



THE ROLE OF SANITATION FACILITIES IN TRANSFORMING URBAN INDIA: CASE STUDY OF MEERUT CITY



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ABSTRACT

The future of mankind lies in cities. The Current situation and trends of urbanization have become more miserable and challenging across the globe including developing country like India. With rapid and unplanned urbanization, cities in India are characterized by dense population, traffic jams, high pollution, urban sprawl and slums, high cost of livings, corruption, irresponsible governance, poor health care and educational facilities, frequent power cuts, water shortages and inadequate sanitation facilities. Adequate sanitation is the core feature of any sustainable city. A city would be sustainable only when we take significant sanitation facilities into consideration such as access to community toilets, safe management of human excreta and solid waste, and waste water treatment. The paper is an attempt to assess the current status of sanitation facilities in Indian cities with special reference to Meerut city and to analyze the role of improved sanitation facilities in city transformation. The study is based on both primary and secondary data. Multi-criteria decision analysis and SWOT analysis is used as a method to assess current status of sanitation facilities in Meerut city and their potential contribution towards making it sustainable. The study will provide future strategies to make Meerut city with smart sanitation facilities.

KEYWORDS :Urban Transformation, Sanitation Facilities, Swachh Bharat Mission, SWOT analysis, Meerut city.

1. INTRODUCTION

The future of mankind lies in cities. It is evident that remarkable shift from primarily rural to primarily urban population have taken place in past two centuries. Earlier in 18th century, not more than 5 percent of the global population inhabited the cities (Population Reference Bureau, 2015). Today, cities are lived by more people. As per UN World Urbanization prospect, in 2014 global urban population was 54 percent and projected to rise to 70 percent by 2050. Also, in the past, new cities have come into existence and building of hundreds more are expected to continue in coming years. These upward trends are likely to be more significant particularly in developing countries, where it is projected that 90 percent of additional 2.5 billion urban dwellers will be accommodated by much of the growth of secondary and tertiary cities by 2050.

The accelerating trend of urbanization is straining city resources including space, physical and social infrastructure. The current situation and trends of urbanization have become more miserable and challenging across the world including developing country like India. With rapid and unplanned urbanization, cities in India are characterized by dense population, traffic jams, high pollution, urban sprawl and slums, high cost of livings, corruption, irresponsible governance, poor health care and educational facilities, frequent power cuts, water shortages and inadequate sanitation facilities. Most of the cities have already stretched beyond its carrying capacity limit and have become unsustainable. Continued increase in flow of migrants to urban areas is only worsening the problem (Owen, 2009). About 31 per cent of India's population lives in urban areas and contributes 63 per cent of India's Gross Domestic Product (Census of India, 2011). With increasing urbanization, 40 per cent of India's population is projected to dwell urban areas and contribute 75 per cent of India's GDP by 2030 (Ministry of Urban Development, 2015).

Sanitation and solid waste management are critical to the sustainable development of Indian cities. Sanitation related problems have shown to be multiple, the most pressing issue for day to day life being the blocking of drainage channels in the cluster with subsequent overflow of waste water in the streets, and sometimes in the houses. While this problem directly interrupts inhabitant's daily schedules and causes disgust, other problem such as the presence of rats, mosquitoes, flies and worm too have a huge impact on people's health, and indirectly, working capacity and income (Zimmer, 2013). A city would be sustainable only when we take significant sanitation facilities into consideration such as access to community toilets, safe management of human excreta and solid waste, and wastewater treatment. The number of toilets per inhabitant is generally inadequate, with no guarantee that they are hygienic to use. Because of the lack of sanitation at a household level (or, in many cases, at any level), many people use plastic bags, streets or other unhygienic places for defecation that do not provide adequate privacy, dignity or hygiene. All sanitation facilities also require an adequate supply of safe water and soap for hand washing (COHRE, AAAS, SDC and UN-HABITAT, 2007). In many parts of the world including India, the absence of adequate sanitation has led to the widespread pollution of water sources that communities rely on for survival. Millions of children are left malnourished, physically stunted and mentally disabled by excreta-related diseases and intestinal worm infections (WHO and UNICEF, 2000).

The Government of India has taken a bold step to launch 'Swachh Bharat Mission' on 2nd October 2014 for improving the level of sanitation and cleanliness in the country. Meerut city has been considered as slow movers in cleanliness mission (Ministry of Urban Development, 2015). The present paper is an attempt to assess the current status of sanitation facilities in Meerut city.

2. SWACHH BHARAT MISSION

Access to sanitation refers to access to excreta disposal facilities which can effectively prevent human, animal and insect contact with excreta, and which ensure privacy and protect dignity. Such facilities may include a toilet connected to a sewer or septic tank system, a pour-flush latrine, a simple or ventilated improved pit latrine or similar facility. The roots of the bad sanitation situation in India can be found in the colonial area which was characterized by inequitable access to sanitation and the failure or disinterest to manage urban growth with the subsequent spread of illegal settlements and slums. But also independent India has not been able to improve the situation, especially for the poor who often are not able to put enough pressure on governments and demand better living conditions. There are huge public funds in India and several programmes to improve the basic infrastructure but policies are often driven by private interests with the result that mainly the upper and middle class profit from sanitation services provided by the state (Christ, 2011).

Objectives of the mission include elimination of open defecation, eradication of manual scavenging, modern and scientific municipal solid waste management, to effect behavioral change regarding healthy sanitation practices. Swachh Bharat Mission is aimed at ensuring door-to-door garbage collection and proper disposal of municipal solid waste in all urban areas by 2019. The mission seeks the active participation of various stakeholders including the private sector and the citizens for Swachh Bharat to become a mass movement.

3. STUDY AREA

Meerut city, the head quarter of Meerut District, situated 70 km from Delhi, has been a place of historical, cultural and administrative importance since the time immemorial (Figure 1). The city plays a significant role in different areas of economy in the modern times that includes trade and commerce, tourism and pilgrimage, transportation and distribution. The city is the gateway to Hastinapur, one of the earliest Indian cities like Ayodhya, Kashi which was the capital of the Kauravas and Pandavas during Mahabharata times. Meerut is famously associated with igniting the spark of first Freedom struggle in 1857 against East India Company, which transformed into a great revolution later. Meerut cantonment is the place where the movement started. The entire region around Meerut is dotted with places of religious, tourist and historical importance, Buddhist and Jain shrines.

The city lies south of the cantonment, and owes its modern importance to its selection by the British government as the site of a great military station. The cantonment, established in 1806, was the headquarters of the 7th division of the northern army. The administration of the cantonment area and running of its urban and other functions is still outside the jurisdiction of Meerut Nagar Nigam.

Meerut district is the part of upper Ganga-Yamuna doaba, which lies between 28° 47' and 29° 18' north latitudes and between 77° 7' and 78° 7' east longitudes. On the north it is bounded by Muzaffarnagar district; in the south by Bulandshahar district while Ghaziabad and Baghpat districts form the southern and western limits. Ganga River makes its boundary in the east direction a separates it from the districts of Moradabad and Bijnor. Hindon River makes its western Boundary in the west and separates it from the Baghpat district.

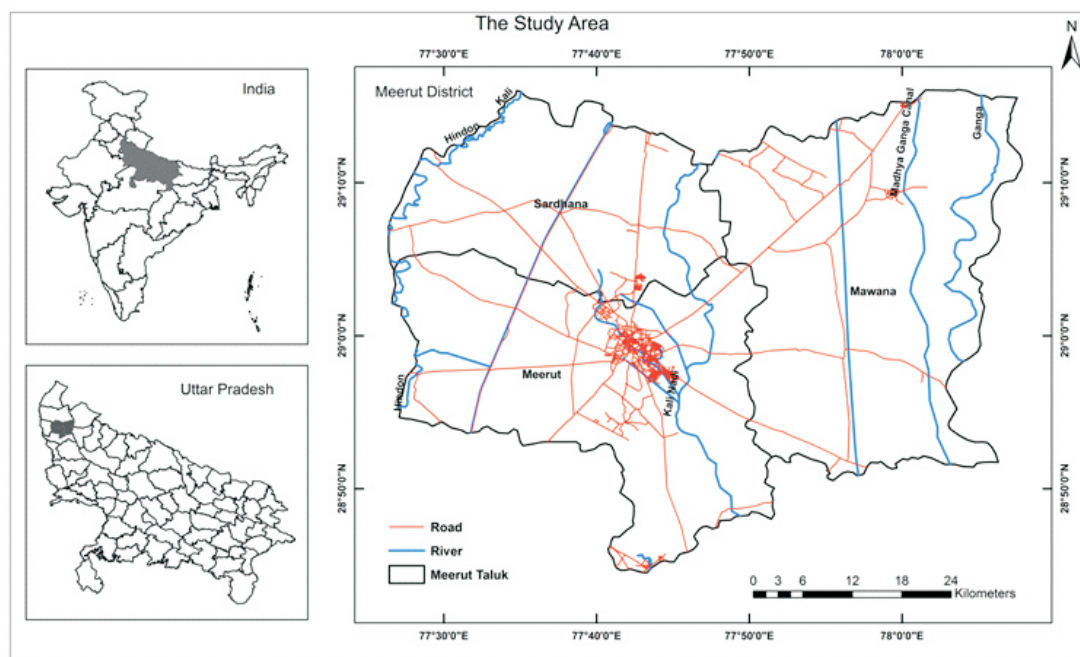


Figure 1: Location of Meerut City

4. DATA BASE AND METHODOLOGY

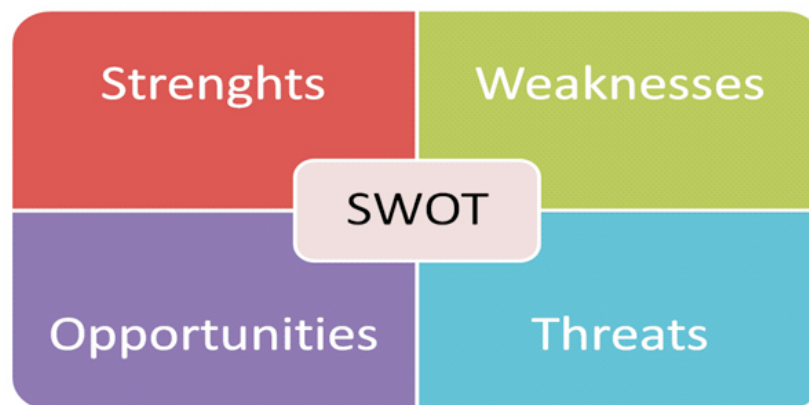
Data for the study has been collected from secondary sources. Secondary data is taken from various Indian government information portals, city-specific government websites, city-specific department websites, research papers available publically, public reports and statistics and surveys done by various analyst organizations. Various central and state government reports such as District Census Handbook 2001, 2011 of Meerut city, Town Directory 2011, Jawaharlal Nehru National Urban Renewal Mission reports of Meerut city etc. JNNURM report has been of great help in carrying out status assessment. City components that are significant in understanding the current situation of sanitation are identified. The data for the components is collected from different departments of UP i.e. Jal Kal Vibhag, Department of Medical Health and Family Welfare, and Development Authority of Meerut city etc. SWOT analysis has been used to assess sanitation facilities in Meerut city.

4.1 SWOT Analysis

SWOT analysis is a precursor to strategic planning and is performed experts who can assess the organization from a critical perspective (Gibis et al. 2001). This could comprise senior leaders, board members, employees, community leaders, and technical experts. Panel members base their assessments on utilization rates, outcome measures, customer satisfaction statistics, organizational performance measures, and financial status. While based on data and facts, the conclusions drawn from SWOT analysis are an expert opinion. SWOT analysis is an examination of an organization's internal strengths and weaknesses, its opportunities for growth and improvement, and the threats the external environment presents to its survival. Originally designed for use in other industries, it is gaining increased use in social science research.

SWOT analysis is a preliminary decision-making tool that sets the stage for this work. Step one of SWOT analysis involves the collection and evaluation of key data. In Step two of SWOT analysis, data on the organization are collected and sorted into four categories: strengths, weaknesses, opportunities,

and threats. Strengths and weaknesses generally stem from factors within the organization, whereas opportunities and threats usually arise from external factors (Figure 2). Step three involves the development of a SWOT matrix for each business alternative under consideration. Step four involves incorporating the SWOT analysis into the decision-making process to determine which business alternative best meets the organization's overall strategic plan.



5 .RESULTS AND DISCUSSION

5.1 Sewerage System

Meerut city unlike other Indian cities does not have a centralised sewer system for collection, transportation, treatment and disposal of domestic and institutional wastewater. However, there are 8 new plants in city with a small network of sewer pipes connected to treatment plants. Since 1956, three slaughter houses are running on 5470 Sq meter land of municipal corporation., 600 furnances , 10 store houses for bones and leather . Daily 8000 animals are sacrificing and 880 tonnes bones are processing . 120 kiloleter blood, 1012 lit polluted water and 120 lakh kilo polluted residues are putting in Nulhas and rivers etc. Meerut has 1215 Nalis and Nulhas .The 122 Nulha is fully filled with silts. These Nulha are Abu nulja, Odian south, Mohanpuri, NAs, Makachin, Hashimpura , Pandav nagar, Subash nagar,makbra Abu,and PAC.

Meerut has 425 km sewer line. The two third city does not have sewer lines and Municipal corporation does not have any sewer treatment plant. Drainage system is not there but on record,104 colonies have the same. The 8 sewage treatment plants which are located at shatabdi nagar, Pandav nagar, Ganga nagar and Pallavpuram . Meerut has 9 sewage pumping stations .In order to promote urban sanitation and recognize excellent performance in this area, the Government of India intends to institute an annual award scheme for cities. The award is based on the premise that improved public health and environmental standards are the two outcomes that cities must seek to ensure quality of life for urban citizens. The proposed awards are not merely an assessment of hardware or expenditure incurred in urban sanitation but how these lead to achievements of milestones of 100 % safe disposal of wastes from the city on a sustainable basis. The sewerage is used for irrigation without any treatment. A very limited area sewer has been laid by old sewer system. The entire existing sewer system needs cleaning because different sections of main and branch lines in the city are partially or fully choked. There is a urgent need to segregate the storm water drainage system from the sewage system.

5.2 Solid Waste Management

Solid waste management is probably the most critical area in Meerut. The MNN is responsible for collection, transportation and disposal of all solid waste generated in the city. Hardly 78 per cent of the area under Municipal Corporation is covered under daily collection and the rest under biweekly or fortnightly collection system. Discloses one important fact that the total waste generated in the city is around 600 tons/day whereas the total capacity of existing bins is only less than 450 tons. The rest of the solid waste lies directly on the street or thrown in the nalas. The garbage collection from the bins is extremely irregular. Other aspects of a normal solid waste management process namely waste storage and segregation, primary and secondary collection, waste processing and disposal, and reuse & recycling, are by and large missing in Meerut, with rampant complaints from different stake holders about plastic and bio medical waste management. Controlling the generation of solid waste, segregation, transport action and disposal of municipal solid wastes arising from households and commercial establishments are some interlinked vital elements of solid waste management to be taken up in Meerut City. With increase in city's population over the years generation of municipal waste has increased manifolds.

The City has a waste collection capacity of about 75% and does not have adequate transportation facilities. Lots of littering usually takes place while waste is stored in collection centers and also during its transport. At present most of the municipal solid waste in the city is disposed off unscientifically. Unscientific disposal practices leave waste unattended at disposal sites, which attract birds, rodents; fleas etc. to the waste and create unhygienic conditions (odour, release of win borne pathogens etc.) Plastic content of municipal waste is picked up by rag pickers. Since the functioning of various group of rag pickers are not formalized, not all the recyclables, particularly plastic bags get picked up and are found littered everywhere, reaching the drains and water bodies ultimately choking them.

The wastes generated by hospitals, Nursing Homes, health centers, laboratories, animal houses, veterinary institutions constitute an important component of waste management. Municipal Corporation in Meerut is not maintaining a separate system for collection, segregation, transportation, storage and disposal of biomedical wastes. These waste both hazardous as well as non hazardous generated by hospitals and nursing homes are being managed by a common collection system which may cause a serious environmental and health hazards. All the wastes are dumped in the landfills and burnt in open releasing smoke and foul smell various industries in Meerut. Small and tiny scale categories are dumping their effluent into drains. Permeation of effluent and toxic substances from drains and land fills into water table is leading to contamination of ground water which is also being used by a large local population as water supply without proper treatment.

As of now, Meerut city produces 600 metric tones of solid waste as against the Municipal Corporation's handling capacity of 470 metric tones. Municipal waste management could be carried out by adopting the following processes:

1. Waste reduction
2. Effective management of waste disposal system

Sustainable development can only be achieved if society in general and industries in particular, produce more with less, produce more goods and services by less use of world's resources.

6. CONCLUSION

Intensive assessment has identified many challenges that city officials are facing today in terms of sanitation. The city has been slow mover in the area of improved sanitation because of poor mechanism and strategies related to pollution control, water recycling, and solid waste management. Cities like Meerut needs complete overhauling of infrastructure related to sanitation and solid waste management. Overall, Meerut is lacking in many parameters of sanitation. In terms of technology intervention, Meerut has to go long way. There are substantial gaps in proper functioning and management that need urgent attention of city officials. Government of India has launched a scheme to fulfill the gap for cleanliness, which requires proper implementation. Finally, transformation of Meerut into city requires great cooperation and coordination among various stakeholders like city administrators, private sector, NGOs, academicians and community along with public-private partnership. The accountability of associated responsible people should be fixed in order to achieve sustainable development goal with inclusivity in Meerut city. Some of the measures that can be adopted to improve sanitation facilities within the city are:-

- Effective implementation and regular monitoring of schemes and programs launched by Central and State Government for improved sanitation facilities in the city.
- To bring about an improvement in the general quality of life in the rural areas, dwellers of slum and squatter settlements, population of such settlements who are shifted in new colonies or in urban areas, special attention has to be given in spreading awareness and consciousness for cleanliness, health and hygiene under certain drives for ecologically safe and sustainable sanitation.
- To change the casual attitude of defecating and throwing waste at free will and to change the traditional rigid mindset of community, an intensive behavior change campaign and an intensive inter-personal communication supported by media campaign is the need of an hour both in rural and urban areas.
- Fringe areas of the city should be incorporated in municipal boundaries so that the basic sanitation facilities may be diffused there.
- Decentralization of sanitation facilities from the urban areas to the areas where these facilities are least availed.

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