

ENHANCING URBAN SANITATION IMPERATIVE FOR SEPTAGE AND FAECAL SLUDGE MANAGEMENT IN UTTAR PRADESH**A K Gupta¹ and Dr. Gaurav Shukla²**¹Research Scholar and ²Assistant Professor M.U.I.T Lucknow**ABSTRACT**

Urban development schemes, programs, and projects play a pivotal role in enhancing the infrastructure, service delivery, and capacity of local governments in cities and towns. Efforts are focused on both state and local levels, with the aim of creating sustainable and inclusive urban areas. One major government initiative is the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), which seeks to improve economic and social infrastructure, provide basic services to the urban poor, and strengthen municipal governments in accordance with the 74th Constitutional Amendment Act.

JNNURM was implemented in 65 cities and towns across various states from 2005 to 2012. As part of the initiative, cities are required to submit City Development Plans (CDPs) to demonstrate their commitment to JNNURM's goals. However, some cities have faced challenges in preparing these plans collaboratively, leading to difficulties in staffing urban local governments.

At the Union Government level, schemes and programs primarily target urban water and sanitation, with the Basic Services to the Urban Poor (BSUP) initiative under JNNURM aiming to provide water and sewage services to the urban poor. The goal is to ensure the sustainability of these services over time by establishing strong links between asset development and asset management.

Another critical aspect of urban development is the Swachh Bharat Mission, a national cleanliness campaign focused on improving sanitation and achieving an open defecation-free India. The emerging need for septage and faecal sludge management in urban local bodies (ULBs) in Uttar Pradesh is emphasized in the paper, recognizing the importance of proper waste management to ensure hygienic conditions and environmental protection.

Overall, these initiatives underscore the significance of collaborative planning, inclusive development, and effective governance in realizing sustainable urban growth and improved living conditions for all citizens effectively.

Keywords: Urban Sanitation, FSSM, SBM

1. INTRODUCTION

Water, sanitation, and health are interconnected aspects that have a profound impact on human well-being and the overall development of societies. In the developing world, more than half of all illnesses can be attributed to poor sanitation and hygiene. This includes issues related to hazardous drinking water and improper disposal of human waste. The consequences of inadequate sanitation extend beyond individual health, as it also affects the high newborn death rate. In the past, human waste was often disposed of through unsanitary methods such as cesspools, open ditches, pit latrines, and bucket systems.

In the modern context, cleanliness encompasses a wide range of issues, including waste disposal, food safety, personal hygiene, and environmental sanitation. Sanitation not only plays a crucial role in public health but also has significant implications for personal and social well-being. It involves the provision and use of facilities and services that ensure privacy, dignity, and access to a clean and healthy living environment. These facilities and services encompass the collection, transportation, treatment, and disposal of human waste, home wastewater, and solid waste, along with promoting good hygiene practices. Water, sanitation, and health are interconnected aspects that have a profound impact on human well-being and the overall development of societies. In the developing world, more than half of all illnesses can be attributed to poor sanitation and hygiene. This includes issues related to hazardous drinking water and improper disposal of human waste. The consequences of

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By empowering ULBs and promoting decentralization, the amendment encourages greater local participation in decision-making, planning, and development processes. This can lead to more responsive and effective urban development initiatives tailored to the specific needs of local communities. Moreover, when ULBs take on development responsibilities, there is a higher likelihood of successful implementation and sustainable management of sanitation projects and infrastructure.

In conclusion, the intricate relationship between water, sanitation, and health is undeniable. Poor sanitation and hygiene contribute significantly to the prevalence of illnesses, making it crucial to focus on improving sanitation facilities and practices. With the 74th Constitutional Amendment Act promoting decentralization and empowering ULBs, there is a renewed emphasis on local governance and community involvement in sanitation and urban development. By recognizing the importance of sanitation in overall development and implementing effective measures at the local level, societies can strive towards improved public health, a better quality of life, and sustainable development.

Sanitation is a fundamental aspect of public health and human well-being, encompassing the safe handling of human waste and wastewater. It involves both physical infrastructure, such as latrines and sewers, and behavioral practices to prevent the spread of faecal-oral diseases. Sanitation also includes the proper disposal, reuse, or discharge of human waste and wastewater, as well as the management of various types of waste in a safe manner.

In the context of public health policies, sanitation is a crucial component of creating a safe environment that includes clean and safe water supply, air free from contaminants, and efficient waste disposal for both human and environmental health. The World Health Organization (WHO) defines sanitation as the provision of sewage and faeces disposal facilities and services. Poor sanitation has been a major contributing factor to illnesses and deaths globally, and improving sanitation has a positive impact on health at both individual and community levels.

Environmental sanitation aims to enhance the quality of life and social progress of individuals and communities. It involves measures to control disease vectors and promote personal and home cleanliness, including the proper management of human waste (both liquid and solid). To achieve a sanitary environment, both behavioral practices and the provision of sanitation facilities are essential. Faecal-oral transmission of pathogens, often present in human excreta, is the most common mode of disease transmission worldwide. Therefore, proper home faeces management plays a critical role in preventing the spread of water supply and sanitation-related illnesses like diarrhea.

In India, there are two main types of sanitation systems: network-based systems, which include piped sewerage, and on-site systems, which encompass various other types of waste management. However, the majority of Indian cities primarily rely on on-site sanitation systems, with network-based systems serving only a third of the urban population. The lack of adequate sewage systems and the prevalent issues with existing sewerage infrastructure contribute to unsanitary conditions and improper garbage disposal. Sewage systems are often in disrepair, resulting in obstructions, siltation, missing manhole covers, and gulley pits. Proper maintenance and repairs are lacking, leading to frequent system failures.

On-site sanitation systems, such as septic tanks and pit latrines, are the most common in India, particularly in rural areas. However, attention and policies have largely focused on network-based systems, and on-site systems often face subpar design and construction. The lack of safe de-sludging equipment for pit or septic tank cleaning is a widespread issue. Families often rely on manual emptying of pits and tanks by sweepers or mechanical emptiers, with little oversight or treatment of the collected faecal sludge.

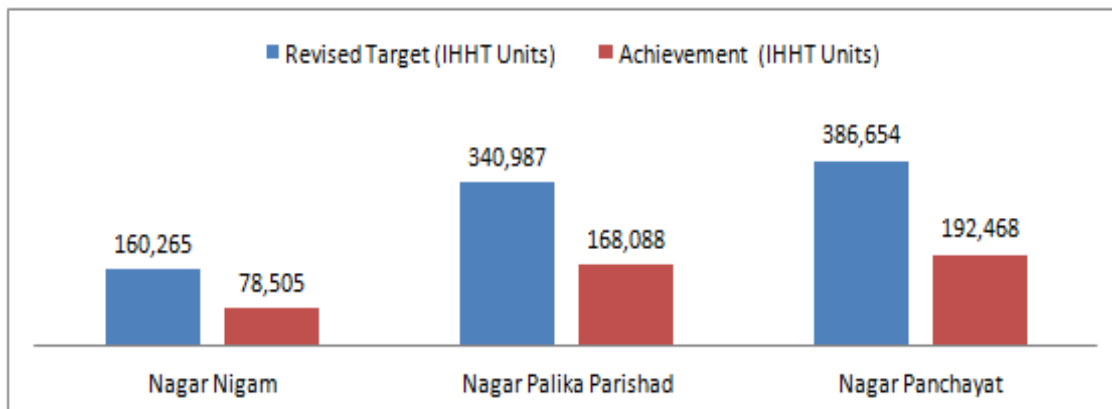
In conclusion, sanitation is a multifaceted concept that involves both physical infrastructure and behavioral practices to ensure the safe handling of human waste and wastewater. It is crucial for public health, environmental well-being, and overall human development. While India has made progress in promoting sanitation through initiatives like the Swachh Bharat Mission, challenges remain, especially in the proper

management of on-site sanitation systems and the development of adequate sewage infrastructure. Addressing these challenges and ensuring access to safe and sustainable sanitation services for all are essential steps towards a healthier and more resilient society.

2. Status of SBM in Uttar Pradesh:

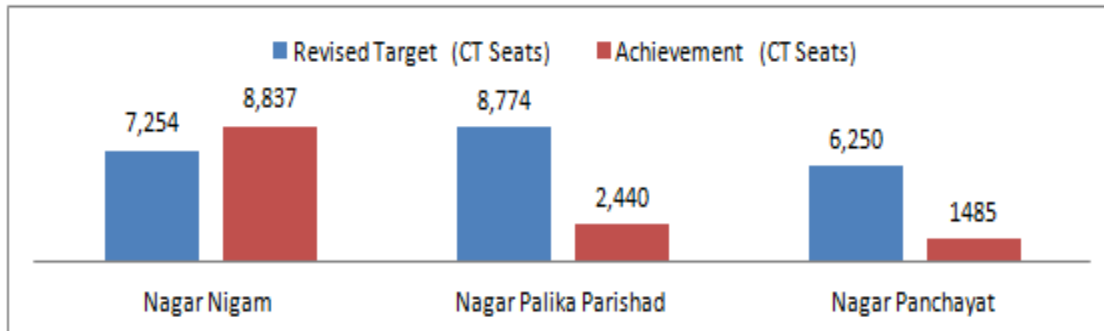
In Uttar Pradesh, the construction of individual household toilets has been slower than the targets set in Urban Local Bodies (ULBs). However, there has been relatively better progress in Nagar Panchayats compared to Nagar Nigams and Nagar Palika Parishads. Under the Swachh Bharat Mission (SBM), approximately 4.39 lakh individual household toilets, 12,762 community toilets, and 13,871 public toilets have been constructed. Despite these efforts, the state is still lagging behind the SBM targets. Addressing funding constraints, bureaucratic hurdles, promoting community participation, and implementing effective monitoring mechanisms are essential to accelerate sanitation improvement and achieve the mission's objectives

Chart 1: Status of Individual Household Toilets



In the context of community toilets, Nagar Nigams (municipal corporations) have shown higher achievement compared to Nagar Palika Parishads (municipal councils) and Nagar Panchayats (urban local bodies with less than 30,000 population). This indicates that municipal corporations have made better progress in the construction and implementation of community toilet facilities under sanitation initiatives. However, further efforts are still needed across all categories of urban local bodies to ensure equitable access to community toilets and to meet the sanitation targets effectively. (Chart 2)

Chart 2: Status of Community Toilets in Uttar Pradesh



In Nagar Nigams (municipal corporations), the construction of public toilets has exceeded the fixed targets, indicating better progress in providing public toilet facilities. However, in other Urban Local Bodies (ULBs) like Nagar Palika Parishads (municipal councils) and Nagar Panchayats (urban local bodies with less than 30,000 population), the progress in constructing public toilets has been slow and may not have met the set targets. This highlights the need for concerted efforts and targeted interventions in these ULBs to accelerate the construction of public toilets and improve overall sanitation infrastructure. (Chart 3).

Chart 3: Status of Public Toilets in Uttar Pradesh

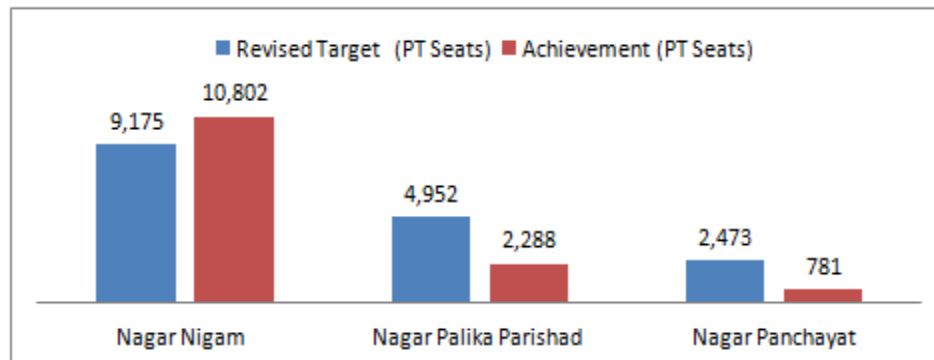


Table 1 shows the utilization of funds under the Swachh Bharat Mission (SBM) in Uttar Pradesh. It indicates that the utilization of funds has been reported to be low compared to the funds received and funds transferred to Urban Local Bodies (ULBs) under SBM.

Specifically, for the construction of individual household toilets, approximately 20 percent of the funds transferred to ULBs were utilized. This means that only a fraction of the allocated funds has been effectively used for constructing individual household toilets.

Similarly, for the construction of community toilets, the utilization of funds was even lower, with only about 5 percent of the funds transferred to ULBs being utilized. This suggests that there are significant challenges or issues in the utilization of funds for the construction of community toilets under the SBM initiative. The low utilization of funds is a matter of concern as it may indicate inefficiencies or bottlenecks in the implementation of sanitation projects in Uttar Pradesh. It is essential for the state government and ULBs to address these issues and improve the utilization of funds to ensure effective implementation of the SBM and accelerate progress towards achieving the mission's objectives of improved sanitation facilities for all. Utilization of funds under SBM in Uttar Pradesh is shown in Table 1. Utilization of funds has been reported to be low as compared to fund received and funds transferred to ULBs under SBM. However, about 20 per cent funds were utilized by ULBs against funds transferred to them for construction of individual household toilets. Similarly, about 5 per cent funds were utilized against funds transferred to them for construction of community toilets under the Mission.

Table 1: Utilization of Funds Under SBM in Uttar Pradesh (Rs. In Crore)

Head	Funds Received	Funds Transferred to ULBs	Funds Utilized by ULBs
Individual Household Toilets	662.84	656.10	130.6
Community Toilets	160.06	141.68	7.52
Public Toilets	31.26	26.35	0.00
Urinals	0.00	0.00	0.00
Solid Waste Management	74.49	68.12	0.00
Total	990.18	905.48	141.6

Source: Department of Urban Development, Government of U.P., March, 2018

3. Need for Septage and FSM:

Fecal waste management services are a critical need for over 2.7 billion people globally who rely on on-site sanitation technology. The majority of the world's population concentrated in Eastern Asia, South Asia, and Sub-Saharan Africa faces sanitation challenges. To address or reduce sanitation-related risks, a multi-barrier strategy is employed, aimed at avoiding or mitigating these risks to a tolerable level.

Current sanitation trends indicate that by 2030, approximately 5 billion people will require faecal sludge management services. This number could escalate even more rapidly as water scarcity worsens. Septic tanks and treatment facilities, which use significant amounts of water, are connected to sewer lines for flushing wastewater. However, due to dwindling water supplies, relying solely on sewer systems for waste disposal will become increasingly challenging. On-site sanitation solutions will become crucial, especially in areas without a fully developed sewer system, and they are often considered a temporary measure until a sewer system can be established.

In a sewer system, deep pipes are connected to individual households to dispose of waste and flush water from toilets, kitchen, laundry, and bathing. Ideally, wastewater is transported to a treatment facility for effective and efficient management. While well-maintained sewer systems with wastewater treatment can provide reliable services, establishing such systems is not feasible for many low- and middle-income communities, particularly in developing countries. The high cost, complexity, and the need for a piped water supply make sewer systems impractical in such areas.

As a result, sanitary planning has evolved, and on-site sanitation is now seen as a suitable, long-term, and cost-effective alternative, especially in the presence of successful faecal sludge emptying, transportation, treatment, and disposal services. Approximately one billion people in urban areas rely on on-site sanitation, and it is increasingly recognized as a viable solution, particularly in areas where access to sewer systems is limited to wealthier neighborhoods.

In many low- and middle-income countries, the shift away from sewer systems has led to changes in sanitation practices. Implementers now view on-site sanitation as a sustainable and practical approach, considering the availability and successful management of faecal sludge services. This approach allows communities to effectively manage waste without relying solely on centralized sewer systems.

On-site sanitation can range from simple pit latrines to more advanced septic tanks, and it offers various benefits such as cost-effectiveness, adaptability to different settings, and reduced water consumption. Moreover, the availability of effective faecal sludge management services has further enhanced the viability of on-site sanitation as a long-term solution.

While on-site sanitation may be more prevalent in certain regions, it is essential to promote and support its adoption worldwide, particularly in areas where sewer systems are not feasible. Governments, NGOs, and international organizations should work together to develop sustainable and integrated sanitation solutions that prioritize community needs and address the challenges faced by the most vulnerable populations. By investing in

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on-site sanitation infrastructure and effective faecal sludge management, we can ensure improved sanitation for billions of people, leading to healthier communities and a cleaner environment.

According to a recent survey conducted in 30 African and Asian cities, approximately one-third of residences rely on on-site sanitation systems, which are physically emptied by manual emptiers. This task is often outsourced to professional manual emptiers who may use basic tools like buckets, shovels, and ropes to perform the job. Unfortunately, the inadequate management of manual emptying can lead to serious health and safety issues. Workers engaged in manual emptying often lack personal protection, such as gloves or boots, increasing the risk of direct contact with faecal sludge and exposing them to injuries, skin rashes, and other illnesses.

Water-based sanitation systems, such as pour flush latrines and septic tanks, require vacuum pumps for waste removal. The pump is connected to a pipe that is lowered into the sanitation technology through an access cover. Faecal sludge is then pumped into a storage tank using heavy-duty trucks or trailers, lightweight carts, or human-powered carts for smaller quantities.

A variety of vacuum truck types and sizes are available to cater to different applications, with typical storage capacities ranging from 200 to 16,000 liters. Conventional vacuum trucks can hold up to 55,000 liters. However, these trucks have some technological constraints, typically limited to a maximum depth of 2 to 3 meters and requiring parking within 25 meters of the pump, depending on its power.

In unplanned and informal areas, large vacuum trucks may face challenges maneuvering through narrow streets and poorly constructed roads. Nonetheless, vacuum trucks play a crucial role in emptying water-based technologies such as flush latrines, septic tanks, and aqua privies, ensuring the proper management and disposal of faecal waste.

To improve faecal sludge management and protect the health and safety of manual emptiers, there is a need for better regulations, training, and appropriate protective equipment. Moreover, efforts should be made to increase the adoption of vacuum trucks in areas where they can effectively operate, especially in urban settings with water-based sanitation systems. By promoting safe and efficient faecal sludge management practices, we can enhance public health and environmental conditions in these cities and regions.

In India's larger cities, centralized sewage systems with extensive underground pipes, pumping stations, and treatment facilities are prevalent. However, these systems are expensive to build and maintain, requiring constant energy, a large amount of water, professional operators, and extensive electro-mechanical maintenance. As a result, around 7,000 smaller towns in India lack centralized sewage systems and are unlikely to establish them anytime soon. According to the Central Pollution Control Board (CPCB), out of the 522 municipal sewage treatment plants (STPs) in India, only 64 percent are currently active, with 79 non-operational, 145 under construction, and 70 planned. This means that only 37 percent of the 62,000 million litres per day (MLD) of sewage produced in urban India can be handled using the existing infrastructure. The majority of urban households in India, nearly 45 percent, rely on on-site pit latrines, septic tanks, and similar systems, and this number is increasing. While initiatives like the Swachh Bharat Mission (SBM) aim to provide toilets to many urban households, in areas where sewerage systems are not available, it is expected that many families will opt for on-site latrines and septic tanks. While on-site sanitation (OSS) systems can contain human waste to a substantial extent, the treatment of the waste remains a significant challenge, leading to health problems and major contamination of water and soil resources in many Indian towns.

Despite the significant role of septic tanks and pit latrines in on-site sanitation, there has been inadequate focus on their installation, maintenance, and safe disposal. Homeowners are mostly responsible for their construction, leading to variations and local practices that may not adhere to standardized building criteria. For instance, soak-away or drain fields may not be provided in many installations. Due to the lack of resources and capacity of Urban Local Bodies (ULBs), many homeowners do not report cleaning their septic tanks and pits for extended periods. While some ULBs have desludging equipment or private companies providing cleaning services, the

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supply is far from sufficient. As a result, people may resort to flushing their waste down the toilet, posing serious health and environmental hazards. Sanitary personnel often clean OSS toilets and septage disposal facilities in dangerous settings without proper safety wear and equipment.

The lack of documentation and information on OSS toilets and septage disposal facilities in most Indian towns contributes to the challenge of faecal sludge management (FSM). The treatment and disposal of faecal sludge from solids and non-faecal materials collected from on-site sanitation systems are crucial components of urban sanitation. Faecal sludge is the term used to describe the bulk of waste from on-site sanitation systems, such as latrines, non-sewered public toilets, septic tanks, and aqua privies. Septage, on the other hand, refers specifically to the faecal sludge that accumulates in septic tanks.

Addressing the issue of faecal sludge management requires greater convergence between urban sanitation programmes like AMRUT and SBM, with a focus on efficient sludge management systems. The Policy on Faecal Sludge and Septage Management (FSSM) would apply only to on-site sanitation facilities and the communities they serve, excluding network or traditional sewerage systems. The policy aims to create synergies between FSSM and sewage systems or municipal solid waste (MSW) management. It applies to all central government departments and agencies, as well as local governments and public-sector corporations, involved in urban and peri-urban sanitation. Furthermore, the policy covers all urban local bodies, outgrowths in urban agglomerations, and census towns in India.

According to the 2011 Census of India, only 32.7 percent of urban dwellings are connected to a piped sewage system, while 38.2 percent use septic tanks, and around 7 percent use pit latrines, indicating the widespread use of on-site systems. The prevalence of septic tanks and pit latrines has resulted in groundwater and surface water contamination in many cities. Proper collection, treatment, and disposal or reuse of faecal sludge present a significant challenge in urban sanitation. Indian cities and towns lack the necessary infrastructure and services to effectively collect, transport, process, and dispose of human waste.

Currently, only 72 million septic tanks are estimated to be in use in India, assuming each dwelling has a single tank. Out of the various Urban Local Body (ULB) categories, approximately 78 percent of Nagar Nigams (municipal corporations), 98 percent of Nagar Panchayats (municipal councils), and 90 percent of Nagar Palika Parishads (municipal committees) have on-site sanitation systems. However, the septage generation in ULBs is substantial, amounting to millions of litres per day. Presently, there are 99 STPs installed in 29 out of 652 ULBs, with a total capacity of 2646 MLD. However, challenges remain, such as the reported reception of sewage at STPs (71 percent) and areas not served by the sewerage network in sewer cities. To address these challenges, AMRUT and Namami Gange, state-sponsored programs, have increased treatment capacity for 1948 MLD across 18 ULBs. Once completed, the state's urban areas will have a total treatment capacity of 4594 MLD.

The State Policy on Septage Management for 2019 advises ULBs to plan for the SM system, which includes a mandatory 5-year septic tank cleaning cycle. The state-level targets include handling 72 lakh septic tanks/OSS throughout the state, treating 1750 to 3000 MLD of septage annually, performing 14 to 24 lakh emptying annually, and running 600 vacuum trucks daily.

To achieve the goals of improved sanitation and efficient faecal sludge management,

Table 2: Septage Generation and Possibilities for Co-treatment

Particulars	Nagar Nigam	Nagar Palika Parishad	Nagar Panchayat	Total
No. of ULBs	17	197	438	652
Septage Generation 2018 (KL/Year)	2000970	1900917	1107219	5009106
Septage Generation -2018 (KL/day)	5482	5208	3033	13724

No. of ULBs where Treatment capacity exceeds septage addition limits for co-treatment (@1.5%)	14	28	6	48
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Source: U.P. Jal Nigam-2019

In addition to the two Faecal Sludge Treatment Plants (FSTPs) in Jhansi and Unnao, the state government of Uttar Pradesh has authorized and granted contracts for 57 FSTPs/Septage Management Projects. However, as of now, only 17 of these projects are under development. Co-treatment of Faecal Sludge (FSS) in existing Sewage Treatment Plants (STPs) is considered a more cost-effective option for treating FSS produced in regions without a sewage network in cities that are partly covered. The implementation of a citywide sewage network with 100 percent coverage is expensive and challenging, especially in densely populated areas.

To set up a Faecal Sludge Treatment Plant (FSTP), several steps must be completed, including land identification, obtaining approvals, and going through the bidding procedure. The process of establishing a new FSTP can be time-consuming and resource-intensive. However, co-treatment of FSS in existing STPs offers several advantages. It utilizes the STP's existing facilities, site infrastructure, and personnel, eliminating the need for a new operator and reducing additional costs associated with site infrastructure for co-treatment.

In many Indian cities, FSS is directly injected into the STP or the nearest pumping station or manhole of the sewage network without any pre-treatment. However, co-treatment of FSS in a STP without proper pre-treatment can have negative consequences. FSS contains higher solids, organic matter, and nutrient loads than regular sewage, leading to issues such as solids deposition, blockage, and corrosion of sewerage infrastructure, including the STP.

To address these concerns and ensure the efficient co-treatment of FSS, the Center for Science and Environment (CSE) in New Delhi has proposed that wastewater samples from the influent and effluent of each module of the STP be collected. This monitoring process allows for the assessment of how each module is operating and whether the FSS co-treatment is causing any adverse effects.

In the context of co-treatment, it is essential to ensure that the FSS undergoes proper pre-treatment before being mixed with the sewage. Pre-treatment steps can include solid-liquid separation, which removes larger particles and helps prevent blockages in the sewage network and the STP. Additionally, measures to reduce the organic and nutrient loads in the FSS should be implemented to avoid overloading the STP.

Co-treatment of FSS in existing STPs can lead to improved efficiency and cost-effectiveness of the overall faecal sludge management system. It can help address the challenges posed by on-site sanitation systems and the lack of a centralized sewage network in certain areas. However, careful planning, monitoring, and pre-treatment measures are crucial to ensure that co-treatment does not result in negative impacts on the existing sewage infrastructure and the STP.

In conclusion, the state government of Uttar Pradesh has undertaken several FSTPs/Septage Management Projects to improve faecal sludge management in the state. Co-treatment of FSS in existing STPs is being explored as a cost-effective option to handle faecal sludge in regions without a sewage network. However, proper pre-treatment and monitoring are essential to ensure that co-treatment is efficient and does not lead to adverse effects on the sewage infrastructure. Collaborative efforts by government agencies, local authorities, and stakeholders are crucial to implement effective and sustainable faecal sludge management practices in urban areas.

4. CONCLUSION

Improving sanitation in urban areas, especially for the urban poor, remains a significant challenge in many developing countries, including India. Lack of access to basic utilities such as sanitation and clean drinking water continues to be a pressing issue even after more than six decades of independence. Efforts to address this problem have not been adequately targeted, leading to appalling sanitation conditions in most towns and cities, with a high

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percentage of slum inhabitants resorting to open defecation due to the lack of reliable sewage networks and proper sanitation facilities.

One of the key issues in improving urban sanitation is the lack of proper maintenance and management of public toilets. Sanitation workers, who are responsible for cleaning and excavating toilets, often lack the necessary tools, equipment, and supplies, making it difficult for them to maintain community toilets properly. Moreover, the implementation of Municipal Solid Waste Management Rules 2016 has been poor, further exacerbating the sanitation situation.

To address these challenges and achieve universal access to sanitation services for the urban poor, it is crucial to build and enhance the delivery of fundamental urban services, such as drinking water and sanitation, in low-income areas. Access to adequate and affordable sanitation services is essential for the well-being of the urban poor and can help prevent open defecation, improve hygiene practices, and reduce the spread of diseases.

Community engagement and awareness on urban poor sanitation services play a vital role in driving demand for proper sanitation facilities. Many people in slum areas have historically been accustomed to open defecation and may not show interest in using toilets unless they understand the benefits of improved sanitation and hygiene. Involving stakeholders such as the community, civil society groups, non-governmental organizations, urban local governments, and women's associations is essential for creating awareness and promoting behavior change towards better sanitation practices.

Women, in particular, are vulnerable in slum areas due to the lack of safe and sanitary latrines. The absence of public urinals and poorly maintained public restrooms add to the challenges faced by women in accessing clean and safe sanitation facilities. Women and girls may face harassment and sexual assault while trying to defecate openly, especially at night when they feel safer doing so.

To address these issues, a comprehensive approach is needed, focusing on building and maintaining proper public toilets, raising awareness, providing adequate resources and training for sanitation workers, and involving the community in promoting better sanitation practices. Sanitation programs must be designed with a gender-sensitive approach, taking into account the specific needs and vulnerabilities of women in urban poor areas.

In addition to building proper sanitation infrastructure, efforts should be made to improve wastewater treatment facilities and develop reliable sewage networks in urban areas. A multi-pronged approach, including investment in infrastructure, capacity building, policy support, and community involvement, is necessary to address the complex challenges of urban sanitation effectively.

Government agencies, urban planners, and policymakers must work together to design and implement sustainable sanitation solutions that cater to the needs of the urban poor. This includes integrating sanitation with other essential services, such as water supply and waste management, to create a more comprehensive and effective approach.

In conclusion, improving urban sanitation for the urban poor is a critical task that requires concerted efforts from all stakeholders. Access to proper sanitation facilities is essential for the health and well-being of the urban poor, and it can significantly contribute to improving overall living conditions in urban areas. By investing in infrastructure, raising awareness, and involving the community, it is possible to achieve universal access to sanitation services and reduce the prevalence of open defecation in urban areas. A comprehensive and holistic approach that addresses the unique challenges faced by women and vulnerable groups is necessary to achieve lasting improvements in urban sanitation.

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