is important to preserve and promote public health and well-being among all socio-economic groups by investing in and monitoring sanitation infrastructure and practices.

Status of IDVI in Telangana

The Infrastructure Deficit Vulnerability Index for Telangana state's socioeconomic categories in rural, urban, and semi-urban areas for each family, illustrates that in rural areas, there are 95.8% SCs, 97% STs, 98.1% OBCs, and 98% Other households; in urban areas, there are 80.9% SCs, 88.9% STs, and 91.2% OBC households; and in semi-urban areas, nearly all households across all social categories are located within the vulnerability index range of 0.10 to 0.20. Although the environmental sanitation conditions are quite high, they nonetheless indicate the existence of vulnerabilities that need continuous attention and action to guarantee long-term improvements and improved public health outcomes, including excluded populations. To enhance circumstances and lessen vulnerabilities, SCs (6% of households), STs (11% of households), and OBCs (2% of households) in urban areas need special attention and focused interventions in infrastructure access.

Status of HRVI in Telangana

The Hygiene Risk Vulnerability Index for households in Telangana State's rural, urban, and semi-urban areas across various socioeconomic groups, illustrates that the distribution of household types in the state: 61% SCs, 45.5% STs, 54.1% OBCs, and 60% Others in rural areas; 75.4% SCs, 44.4% STs, and 57.5% OBCs in urban areas; and 50% SCs and 11.6% OBCs in urban areas. These data point to a moderate to high level of vulnerability, requiring targeted interventions and strategic actions to address hygiene risks. In contrast, the fact that 75% of households, 79% of OBC households, and almost 100% of households are located in semi-urban areas suggests a significant degree of vulnerability that calls for focused measures to address hygiene hazards. It is an essential tool for risk reduction and crisis management, directing resource allocation and decision-making to reduce negative effects and increase resilience.

Status of UMEVI in Telangana

The Unsanitary Micro Environment Vulnerability Index for Telangana State's rural, urban, and semi-urban households across various socioeconomic levels, demonstrates that there are 99.2% of SCs, 93.9% of STs, 98.8% of OBCs, and 98% of Others in rural areas, 76% of SCs, 66.7% of STs, and 89.4% of OBCs in urban areas, and nearly 100% of SCs, 94.7% of STs, and 92.9% of OBCs in semi-urban areas. These values indicate a moderate vulnerability, but there is also a high potential to minimise vulnerability.

Status of DRVI in Telangana

The Disease Risk Vulnerability Index for Telangana State's rural, urban, and semi-urban areas across socioeconomic groups, yielded similar observations. It depicts 80.5% of SCs, 84.8% of STs, 84.6% of OBCs, and 90% of Other households in rural areas, 88% of SCs, approximately 100% of STs, and 94.7% of OBCs in urban and semi-urban areas, respectively. All of these households, regardless of social categories, reported a vulnerability index value between 0.10 and 0.20, indicating a low to moderate level of vulnerability to disease risk.

Behavioural Change due to Swachh Bharat Mission

To identify the overall behavioural change among the household due to Swachh Bharat Mission, heat map has been depicted based on the percentage of response of the household on self-reported question in the following table. It gives potential positive sign of overall change in the behaviour of individual due to the mission. The values highlighted in red colour shows a relative lower response percentage, green depicts higher response percentage.

Heat Map about Behavioural Change due to Swachh Bharat Mission (%)

Response*	Disagree	Neutral	Agree
I have personally adopted better hygiene habits as a result of the Swachh Bharat Mission	18.4	27.4	52.2
The Swachh Bharat Mission has influenced me to use a toilet regularly	21.9	35.7	39.1
I participate in community efforts to maintain public toilets	40.8	27.1	30.1
I feel a sense of responsibility towards maintaining a clean environment in my locality	39.6	24.2	34.6
I participate in local cleanliness and sanitation campaigns.	39.3	29.2	29.2
The availability of toilets has changed my behavior towards open defecation.	29.6	23.2	43.8
I believe that community involvement is crucial for the success of the Swachh Bharat Mission.	34.6	23.7	38.0
I have witnessed positive changes in community behavior due to collective efforts in sanitation.	27.3	23.9	46.5
The Swachh Bharat Mission has played a role in reducing open defecation through the provision of adequate toilets.	23.7	28.7	46.0
The Swachh Bharat Mission has contributed to better waste management practices in my locality.	37.2	30.9	29.2
The construction of sanitation facilities in my community has positively impacted property values.	34.8	29.1	33.1
I have noticed positive changes in the cleanliness and hygiene practices of people in my community.	22.3	24.3	50.8
The Swachh Bharat Mission has positively influenced my perception of the importance of sanitation.	36.1	27.4	31.8
I believe that the mission has contributed to an overall improvement in the quality of life in my area.	15.8	26.5	53.0
The Swachh Bharat Mission has made a noticeable difference in my daily life.	31.4	28.4	38.2
Members of my household are more conscious of proper sanitation practices due to the Swachh Bharat Mission.	18.0	24.1	55.4
The Swachh Bharat Mission has led to a positive change in the hygiene habits of individuals in my household.	37.4	28.6	31.6
There is increased awareness among members of my household regarding the importance of sanitation.	24.1	21.4	51.9
Members of my household actively participate in initiatives supporting the cleanliness goals of the Swachh Bharat Mission.	26.0	24.3	45.6
The Swachh Bharat Mission has positively impacted the overall well-being and health of members in my household	40.4	20.5	36.7
There has been a noticeable reduction in open defecation practices among members of my household	45.6	27.4	24.0
There is increased awareness among community members regarding the importance of sanitation and hygiene.	23.8	27.9	42.3
There is a noticeable reduction in open defecation practices within my community	26.0	28.0	43.6
Community members actively participate in cleanliness and sanitation campaigns initiated by the Swachh Bharat Mission.	26.1	19.2	50.9
The Swachh Bharat Mission has positively impacted the overall health and well-being of people in my community	24.6	27.9	43.4

* Ignores "strongly disagree" and "strongly agree" response due to very low response percentage

4.   Remarks

Changing behaviour is often necessary to tackle the societal problems, the SBM is one of such implementing policy, which is meant to achieve a vital change in open defections, waste management and sanitation at individual level in rural as well as urban India. Which, also comprehend SDG 6 of the nation adhered to be achieved i.e. "ensure availability and sustainable management of water and sanitation for all". The nation has witnessed an unparalleled expansion of sanitation-related initiatives since its inception on October 2, 2014. The observation from the above, gives strong evidence of the achievement of ODF, and arrangement of waste management till the date. Though, 100% ODF was one of the targets, to be achieved by 2019, where the states were vying with one another to reach objectives and targets in order to become a nation free of open defecation. Most of States were able to meet the targets, and some are bringing themselves out from social and geographical footraces. In current review of secondary data, reveals the fact that, the states, Telangana, and Andhra Pradesh, has successfully able to achieve 100% open defection free, Odisha, could not do so, probably because of extreme geographical terrain and diverse demographic structure, having typical social taboos and norms especially in the tribal populated area. As per the current level of understanding from the perspective of current finding, policy demands inclusiveness, infrastructure related monitoring mechanisms and awareness towards sanitation before implementation of SBM among the people where the targets are lacking.

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