

Sociology of Urban Sanitation in India

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ABSTRACT

Urban development schemes, programmes, and projects target to infrastructure development, delivery of services, and strengthening of local governments. It further highlighted on implementation of reforms at state and ULB level. The scheme was implemented in 65 selected towns and cities across the states during the period of 2005 to 2012. At the Union Government level, there are some schemes and policies that focus specifically on water and sanitation in the urban setting. In order to minimize these impacts, Government of India has under taken several measures including increased investment in urban sanitation, policy initiatives, regulations, and public campaigns to improve sanitary conditions in the country. Ministry of Urban Development, Government of India, launched Swachh Bharat Mission in October, 2014 with a view to eliminate open defecation and improving the sanitary conditions in urban areas. Weak sanitation has significant health costs and untreated sewage from cities is the single biggest source of water resource pollution in India. This indicates both the scale of the challenge ahead of the Indian cities and the huge costs incurred from not addressing them. Against this backdrop, present paper highlights sociology of urban sanitation in India.

Introduction

Providing environmentally safe sanitation to the people is a challenging task. In order to minimize these impacts, Government of India has under taken several measures including increased investment in urban sanitation, policy initiatives, regulations, and public campaigns to improve sanitary conditions in the country. Ministry of Urban Development, Government of India, launched Swachh Bharat Mission in October, 2014 with a view to eliminate open defecation and improving the sanitary conditions in urban areas. Weak sanitation has significant health costs and untreated sewage from cities is the single biggest source of water resource pollution in India. This indicates both the scale of the challenge ahead of the Indian cities and the huge costs incurred from not addressing them. India's bigger cities have large, centralized sewerage systems with vast underground pipelines, pumping stations and huge treatment plants. These systems are expensive to build and even more expensive to operate, as they require continuous power, a large amount

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of water, skilled operators and extensive electro-mechanical maintenance. Currently on-site pit latrines, septic tanks and other such systems account for a substantial proportion of toilets in urban areas while the containment of human waste will be largely achieved under SBM, its treatment still poses a huge challenge. In the absence of adequate safe and sustainable sanitation, many Indian cities are already suffering the consequences, in the form of health ailments and serious pollution of water and soil resources. In contrast with the large proportion of on-site sanitation systems, limited attention has been accorded to proper construction, maintenance management and safe disposal of faecal sludge and septage from septic tanks and pit latrines. Limited capacities and resources with Urban Local Bodies resulted in little regulation of maintenance and cleaning of septic tanks and pits – in many cases, households do not report cleaning for a number of years. Some ULBs have desludging equipment or there are private players providing cleaning services but the supply of desludging services is far from adequate. In many instances, faecal sludge and septage is dumped in drains and open areas agriculture fields posing considerable health and environmental risks. The problem of faecal sludge and septage / sewerage must be addressed in a holistic manner, with a strategy that provides for minimum needs and is appropriate and affordable for all areas and population considering the local situation. Against this backdrop, present study purports to examine the status of urban sanitation in selected cities of Uttar Pradesh and suggesting roadmap for improving sanitation conditions.

Objective and Methods

Present paper purports to review the sociology of urban sanitation in India. It also highlights the emerging issues and challenges in achieving universal access of sanitation in urban centres in India. The paper is based on secondary data and pertinent literature. The data and literature has been compiled from published and documented sources including internet sources.

Status of Urban Sanitation

Universal access of urban sanitation to poor families is major challenge as slums and backward areas have grossly inadequate sanitation infrastructure and sanitation services as compared to the urban areas. This is because of the fact that development work was carried out in only recognized/notified slums by the local bodies. However, In 2005 Govt. of India under the JNNURM Mission highlighted that all existing slums are to be integrated in the mainstream of urban planning and development. Thus, with the construction of community and public toilets in the states like Maharashtra, Karnataka, Madhya Pradesh, Gujarat and Orissa accessibility of sanitation services has been increased to the urban poor. There has been paradigm shift in urban governance in India in the

recent years. The emphasis from schemes and programmes has been shifted to mission mode approach for achieving the targets and project objectives. Massive investment based programmes and schemes in mission mode approach have been implemented recently by the Ministry of Urban Development as Ministry of Housing and Urban Poverty Alleviation, Government of India. The focus of government is on development of urban infrastructure, improvement in delivery of civic services through public private partnership, implementation of reforms and improving service delivery mechanism. The government is also planning to create high quality urban infrastructure and providing smart solutions in civic services through effective use of technology and mobilizing private sectors for investment in selected cities of India. There has been larger focus on improving the sanitary conditions and eradication of open defecation in urban areas through social mobilization and construction of toilets.

Presently fund is available under AMRUT, Swacch Bharat Mission, Namami Gange and 14th Finance Commission for sanitation in urban centres in India. However, septage and faecal sludge management is covered under AMRUT. Sererage connection is also been ensured under AMRUT and Namami Gange (Table 1).

Table: 1
Budgetary Allocation for Sanitation in India
(Rs. In Crore)

<i>Scheme</i>	<i>Budget</i>	<i>Duration</i>	<i>Thematic Areas</i>
Swachh Bharat Mission	62009	2014-19	Solid Waste Management, Sanitation, IEC and Capacity Building
AMRUT	50000	2014-19	Sewerage and Septage Management, Water Supply, Storm Water Drainage, Urban Transport, Capacity Building, Reforms and Development of Green Space and Parks
13 th Finance Commission	87519	2010-15	Untide Grant for various sectors specially basic infrastructure services such as water supply, waste water, solid waste and storm water based on ULB preference
14 th Finance Commission	87143	2015-20	

Source: Ministry of Housing and Urban Affairs, Government of India

There is a direct relationship between water, sanitation and health. Consumption of unsafe drinking water, improper disposal of human excreta, improper environmental sanitation and lack of personal and food hygiene have been major causes of many diseases in developing countries. India is no exception to this. Prevailing high infant mortality rate is also largely attributed to poor sanitation. The concept of sanitation was earlier limited to disposal of human excreta by cesspools, open ditches, pit latrines, bucket system etc. Today, it connotes a comprehensive concept, which includes liquid and solid waste disposal, food hygiene, and personal, domestic as well as environmental hygiene. Proper sanitation is important not only from the general health

point of view but it has a vital role to play in our individual and social life too. Sanitation is access to, and use of, excreta and waste water facilities and services that ensure privacy and dignity, ensuring a clean and healthy living environment for all. Facilities and services should include the collection, transport, treatment and disposal of human excreta, domestic wastewater and solid waste, and associated hygiene promotion (UN Habitat and Water Aid). Sanitation is one of the basic determinants of quality of life and human development index. Good sanitary practices prevent contamination of water and soil and thereby prevent diseases. The concept of sanitation was, therefore, expanded to include personal hygiene, home sanitation, safe water, garbage disposal, excreta disposal and waste water disposal. Provision of basic services such as water supply, sewerage, sanitation, solid waste disposal and street lighting has traditionally been the responsibility of the local governments. These services are being provided through state government departments, state level boards, corporations etc. Public Health Engineering Department, Public Works Department, Urban Development Department, Housing Boards, Department of Local Self Government, Water Supply and Sewerage Boards etc. are some of the departments of the state government which performs municipal functions. With the passing of 74th Constitutional Amendment Act, Metropolitan Planning Committee and District Planning Committee have been formed to take up developmental activities in the concerned region in place of the parastatals. The ULB's have also been empowered to take up development functions. States have responded in diverse manner with regard to the status of parastatal agencies in the post decentralized period. Many state governments like Kerala and Karnataka have recommended the abolition of the parastatals while some have recommended for a change in their functional role like in Tamil Nadu, Uttar Pradesh, Maharashtra, West Bengal and Andhra Pradesh. The parastatal agencies have also been merged with Urban Development Department. The 74th Constitutional Amendment Act has also transferred administrative and financial process and created an enabling environment for the local bodies to undertake planning and development responsibility. Sanitation brings heavy return on investment of any development intervention, however, in India; it has been remained neglected for most of the post independence history. Millions of Indians are subjected to grave ill health, increasing threats to safety, lower spending on education and nutrition, reduced productivity and lower income earning potential resulting into a deepening cycle of poverty due to lack of sanitation facilities (Dasra, 2012). The poor bear the worst consequences of inadequate sanitation in the form of ailing children, uneducated girls and unproductive people, making these populations even more vulnerable and costing India 6.4 percent of its GDP (Dasra, 2012).

State-wise access to toilets in urban India is shown in Table 2. Open defecation is still prevalent in urban areas as about 13 per cent urban households

reported that they are defecating in open. This was recorded significantly high in Chhattisgarh (34.44 per cent) followed by Odisha (33.17 per cent), Jharkhand (30.99 per cent) and Bihar (28.88 per cent). Overall, 81.36 per cent urban households reported that they own latrine facility within their housing premises. This was found significantly high in the state of Mizoram (98.52 per cent), Tripura (97.88 per cent), Kerala (97.43 per cent), Meghalaya (95.74 per cent), Manipur (95.77 per cent), Nagaland (94.60 per cent) and Assam (93.71 per cent). Thus, about 19 per cent urban households do not own latrine facility within their housing premises. This was recorded significantly high in the state of Chhattisgarh (39.80 per cent), Odisha (35.22 per cent), Jharkhand (32.83 per cent) and Bihar (31.04 per cent). Overall, about 6 per cent urban households are using public latrine facility. This was recorded significantly high in the state of Maharashtra (21.04 per cent), Tamil Nadu (8.65 per cent), Delhi (7.12 per cent) and Chhattisgarh (5.36 per cent).

Table: 2
State-wise Access to Toilets in Urban India

State	Total Number Of Households	Number Of Households Having Latrine Facility Within The Premises	Number Of Households Not Having Latrine Facility Within The Premises	No Latrine Within Premises	
				Public Latrine	Open
India	78,865,937	64,162,119	14,703,818	4,743,807	9,960,011
(%)	100.00	81.36	18.64	6.01	12.63
Jammu & Kashmir	517,168	452,373	64,795	9,277	55,518
(%)	100.00	87.47	12.53	1.79	10.73
Himachal Pradesh	166,043	147,978	18,065	6,641	11,424
(%)	100.00	89.12	10.88	3.99	6.88
Punjab	2,094,067	1,955,147	138,920	17,543	121,377
(%)	100.00	93.37	6.63	0.84	5.80
Uttarakhand	592,223	554,169	38,054	10,089	27,965
(%)	100.00	93.57	6.42	1.70	4.72
Haryana	1,751,901	1,574,783	177,118	23,381	153,737
(%)	100.00	89.89	10.11	1.33	8.77
Delhi	3,261,423	2,930,386	331,037	232,372	98,665
(%)	100.00	89.85	10.15	7.12	3.02
Rajasthan	3,090,940	2,535,241	555,699	40,479	515,220
(%)	100.00	81.70	17.99	1.31	16.67
Uttar Pradesh	7,449,195	6,190,972	1,258,223	154,061	1,104,162

Contd..

(%)	100.00	83.11	16.89	2.07	14.82
Bihar	2,013,671	1,388,629	625,042	43,436	581,606
(%)	100.00	68.96	31.04	2.16	28.88
Sikkim	35,761	34,040	1,721	939	782
(%)	100.00	95.19	4.81	2.63	2.19
Arunachal Pradesh	65,891	58,977	6,914	2,477	4,437
(%)	100.00	89.51	10.49	3.76	6.73
Nagaland	115,054	108,845	6,209	3,656	2,553
(%)	100.00	94.60	5.40	3.18	2.22
Manipur	171,400	164,152	7,248	3,226	4,022
(%)	100.00	95.77	4.23	1.88	2.35
Mizoram	116,203	114,487	1,716	697	1,019
(%)	100.00	98.52	1.48	0.59	0.87
Tripura	235,002	230,039	4,963	1,988	2,975
(%)	100.00	97.89	2.11	0.86	1.26
Meghalaya	116,102	111,163	4,939	2,151	2,788
(%)	100.00	95.74	4.26	1.85	2.40
Assam	992,742	930,306	62,436	12,873	49,563
(%)	100.00	93.71	6.29	1.30	4.99
West Bengal	6,350,113	5,398,223	951,890	237,431	714,459
(%)	100.00	85.01	14.99	3.74	11.25
Jharkhand	1,495,642	1,004,578	491,064	27,543	463,521
(%)	100.00	67.17	32.83	1.84	30.99
Odisha	1,517,073	982,744	534,329	31,090	503,239
(%)	100.00	64.78	35.22	2.49	33.17
Chhattisgarh	1,238,738	745,715	493,023	66,386	426,637
(%)	100.00	60.20	39.80	5.36	34.44
Madhya Pradesh	3,845,232	2,854,081	991,151	126,871	864,280
(%)	100.00	74.22	25.78	3.29	22.48
Gujarat	5,416,315	4,750,063	666,252	193,001	473,251
(%)	100.00	87.70	12.30	3.56	8.74
Maharashtra	10,813,928	7,707,096	3,106,832	2,275,164	831,668
(%)	100.00	71.27	28.73	21.04	7.69
Andhra Pradesh	6,778,225	5,838,383	939,842	132,324	807,518
(%)	100.00	86.13	13.87	1.95	11.91
Karnataka	5,315,715	4,514,862	800,853	231,249	569,604
(%)	100.00	84.93	15.07	4.35	10.71
Kerala	3,620,696	3,527,650	93,046	32,425	60,621

Contd

(%)	100.00	97.43	2.57	0.89	1.67
Tamil Nadu	8,929,104	6,709,788	2,219,316	772,012	1,447,304
(%)	100.00	75.14	24.86	8.65	16.21

Source: Census, 2011

A comparative status of sanitation in urban areas and slums is shown in Table 3. The accessibility of toilets is found significantly high in the urban areas as compared to slums. Similarly, the proportion of households admitting that they are defecating in open has been recorded high in the slums as compared to urban areas in most of the states. However, the proportion of slum households defecating in open has been reported low where government and other non-government agencies have ensured the construction and functioning of public toilets. The proportion of households reporting non-existence of drainage was found significantly high in the slum areas as compared to urban areas in most of the states.

Table: 3
A Comparative Status of Sanitation in Urban Areas and Slums in India
(Percentage)

State	No Drainage		Open Defecation		Access to Toilet	
	Urban Areas	Slums	Urban Areas	Slums	Urban Areas	Slums
India	18.23	18.76	12.63	18.90	81.36	66.01
Jammu & Kashmir	16.88	18.88	10.73	9.09	87.47	88.19
Himachal Pradesh	6.44	10.49	6.88	9.44	89.12	85.46
Punjab	9.10	11.31	5.80	10.48	93.37	88.67
Uttarakhand	7.09	5.79	4.72	6.06	93.57	91.70
Haryana	7.75	9.57	8.77	17.31	89.89	79.96
Delhi	3.96	5.73	3.02	12.47	89.85	50.09
Rajasthan	13.96	16.76	16.67	26.26	81.70	71.59
Uttar Pradesh	6.64	7.74	14.82	18.76	83.11	77.48
Bihar	28.61	41.25	28.88	42.49	68.96	53.84
Assam	43.65	50.09	4.99	10.52	93.79	86.43
West Bengal	33.17	31.28	11.25	11.10	85.01	82.53
Jharkhand	29.20	44.81	30.99	41.88	67.17	52.69
Odisha	40.95	53.92	33.17	48.34	64.78	48.15
Chhattisgarh	31.09	33.08	34.44	41.65	60.20	48.67
Madhya Pradesh	17.66	22.13	22.48	31.65	74.22	35.25
Gujarat	17.36	27.55	8.74	21.26	87.70	64.41

Contd

Maharashtra	8.85	7.73	7.69	9.75	71.27	41.63
Andhra Pradesh	11.74	12.44	11.91	14.78	86.13	82.35
Karnataka	12.40	16.10	10.71	24.97	84.93	63.30
Kerala	45.45	37.55	1.67	3.34	97.43	93.21
Tamil Nadu	25.06	28.92	16.21	23.08	75.14	61.01

Source: Census, 2011

Category of city-wise type of sanitation facilities are shown in Table 4. Connection of toilets with piped sewer network was reported less than 1/3rd in urban areas however, it was recorded as high as 62.2 per cent in metropolitan city and 47.4 per cent in Class I cities. The septic tank dependency was recorded high in Class III, Class IV cities. The proportion of pit latrine was also recorded high in small cities. The proportion of community toilets was recorded high in larger cities as compared to smaller cities (Wankhade et. al., 2014).

Table: 4
Category of City-wise Type of Sanitation Facilities in India

Category of City	Connection of Toilet				Alternative Source			
	Piped Sewer Network	Septic Tank	Other System	Total	Pit Latrine	Service Latrine	Community Toilets	Open
India	11.9	22.2	2.3	36.4	9.4	1.1	3.2	49.8
Rural	2.2	14.7	2.5	19.4	10.5	0.8	1.9	67.3
Urban	32.7	38.2	1.7	72.6	7.1	1.7	6.0	12.6
Metropolitan	62.2	20.3	0.9	83.5	2.8	1.5	8.2	4.0
Class I Cities of Non-Metropolitan Category	28.1	46.8	1.9	76.8	5.3	2.3	4.8	10.7
All Cities	11.2	43.9	2.3	57.4	10.2	1.7	4.8	25.8
Class I	47.4	31.8	1.3	80.6	3.9	1.9	6.8	6.9
Class II	15.8	49.0	2.0	66.8	7.2	2.4	5.7	17.9
Class III	10.8	45.4	2.3	58.5	9.2	1.7	4.8	26.0
Class IV	8.2	40.2	2.4	50.8	12.7	1.3	4.5	30.7
Class V	7.3	35.2	2.9	45.3	15.4	1.2	3.9	34.3
Class VI	9.2	36.2	3.5	48.9	14.8	1.0	3.6	31.7

Source: Census 2011.

Sewerage treatment has not been a priority for the majority of the utilities across India. The sewerage treatment facilities are grossly inadequate besides low level of sewerage network in India. The sewerage treatment plants are not

effective functioning due to several reasons (Table 5). Punjab, Maharashtra, Tamil Nadu, Uttar Pradesh, Himachal Pradesh, Rajasthan, Karnataka and Gujarat accounted for large number of sewerage treatment plants. However, functioning of these treatment plants was not found effective.

Table: 5
Sewage Treatment Plants in Urban India

<i>Category</i>	<i>No. of Cities</i>	<i>No. of Cities with Sewage Treatment Plants</i>	<i>No. of Cities with no Sewage Treatment Facility</i>	<i>per cent Cities in the Category with no Sewage Treatment Facilities</i>
Class I Cities (10 lakh and above)	39	29	10	26
Class I Cities (5 to 10 lakh population)	32	13	19	59
Class I Cities (20-5 lakh population)	119	34	85	71
Class I Cities (1-2 lakh population)	224	36	188	84
Class II towns (0.5-1 lakh population)	489	22	467	96

Source: Centre for Science & Environment, New Delhi, 2011

Sociology of Sanitation

Sociology of sanitation is being much debated recently as there is thrust on behaviour change of people in order to improve sanitation conditions. Sociology of sanitation has emerged as branch of medical sociology in the early 1940's. The discipline that investigates the social causes and consequences of health and illness was inspired by the health and sanitary reforms that took place in Western society. It was well recognised that the relations between sociology and sanitation are extremely intimate. The individual is the essential element of the society, his social values depends largely upon his health, and his environment depends on his habits (Pais, 2015). Sociology of sanitation includes: (1) the sanitary measures at household; (2) the sanitary conditions at public places; (3) sanitation at work place; (4) relation of sanitation with the caste; (5) gender and sanitation; (6) social status and manual scavengers; (7) culture and sanitation; (8) sanitation at school or educational sector; (9), collection, storage, segregation, transportation and disposal of wastes, (10) user interface, storage/containment, emptying and transportation, treatment, and use/ safe disposal of faecal sludge; (11) public policies of sanitation, and (12) community engagement and participation of CBOs / NGOs. Thus, sociology of sanitation makes a scientific study of sanitation. It examines the

role of institutions in the sanitary conditions and helps in better understanding and planning of healthy society. It also offers great solution of social problems. The culture of sanitation also helps in evolving road map and action plan for making cities open defecation free as well as launching of community led total sanitation campaign (Pais, 2015).

There are many possible definitions of sanitation. Sanitation means the safe management of human excreta and wastewater. It therefore includes both the 'hardware' (e.g. latrines and sewers) and the 'software' (regulation, hygiene promotion) needed to reduce faecal-oral disease transmission. It encompasses potential reuse, ultimate disposal of human excreta or discharge of wastewater. Sanitation refers to safe handling of many types of waste products. By safe handling we mean ensuring safety in collection, storage, treatment and disposal of all types of waste products. We generate a lot of waste in form of human excreta, household waste water, sewerage, effluents, industrial waste products etc. (Bisaria, 2015). Sanitation refers to formulation and application of measures designed to protect public health. It also refers to the safe conditions which includes lean and safe water supply, clean and safe ambient air, efficient and safe animal, human, and industrial waste disposal, protection of food from biological and chemical contaminations, and adequate housing in clean and safe surroundings (Pais, 2015). According to WHO, sanitation refers to the provision of facilities and services for the safe disposal of human urine and faeces. Inadequate sanitation is a major cause of disease worldwide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities. According to UNICEF, sanitation literally means measures necessary for improving and protecting health and well being of the people.

Environmental sanitation aims at improving the quality of life of the individuals and at contributing to social development. This includes disposal or hygienic management of liquid and solid human waste, control of disease vectors and provision of washing facilities for personal and domestic hygiene. Environmental sanitation comprises both behaviour and facilities to form a hygienic environment. Most diseases associated with water supply and sanitation, such as diarrhoea, are spread by pathogens found in human excreta. The faecal-oral mechanism, in which some of the faeces of an infected individual are transmitted to the mouth of a new host through one of a variety of routes, is by far the most significant transmission mechanism. This mechanism works through a variety of routes. Primary interventions with the greatest impact on health often relate to the management of faeces at the household level. This is because (a) a large percentage of hygiene-related activity takes place in or close to the home and (b) first steps to improving hygienic practices is often easiest to implement at the household level. Secondary barriers are hygiene practices

preventing faecal pathogens, which have entered the environment via stools or on hands, from multiplying and reaching new hosts. Secondary barriers thus include washing hands before preparing food or eating, and preparing, cooking, storing, and re-heating food in such a way as to avoid pathogen survival and multiplication. The water supply and sanitation provide the necessary barrier between the pollutants, natural - built environment and humans.

Notions of purity and attitude towards excreta are complex among Indians. The urine and excreta of cows are considered sacred and cow dung is used for manure, dung cake for fuel and cleaning of kacha floors while human excreta is considered as major cause of spread of pathogen diseases, however, treated and converted human excreta is being used as best compost manure for agricultural crops. Open defecation is the social norm in many communities and is often argued that people prefer open fields and feel claustrophobic in an enclosed area so that even when toilets are constructed, at least men prefer to go out to the field. However, women aged and children are affected to a great extent by the lack of toilets within the household. Women defecating in open are not only exposed to the risk of hygiene, but also they face threats of harassments, teasing, lewd remarks and even sexual assault in open fields after dark (Bisaria, 2015).

Singh (2014) in his study of selected cities in Uttar Pradesh and West Bengal highlighted that slum dwellers are being deprived of better sanitation facilities due to lack of infrastructure and poor delivery of services. Faruqui (2014) in her study also highlighted that there is lack of sanitation infrastructure and poor delivery of sanitation services in slums of Uttar Pradesh and Bihar. She is of the view that Integrated Low Cost Sanitation Scheme has positive impact on urban sanitation and better access of toilets to women in slums. Singh (2014) is of the view that India loses 6.4 percent of GDP annually for lack of basic sanitation and sanitation facilities. The Swachh Bharat Mission is likely to bridge the gap of urban sanitation infrastructure and reduce the open defecation in urban centers. Kalkoti (2014) has reviewed the status of urban sanitation and examined the emerging challenges as well as new initiatives; however, lack of sewerage network is causing concern. Jaiswal (2014) in her paper highlighted that government initiatives for public health and hygiene are not adequate in India as open defecation is rampant. A study by Wankhade et. al (2014) has highlighted the problems of urban water and sanitation sector in India are complex and require concerted efforts to sustain the policy momentum. The study has also reviewed the key policy responses and recent initiatives of the recent decades. Pillai and Parekh (2015) are of the view that modernization has played important role in improving sanitation conditions in India however, we need strong political will which will bring modern amenities and public health education to the door steps of people. Agarwal (2015) is of the view that policies

and schemes on urban sanitation would have a limited impact unless they are backed by adequate budgets and effective implementation. Chikarmane (2015) said that the growing cities will have to evolve their mechanism to solve waste disposal in near future. Kaul (2015) is of the view that the launch of Swachh Bharat Mission marks the beginning of the most ambitious programme on sanitation in the country till date. Pathak (2015) said that in order to achieve the targets of total sanitation by the year 2019, government needs additional support from all sections of society. Jha (2015) in his study on "Sanitation in India" has highlighted the historic-socio perspectives of sanitation. He has also examined the status of sanitation in the colonial period and highlighted the issues of untouchability and sanitation in pre modern era. Akram (2015) in his recent treatise on sociology of sanitation has conceptualized and analysed the status of sanitation in socio-cultural context. He has also examined the role of Sulabh Sanitation Mission in improving sanitation condition and empowering manually scavengers in India. Gatade (2015) has also raised the issue of caste system and the practice of untouchability in the context of Swachha Bharat Abhiyan. He is of the view that Hindu notions of purity and pollution, inextricable link with caste system and practice of untouchability, underline the unsanitary practices in Indian society. Bhattacharyajee (2015) also called for the need of improving sanitation condition in India. In order to become glammers India sanitation and hygiene are the pre-requisite. Thus, Swachha Bharat should be considered as Swastha Bharat. Singh (2015) has talked about the linkages between sanitation, development and social change in India.

About 2.7 billion people around the world use on-site sanitation technologies that need fecal sludge management services (Strande et al., 2014). The on-site sanitation has been considered as a temporary solution until a sewerage system is constructed (Strande, Ronteltap & Brdjanovic, 2014). In a sewerage system, excreta and flush water from toilets, as well as other used water from laundry, kitchens and bathing, is transported from the home by a direct connection to a system of pipes (sewers) buried deep underground. Ideally, the wastewater is sent to a treatment facility. Well-constructed and maintained sewerage systems with wastewater treatment facilities can provide effective and efficient services. Sewerage systems have been constructed in many parts of the world, particularly in high-income countries. However, for many low- and middle-income communities, particularly in developing countries, installing a sewerage system is not a feasible option due to the complexity, high cost, and need for a piped water supply. For such communities, on-site sanitation offers a hygienic and affordable solution (Franceys, Pickford & Reed, 1992). Sanitation planners have come to realize that sewerage systems are an inappropriate technology to manage excreta in many parts of low- and middle-income countries. This has led to a shift in sanitation planning. Implementers are now accepting on-site sanitation as an appropriate, sustainable, and affordable solution as long as

fecal sludge emptying, transport, treatment and disposal or use services are available and managed correctly (Strande et al., 2014).

There are a range of service providers for faecal sludge emptying and transport, from informal and independent individuals to formal and large companies. In some areas, services are also provided by public utilities or nongovernmental organizations (Chowdhry & Kone, 2012). It is common to see a variety of service providers working in the same region due. This is because of the complexity and accessibility of different on-site sanitation technologies and the customers' ability to pay for the services (Strande, Ronteltap & Brdjanovic, 2014). A recent survey of 30 cities in Africa and Asia found that about one-third of households manually empty their on-site sanitation technologies. While family members sometimes do this job themselves, a manual emptier is hired almost 90% of the time (Chowdhry & Kone, 2012). Manual emptying is hard and unpleasant work, and it poses serious health and safety risks if it is not carefully managed. The tools used for manual emptying are simple, usually no more than a bucket, shovel, and rope. Workers often use minimal or no personal protection, like gloves or boots, to prevent direct contact with the faecal sludge. As a result, they report injuries, skin rashes, and other diseases (Chowdhry & Kone, 2012; Opel, 2012).

Vacuum pumps are effective in emptying water-based on-site sanitation technologies, like pour flush latrines, septic tanks, and aqua privies. The pump is connected to a hose that is lowered through an access cover into the technology. The fecal sludge is then pumped into the storage tank mounted on a heavy duty truck or trailer, on lighter carts, or even human powered carts for smaller volumes (Strande, Ronteltap & Brdjanovic, 2014). Vacuum trucks are available in a wide variety of sizes and models to meet different needs. Most commonly they have a storage capacity of 200 to 16,000 litres. Conventional vacuum trucks can hold as much as 55,000 litres (Strande, Ronteltap & Brdjanovic, 2014). There are some technical limitations for using vacuum trucks. Conventional vacuum trucks can usually only suck down to a depth of 2 to 3 metres. They also must be parked within 25 metres of the on-site sanitation technology, depending on the strength of the pump (Strande, Ronteltap & Brdjanovic, 2014). As well, large vehicles are often unable to access narrow streets and poor roads, especially in unplanned and informal communities. Vacuum trucks are also designed for emptying water-based technologies, such as pour flush latrines, septic tanks, and aqua privies. Depending on the technology, the sludge can become too thick and cannot easily be pumped. In this case, it is necessary to dilute the fecal sludge with water so that it can flow more easily. However, this is inefficient and potentially costly. If water is not available, then manual emptying may be the only option to empty the technology (Tilley et al., 2014).

Conclusion

India's bigger cities have large, centralized sewerage systems with vast underground pipelines, pumping stations and huge treatment plants. These systems are expensive to build and even more expensive to operate, as they require continuous power, a large amount of water, skilled operators and extensive electro-mechanical maintenance. It is for this reason that India's 7,000+ small towns do not have such systems and are unlikely to be covered by centralized sewerage systems in the near future. Thus, while the containment of human waste will be largely achieved under SBM, its treatment still poses a huge challenge. In the absence of adequate safe and sustainable sanitation, many Indian cities are already suffering the consequences, in the form of health ailments and serious pollution of water and soil resources. In contrast with the large proportion of on-site sanitation (OSS) systems, limited attention has been accorded to proper construction, maintenance management and safe disposal of faecal sludge and septage from septic tanks and pit latrines. While construction standards have been codified by the Bureau of Indian Standards, the actual construction was largely left to households to manage – in reality, the installations are subject to local practices and considerable variations are observed. In many instances for example, soak-away or drain fields are not provided. Limited capacities and resources with Urban Local Bodies (ULBs) also resulted in little regulation of maintenance and cleaning of septic tanks and pits – in many cases, households do not report cleaning for a number of years. Some ULBs have desludging equipment or there are private players providing cleaning services but the supply of desludging services is far from adequate. In many instances, faecal sludge and septage is dumped in drains and open areas posing considerable health and environmental risks. Sanitary workers also work in hazardous conditions to clean OSS pits and tanks sometime without adequate protective gear and equipment. In most Indian cities, there is limited data & information on the types and number of OSS toilets and septage disposal systems and practices. The problem of faecal sludge and septage / sewerage must be addressed in a holistic manner, with a strategy that provides for minimum needs and is appropriate and affordable for all areas and population considering the local situation. It must also address the enabling provisions in the form of suitable regulation and institutional framework, capacity building and education and awareness among all stakeholders. This policy seeks to address the efficiency of systems in place for onsite sanitation whereof the faecal sludge output needs to be managed in an environmentally safe manner including the proper engineering design, construction and maintenance of septic tanks systems, pit latrines and such other systems generating faecal sludge. Only on-site sanitation facilities and areas served by such facilities would fall under the purview of this Faecal Sludge and Septage / Sewerage Policy. It does not seek to cover network or conventional sewerage system (including treatment plants) of wastewater/sewage management.

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