

Draft - Hygiene Assessment Report 2015-16

Advisory Transmittal Letter

31 January, 2017

To,
Mr. Nitish Kapoor
Regional Director (South Asia)
RB
Plot No. 48, Institutional Area
Sector-32, Gurgaon, 122001, Haryana, INDIA

Submission of Hygiene Assessment Report towards the 'Hygiene Index' for RB

Reference: Engagement Agreement between RB and Ernst & Young LLP (EY) dated 20 May 2016

Dear Sir,

We have prepared the Hygiene Assessment Report, consolidating the findings for 10 cities. Our work was performed in accordance with the above captioned agreement dated 20 May 2016, and our procedures were limited to those described in that agreement and instructions thereafter.

As part of the report, EY has assessed the performance of 10 cities across the identified sectors of water, sewerage, solid waste management, toilets, health and behavior change communication (BCC) activities. These sectors are collectively referred to as hygiene sectors. Subsequently, different key performance indicators (KPIs) were identified to quantify hygiene and exhaustively measure the status across cities. This report for 10 cities includes HI score for each city, best practices adopted by cities and investment heatmap depicting investments made by ULBs as well as private sector.

The work product '*Hygiene Assessment Report*' resulting from our work is provided in subsequent sections. Our work has been limited in scope and time and we stress that more detailed procedures may reveal issues that this report has not. The procedures summarized in our *Hygiene Assessment Report* do not constitute an audit, a review or other form of assurance in accordance with any generally accepted auditing, review or other assurance standards, and accordingly we do not express any form of assurance.

This *Hygiene Assessment Report* is intended solely for the information and use of the management of RB and is not intended to be and should not be used by anyone other than the specified parties in the agreement.

We appreciate the cooperation and assistance provided to us during the course of our work. If you have any questions, please call Mr. Vineet Chhatwal at +91 124 671 4950.

Yours sincerely,



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Disclaimer

This Hygiene Assessment Report 2015-16 (hereinafter referred to as “the Report”) has been prepared by Ernst & Young LLP (hereinafter referred to as “EY”) for United States Agency for International Development (hereinafter referred to as “USAID” or “the Client”) and RB (hereinafter referred to as “the Client”).

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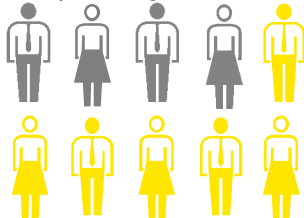
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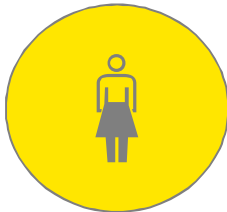
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1. Background

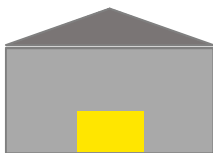
Rapid economic reforms have unleashed investment and enormous opportunities for growth in India. While urbanisation has accelerated with focus on human development, India is the world's largest open defecator. As per the Swachhta Status Report of 2016, 43.02% of the Indian population does not have access to toilets. In 2013, India ranked second in terms of people not having access to improved drinking water sources, with 99 million affected people. 70% of the sewage generated in cities is untreated and drained into water systems. In terms of total cost, India loses 5.2% equivalent of GDP because of poor sanitation conditions. There is therefore a pressing need to address the water, sanitation and hygiene problems for a rapid socio-economic growth.



46% defecate openly in India



13% children (below the age of 5) in India die due to diarrhea



55% households in rural India do not have toilets

Lack of safe water, sanitation

and basic hygiene is the major reason for diarrheal diseases. In India, diarrhoea is the third leading cause of childhood mortality and is responsible for 13% of all deaths/year in children under 5 years of age. Globally, India ranks first in terms of mortality (in children below the age of 5) on account of pneumonia and diarrhoea, with 296,279 reported deaths¹. Improved sanitation facilities are estimated to result in an average reduction in cases of diarrhoea by approximately 28%².

To tackle these issues, it is important to deploy a robust strategy for a sustainable change. As the first step, understanding the current situation comprehensively is crucial. Hygiene Index (HI), as an evaluation tool, is an important step in that direction. HI happens to be an integral component of RB's Dettol-Banega Swachh India program, which intends to complement the Government of India's efforts towards the nationwide Swachh Bharat Mission. The United States Agency for International Development (USAID) is the co-funding knowledge partner on the project and intends to improve the lives of the citizens in India.

As a part of the HI program, each city will be evaluated based on the hygiene assessment and benchmarked with the best practices adopted across the country. Investment heat maps will be created to access the investment impact. Likewise, change requirements in investment will be identified. Finally, cities will be annually awarded for sector-wise best performance and training workshops will be conducted.

“The last three years have seen a positive trend in the areas of sanitation, water security and safety, sewerage and solid waste management in the country. National missions and programmes such as the Swachh Bharat Abhiyan, AMRUT etc. have possibly brought these issues to the center stage of action. However, areas where more input and innovative steps are needed are improving the health as well as nutritional status as well as hygiene linked awareness of communities. These are the ultimate outputs expected, to ensure a sustainable development. Hence, the cities/local bodies should plan and implement integrated interventions through a collective approach involving the community, the Govt., social organisations as well as the private sector.

Dr. Indira Chakravarty, Padmashri Awardee

¹ International Vaccine Access Center (IVAC) (2016). *Pneumonia and Diarrhea Progress Report: Reaching goals through action and innovation*. John Hopkins Bloomberg school of Public Health. Retrieved from : <http://www.jhsph.edu/research/centers-and-institutes/ivac/resources/IVAC-2016-Pneumonia-Diarrhea-Progress-Report.pdf>

² Tropical Medicine and International Health. 19, No. 8 (2014): 894 - 905. *Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries* (www.ncbi.nlm.nih.gov)

2. Executive Summary

On 26 September 2014, RB (formerly known as Reckitt Benckiser) launched the Dettol-Banega Swachh India program, with a mission to work towards healthy lives and happier homes and complement the Government of India's Swachh Bharat Mission.

The Hygiene Index (HI) is one of the programs under Dettol-Banega Swachh India. It focuses on assessing the current hygiene status across India. EY is the technical partner responsible for the implementation of this project. United States Agency for International Development (USAID) is the co-funding partner of this program. On 19 November 2016, the World Toilet Day, the concept of HI was announced at the Global Citizen Festival in Mumbai, attended by more than 80,000 people.

The HI programme includes not only assessing the hygiene of cities but also conducting capacity-building workshops with city administrators, emphasising on existing gaps and subsequent steps to be taken in the water, sanitation and hygiene (WASH) sectors. It also includes an annual award programme to felicitate the best performing cities.

To achieve these target, the process started with the creation of an evaluation tool to measure the hygiene situation in a city. After multiple ideation discussions between RB, USAID and the technical committee³ comprising of subject matter experts, six sectors were identified that have an impact on the hygienic condition of a city: water, sewerage, solid waste management, toilets, health and behaviour change communication. These sectors are collectively referred to as hygiene sectors. Subsequently, different key performance indicators (KPIs) were identified to quantify hygiene and exhaustively measure the status across cities.

The programme is planned to be rolled out in phases. While phase one of the programme targets 10 cities spread across India, a total of 25 cities will be covered by the end of the program. This report presents the study of the following 10 cities: Ahmedabad, Allahabad, Bhopal, Gandhinagar, Nagpur, New Delhi Municipal Corporation (NDMC), Pune, Raipur, Udaipur and Varanasi.



“Hygiene is a holistic concept and needs to be dealt in a comprehensive manner. While cities have been deploying interventions, we need to actively move towards an integrated measures. With the help of national missions and programmes such as the Swachh Bharat Abhiyaan, AMRUT etc., the above issues have already been brought to the centre stage. Henceforth, it is the prerogative of the local bodies to deploy community driven, sustainable and scalable technologies to achieve the overall goals.”
- Mr. Naresh Kumar, NDMC Chairman

The HI tool was taken to the respective municipal corporations of these 10 cities. Through consultation discussions with the commissioners and urban local body (ULB) officials, data was collected for each KPI defined under the HI program. Some information was also collected from the census results and other reliable published resources. In order to understand the focus on the hygiene sectors, the annual budget statement of each city was reviewed. Private investment in these cities was identified through various CSR initiatives by companies in the WASH sector. Subsequently, analysis was performed to identify the performance of each city and to calculate the resultant HI score.⁴

³

Technical committee guiding on the HI program comprises of Paul Seong, USAID; Ajay Khera, Ministry of Health & Family Welfare; Vineet Chhatwal, EY; Narendra Saini, Global Hygiene Council; T. Sundararaman, TISS; Tinny, Aga Khan Foundation; Shagufta Khan, NDTV; Ravi Bhatnagar, RB; Vipin Yadav, Dure Technologies; JVG Krishnamurthy, FICCI; Indira Chakravarty, Public Health Specialist; Neeraj Jain, Path

⁴

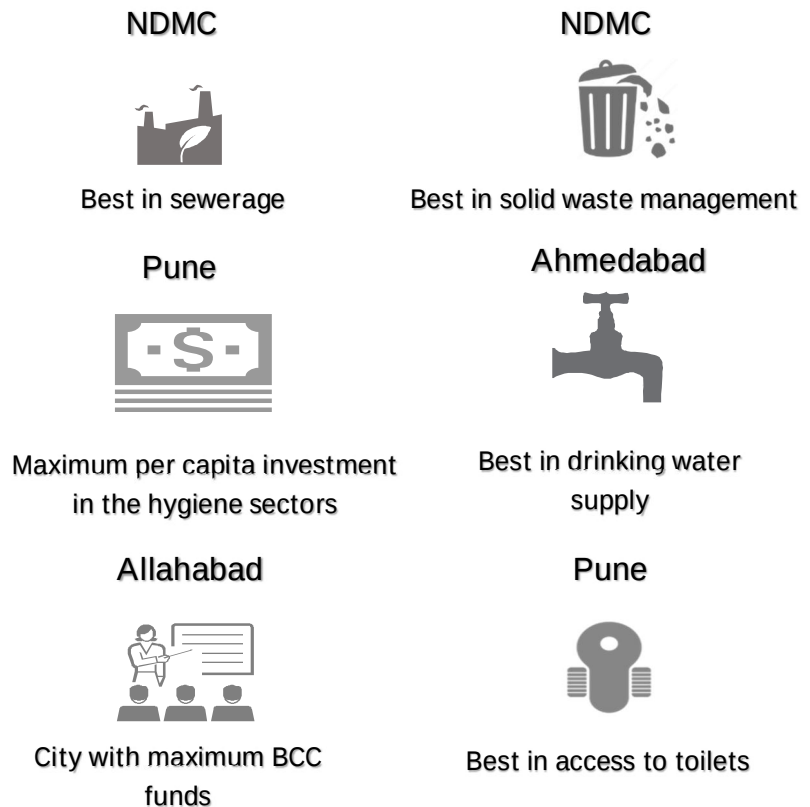
The results of the analysis are subject to the authenticity of the data provided by ULB and the data available in the budget sheets and the respective municipal corporation's website.

Based on the performance across the hygiene sectors, the cities have been rated as Savdhaan (cautious), Shuruaat (beginner), Samarpit (dedicated), Sambhav (possible) and Swachh (clean).

Ahmedabad and Nagpur have received the Swachh status, whereas, Raipur has received the Shuruaat status. Bhopal, Gandhinagar, Udaipur, Varanasi and Allahabad have received the Samarpit status.

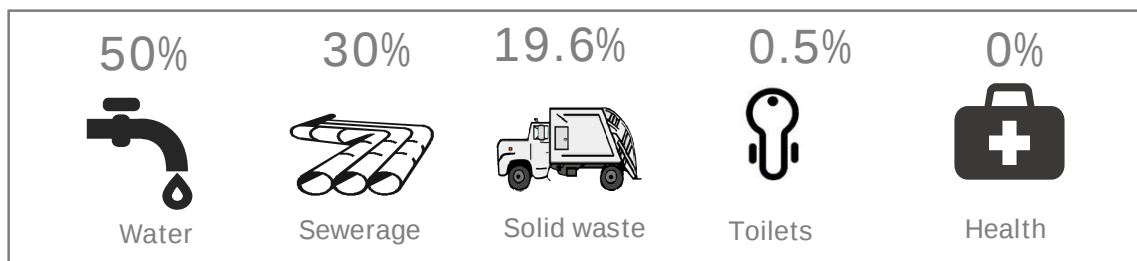
Sectorally, NDMC is the best performer in sewerage and solid waste management, and Pune has the greatest access to toilets. Ahmedabad is the most effective in drinking water supply, and Allahabad dedicates the maximum funds for awareness-creation activities.

Pune also has the maximum per capita investment in the hygiene sectors, and Bhopal has allocated the maximum proportion of its annual funds for the hygiene sectors. It has been noted that most cities tend to spend most on infrastructure creation and operation and maintenance activities.



City Score						
		Savdhan	Shuruaat	Samarpit	Sambhav	Swachh
Investment/Pers on	High		Raipur		Pune Gandhinagar	
	Medium			Bhopal Varanasi	NDMC Nagpur	
	Low			Allahabad Udaipur	Ahmedabad	

Based on their performance and investments in the hygiene sectors, Pune and Gandhinagar can be seen as high-performing cities with both investment and performance being high. However, for Ahmedabad, the current performance is high even though investment is low. Though Raipur has a low score, it has high investments which are likely to improve its performance in the near future.



Of the total investment in the hygiene sectors by the cities included in the HI program, water has received the highest investment (50%), while health has received the minimum investment (~0%).

BCC is an integral component of creating a pull factor in making the Swachh Bharat Mission a citizen-driven movement. It is the need of the hour to focus on awareness creation towards the importance of hygiene.

Based on the average for 10 cities, the spent on BCC activities is around 2% and needs more attention.

3. HI Score Calculation

For the hygiene assessment of any city, the HI tool gauges the performance across 6 sectors: water, sewerage, solid waste, toilet, health and behaviour communication change (BCC). For each of these sectors, key performance indicators (KPIs) have been defined to quantify and measure the performance of a city. Each KPI has been assigned a fixed weightage depending upon its overall impact on the hygiene situation of the city⁵.

Table 1: Identified KPIs

S. No.	Sector	Indicators for HI	Weightage
1.	Drinking water	Coverage of direct water supply connection: This indicator reflects the percentage of households in the defined jurisdiction of the municipal corporation that receive water in their house through the direct pipeline connection laid down by the municipal corporation.	5
2.		Extent of treated water supplied by municipal body: This indicator reflects the percentage of the total distributed water that is treated in water treatment plants by the municipal corporation.	5
3.		Quality of water supplied: This indicator gauges the percentage of samples of water treated from the water treatment plants that fulfil ULB's drinking water norms. The indicator does not consider the statistical sufficiency of the samples.	5
4.	Sewerage	Coverage of sewerage system: This indicator shows the percentage of households in the defined jurisdiction of the municipal corporation connected to the sewerage network.	7.5
5.		Adequacy of capacity of sewerage treatment: The indicator reflects the percentage of generated sewerage that can be treated by sewage treatment plants (STPs).	7.5
6.		Quality of sewage treated: This indicator defines the percentage of samples of sewage treated in STPs that adhere to ULB's sewage treatment norms. The indicator does not consider the statistical sufficiency of the samples	2.5
7.		Decentralised sewerage treatment: The indicator qualitatively assesses ULB's awareness on septage management in terms of Faecal Sludge Management (FSM) guidelines, FSM value chain and funds allotted.	5
8.	Solid waste	Household coverage of solid waste : This indicator reflects the percentage of households in the defined jurisdiction of the municipal corporation that are covered by door-to-door solid waste collectors.	5
9.		Efficiency in collection of solid waste: This indicator reflects the percentage of waste generated that is collected by the municipal corporation.	2.5
10.		Extent of scientific disposal of municipal solid waste (MSW): This indicator reflects the percentage of waste disposed in a landfill site that is compliant to MSW rules, not in an open dump.	2.5

⁵ The KPIs and their weights have been decided by the Technical committee of the HI program comprising of Paul Seong, USAID; Ajay Khara, Ministry of Health & Family Welfare; Vineet Chhatwal, EY; Narendra Saini, Global Hygiene Council; T. Sundararaman, TISS; Tinny, Aga Khan Foundation; Shagufta Khan, NDTV; Ravi Bhatnagar, RB; Vipin Yadav, Dure Technologies; JVG Krishnamurthy, FICCI; Indira Chakravarty, Public Health Specialist; Neeraj Jain, Path

S. No.	Sector	Indicators for HI	Weightage
11.		Extent of segregation of waste: This indicator reflects the percentage of waste collected that arrives in a segregated manner at the waste treatment/disposal plant.	2.5
12.	Toilet	Access to individual toilet (coverage): This indicator reflects the percentage of households in the defined jurisdiction of the municipal corporation that have access to an individual toilet.	10
13.		Access to public/community toilets (coverage): The indicator reflects the percentage of floating population whose toilet needs can be fulfilled by the public/community toilet seats in the city. It is assumed that one toilet seat is sufficient for 250 people.	10
14.	Health	Incidence of hygiene-related gastro-intestinal (GI) diseases: This indicator reflects the year-on-year change in the number of incidences of GI disorders. The number of GI diseases is limited to the data maintained by the government hospitals.	15
15.	BCC	BCC funds utilisation: The indicator reflects the percentage of the total available funds spent under SBM for behaviour change activities.	15

A scorecard has been devised with a scale of 0–5 for each KPI. A score of 100% is depicted by 5 and 0% by 0. This scoring mechanism has been used for the water, sewerage, solid waste, toilet and BCC sectors. However, for the health sector, a score of 5 signifies a year-on-year reduction in incidences of new diseases by 100% (i.e., no incidences reported), while a score of 0 signifies a 100% increase in the incidences reported. Consequently, if the number of incidences reported in a year has remained unchanged as compared to the previous year, a median score of 2.5 would be awarded. Based on the scale of 0–5, the indicators are named as *Savdhan*, *Shuruaat*, *Samarpit*, *Sambhav* and *Swachh*, respectively.

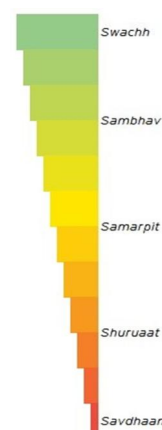


Table 2: HI Scorecard

Score	Scorecard Grades
0.0-1.5	'Savdhan' – Alarming condition and needs immediate action
1.5-2.5	'Shuruaat' – Initial stage and needs to put efforts
2.5-3.5	'Samarpit' – Promising and dedicated towards the actions
3.5-4.5	'Sambhav' – Potential and has scope of improvement
4.5-5.0	'Swachh' – Leading practices in urban sanitation

On the basis of the performance score calculated for each KPI, the overall score is computed using the following formula:

$$HI = \frac{\sum_{i=1}^{15} K_i \times W_i}{\sum_{i=1}^{15} W_i}$$

Where,

K_i is the indicator ('i' is the indicator number from 1 to 15)

W_i is the weightage given to each indicator in consultation with the technical committee comprising of experts from the industry

This method has been used for 10 cities covered under the first phase of the HI program, and the results of city wise performance is shown ahead.



Hygiene Assessment Report: Ahmedabad

Introduction

Ahmedabad city is situated in the state of Gujarat in India and is located on the banks of the Sabarmati river. It is the seventh largest metropolitan area of India. It has emerged as an important economic centre and is one of the prominent industrial hubs in the country. It is the second largest producer of cotton in India. Ahmedabad has been selected as one of the cities to be developed as a Smart City under the Smart cities Mission.⁶

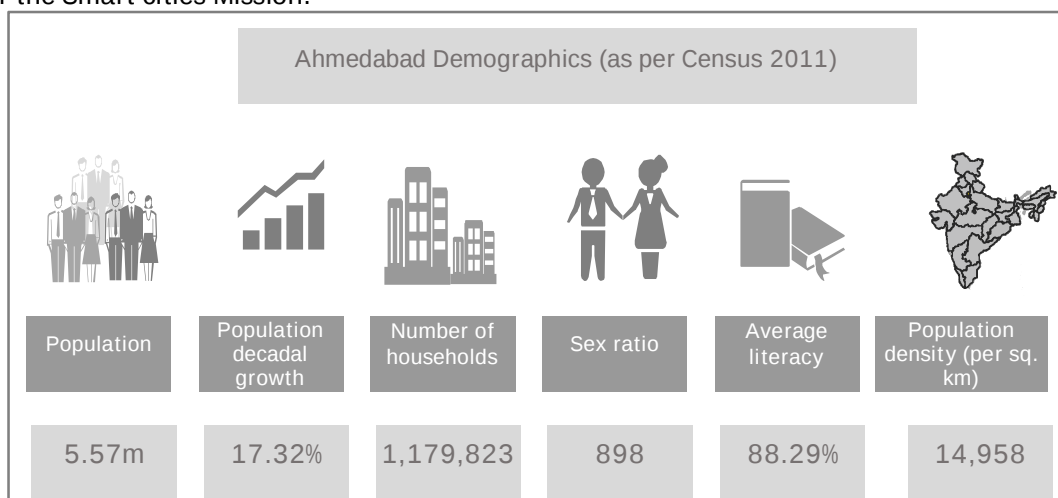
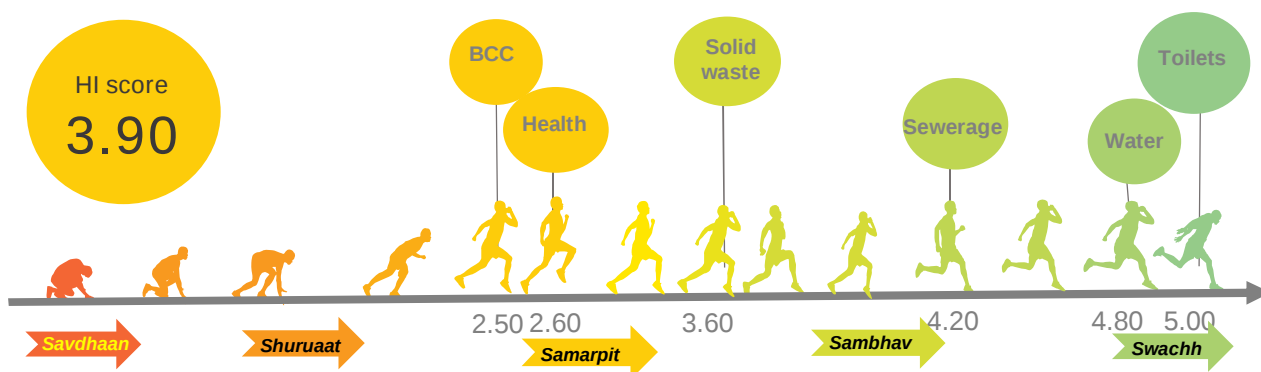


Exhibit A: Demographic Scenario of Ahmedabad

City Highlights: Ahmedabad ranks 14 out of 75 cities in the Swacch Survekshan. The city has a well-established infrastructure in place and was ranked the 'Best City (Power)' during the Best City Award by ABP News in 2015. Some initiatives taken by the state government are Sabarmati riverfront development and urban transportation in the form of BRTS.

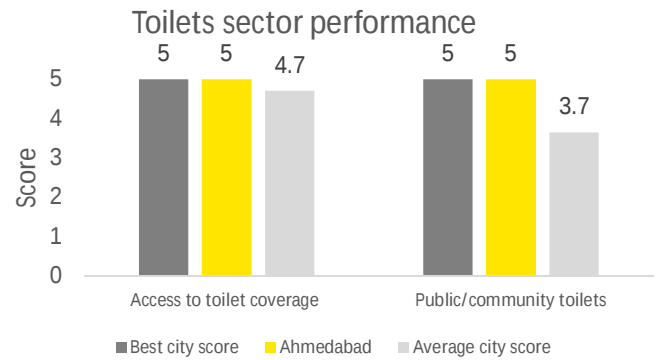
Sector-wise Performance⁷



⁶ Demographics data is as per census 2011, Population growth is taken with respect to 2001.

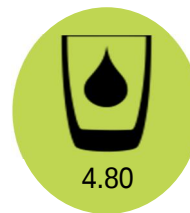
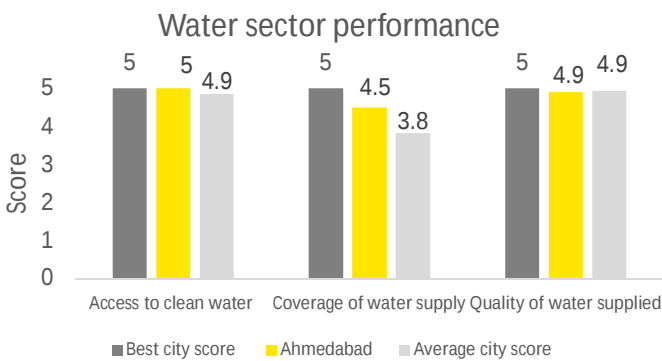
⁷ For year 2015-16

High Performance Sectors⁸



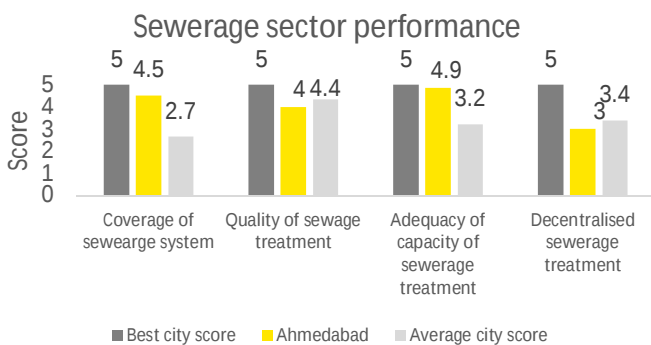
Toilets

Among the six sectors, Ahmedabad has secured the Swachh status in toilets with a perfect score. An estimated 1.4m individual households have access to toilets. The city has nearly 5,000 public/community toilet seats, which can cater to 100% of the floating population.



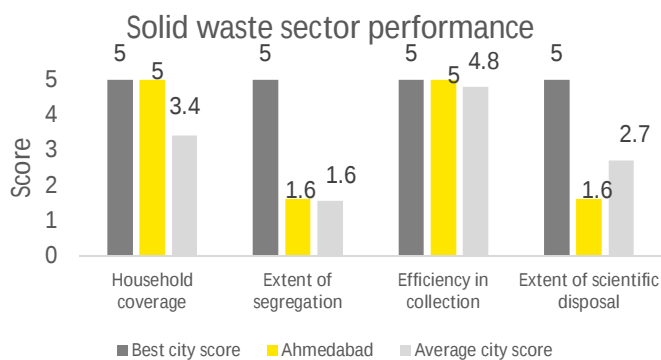
Water

Ahmedabad has achieved the Swachh status in drinking water supply. AMC has 90% coverage of water supply and has the required infrastructure in place. The installed capacity of water treatment plants in the city exceeds the city's daily requirements.



Sewerage

The city is well connected with the sewerage system. It was observed that the city has sufficient capacity to treat the daily sewage generation. A total of 1.28m households under AMC are connected with the existing sewerage system. A decentralised sewage treatment system should be promoted in the city because it is less capital intensive.



Solid waste

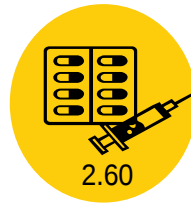
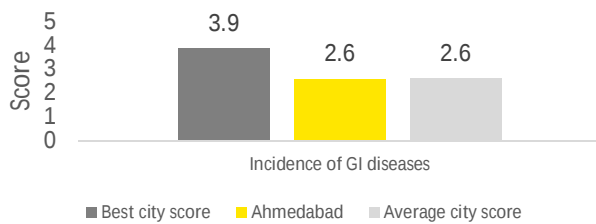
Though the city performed well in terms of efficiency of collection of solid waste and household coverage of SWM services, it still lags behind in segregation and scientific disposal of waste collected. Out of the 2,500 MT of MSW generated daily, 1,200 MT is treated, while 1,300 MT is dumped in a non-compliant dedicated landfill site.

⁸ Best city score denotes the best score amongst the 10 cities covered under the HI program.

Average city score denotes the overall average score amongst the 10 cities covered under the HI program.

Sectors Requiring Attention

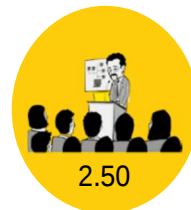
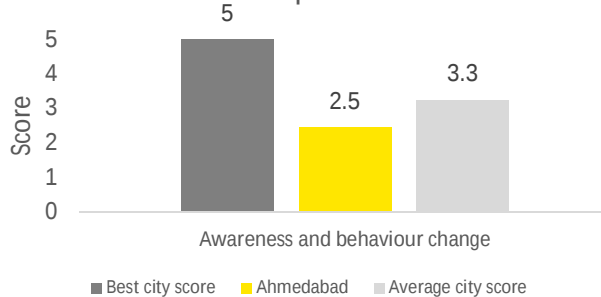
Health sector performance



Health

As per the data maintained by the Health Department, there has been a marginal decrease in the number of GI incidences this year as compared to 2014–15.

BCC sector performance

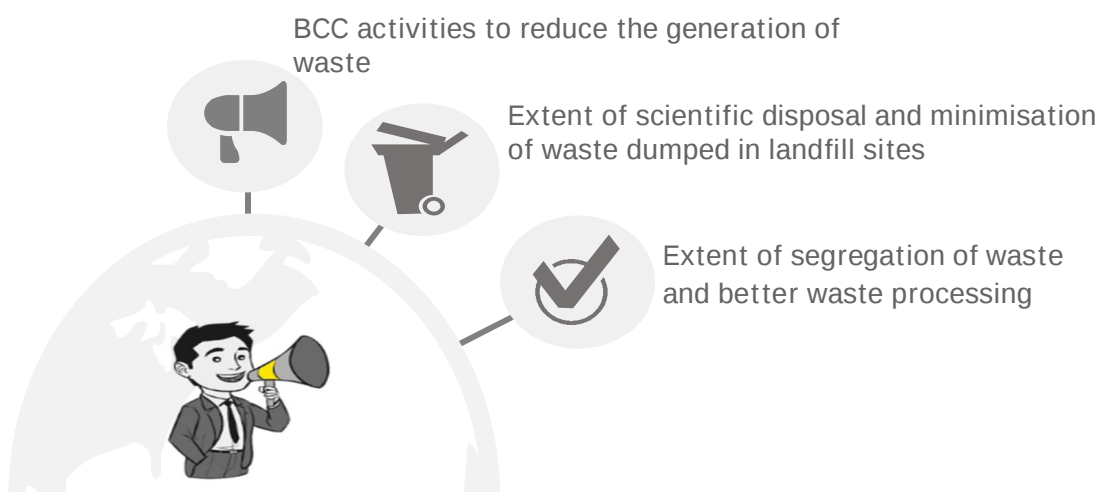


BCC funds utilisation

While the SBM funds utilisation by the city for the year 2016–17 are very good, no funds were received in 2015–16 for BCC activities.

For all such cities, 50% marks have been allotted this year and this score is likely to increase in the subsequent year.

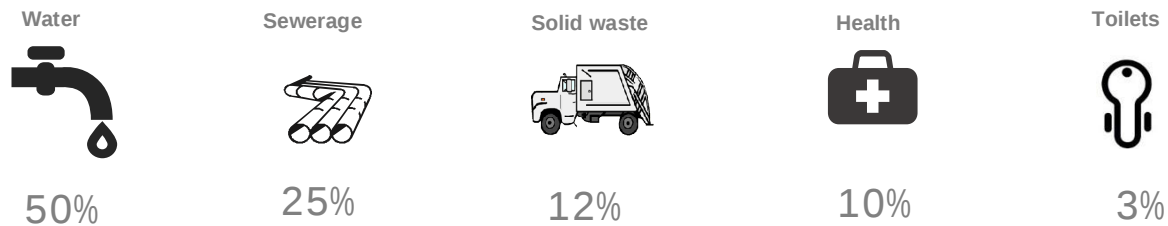
Call for Action



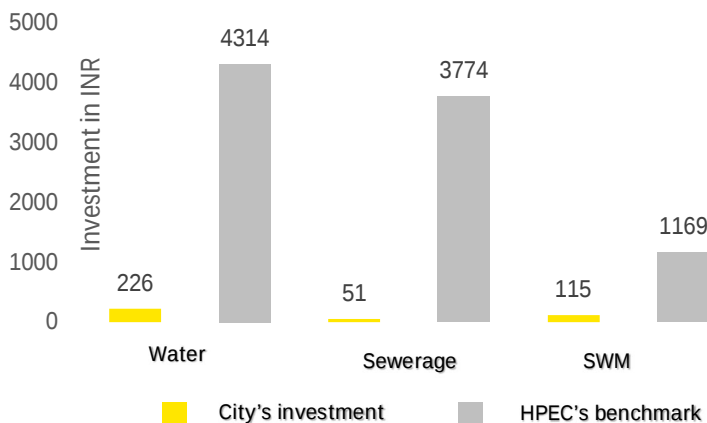
- We suggest the city municipality invest more funds to start segregating the waste and implement advanced waste processing units. To improve the overall SWM in the city, capital expenses, such as providing separate bins to citizens and creating landfill sites, and capacity building and BCC activities, such as creating a workforce that can encourage the citizens to segregate the waste, are required.
- Awareness and behaviour change activities directly affect the city's hygiene conditions and help to create a healthy living environment.
- To improve hygiene and health for the bottom-of-the-pyramid communities, increased awareness, improved sanitation and drinking water infrastructure, and provision of 'product bundles' for prevention and treatment of diarrhoea may be undertaken.
- A similar intervention has been done in UP, Uttarakhand, Delhi and West Bengal and 2 million people have shown better awareness.

Investment Heat Map and Recommendations

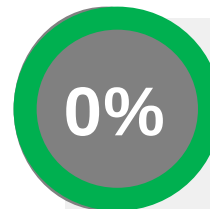
Break-up of the spend in the hygiene sectors



City's per capita investment v/s HPEC benchmark⁹:



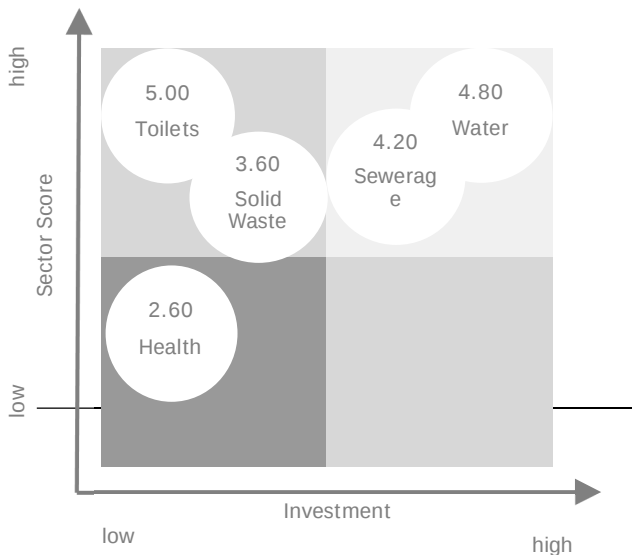
While Ahmedabad Municipal Corporation (AMC) invests 4% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities:

AMC's budget shows that no amount has been spent on awareness programs. This is very alarming and actions should be taken accordingly.

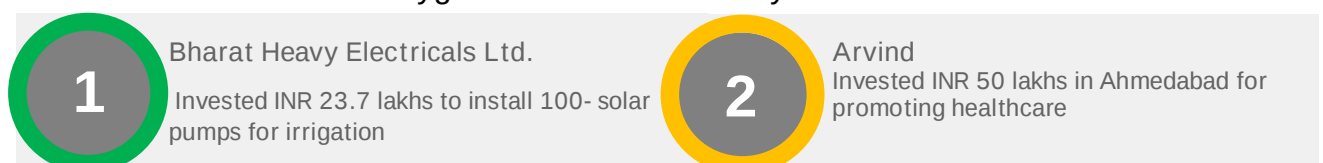
Relation of Investment and Performance:



Among the various hygiene sectors, AMC invests majorly in water. Although it performs well in the toilets and solid waste sectors, it requires much more investment to improve the overall score of the city.

The majority of AMC's funds are spent in infrastructure creation and operation and maintenance. The investment in BCC activities is very low. AMC should increase the investment in BCC activities promoting behaviour change and healthy habits.

Private Investment in the Hygiene Sectors in the City:



⁹ <http://icrier.org/pdf/FinalReport-hpec.pdf>

Hygiene Assessment Report: Allahabad

Introduction

Allahabad, earlier called Prayag or 'place of offerings' due to its position at the Sangam (confluence) of rivers, is the second-oldest city in India. Allahabad is one of the 25 cities selected to be developed as Smart Cities under the Smart City Mission. Allahabad Municipal Corporation is responsible for maintaining hygienic conditions in the city¹⁰.

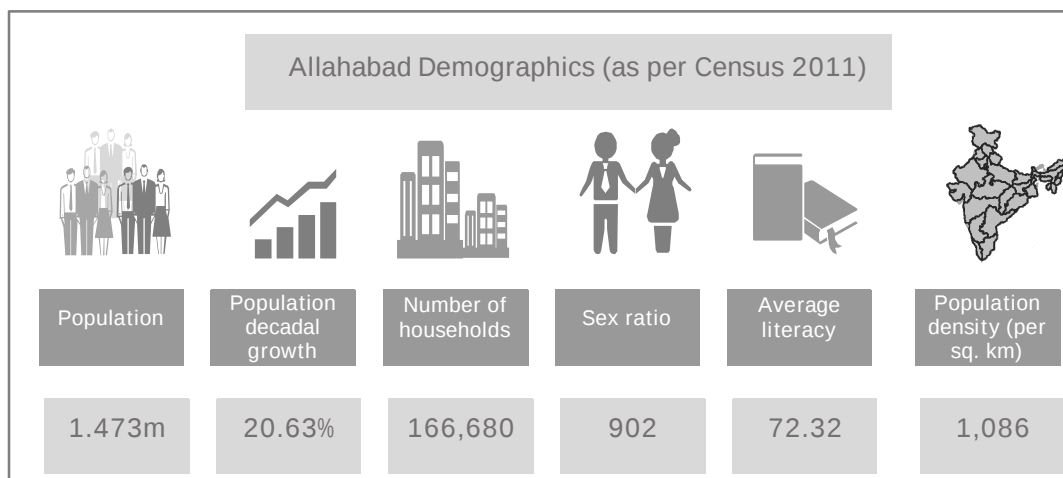
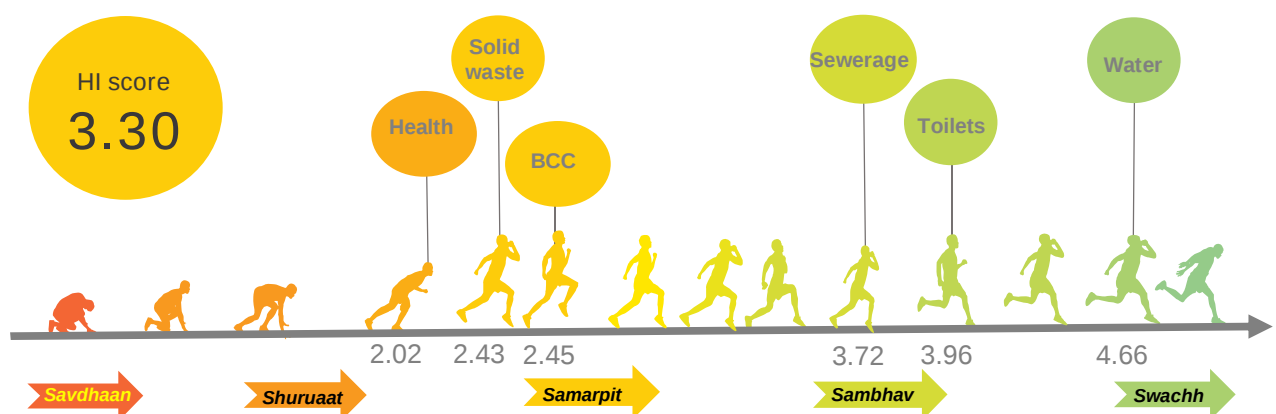


Exhibit B: Demographic Scenario of Allahabad

City Highlights: Allahabad ranks 21 out of 75 cities in the Swachh Survekshan. It is the recipient of IBM's Smart Cities Challenge Grant, which has recommended innovative and specifically tailored ways to address critical issues faced by the municipality to enable the city to become more competitive. Allahabad has also been awarded the Certificate of Achievement for best AMRUT slip presentation and recognised as the best progressive city of Uttar Pradesh by the MoUD.

Sector-wise Performance¹¹

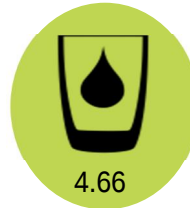
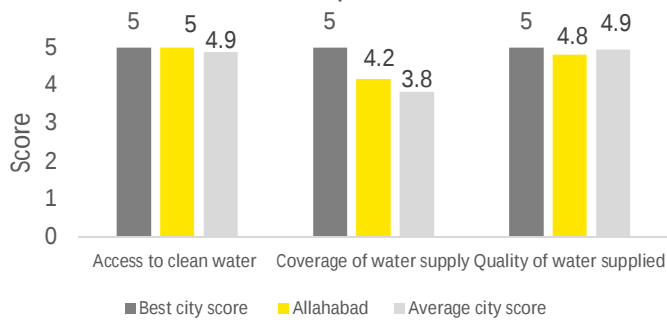


¹⁰ Demographics data is as per census 2011. Population growth is taken with respect to 2001.

¹¹ For year 2015-16

High Performance Sectors¹²

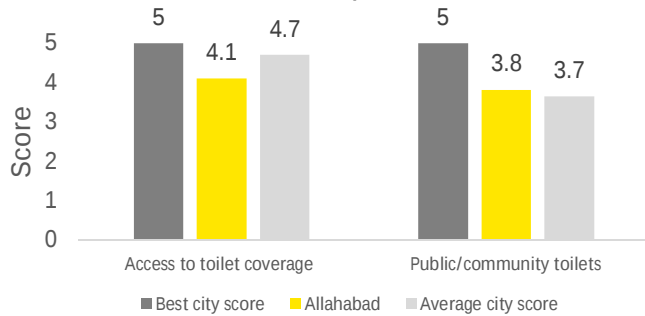
Water sector performance



Water

Among the six sectors, Allahabad has the best performance in the water sector and has achieved Swachh sector status. City supplies 237 MLD clean water which caters to an estimated 0.16m houses of the total of 0.19m houses.

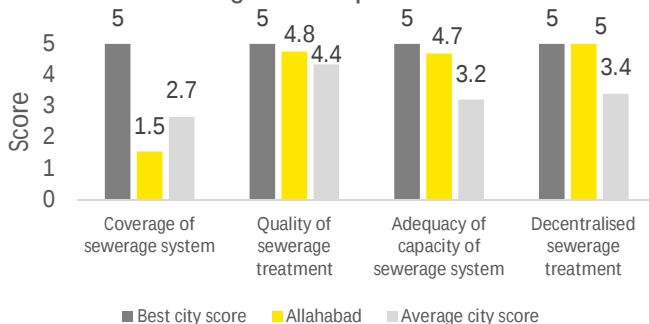
Toilets sector performance



Toilets

Allahabad has secured the Sambhav status in toilets. An estimated 0.17m individual households have access to toilets. The city has a ratio of nearly 1,528 people/community toilet seats, which can cater to an approximate of 75% the floating population.

Sewerage sector performance



Sewerage

270 MLD tonnes of sewage is generated annually, while the installed treatment capacity in the city is 254 MLD. In order to bridge this gap, two more STPs have been proposed with a capacity of 12 MLD and should be commissioned in the next year. Allahabad is on the right track here with annual checks and controls in place.

Sectors Requiring Attention

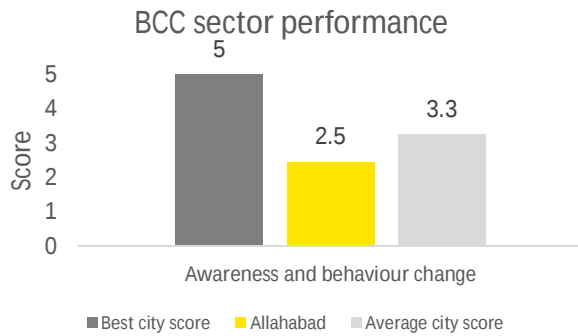
Solid waste sector performance



Solid waste

Coverage of households under door-to-door waste collection is very low with over 50% of the households not being covered. Segregation of waste is another major issue across all levels of waste collection.

¹² Best city score denotes the best score amongst the 10 cities covered under the HI program.
Average city score denotes the overall average score for the 10 cities covered under the HI program.

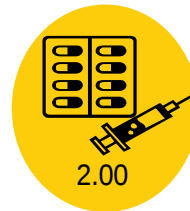
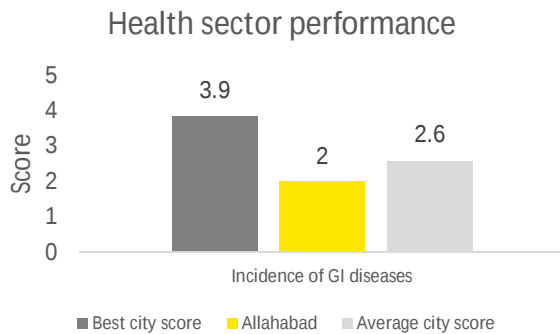


BCC funds utilisation

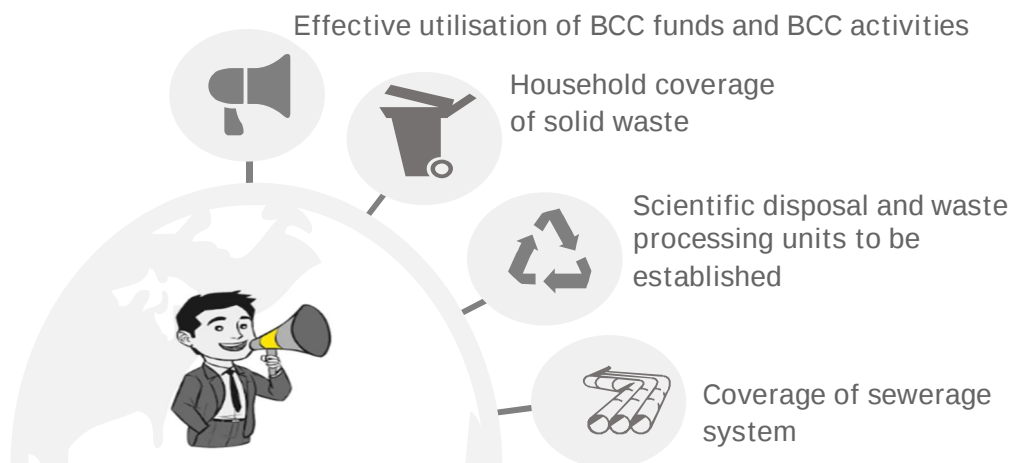
Allahabad has INR1.2 million allocated under SBM, of which it has utilised INR 0.61 million. While the fund allocation is higher than other cities, the utilisation is very low and the city needs to have more BCC activities.

Health

It was observed that incidences of GI diseases has increased over the past year, which correlates with the city's hygiene conditions. The increase in number of GI cases indicates a decline in the hygiene condition of the city.



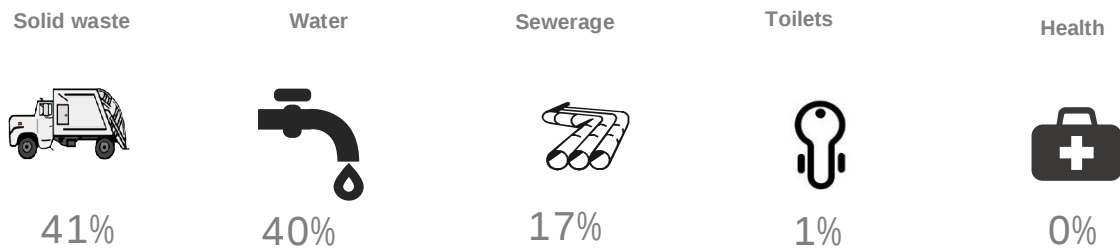
Call for Action



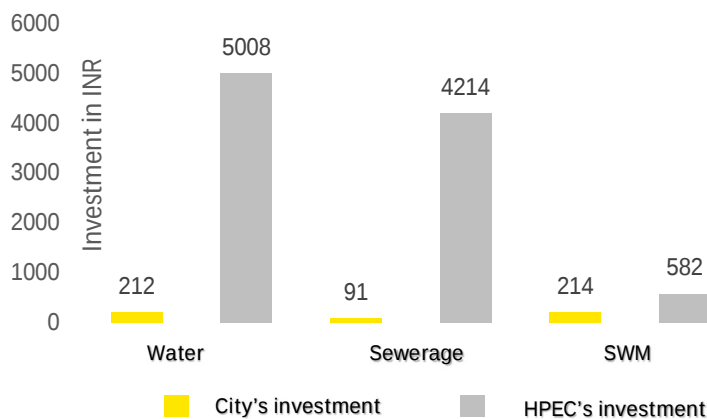
- Awareness and attitude are the two major parameters directly affecting the city's hygiene conditions. Therefore, Allahabad needs to effectively utilise the allocated BCC funds.
- We suggest the city start a comprehensive BCC programme where change leaders such as mothers, panchayat leaders and members of panchayati raj institutions are made the pillars for change.
- Use of the latest technology such as mobile apps to educate and mobilise people and, at the same time, use of effective traditional methods such as wall paintings, posters and street plays will help generate awareness and improve the hygiene status. A similar model has already been used in Uttar Pradesh and Bihar and has proved to be successful.
- Allahabad should also adopt available best practices to improve its sewerage system as well as solid waste collection, disposal and processing units.

Investment Heat Map and Recommendations

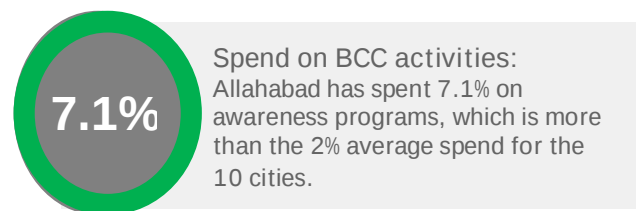
Break-up of the Spend in the Hygiene Sectors



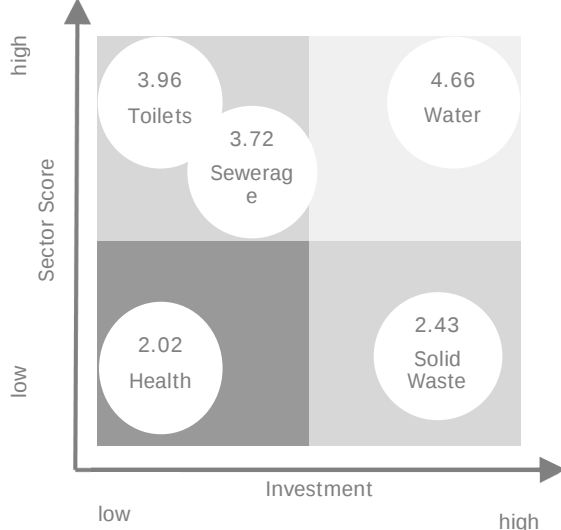
City's per capita investment v/s HPEC benchmark¹³:



While Allahabad Municipal Corporation invests 4% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Relation of Investment and Performance



Amongst the various hygiene sectors, Allahabad invests majorly in solid waste and water. Although it performs well in the water sector, solid waste management requires much more investment to improve the basic infrastructure.

The city spends the lowest on health, toilets and BCC, and there is a need to increase investments in BCC and health.

Most of Allahabad's funds are spent on operation and maintenance. While 7% is currently spent for BCC activities, more such interventions promoting the importance of hygiene are required.

Private Investment in the Hygiene Sectors in the City:



¹³ <http://icrier.org/pdf/FinalReport-hpec.pdf>

Hygiene Assessment Report: Bhopal

Introduction

Bhopal, also known as the city of lakes, is the capital of the state of Madhya Pradesh. It is also the administrative headquarter for the Bhopal district and Bhopal division. It is one of the initial 25 cities selected to be developed as Smart Cities under the Smart City Mission. Bhopal Municipal Corporation (BMC) is responsible for maintaining hygienic conditions in the city. The slum population in Bhopal is 407,000 as compared to the total population of 2,371,061¹⁴.

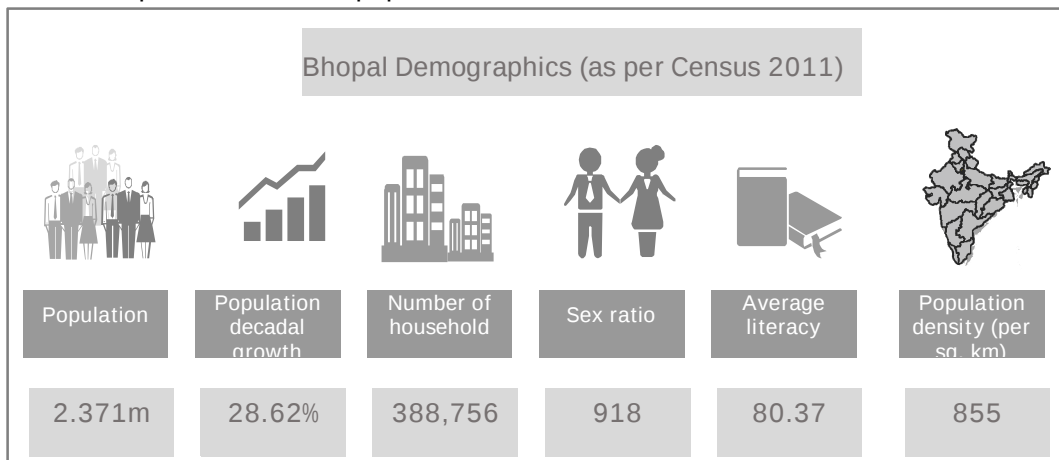
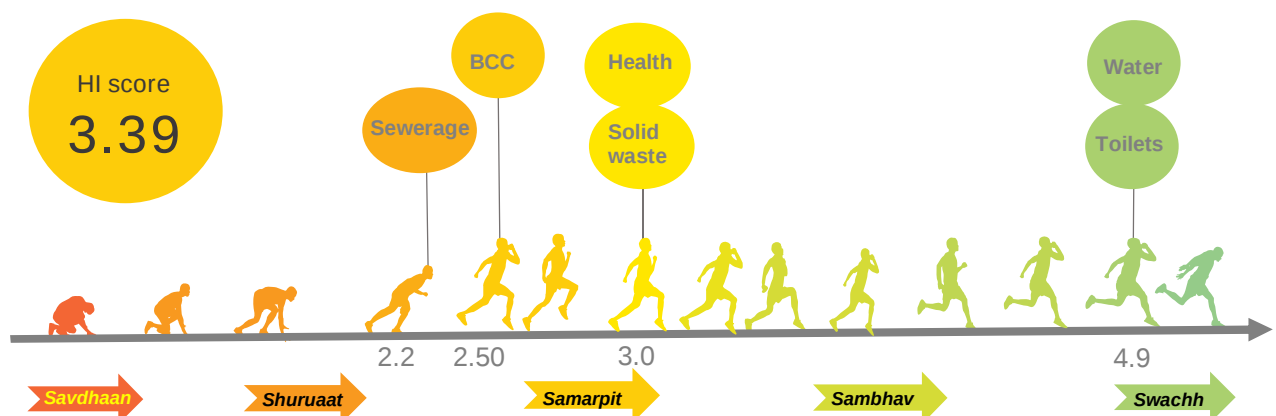


Exhibit C: Demographic Scenario of Allahabad

City Highlights: Bhopal ranks 21 out of 75 cities in the Swachh Survekshan, which measures hygiene conditions in terms of SWM, sanitation and awareness.

Sector-wise Performance¹⁵

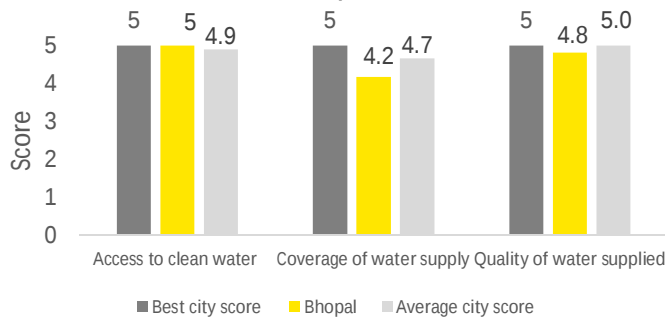


¹⁴ Demographics data is as per census 2011. Population growth is taken with respect to 2001.

¹⁵ For year 2015-16

High Performance Sectors¹⁶

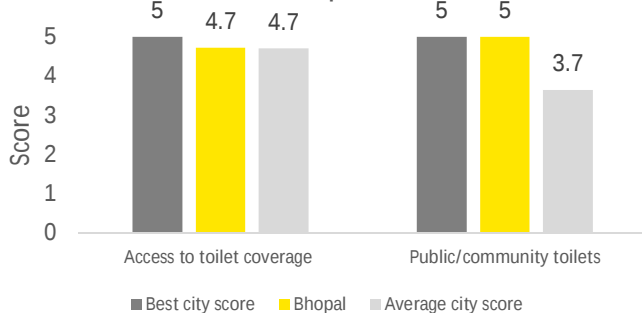
Water sector performance



Water

Among the six sectors, Bhopal has the best performance in the water sector and has achieved the Swachh sector status. Bhopal supplies 407 MLD clean water, while it has a capacity to treat up to 450 MLD.

Toilets sector performance

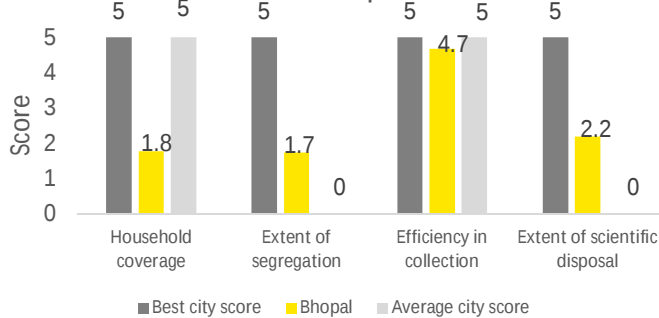


Toilets

Bhopal performs well in terms of total number of individual households having access to toilets. It has achieved the Swachh sector status. The city has nearly 1,704 public/community sanitation seats to cater to the floating population of the city.

Sectors Requiring Attention

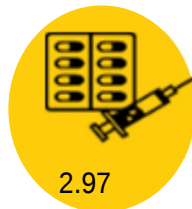
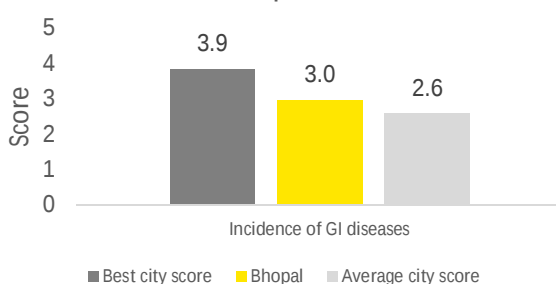
Solid waste sector performance



Solid waste

Bhopal covers 100% households via door-to-door waste collection and is able to collect 100% waste generated. However, there is no processing unit for the MSW collected. With a waste-to-energy plant and a bio-methanisation plant likely to be commissioned soon, Bhopal is expected to score more in the years to come.

Health sector performance



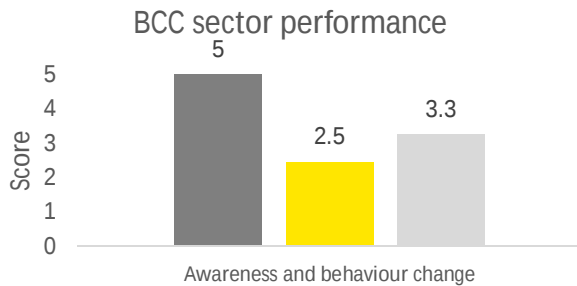
Health

It was observed that the incidence of GI diseases has decreased over the past years, which correlates with the city's hygiene conditions. The decrease in the number of GI cases indicates an improvement in the hygiene condition of the city.

¹⁶

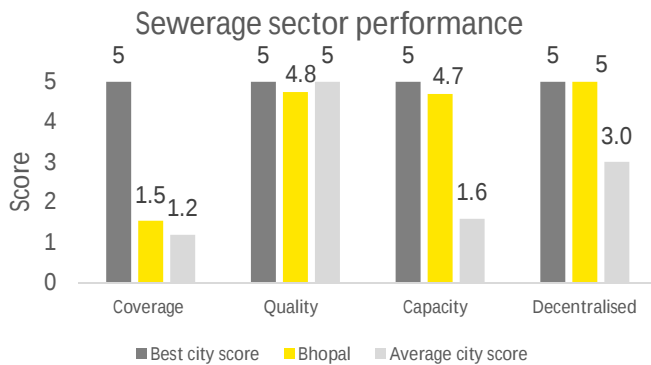
Best city score denotes the best score amongst the 10 cities covered under the HI program.

Average city score denotes the overall average score amongst the 10 cities covered under the HI program.



BCC funds utilisation

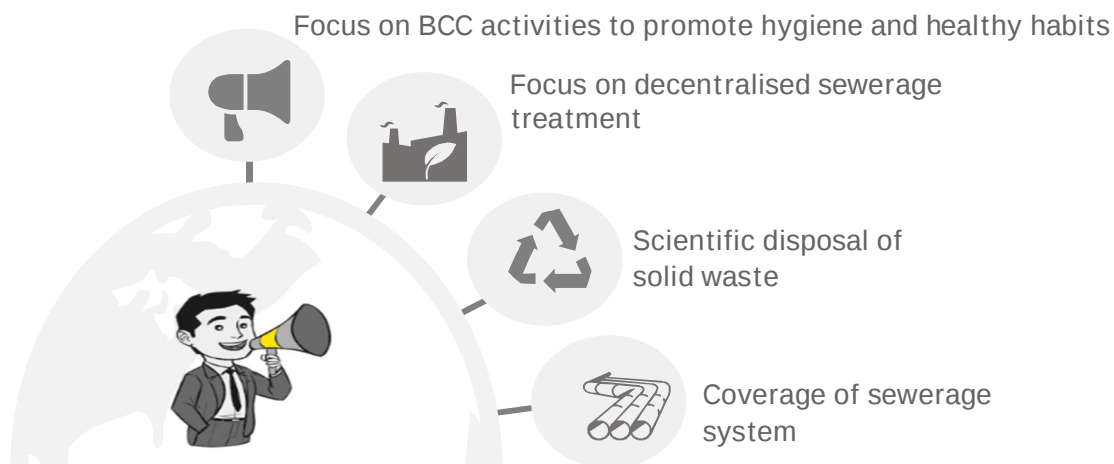
Bhopal did not receive any funds under SBM for awareness creation. Therefore, an average rating of 2.5 has been given to the city.



Sewerage

234 MLD tonnes of sewage is generated daily, while the installed treatment capacity is only 75 MLD. Only 109,000 households are covered by the sewerage network out of the 455,000 households. Bhopal needs to have the basic infrastructure in place.

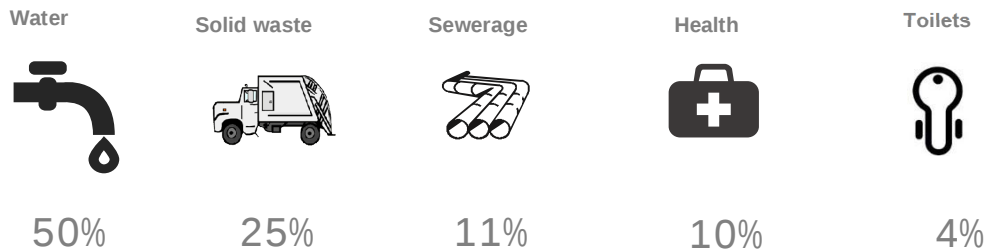
Call for Action



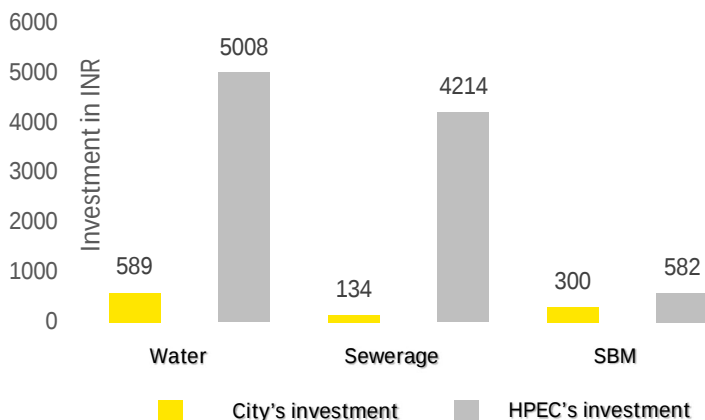
- For the success of every community-level intervention, it is crucial that the local population is aware about it and supports it. Therefore, BMC needs to effectively utilise the allocated BCC funds to spread awareness about the importance of hygiene and the ways to achieve it.
- We suggest that BMC start a modular school education programme focusing on personal hygiene, hygiene at home, hygiene at school, hygiene in illness, hygiene in neighbourhood etc. A similar programme has been initiated nationwide targeting 2.5 million school kids along with their teachers and families.
- Investing on young generation will have a direct impact on the current hygiene sector as well as help build a better future.
- BMC should also adopt the available best practices to improve its sewerage system as well as solid waste disposal and treatment.

Investment Heat Map and Recommendations

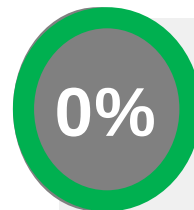
Break-up of the Spend in the Hygiene Sectors



City's per capita investment v/s HPEC benchmark:¹⁷

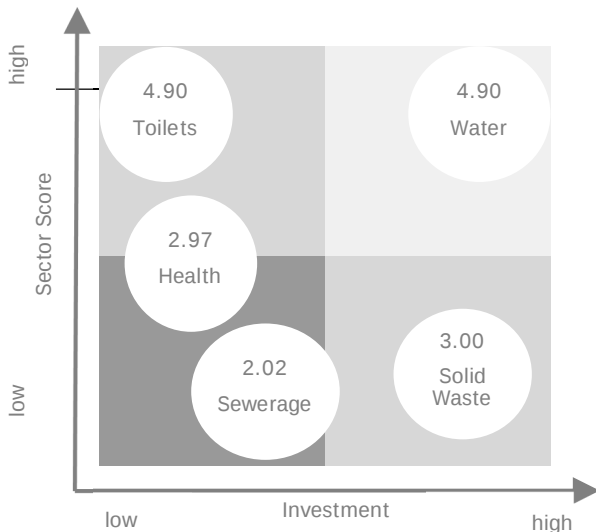


While Bhopal Municipal Corporation (BMC) invests 39% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities:
BMC's budget shows no amount has been spent on awareness programs. This is very alarming and actions should be taken accordingly.

Relation of Investment and Performance:



Amongst the various hygiene sectors, BMC invests the majority in solid waste and water. Although it performs well in the water sector, solid waste requires much more investment to have the basic infrastructure in place.

BMC spends the lowest in health, toilets and BCC. Although the sector score for toilets is high, BMC needs to increase its investment in BCC and Health.

The majority of BMC's funds are spent in infrastructure creation and operation and maintenance. No funds are spent for BCC activities, which is something that the city needs to focus on.

Private Investment in the Hygiene Sectors in the City:



Crompton Greaves Ltd.
Invested INR50 lakhs in Bhopal and other cities in preventive health care through Avantha foundation



Kansai Nerolac Paints
Invested INR32.2 lakhs in Bhopal and a few other cities for health camps

¹⁷ <http://icrier.org/pdf/FinalReport-hpec.pdf>



Hygiene Assessment Report: Gandhinagar

Introduction

Gandhinagar, Gujarat's capital city, is a well-planned and one of the greenest cities in India. It is situated on the west bank of the Sabarmati River. Gandhinagar presents the spacious, well-organized look of an architecturally integrated city. Gandhinagar is one of the 98 cities selected to be developed as Smart Cities under the Smart City Mission. Gandhinagar Municipal Corporation (GMC) is responsible for maintaining hygienic conditions in the city.¹⁸

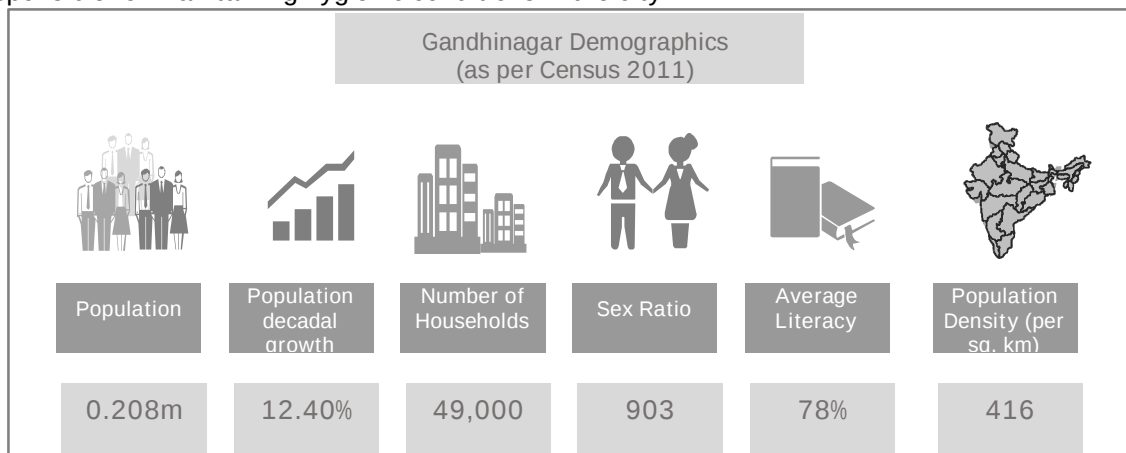
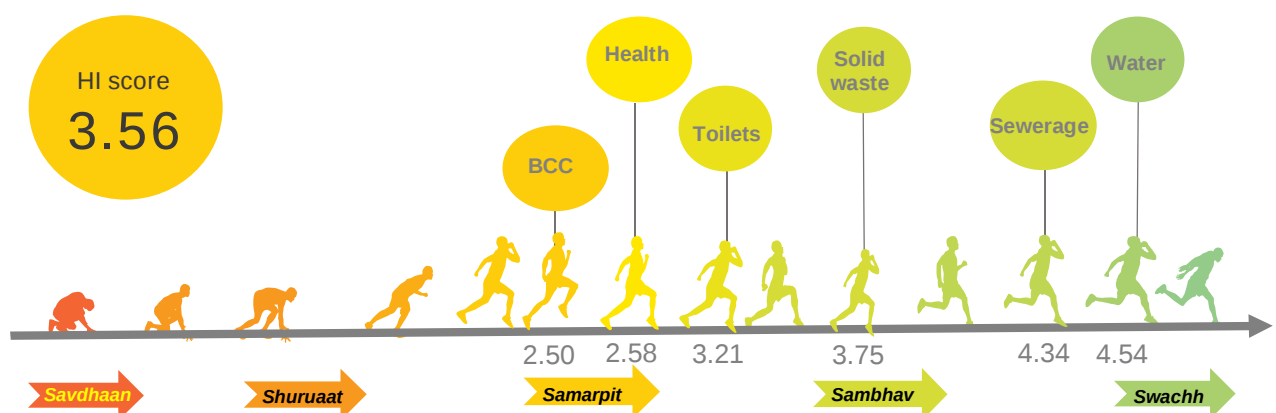


Exhibit D: Demographic Scenario of Gandhinagar

Achievements: Gandhinagar ranks 42 out of 75 cities in the Swachh Survekshan. Some of the initiatives rolled out by GMC are seamless WiFi connectivity, smart sensor-enabled traffic lights, internet protocol-based surveillance, speed and face detection traffic management, public address system (PAS) and centralised command centre to monitor activities.

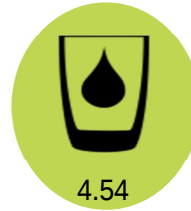
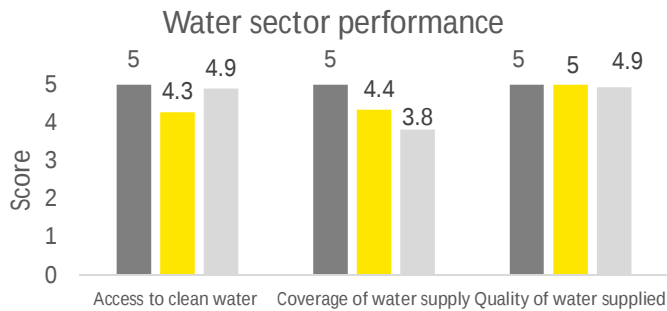
Sector-wise Performance¹⁹



¹⁸ Demographics data is as per census 2011. Population growth is taken with respect to 2001.

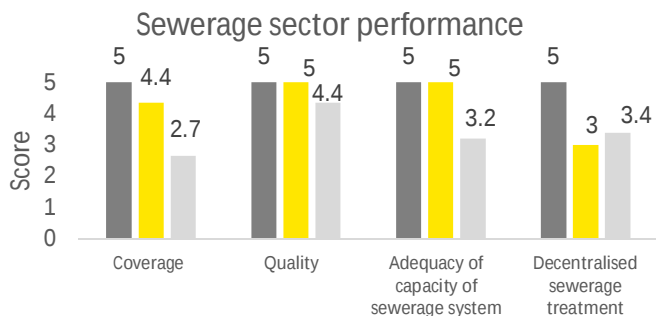
¹⁹ For year 2015-16

High Performance Sectors²⁰



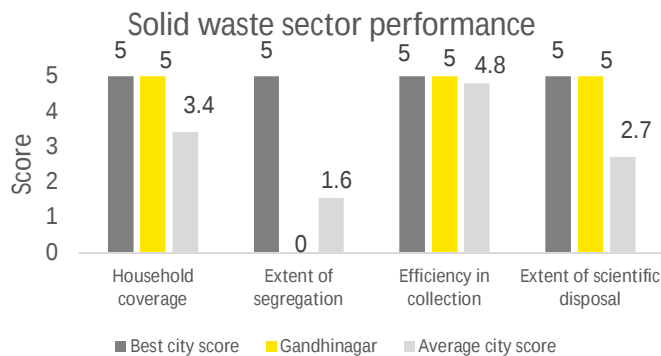
Water

Among the six sectors, Gandhinagar has the best performance in the water sector and has achieved the Swachh sector status. GMC supplies 70 MLD clean water, which caters to an estimated 42,610 households of the total of 49,000 households.



Sewerage

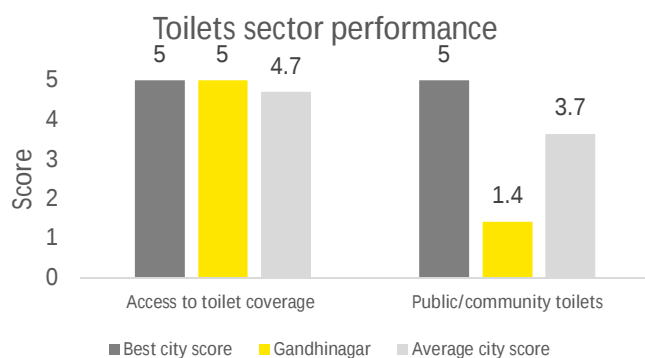
44 MLD of sewage is generated daily, while the sewage treatment capacity is double the generation, i.e., 88 MLD. GMC has provided direct sewerage connection to more than 86% households in its area and is on the right track with the necessary infrastructure in place to take care of the increasing population requirements in the years to come.



Solid waste

Coverage of households under door-to-door waste collection is very high since all establishments, including households, are covered. However, segregation of waste is an issue across all levels of waste collection.

Sectors Requiring Attention



Toilets

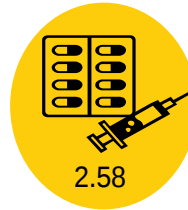
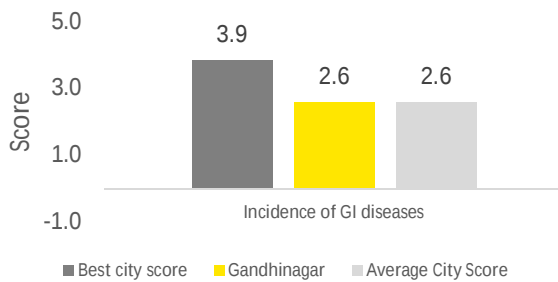
Almost all the households in the city have access to individual household toilets. Accordingly, Gandhinagar has secured the Sambhav status in this sector. The city has nearly 80 public/community toilet units, which can cater to an approximate 30% of the floating population of the city.

²⁰

Best city score denotes the best score amongst the 10 cities covered under the HI program.

Average city score denotes the overall average score amongst the 10 cities covered under the HI program.

Health sector performance



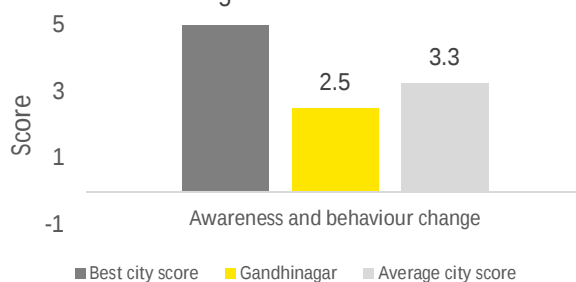
Health

It was observed that the incidence of GI diseases has reduced compared to the previous year. This decrease in the number of GI cases is nominal, which indicates more strategies need to be executed to improve the overall hygiene condition of the city.

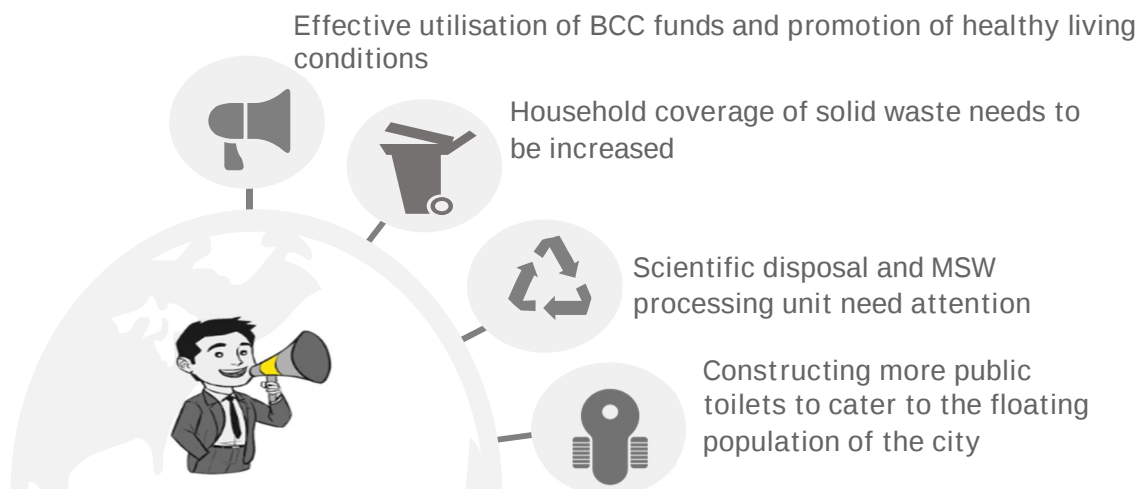
BCC funds utilisation

Under SBM, a significant amount of funds were allotted to Gandhinagar for BCC activities. However, the city could utilise only 50% of the funds. The utilisation needs to be increased for targeted interventions.

BCC sector performance



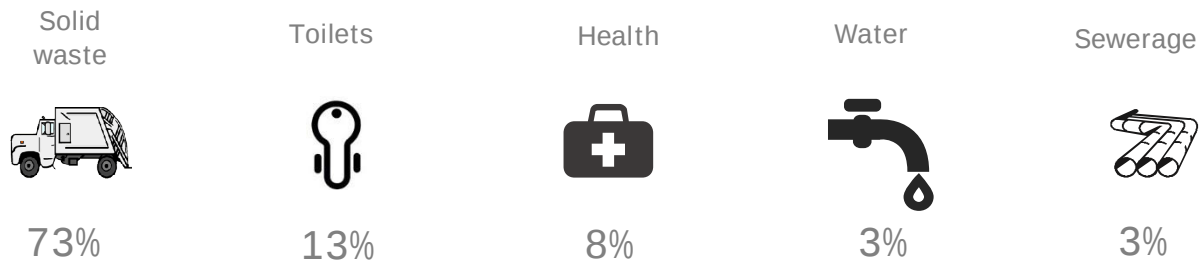
Call for Action



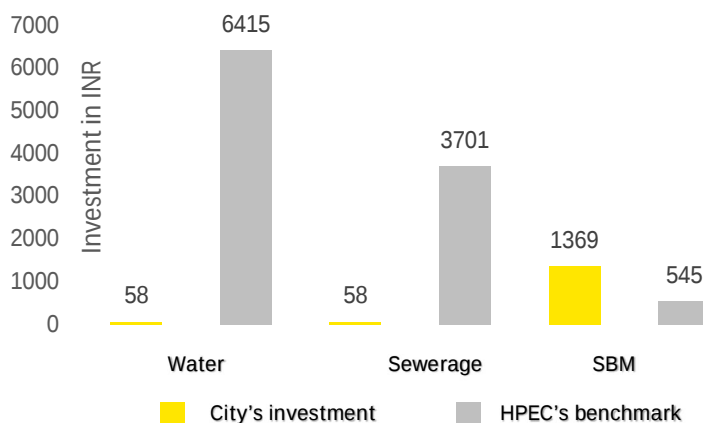
- Awareness and attitude are the two major parameters directly affecting the city's hygiene conditions. Therefore, GMC needs to effectively utilise the allocated BCC funds. Empowering the society and making them responsible for their actions are potential first steps in this direction.
- We suggest GMC to start a comprehensive BCC programme where change leaders are created within the society. These change leaders can use the latest technology means such as mobile apps to educate and mobilise people and, at the same time, use effective tradition methods such as wall paintings, posters and street plays to improve its hygiene status.
- GMC should also adopt available best practices to improve its sewerage system as well as solid waste collection and disposal.

Investment Heat Map and Recommendations

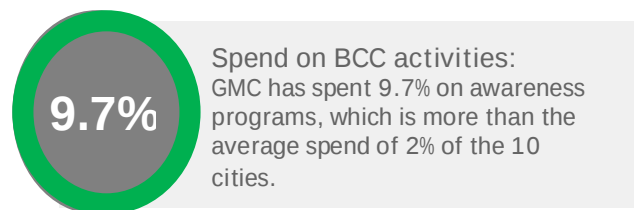
Break-up of the Spend in the Hygiene Sectors:



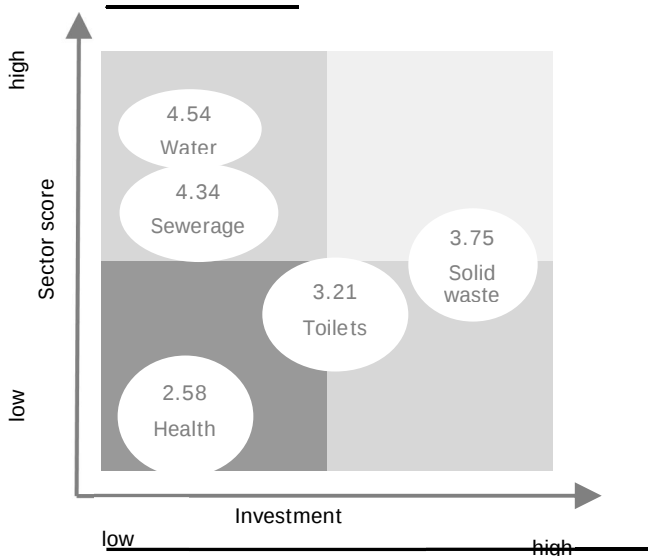
City's per capita investment v/s HPEC benchmark:²¹



While Gandhinagar Municipal Corporation (GMC) invests 35% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Relation of Investment and Performance:

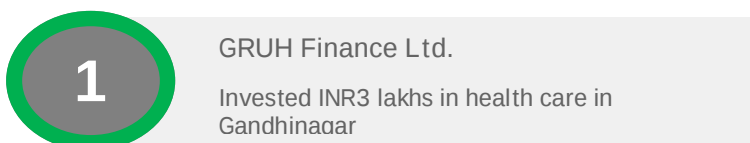


Among the various hygiene sectors, GMC invests majorly in the solid waste and toilet sectors. Although the city performs well in the solid waste sector, public toilets require much more investment to improve the overall score in the years to come.

GMC spends the lowest in health, water, sewerage and BCC. Water and sewerage require specific investments for 100% household connectivity. However, GMC needs to increase its investment in BCC and health.

The majority of GMC's funds are spent in infrastructure creation and operation and maintenance, while close to 10% are spent for BCC activities. GMC needs to focus on BCC activities for promoting the importance of hygiene and healthy living.

Private Investment in the Hygiene Sectors in the City:



²¹ <http://icrier.org/pdf/FinalReport-hpec.pdf>

Hygiene Assessment Report: Nagpur

Introduction

Nagpur, the capital of Vidarbha, is the third largest city of Maharashtra. It is known as the Orange City for being a major trade centres of oranges cultivated in the region. It is amongst the top 25 cities selected to be developed as Smart Cities under the Smart Cities Mission. Nagpur Municipal Corporation (NMC) is responsible for maintaining city hygiene conditions.²²

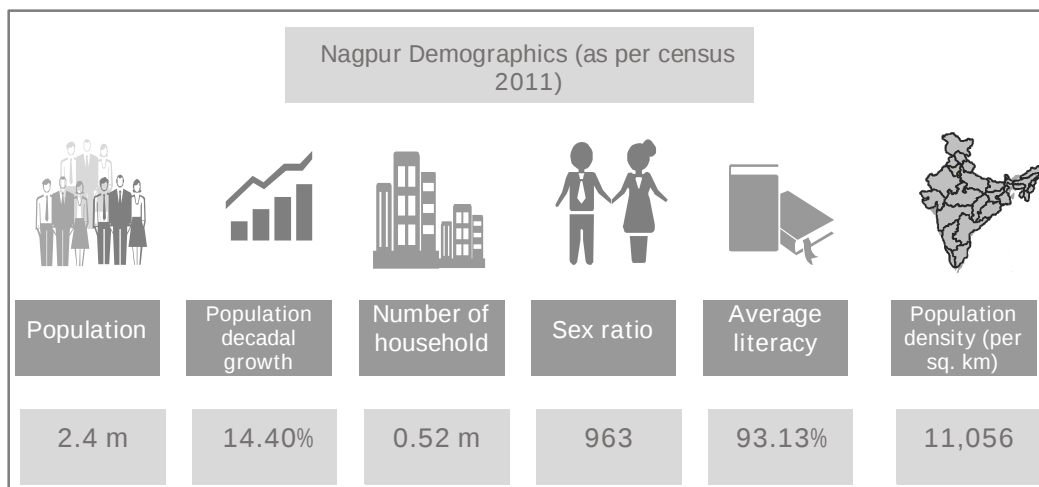
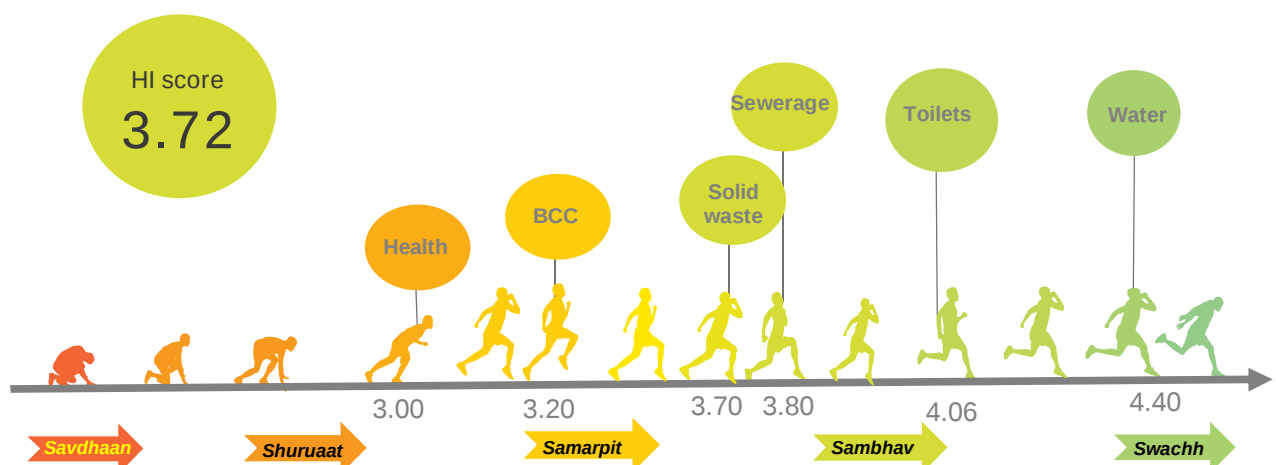


Exhibit E: Demographic Scenario of Nagpur

City Highlights: Nagpur ranks 20 out of 75 cities in the Swachh Sarvekshan. Moreover, the city was declared as an Aspiring Leader and won the 'Top Mover in Western Zone' for overall improvement in sanitation of urban areas.

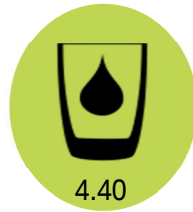
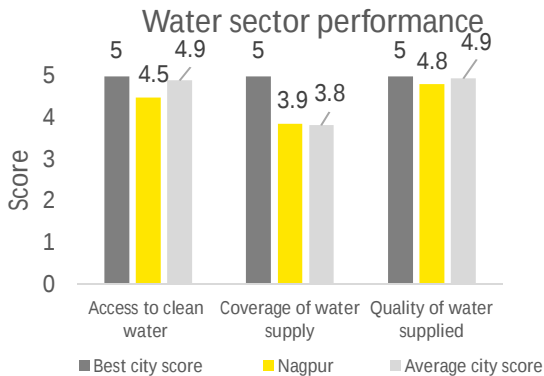
Sector-wise Performance²³



²² Demographics data is as per census 2011. Population growth is taken with respect to 2001.

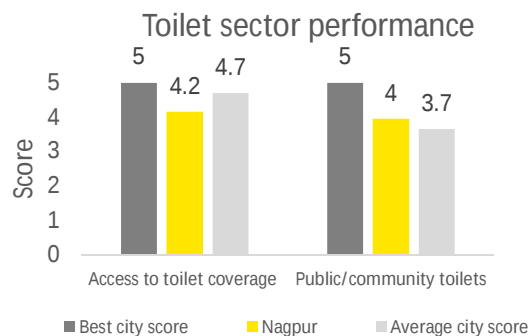
²³ For year 2015-16

High Performance Sectors²⁴



Water

Nagpur performs well in the water sector and has achieved the Sambhav status. NMC supplies 682 MLD water to an estimated 487,206 of the total of 630,640 houses. Orange City Water Pvt. Ltd. provides water in most parts of the city. For the non-network areas, water is provided through water tankers.

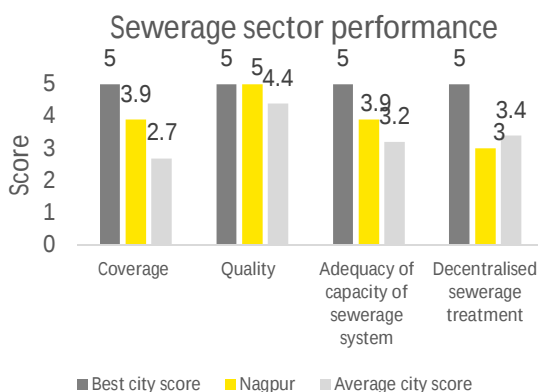


Toilet

While 83% of the households have access to individual toilets, 80% of the total floating population of the city is catered through the public/community toilet seats. Efforts need to be ramped up to increase the overall access to toilet achieve the open defecation free status.

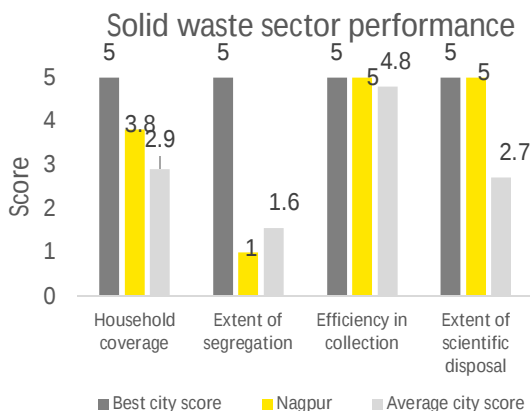
Sewerage

296 MLD is the daily sewage generation of the city, while there is total STP capacity of 230 MLD. In order to bridge this gap, two more STPs are under construction and should be commissioned in the coming year. NMC is on the right track here with annual checks and controls in place.



Solid waste

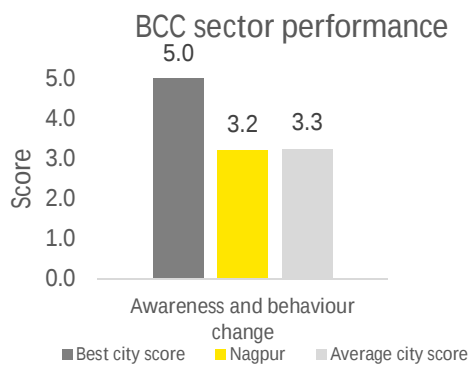
Household coverage in terms of door-to-door collection of municipal solid waste is currently around 76% and is an issue that needs to be addressed. 20% waste is segregated at the disposal site, while the remaining goes to the landfill at Bhandewadi. With a waste processing plant likely to be commissioned soon, sectoral score is likely to improve in the subsequent years.



²⁴

Best city score denotes the best score amongst the 10 cities covered under the HI program
Average city score denotes the overall average score amongst the 10 cities covered under the HI program

Sectors Requiring Attention

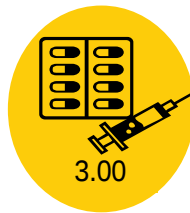
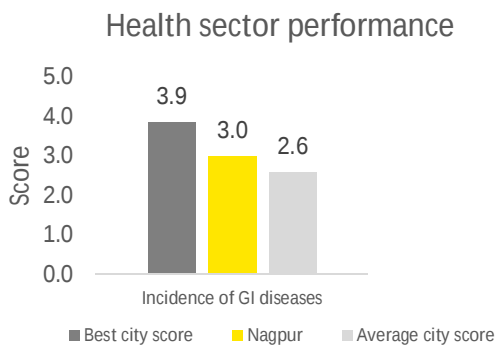


BCC funds utilisation

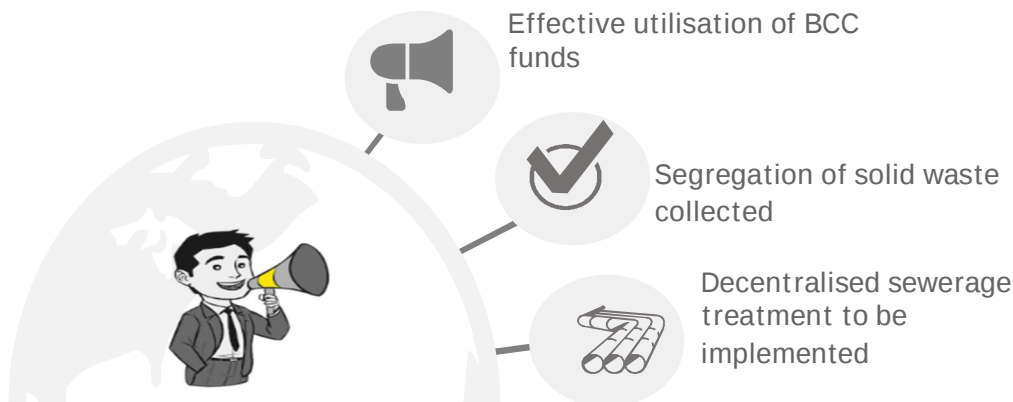
Under SBM, Nagpur was allocated INR1.13 million for BCC activities for the year 2015–16 of which INR0.72 million was utilised. The overall the fund utilisation is about 63% and needs attention.

Health

It was observed that the incidence of GI diseases has marginally decreased from the last year. Even though there has been an overall decrease, Nagpur needs to ramp up its efforts to decrease the number of GI cases.



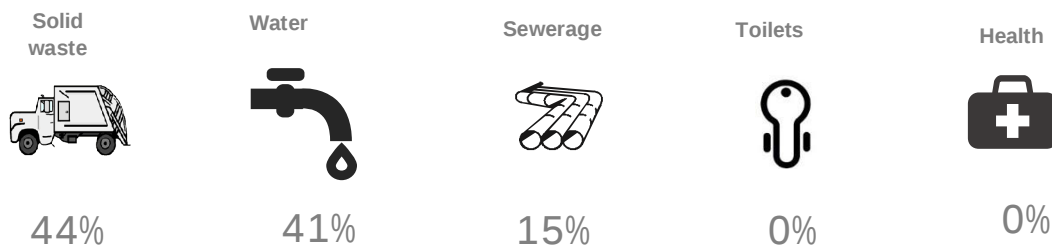
Call for Action



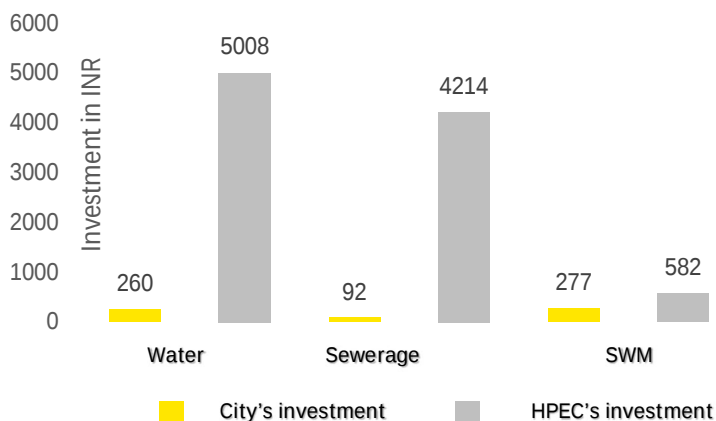
- Extent of segregation and decentralised sewerage treatment are the two major parameters directly affecting the city's hygiene conditions. Furthermore, NMC needs to effectively utilise the allocated BCC funds to generate citizen awareness about segregation of waste.
- Empowering the society and making them responsible for their actions are potential first steps in this direction.
- For a decentralised sewerage system, it is suggested that NMC should keep a check on those not connected with the sewerage system and impose a fine in the absence of their own treatment system.
- To improve hygiene and health at the bottom-of-the-pyramid communities, increased awareness, improved sanitation and drinking water infrastructure, and provision of 'product bundles' for the prevention and treatment of diarrhoea may be undertaken. A similar intervention has been done in Uttar Pradesh, Uttarakhand, Delhi and West Bengal and 2 million people have shown better awareness.

Investment Heat Map and Recommendations

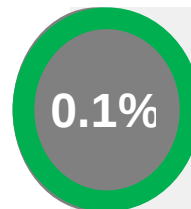
Break-up of the Spend in the Hygiene Sectors:



City's per capita investment v/s HPEC benchmark:²⁵

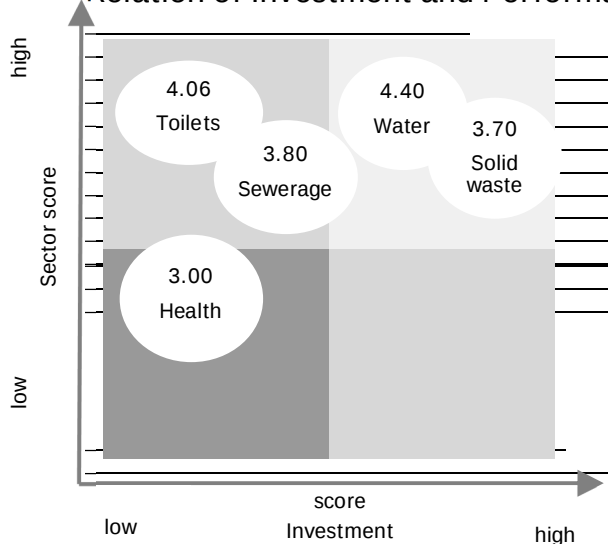


While Nagpur Municipal Corporation (NMC) invests 13% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities: NMC's budget shows negligible amount spent on awareness programs. NMC has spent INR 7.25 lakhs of the funds received under SBM.

Relation of Investment and Performance:

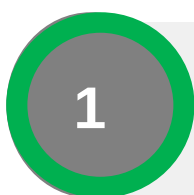


Amongst the various hygiene sectors, NMC invests majorly in solid waste and water. Although it performs well in the water sector, solid waste requires much more investment to improve.

NMC spends the lowest in health and sanitation. Sanitation as a sector requires lower investment as compared to the other sectors. However, NMC needs to increase its investment in BCC and health. NMC should invest more in infrastructure creation.

The majority of NMC's funds are spent on operation and maintenance. NMC should increase the spent on infrastructure creation and BCC. BCC funds utilisation score indicates that NMC should also effectively utilise the available funds through planned interventions.

Private Investment in the Hygiene Sectors in the City:

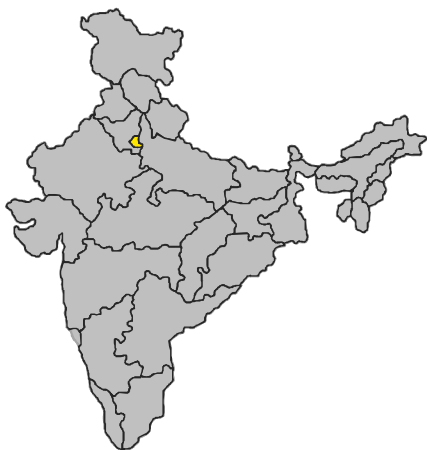


Persistent System Ltd.
Invested 1L for medical assistance



Mahindra & Mahindra Finance Services Ltd.
Invested INR 2.82 crore in Nagpur and others cities for healthcare infrastructure

²⁵ <http://icrier.org/pdf/FinalReport-hpec.pdf>



Hygiene Assessment Report: NDMC

Introduction

New Delhi is the capital of India. The state of Delhi is divided into multiple statutory urban regions. New Delhi Municipal Council (NDMC) is the municipal council of the city of New Delhi, India, and the area under its administration is referred to as the NDMC area. NDMC covers an area of 43.7 sq. km. It is governed by a council with a chairperson appointed by the Central Government and includes the Chief Minister of Delhi.²⁶

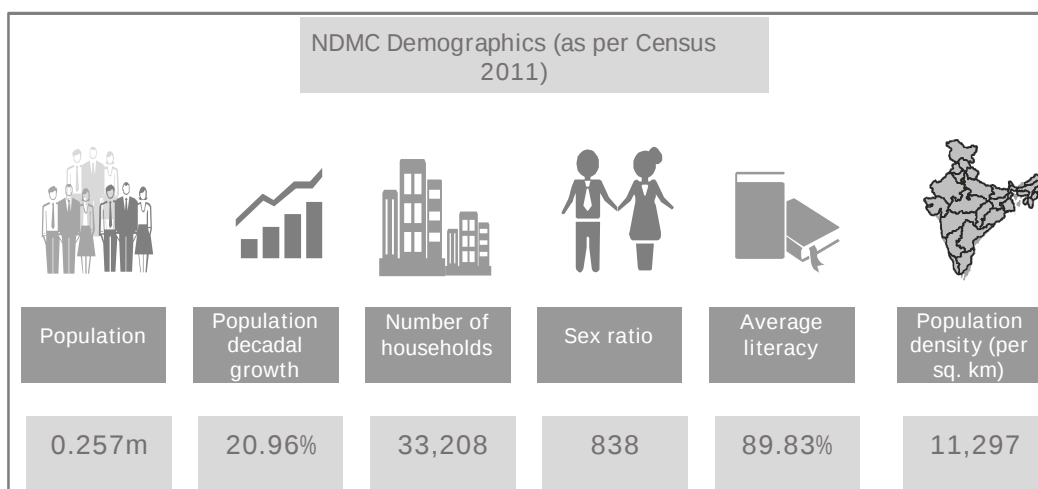
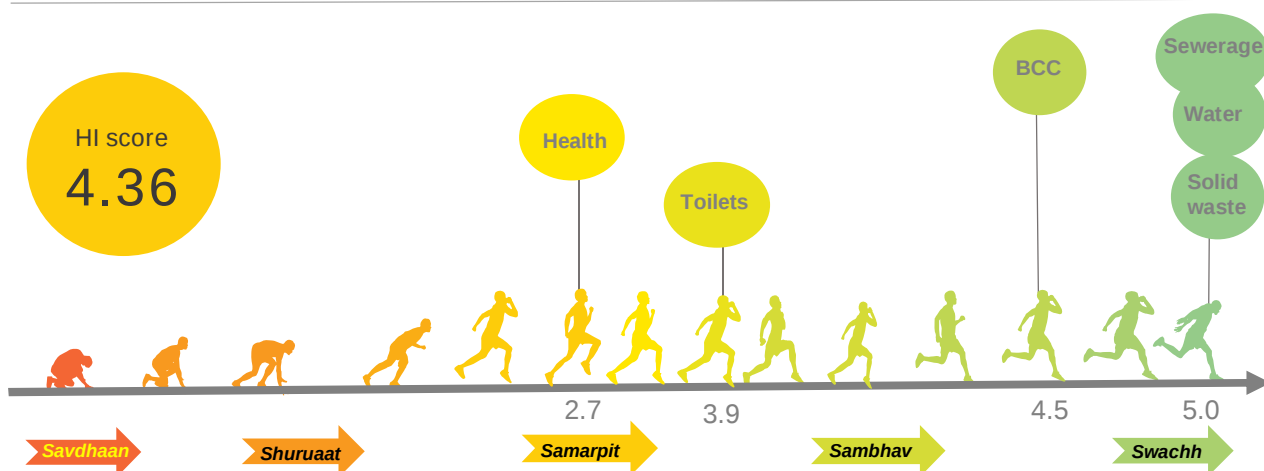


Exhibit F: Demographic Scenario of New Delhi Municipal Corporation

City Highlights: NDMC ranks 4 out of 75 cities in the Swacch Survekshan. The floating population of NDMC is nearly 5 times the ULB's population which reflects the ULB's importance in terms of commercial activities.

Sector-wise Performance²⁷

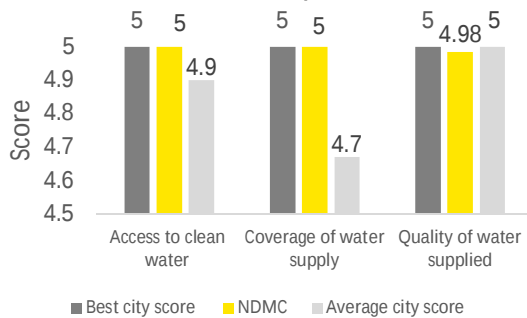


²⁶ Demographics data is as per census 2011. Population density and growth is for the Delhi city. Population growth is taken with respect to 2001 and population density as of 2016.

²⁷ For year 2015-16

High Performance Sectors²⁸

Water sector performance



Water

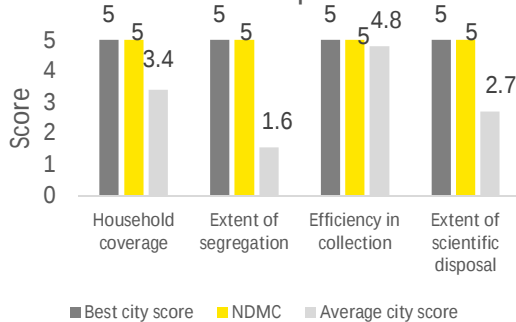
Among the six sectors, NDMC has the best performance in the water sector and has achieved the Swachh sector status. Through the Delhi Jal Board (DJB), NDMC supplies 125 MLD water, catering to all the households in the city. All the water supplied is treated at the water treatment plants.

Solid waste

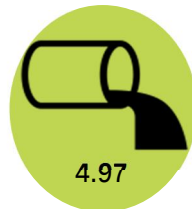
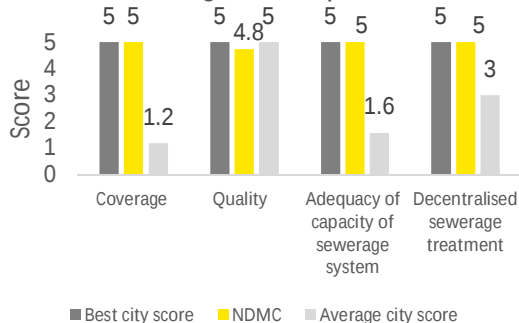
NDMC covers 100% households via door-to-door waste collection and is able to collect 100% waste generated. NDMC supplies all the MSW collection to waste-to-energy plants. Also, the process of transfer of waste has been 100% mechanised.



Solid waste sector performance



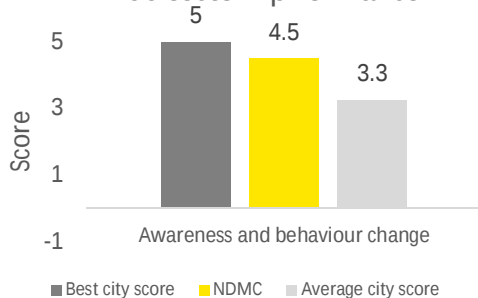
Sewerage sector performance



Sewerage

NDMC has a total of 604 GLD capacity of STP, and all the sewerage generated is treated before final disposal. All the 27,000 households are directly connected through the sewerage network.

BCC Sctor Pprformance

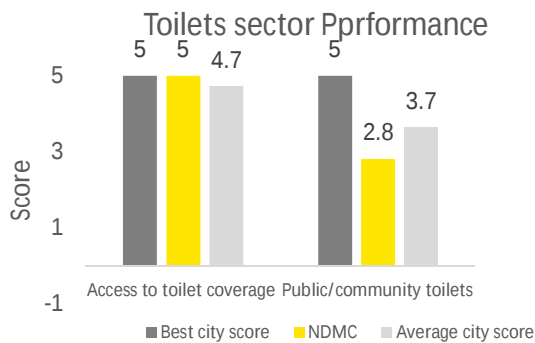


BCC funds utilisation

NDMC received INR6.2 million under SBM for awareness creation, of which it has utilised 90%. New schemes can be implemented to increase the utilisation of funds.

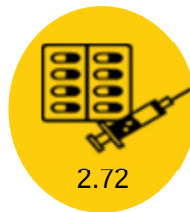
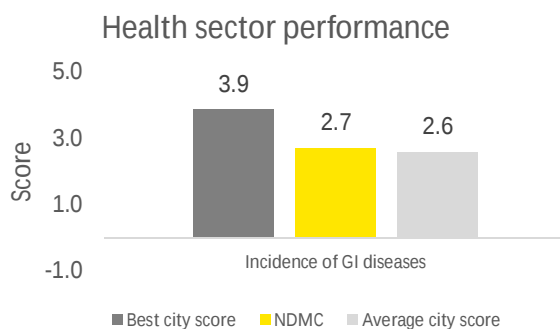
²⁸ Best city score denotes the best score amongst the 10 cities covered under the HI program.
Average city score denotes the overall average score amongst the 10 cities covered under the HI program.

Sectors Requiring Attention



Toilets

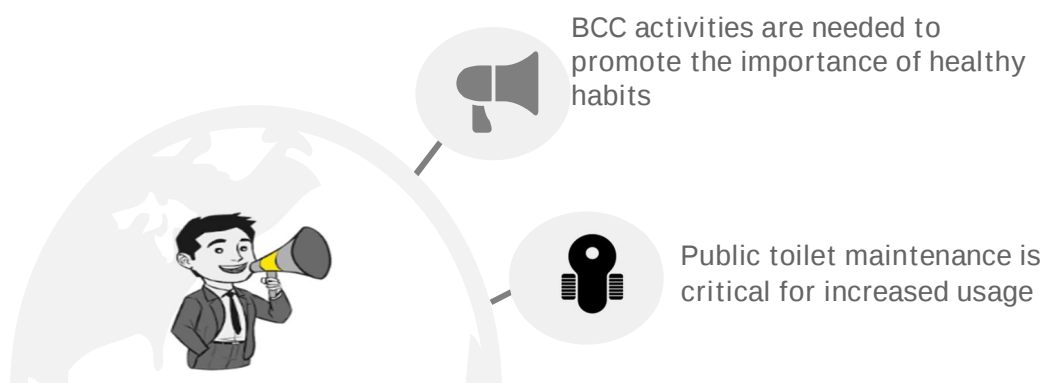
NDMC lags behind in the toilets sector, where many other cities are performing quite well. However, the sector score might not be a true indicator since NDMC has a unique case wherein the floating population is 5 times the total population. While all the individual households have access to toilets, there seems to be a shortfall for the floating population.



Health

There have been no cholera cases reported in the last 3 years, which is a positive. Based on the number of GI cases admitted in Charak Palika Hospital, NDMC, Moti Bagh New Delhi, there is a decline in the number of incidences and hence the sector score of 2.72.

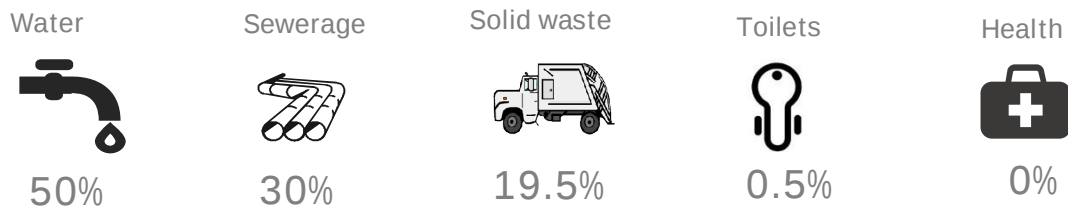
Call for Action



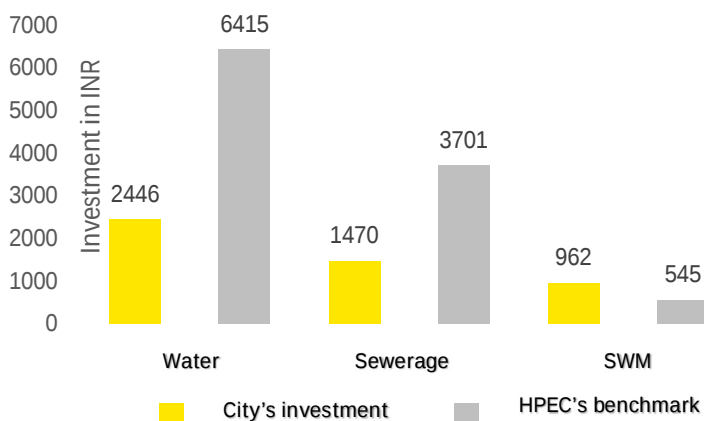
- We suggest NDMC should invest more on awareness creation and should effectively utilise the allocated BCC funds.
- A possible BCC programme relevant to NDMC can be to create a comprehensive training programme around cleaning and maintenance of toilets, public toilets marketing, hygiene promotion, behavioural change, public policy, social entrepreneurship and women's empowerment. The target audience would be urban sanitation professionals, toilet cleaners, rural residents, urban slum dwellers, panchayats, low-income women and manual scavengers. A similar programme has been implemented in parts of Delhi and Rishikesh and has proven successful.
- NDMC should also focus on constructing more public toilets to cater to its large floating population.

Investment Heat Map and Recommendations

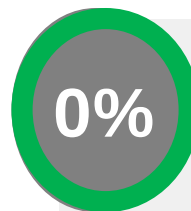
Break-up of the Spend in the Hygiene Sectors



City's per capita investment v/s HPEC benchmark:²⁹

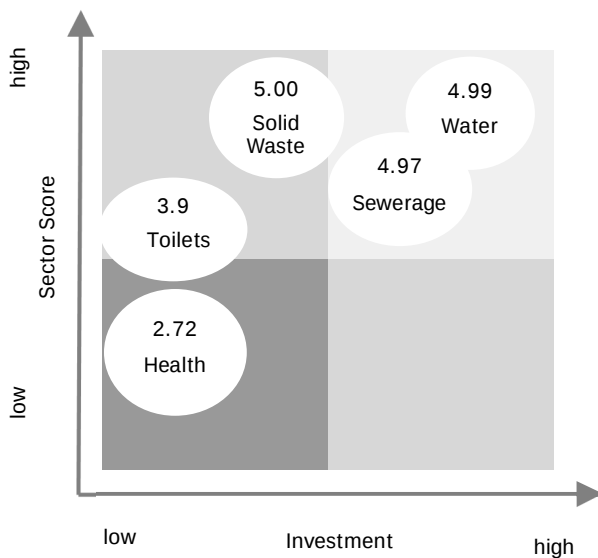


While NDMC invests 4% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities:
NDMC's budget shows that it has not spent on awareness programs. Therefore, mass awareness programs need to be taken up.

Relation of Investment and Performance:

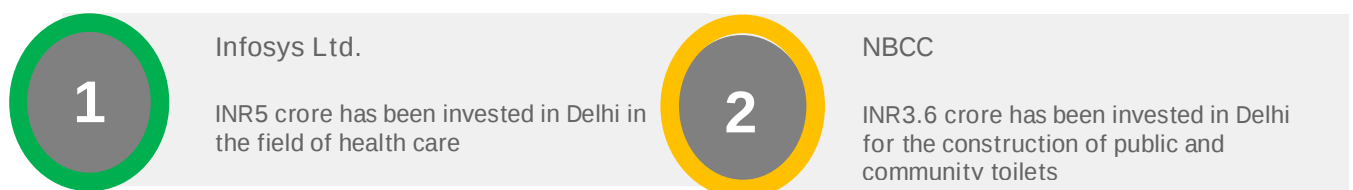


Among the various hygiene sectors, NDMC invests mainly in the water, sewerage and solid waste sectors. Annual spend is minimal in health, toilets and BCC.

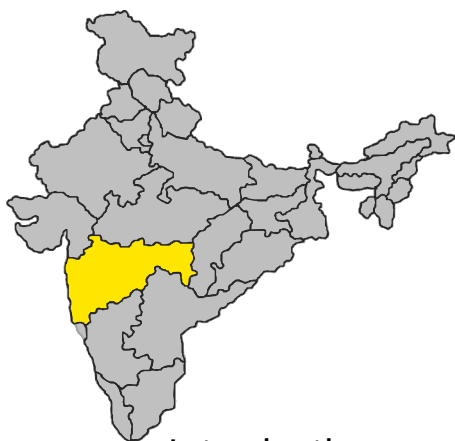
The majority of NDMC's funds are spent on operation and maintenance and infrastructure creation.

However, NDMC needs to increase its investment in BCC activities.

Private Investment in the Hygiene Sectors in the City:



²⁹ <http://icrier.org/pdf/FinalReport-hpec.pdf>



Hygiene Assessment Report: Pune

Introduction

Pune District is situated in Maharashtra state of India and is the second largest city of the state after Mumbai. Driven by the rapid urbanization, the city has taken initiatives to ensure a sustainable future and taking initiatives to transform into a Smart City.³⁰ It is the prime tourist destination of state & is an important educational centre. It is home for IT companies like WIPRO, TCS, Infosys & Accenture.

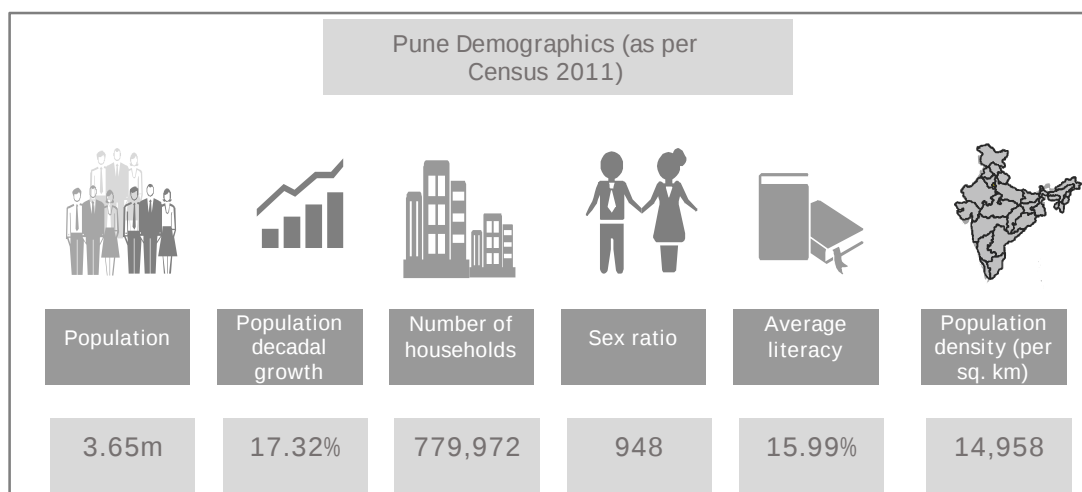
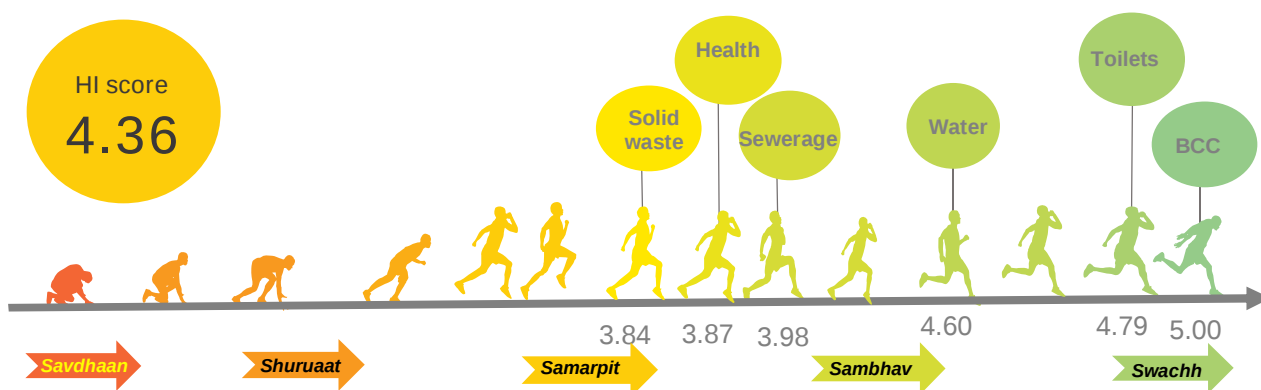


Exhibit G: Demographic Scenario of Pune

City Highlights: Pune ranks 11 out of 73 cities in Swacch Survekshan. The city has undertaken various programs for individual and community sanitation, such as one home one sanitation for urban poor, community sanitations, public sanitations, CSR partnerships, school sanitations through CSR intervention and Pune Pattern of Ladies' Sanitations. The city has various important organisations such as Swades, Samagra and Saraplast Pvt. Ltd. working to develop the city's sanitation portfolio.

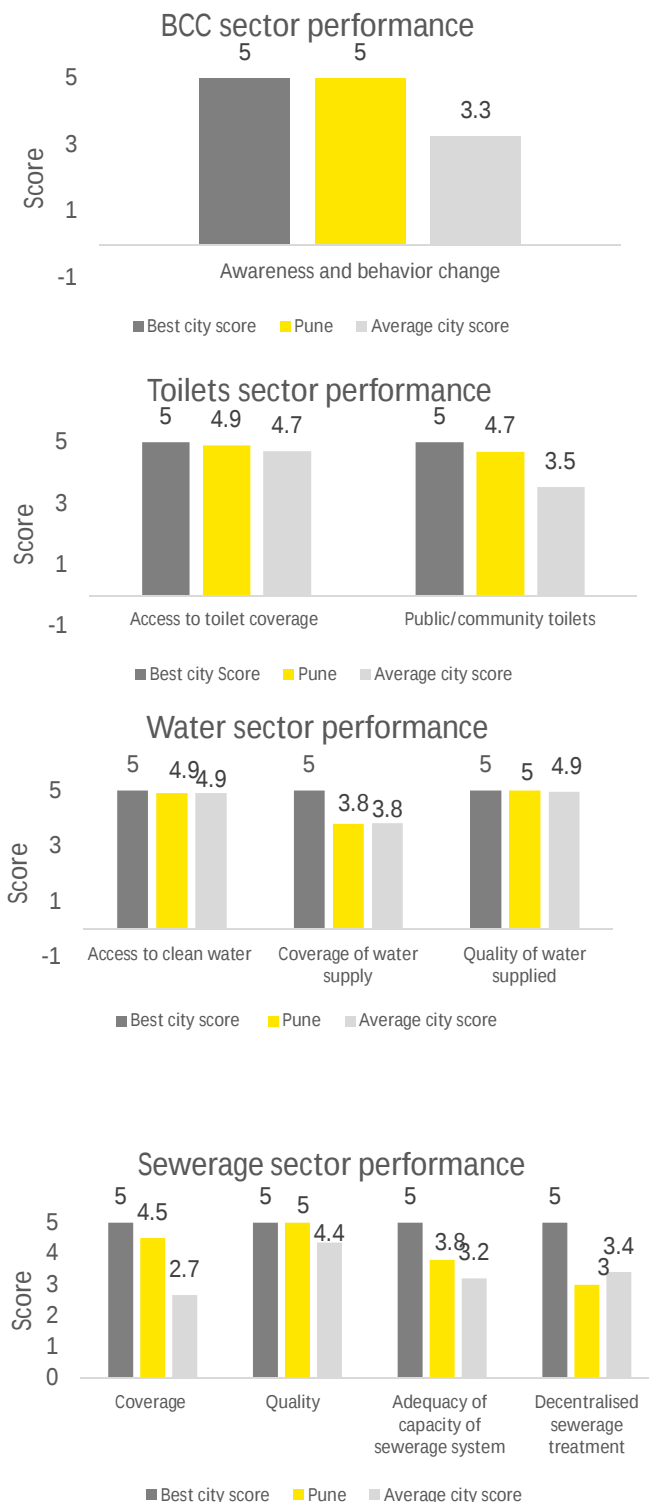
Sector-wise Performance³¹



³⁰ Demographics data is as per census 2011, Population growth is taken with respect to 2001

³¹ For year 2015-16

High Performance Sectors³²



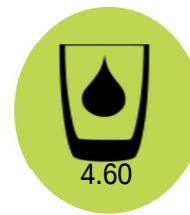
Behaviour Change and Communication (BCC)

Pune has allocated INR 1,640,000 under SBM of which 100% has been utilized. The city allocated sufficient funds and has made the expected expenditure too. To continue with the achievements, the city should keep adopting targeted interventions.



Toilets

Pune has secured the Swachh status in the terms of access to toilets. An estimated 1,058,124 households have access to individual toilets. The city has nearly 1,500 public/community toilet seats, which can cater to an approximate 93% of the floating population.



Water

Pune has achieved the Swachh status in the water sector. PMC has been able to supply clean water to all the citizens but coverage of water supply is 76%. This is one aspect that needs improvement, especially in the western part of the city.



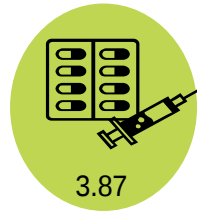
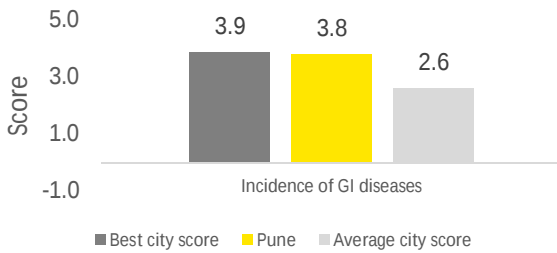
Sewerage

It was observed that the sewerage system covers almost 100% of the city and the city is able to maintain the quality of sewage before releasing. The city needs to create more infrastructure to treat all the sewage generated (currently only 76% sewage is treated). PMC also needs to ramp up its efforts to create decentralised sewage treatment system for the fringe areas of the city.

³²

Best city score denotes the best score amongst the 10 cities covered under the HI program
Average city score denotes the overall average score amongst the 10 cities covered under the HI program

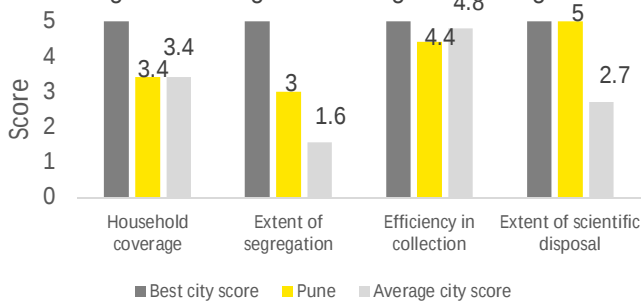
Health sector performance



Health

It was observed that the city has seen a decrease in the incidence of GI diseases, which correlates with the city's hygiene conditions. The decrease in the number of GI cases indicates good hygiene conditions in the city.

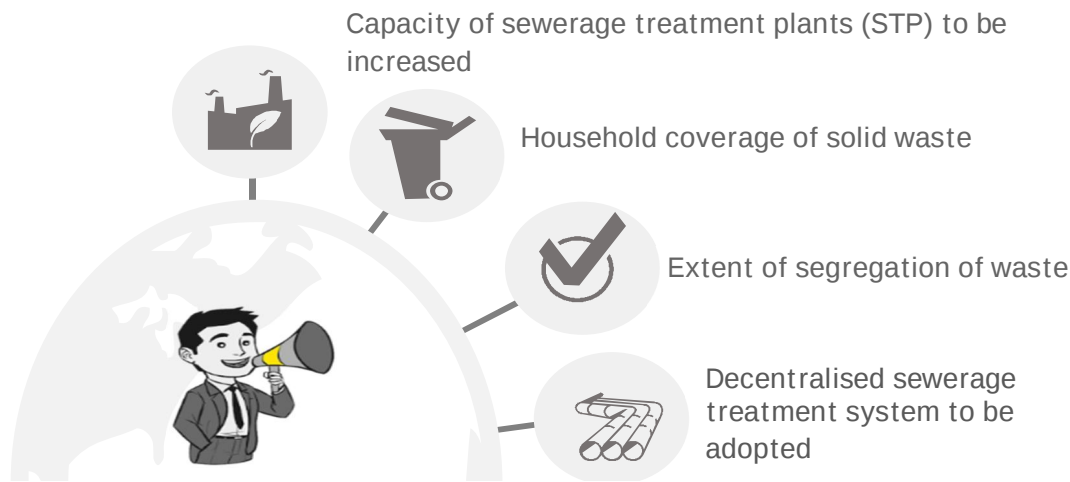
Solid waste sector performance



Solid waste

The city performs well in terms of efficiency of collection of solid waste and coverage of household SWM services and is disposing its waste in the designated landfill sites, which reflects the city's commitment to maintain the solid waste value chain. The Swachh model is adopted to collect segregated waste from the households but it is not implemented throughout the city.

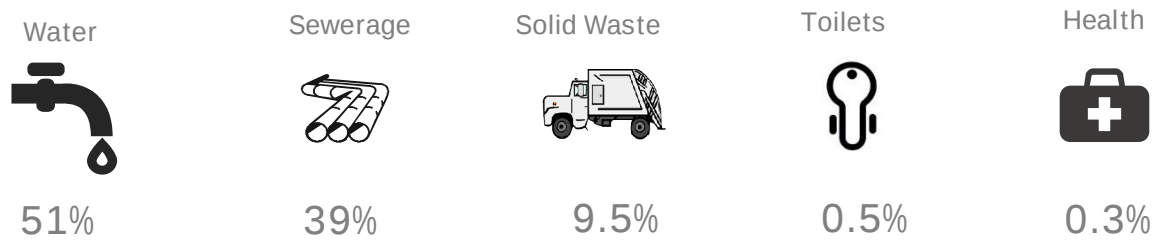
Call for Action



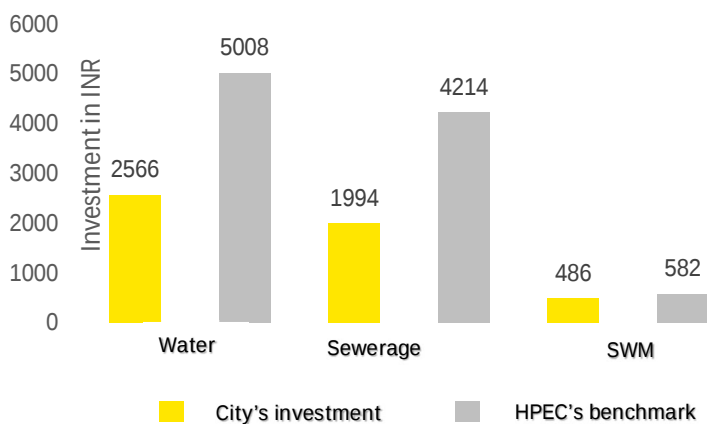
- ▶ The city municipality needs to ramp up its efforts to cover all the households through the existing solid waste collection system. Though the city is well covered through the Swachh model, which promotes the collection of segregated waste from households, it does not cover the entire city. Since the city has a model in place, it will be easier to replicate it in the wards that are left out currently.
- ▶ The population is well connected with the sewerage system, but the existing capacity of the plant is not sufficient to treat all the sewage generated. To bridge this gap, PMC should focus on creating more infrastructure. It can also check the possibility of installing decentralised sewerage treatment facilities, which will facilitate the treatment of all the sewage generated.
- ▶ Awareness and behaviour change activities directly affect the city's hygiene conditions. The city should educate the masses through mediums such as mobile apps and can use effective traditional methods such as wall paintings, posters and street plays to improve in the hygiene sector. It can also adopt available best practices to improve its sewerage system as well as solid waste collection.

Investment Heat Map and Recommendations

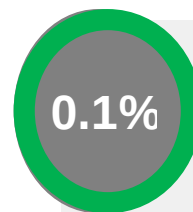
Break-up of the Spend in the Hygiene Sectors



City's per capita investment v/s HPEC benchmark³³:

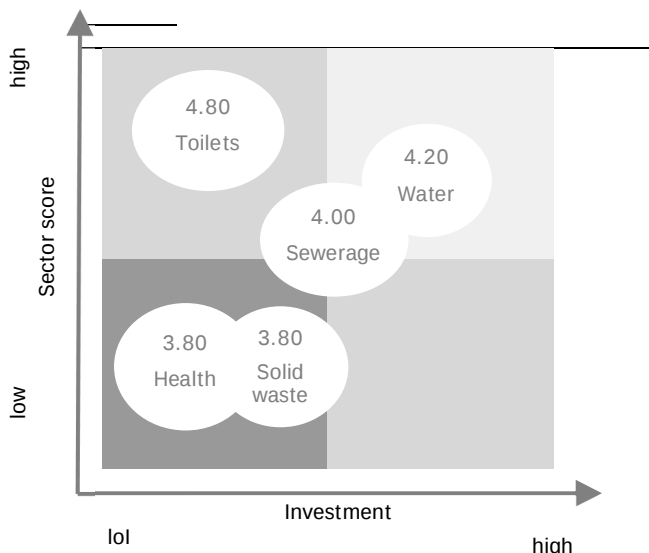


Pune Municipal Corporation (PMC) invests 42% of its total budget on the hygiene sectors. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities:
PMC's budget shows negligible amount spent on awareness programs. PMC has spent INR16.4 lakhs of the funds received under SBM.

Relation of Investment and Performance:

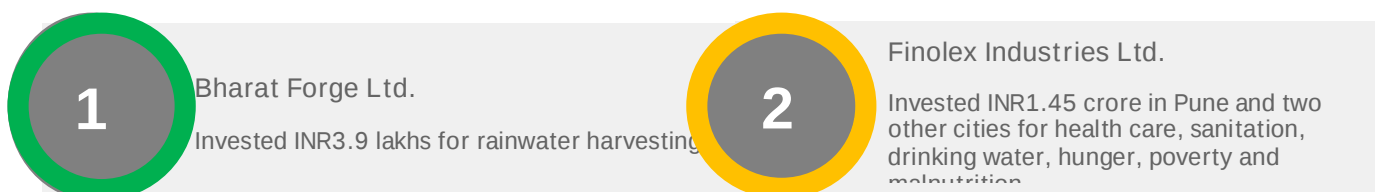


Amongst the various hygiene sectors, PMC invests majorly in the sewerage and water sectors. Although it performs well in the water sector, solid waste requires much more investment to improve.

PMC spends the lowest in health, toilets and solid waste. Toilets should receive more investment, especially with increasing focus on SBM. Also, PMC needs to increase its investment in BCC with emphasis on solid waste and Health.

The majority of PMC's funds are spent in infrastructure creation and O&M activities. PMC should increase the spent on BCC, and should continue to effectively utilise the available funds through planned interventions.

Private Investment in the Hygiene Sectors in the City:



Hygiene Assessment Report: Raipur

Introduction

Raipur (urban) is the capital city of the state of Chhattisgarh in India and is divided into 8 zones at the administrative level. It is commonly called as the 'rice bowl of India' where hundreds of varieties of rice are grown. It serves as a regional hub for trade and commerce for a variety of local agricultural and forest products.³⁴

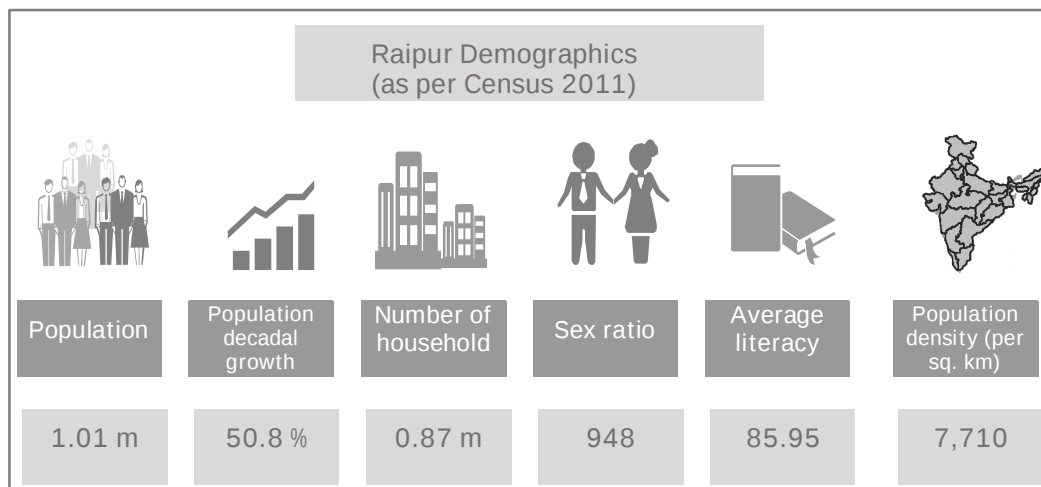
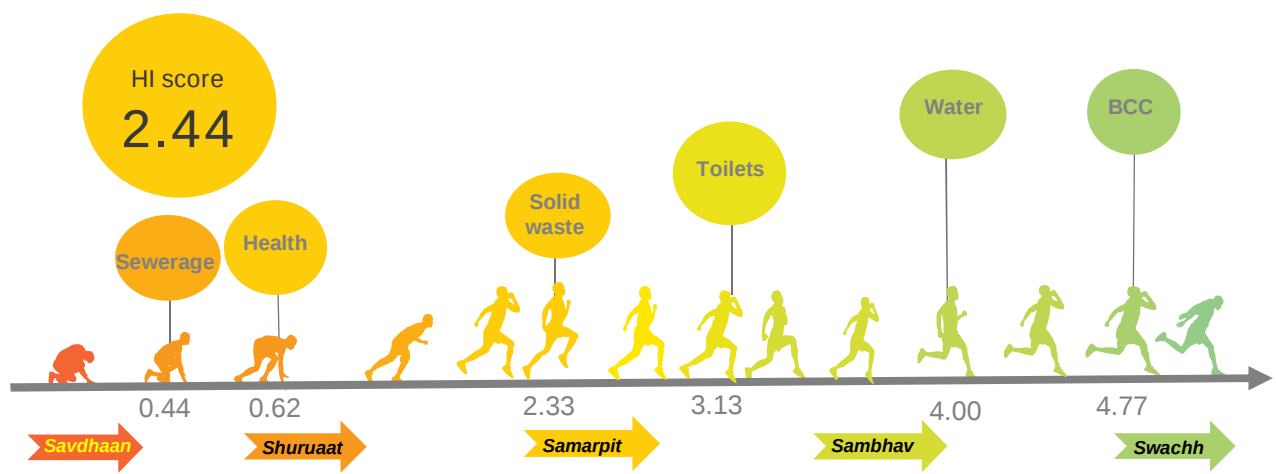


Exhibit E: Demographic Scenario of Raipur

Achievements: Raipur ranks 68 out of 75 cities in the Swachh Sarvekshan. It was placed in the list of Fast Track Smart Cities. With a view to ensure proper implementation of the centrally sponsored Smart City Mission, the Chhattisgarh government announced the formation of two state-owned companies for the execution of projects for Raipur and Bilaspur: Raipur Smart City Ltd. and Bilaspur Smart City Ltd.

Sector-wise Performance³⁵

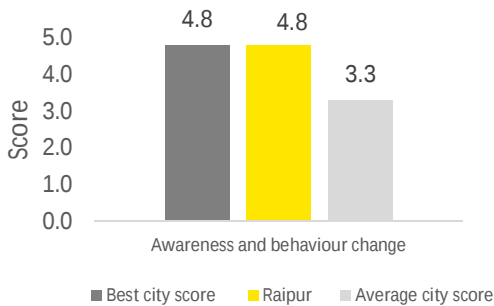


³⁴ Demographics data is as per census 2011. Population growth is taken with respect to 2001.

³⁵ For year 2015-16

High Performance Sectors³⁶

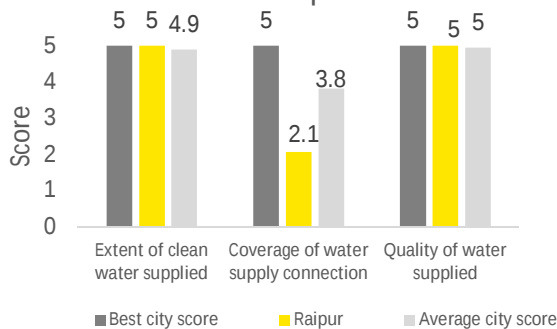
BCC sector performance



BCC funds utilization

Raipur has the best performance, among 10 cities, in terms of SBM funds utilization and has achieved Swachh status for the sector. From the INR 31.44 Lacs allocated, 95% of the funds have been spent on BCC activities.

Water sector performance

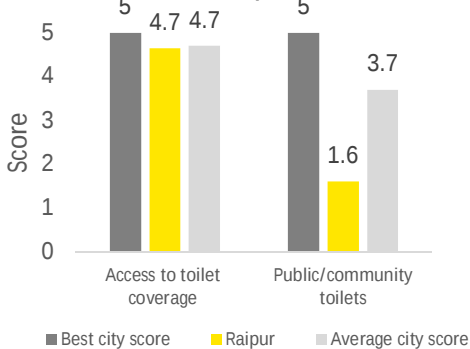


Water

190 MLD of water is supplied by the municipal body, while the installed treatment capacity is 277 MLD. Raipur needs to focus on increasing the household connections. Also there is no mechanism to check the no. of illegal connections which needs to be taken care of.

Sectors requiring Attention

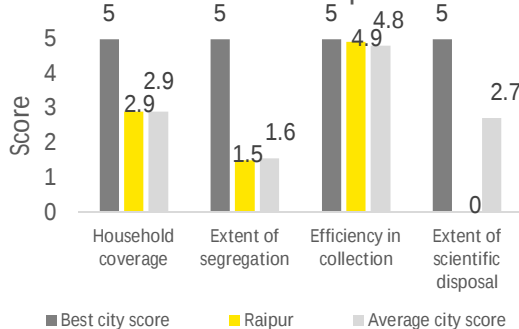
Toilet sector performance



Toilets

Raipur has secured the Sambhav status in terms of access to toilets. An estimate of 199,950 households have access to individual toilet. The city has nearly 144 public/community toilet seats which can cater to an approximate of 32% floating population.

Solid waste sector performance



Solid waste

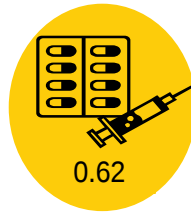
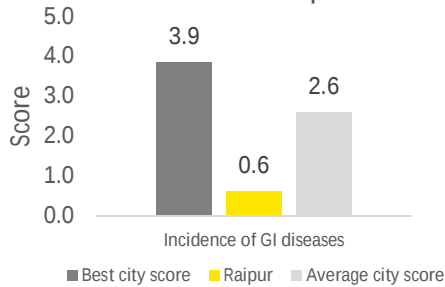
Coverage of households under door to door municipal waste collection is very low with over 40% of the households not being covered. Segregation of waste is another issue across all levels of waste collection. There is no designated scientific landfill, rather it is a dedicated dumping ground.

³⁶

Best city score denotes the best score amongst the 10 cities covered under the HI program.

Average city score denotes the overall average score amongst the 10 cities covered under the HI program.

Health sector performance

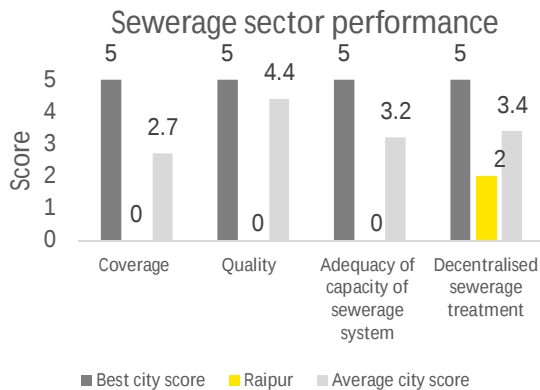


Health

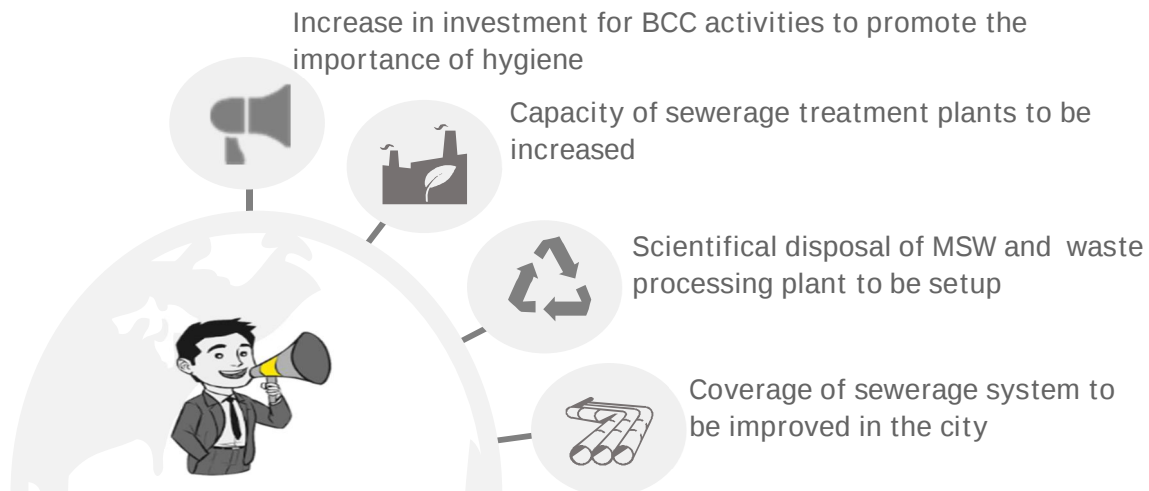
It was observed that Incidence of gastro intestinal (GI) diseases has increased over the past years which correlates with the city's hygiene conditions.

Sewerage

Raipur has a very low score in the sector as the city lacks adequate coverage of sewerage system and the capacity to treat the sewage generated. A 6MLD sewage treatment plant is in the planning stage. But city needs to create the necessary infrastructure to improve the overall sector score.



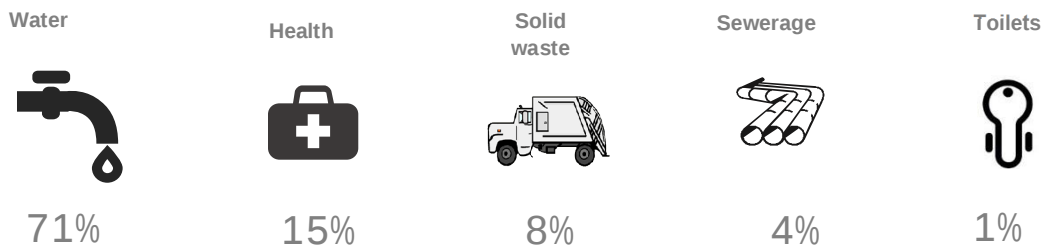
Call for Action



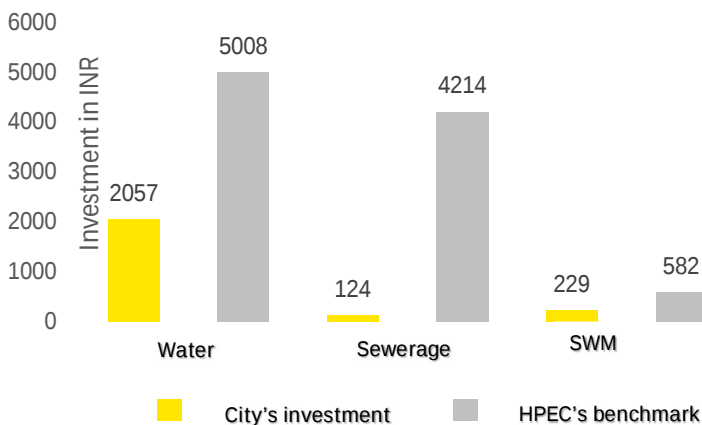
- Sewerage system and disposal of solid waste management are the two critical components directly affecting the city's hygiene conditions. Therefore, RMC needs to effectively think upon allocating more funds to improve the sewerage system.
- Creation of a decentralised sewerage treatment system can be a step ahead in this direction. Decentralized system is less capital intensive and can be applied across all Indian cities. An adequate system in place will itself take care of the entire value chain, right from sewage generation to its disposal.
- RMC should adopt awareness-creation activities such as building change leaders within the society who would help mobilise and educate at the root level. A similar programme has been executed in UP and Bihar and has proven to be extremely successful.

Investment Heat Map and Recommendations

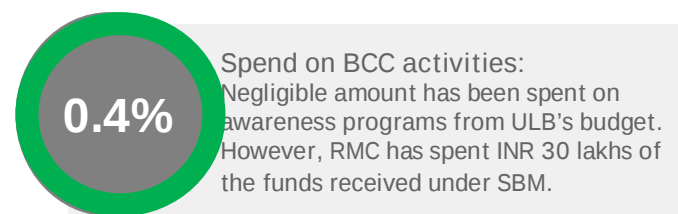
Break-up of the Spend in the Hygiene Sectors:



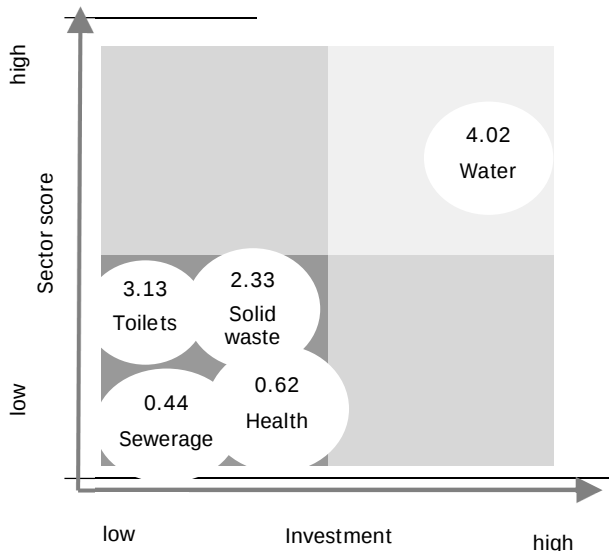
City's per capita investment v/s HPEC benchmark:³⁷



While Raipur Municipal Corporation (RMC) invests 14% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Relation of Investment and Performance:

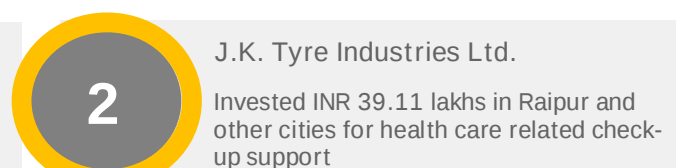
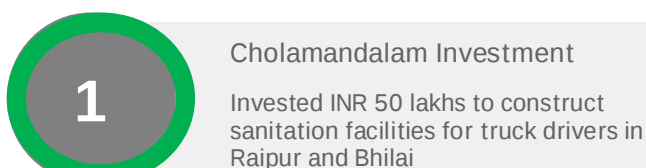


Amongst the various hygiene sectors, RMC invests majorly in BCC and water. Although it performs well in the sewerage and sanitation sectors, both the sectors require much more investment to improve.

RMC spends the lowest in sewerage, solid waste and sanitation. Since sufficient funds are spent on the water sector, RMC should focus on spending its share of investments in creating infrastructure and conducting BCC activities in the sewerage, solid waste and toilet sectors.

The majority of RMC's funds are spent in operation and maintenance and it is necessary to focus on the capacity building activities.

Private Investment in Hygiene Sectors in the City:

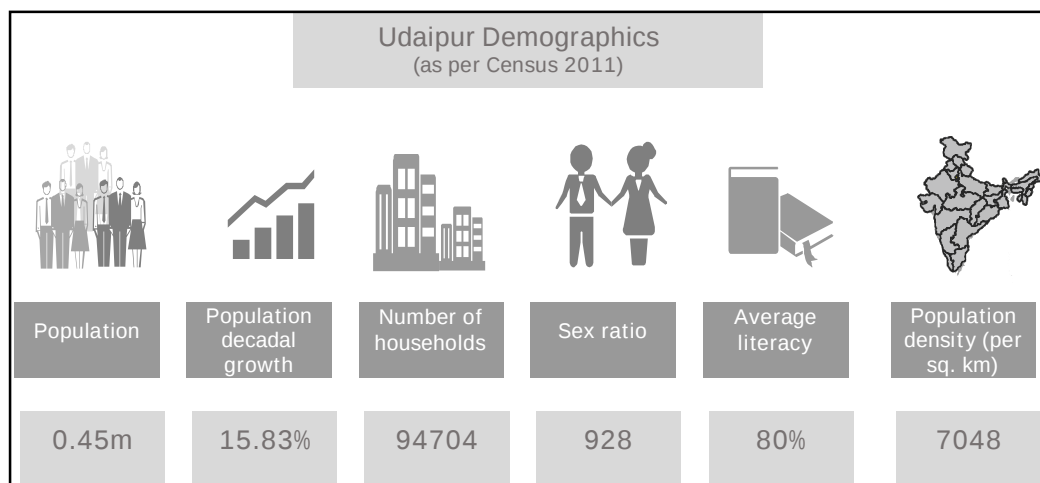


³⁷ <http://icrier.org/pdf/FinalReport-hpec.pdf>

Hygiene Assessment Report: Udaipur

Introduction

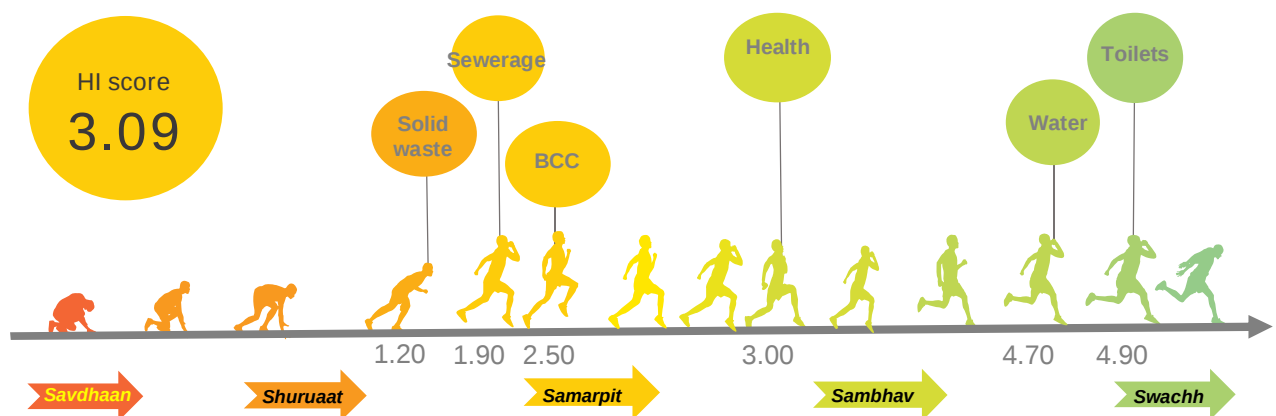
Udaipur city, situated in the Indian state of Rajasthan, is a popular tourist destination because of its picturesque landscape, lakes, historic palaces and architecture. The city, also known as the 'City of Lakes', is governed by Udaipur Municipal Corporation (UMC) and has 55 municipal wards. Spread over an area of 37 sq. km, Udaipur is an important administrative and educational centre in the state.



³⁸ Exhibit E: Demographic Scenario of Udaipur

City Highlights: Udaipur had a dismal performance in the Swachh Survekshan last year and is eyeing to improve its performance in the second edition of the survey. Night sweeping at all major tourist attractions such as Fatehsagar Lake, Pichola Lake and Saheliyon ki Bari is a novel initiative that can be replicated across all major tourist destinations in India. With a host of initiatives already underway, the performance of the city is likely to improve in the subsequent years.

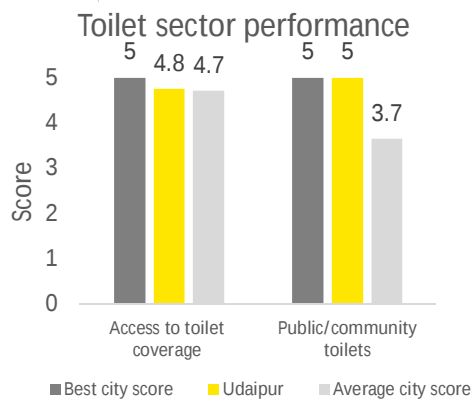
Sector-wise Performance³⁹



³⁸ Demographics data is as per census 2011. Population growth is taken with respect to 2001 and population density as of 2016.

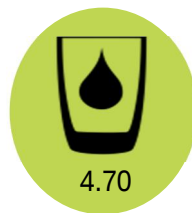
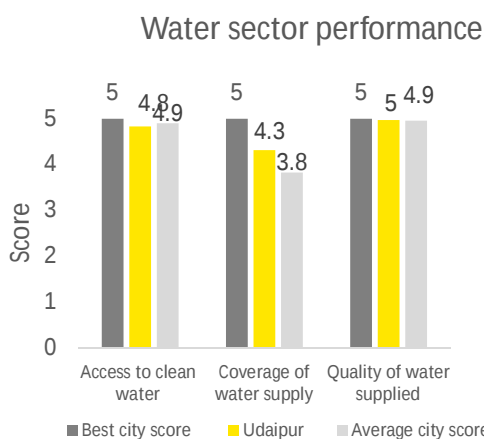
³⁹ For year 2015-16

High Performance Sectors⁴⁰



Toilets

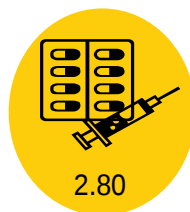
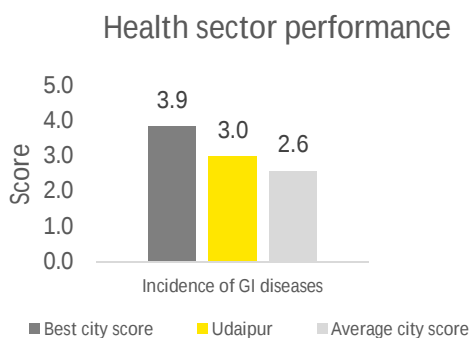
Amongst the six sectors, Udaipur has secured the Swachh status in terms of access to toilets. An estimate of 95,000 households have access to individual household toilets. The city has nearly 670 public/community toilet seats, which can cater to 100% of the floating population.



Water

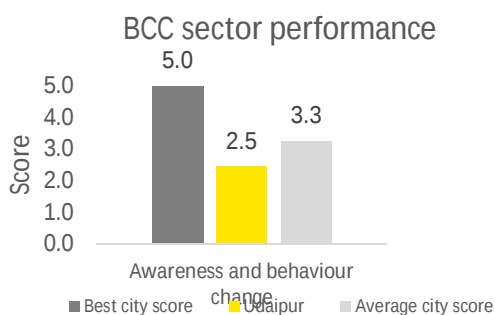
Udaipur has achieved the Swachh status in the water sector. UMC has 86% coverage of water supply and provides water to 97% of the population of city. The scores project ideal conditions in the city in terms of drinking water supply.

Sectors Requiring Attention



Health

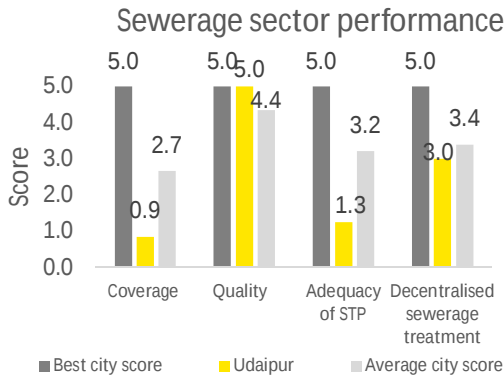
The observed decrease in the incidence of GI diseases correlates with the city's hygiene conditions. The decrease in the number of GI cases generally indicates an improvement in the hygiene condition of the city.



BCC funds utilization

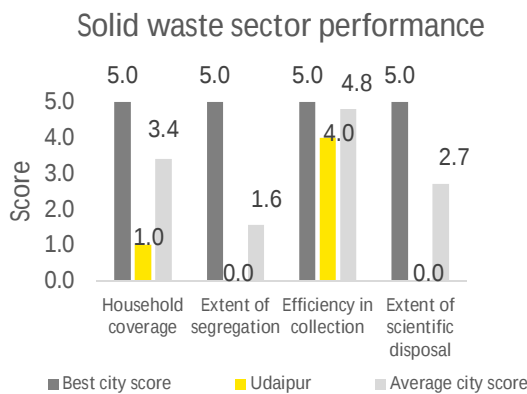
The city has been allotted 50% marks because, under SBM, no funds were received in 2015–16 for BCC activities. The city needs to focus on BCC activities to make citizens more aware of the importance of hygiene.

⁴⁰ Best city score denotes the best score amongst the 10 cities covered under the HI program.
Average city score denotes the overall average score amongst the 10 cities covered under the HI program.



Sewerage

Although the quality of sewerage released after treatment at the STP is adequate, only a small fraction of households are currently connected to the sewer network. Sewage treatment capacity, too, is inadequate and Udaipur needs to invest heavily to create the required infrastructure.



Solid waste

The city performs well in terms of efficiency of collection of solid waste, but lags behind in the coverage of households with door-to-door collection and scientific disposal of waste. The city lacks basic infrastructure such as an MSW processing plant. Hence, significant investment is required in the sector.

Call for Action

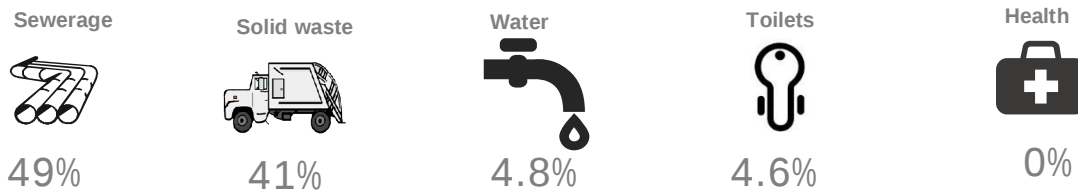
BCC activities to be taken up to create awareness among the citizens



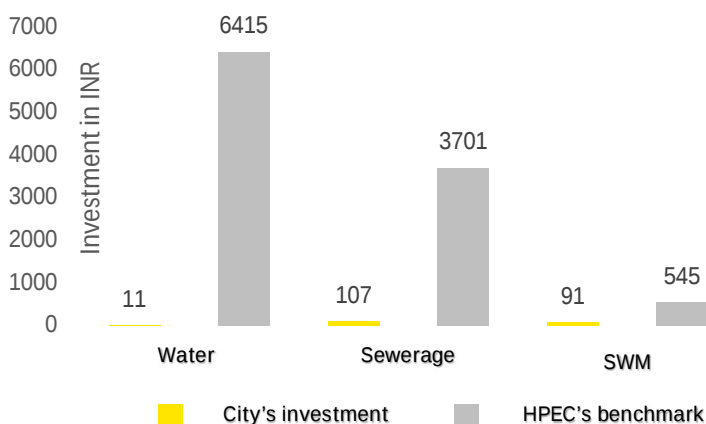
- Udaipur needs to ramp up its efforts to cover households within the sewer network and solid waste collection system.
- Awareness and behaviour change activities impact the city's hygiene conditions and Udaipur needs to make it's citizen aware about the importance of hygienic living.
- We suggest UMC to start a modular school education programme focusing on personal hygiene, hygiene at home, hygiene at school, hygiene in illness, hygiene in neighbourhood etc. A similar programme has been initiated nationwide targeting 2.5 million school kids along with their teachers and families.

Investment Heat Map and Recommendations

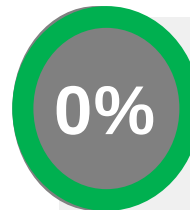
Break-up of the Spend in the Hygiene Sectors



City's per capita investment v/s HPEC benchmark: ⁴¹

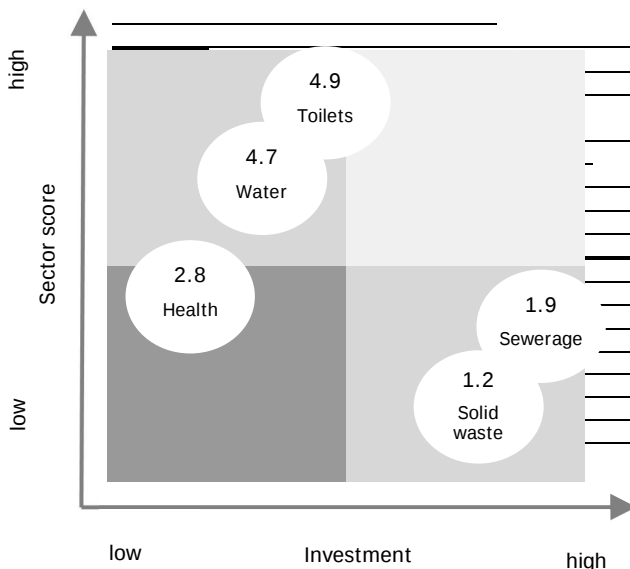


While Udaipur Municipal Corporation (UMC) invests 9% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities: UMC's budget shows that no amount has been spent on awareness programs. This is very alarming and actions should be taken accordingly.

Relation of Investment and Performance



Amongst the various hygiene sectors, UMC invests predominantly in solid waste and sewerage. Although the city performs well in the water supply and access to toilets sectors, both the sectors require much more investment to sustain the performance.

The majority of UMC's funds are spent on operation and maintenance and there is negligible allotment for capacity building activities.

UMC needs to focus on infrastructure creation, but at the same time, there must be adequate allotment towards the BCC activities for mass awareness.

Private Investment in Hygiene Sectors in the City:



VIP Industries

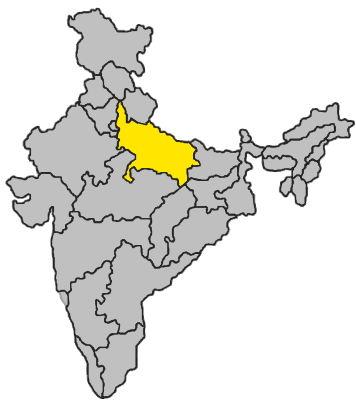
Invested INR1.2 crore in Udaipur and other cities to provide medical facility

<http://mncr.org/pam-manipal-hpec.pdf>



Hindustan Zinc Ltd.

Invested INR12.83 crore in Udaipur and other cities for providing services for health, water and sanitation



Hygiene Assessment Report: Varanasi

Introduction

Varanasi district is situated in the state of Uttar Pradesh in India, on the banks of river Ganga. It is one of the most important pilgrim centres of North India. A floating population of 25,000 visits the city per day. Varanasi has received huge attention after the SBM was initiated by PM Modi from Varanasi.⁴²

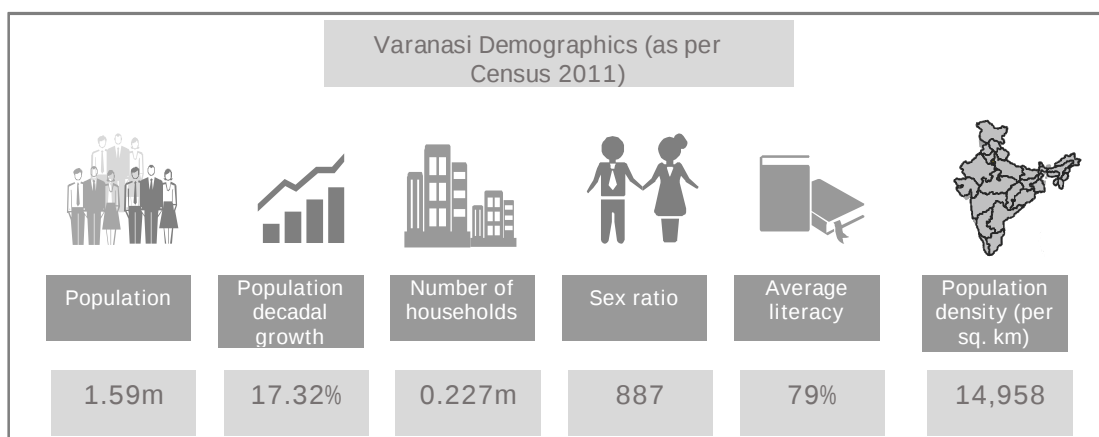
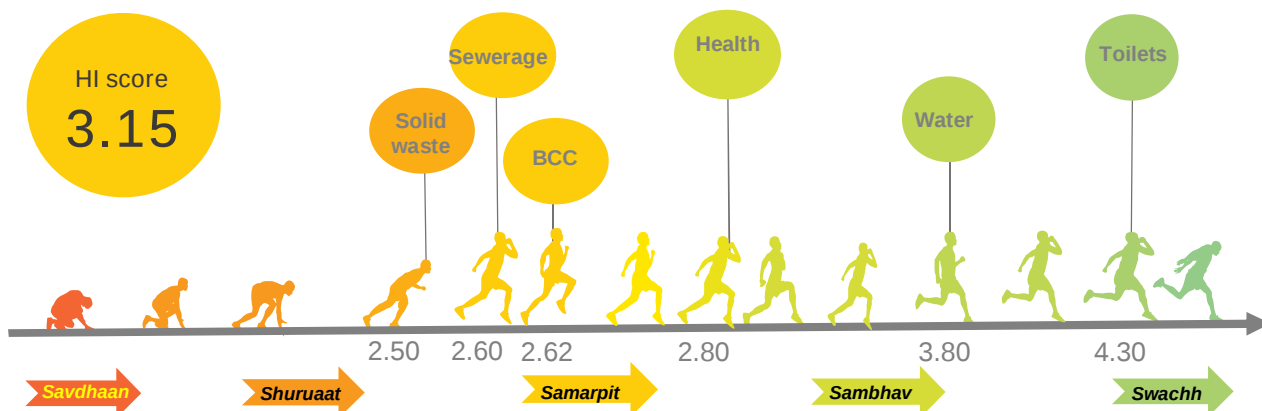


Exhibit J: Demographic Scenario of Varanasi

City Highlights: Varanasi ranks 65 out of 75 cities in the Swachh Survekshan. The city has received funding from JICA for its development in the sanitation and sewerage sectors. The funds received from the foundation would be used for the construction of new STP plants and individual sanitation. The city has received lot of traction from private players such as BHEL, NTPC and RFPL for investments in various sectors of hygiene, after the launch of SBM.

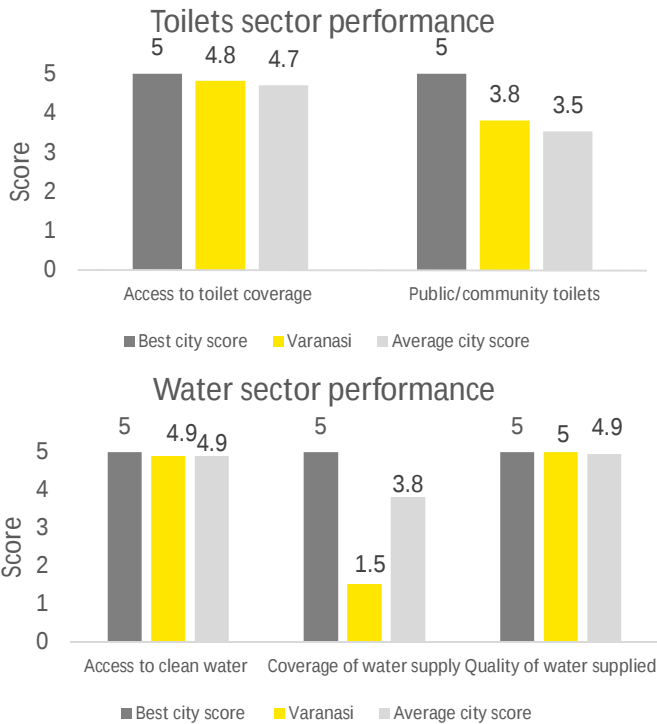
Sector-wise Performance⁴³



⁴² Demographics data is as per census 2011. Population growth is taken with respect to 2001.

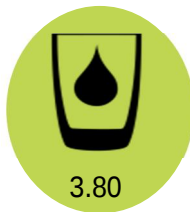
⁴³ For year 2015-16

High Performance Sectors⁴⁴:



Toilets

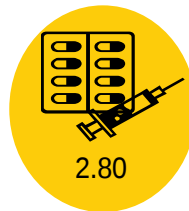
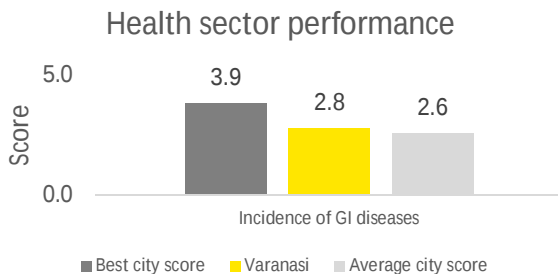
Amongst the six sectors, Varanasi has secured the Swachh status in the toilet sector. An estimated 237,000 households have access to toilets. The city has nearly 915 public/community toilet seats, which can cater to an approximate 76% of the floating population.



Water

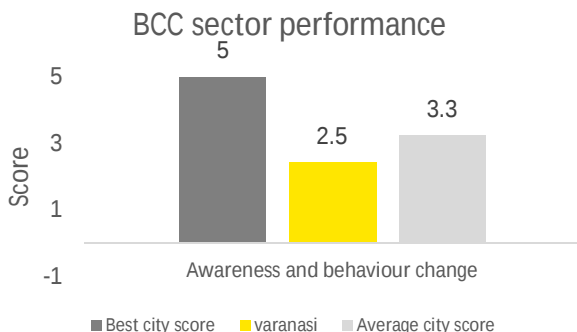
Varanasi has achieved the Sambhav status in the water sector. While VMC has only 30% households covered in terms of drinking water supply, it is able to supply clean water to 99% of the population.

Sectors Requiring Attention



Health

The city has seen a decrease in the incidence of GI diseases, which correlates with the city's hygiene conditions.



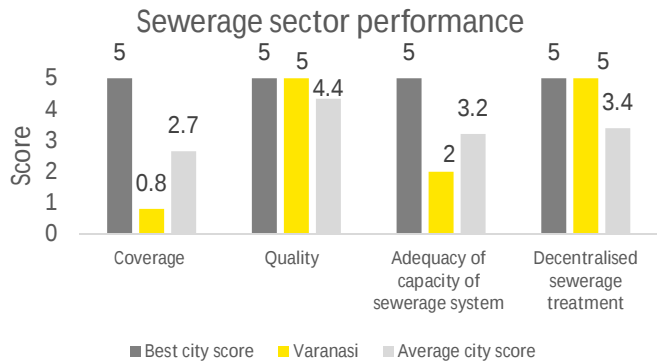
BCC funds utilization

Under SBM, for BCC activities, Varanasi has been allocated INR 2,227,684. Out of this amount, the city has utilized INR 1,169,685. Varanasi needs to take up more mass awareness activities to promote the impact of hygienic living conditions on health of the citizens.

⁴⁴

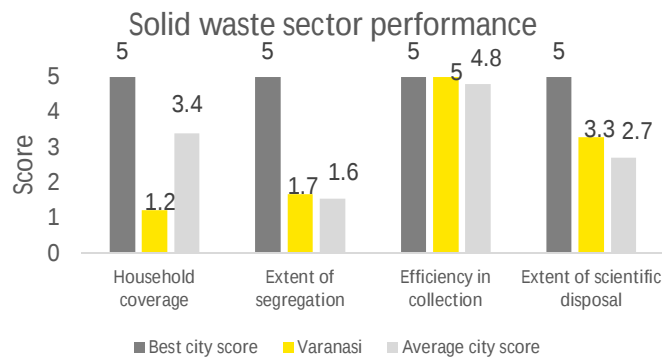
Best city score denotes the best score amongst the 10 cities covered under the HI program.

Average city score denotes the overall average score amongst the 10 cities covered under the HI program.



Sewerage

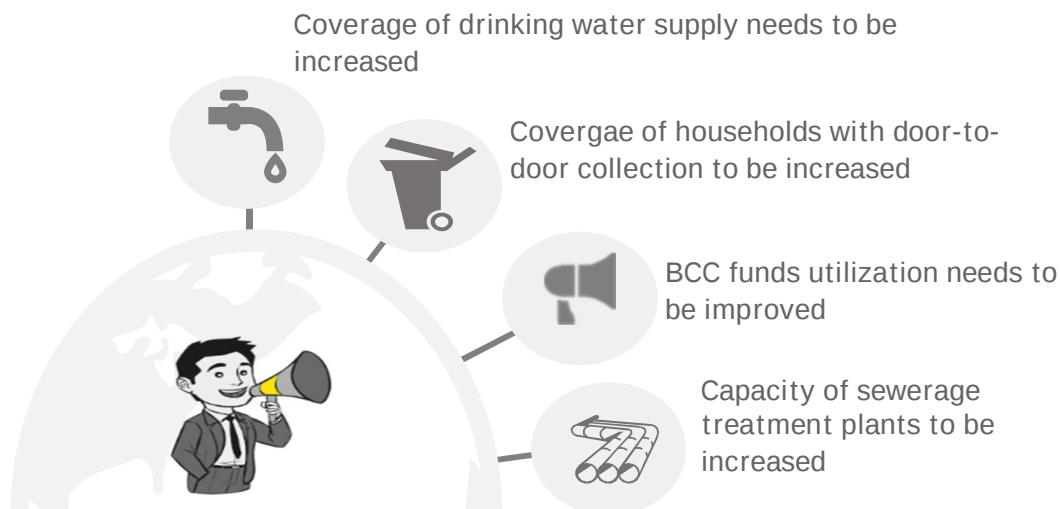
The quality of sewerage released after treatment is found to be satisfactory. However, negligible number of the households are connected to the sewer network. The treatment capacity too is not adequate and a lot of efforts are needed in the sector.



Solid waste

The city performs well in terms of efficiency of collection of solid waste, and fairly well in terms of disposal of waste, but it lags behind in terms of coverage of household SWM services and segregation of waste. An overall increase in investment in the sector is likely to have a positive impact in the subsequent years.

Call for Action



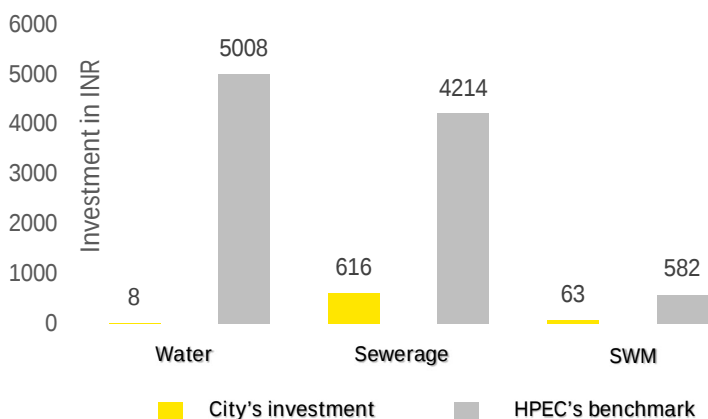
- The city municipality needs to ramp up its efforts to cover all the households with the water supply, sewerage and solid waste system. Less than half of the population is connected with these systems at present.
- To improve hygiene and health in the bottom-of-the-pyramid communities, increased awareness, improved sanitation and drinking water infrastructure, and provision of 'product bundles' for prevention and treatment of diarrhoea may be undertaken. A similar intervention has been undertaken in Uttar Pradesh, Uttarakhand, Delhi and West Bengal and around 2 million people have shown better awareness.
- VMC should also adopt available best practices to improve its sewerage system as well as solid waste management.

Investment Heat Map and Recommendations

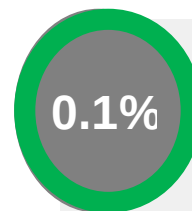
Break-up of the Spend in the Hygiene Sectors:



City's per capita investment v/s HPEC benchmark:⁴⁵

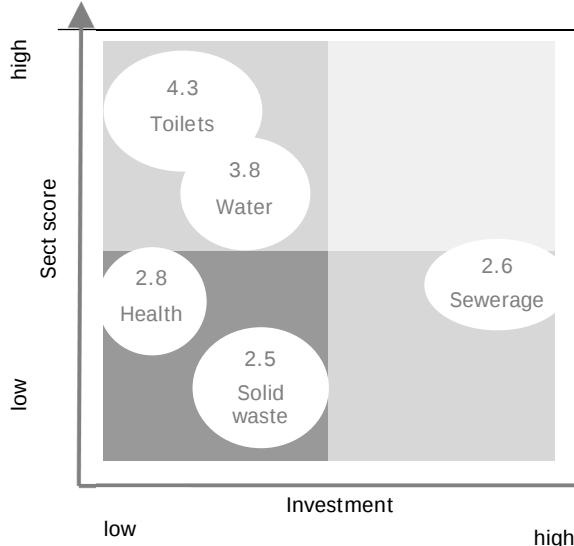


While Varanasi Municipal Corporation (VMC) invests 14% of its total budget on the hygiene sectors, Pune spends 42%. To put things into perspective, a comparison of city's per capita investment vis-a-vis the recommendations by the High Powered Expert Committee (HPEC) to achieve the defined service standards is shown in the exhibit alongside.



Spend on BCC activities:
VMC's budget shows negligible spent on awareness programs. More BCC activities need to be taken up to create mass awareness in the city.

Relation of Investment and Performance:

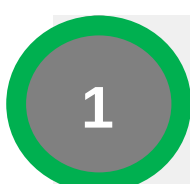


Among the various hygiene sectors, VMC invests majorly in the sewerage sector. The performance of the city can be improved by investing in the solid waste sector.

VMC spends the lowest in water, health, sanitation and BCC. With the ongoing sanitation mission in the country, VMC should look for options to invest in the sanitation sector. The investment should be mainly diverted towards infrastructure creation and BCC activities. However, VMC needs to increase its investment in BCC and health.

The majority of VMC's funds are spent in infrastructure creation and some on operation and maintenance. VMC should increase the spent on BCC and plan to effectively utilise the available funds through planned interventions.

Private Investment in the Hygiene Sectors in the City:



Dabur India Ltd.

Invested INR12 lakhs to conduct programs for empowering ASHA workers with knowledge on health care practices and social development.



Bharat heavy Electricals Ltd.

Invested INR16 crore in Varanasi for providing tractors and dumpers for solid waste collection.

⁴⁵ <http://icrier.org/pdf/FinalReport-hpec.pdf>

4. Industry Representatives' Perspective

*Milon K Nag
CMD, KK Nag*

Given that 600 million people in our country do not have access to sanitations, the only practical way of achieving the objectives of the Swachh Bharat Abhiyan is through on-site treatment of sewage. Conventional sewerage systems are much too expensive, and much too water-intensive, to provide a viable solution.

*Dorai Narayana
WASH Consultant,
Malaysia*

The primary objectives of sanitation/sewerage systems should be to protect public health; prevent pollution of water resources such as rivers, lakes, coastal areas and ground water to enable utilization for drinking, irrigation, fisheries and tourism; protect the environment; and provide nuisance-free living space.

We often come across cities where even the basic sanitation requirements are not met, and in such circumstances, an approach of introduction of simple low cost interventions to effect progress towards the objectives in an incremental manner will bring best results. Needless to say, the strategy must comprise hardware solutions as well as create an enabling environment for it to function effectively.

*Balaji Gopalan
Co-founder,
Upward Spiral*

It is time to rethink the way we engage with waste. The current attitude towards waste, from citizens and administrators, is at best aimed at removing waste out of sight, as reflected in sewage waters in rivers, lakes and oceans and landfill mountains. The urgent need is to look at all forms of waste in a more sustainable manner and at recycling rather than just removing it from our sight.

It is time to rethink the way we engage with waste. Current attitude towards waste, from citizens and administrators is at best, aimed at removing waste out of sight. As reflected in sewage waters in rivers, lakes and oceans and landfill mountains. The urgent need is to look at all forms of waste in a more sustainable manner, recycling rather than just removing it from our sight

*Rajeev Kher
Saraplast Pvt Ltd.*

About 80% of the sewage in India flows untreated into the water bodies. This has caused the nitrate levels to rise in the ground water aquifers, which has impacted the day to day functioning of citizens as the basic necessity, water, is affected. We need a more systematic, regulated and standardised way of managing and disposing sewage to not only protect the ground water aquifers, but also – by providing a business model to service and evacuate septic tanks in a timely and regulated manner using technology and modern computing – build data and make it user friendly. This would specially help the people living in urban communities and slums, who rely on ground water aquifers as their main source of water and do not have access to easy pumping or septage management.

Industry Representatives' Perspective

Swati Pednekar

Founder Member,
Deccan Gymkhana Parisar
Samiti, Pune

A neighbourhood is seen as hygienic when there's no littering. Putting litter bins cannot be the only solution. If the households in that area are not connected with the existing municipal collection system, we see this waste in the bins and soon an overflow. With bins garbage is thrown 24X7. Any corporation's clearance of bins has to keep up with this to maintain clean surroundings, adding to the costs. Segregation of waste at source is the primary responsibility of the generator. This will ensure optimum utilisation of the waste management infrastructure, such as collection, storage and disposal. A huge resource is spent on segregation after collection, often reducing the quality of waste – for example, soiled plastic bags need further cleaning before disposal. As long as there is no strict enforcement of segregated doorstep collection, we will always see overflowing litter bins and waste containers.

Swapnil Chaturvedi
Chief Toilet Cleaner,
Samagra

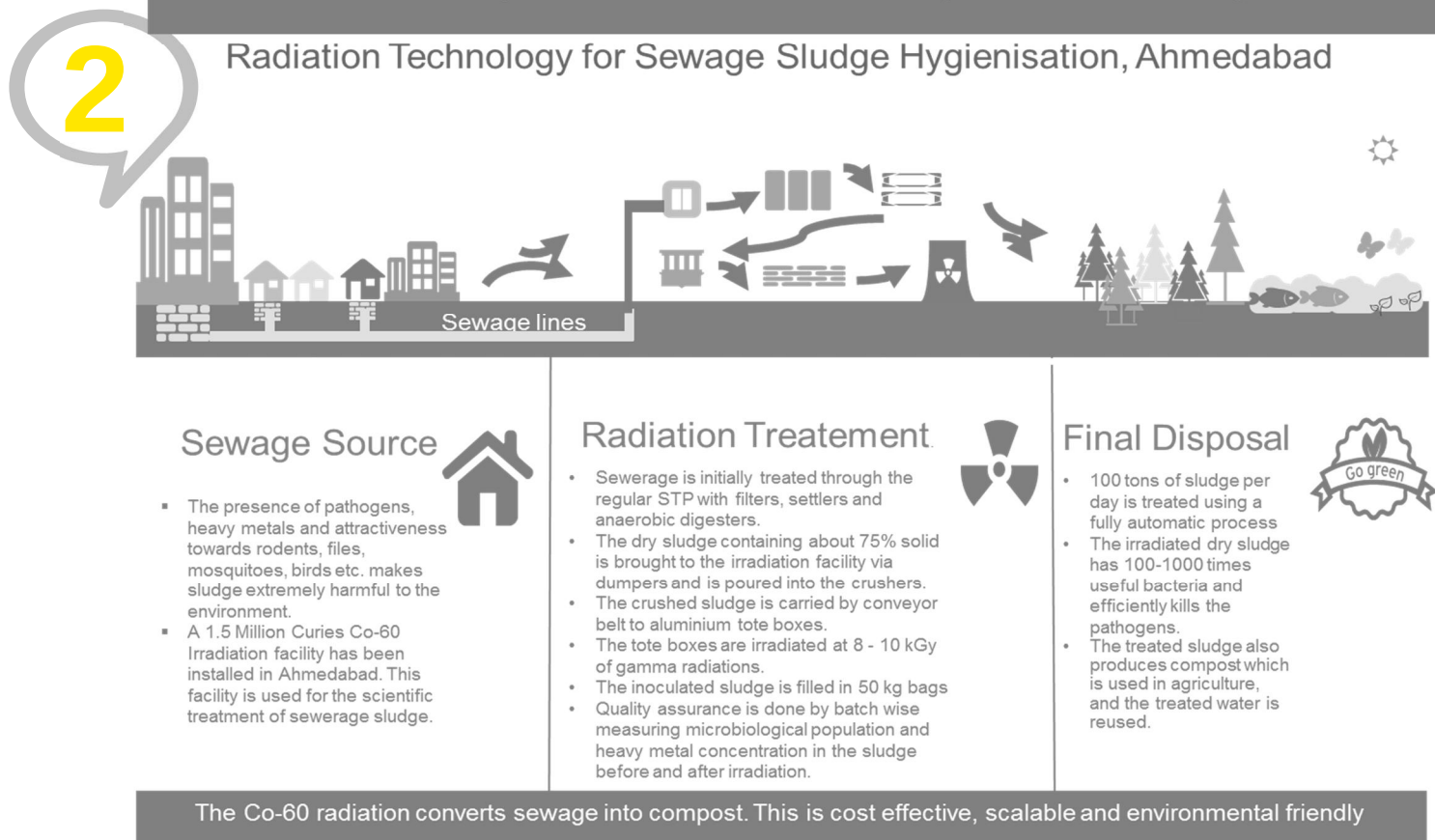
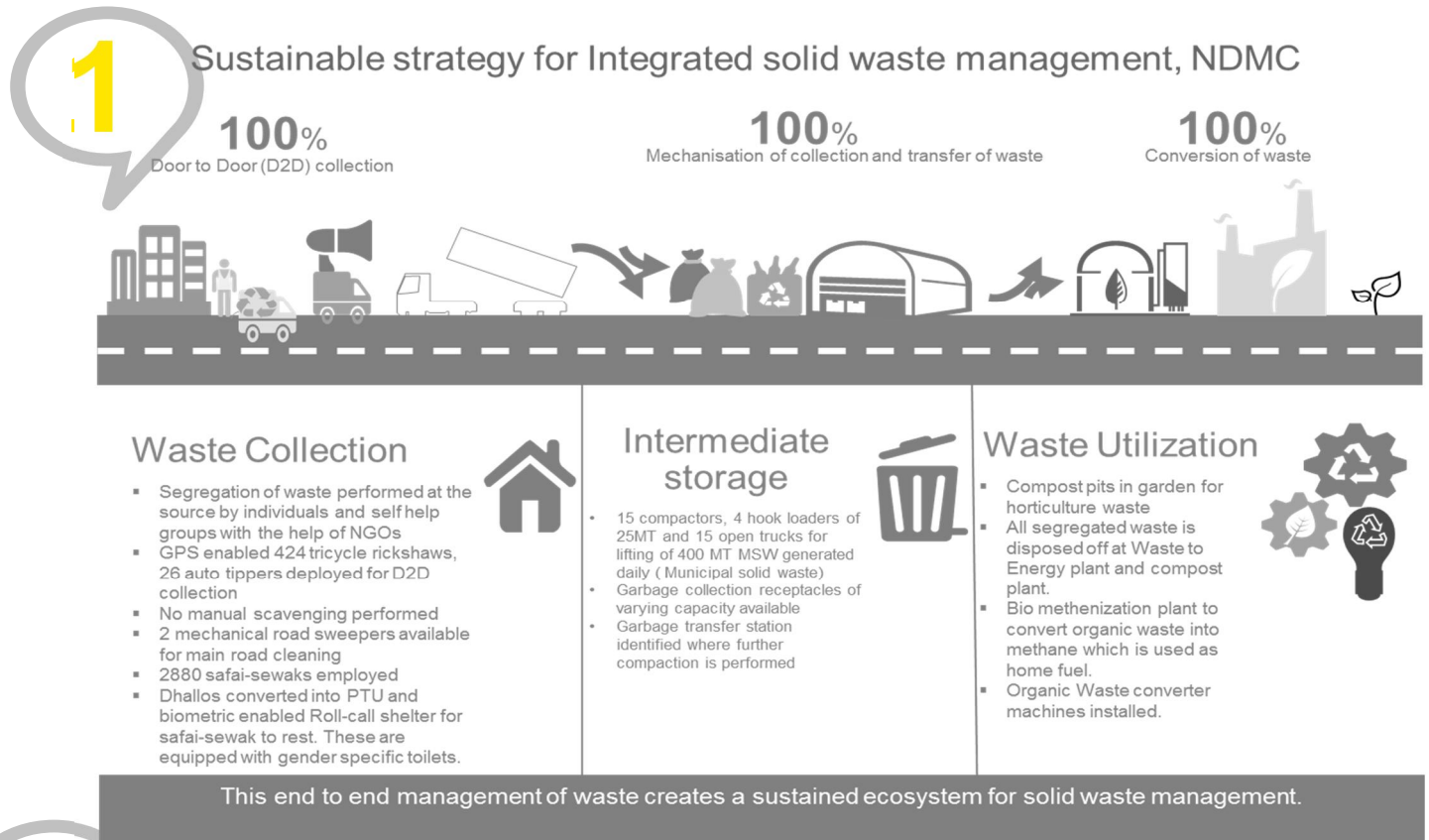
Pune city is seeing unprecedented efforts from the PMC administration and corporate/NGO partners with respect to making Pune ODF. But as per my observation, this translates largely to the construction of individual household sanitations, public sanitations and community sanitations. In my humble opinion, a lot of data collection and analysis is required to understand how people use these facilities so that targeted provisioning and behaviour change strategies can be implemented; and a lot of effort is required to make sure that these facilities operate sustainably so that habit formation with respect to usage actually takes place.

Manoj Jha
Managing Director,
Arkin Creations Pvt
Ltd.

Under the leadership of PM Sri Modi Ji, the Central Government has launched flagship programs such as Swachh Bharat Abhiyan and AMRUT for rejuvenation and transformation of the nation and accorded the highest continued priority to them. However, to achieve the desired success in these flagship programs, it is vitally important that appropriate technologies addressing the issues from end to end be deployed. Further, it is also imperative that home grown, environment friendly, self-sustainable and scalable technologies for treatment of drinking water to treatment of sewage that can address issues closer to the point of use/generation in a decentralized manner be promoted and pursued relentlessly for a truly Swachh Bharat. Only when water and sewage treatment go hand in hand from end to end using bio friendly technologies, can we look forward to a truly green and clean India.

5. Leading Practices

Based on consultations with different stakeholders and primary and secondary research, the following leading practices in India have been identified across the hygiene sectors. These leading practices can be replicated by other cities which lag behind in these sectors.



3

Faecal Sludge Treatment Plant, Devanahalli



Faecal Source



- Only 36% of households are connected by pipeline sewerage system. 44% use septic tanks or pit latrines which do not have a dedicated mechanism for treatment of its sludge.
- These tanks should be emptied every 2-3 years as per CPHEEO guidelines.
- The sludge is removed from the septic tanks and disposed off into a feeding tank.

Faecal Plant



- The liquid part of the sludge is fed into an anaerobic baffle reactor, where the suspended particles settle and get filtered.
- The filtered liquid is passed through planted gravel filter from which the water comes ready for re-use.
- The solid part is fed into the biogas digester which produces biogas.
- The remaining partially digested solid is fed into stabilization tank. The liquid separated in the stabilization tank is fed back into the anaerobic baffle reactor and remaining solid is fed into sludge drying bed where the compost is created..

Final Disposal



- 5000L of sludge is treated everyday in an area of 650 m2 in Devanahalli.
- The treated sludge produces bio gas which is used as fuel, the generated compost is used in agriculture, and the treated water is reused.

Decentralized faecal sludge management system is the need of the hour

4

Nag river treatment plant using Phytorid Technology, Nagpur



Sewerage Source



- Enormous amount of sewerage is generated due to residential and commercial activities.
- Historically, a major portion of this waste was directly disposed off in the Nag river which turned it into a drain.
- The treatment of this sewerage required 118 crore worth STP.
- However, phytorid technology was deployed for the treatment of waste which costed about 1.3 lakh

Phytorid Bed



- Phytorid bed consists of a constructed wetland designed for the treatment of wastewater.
- Various plants like Elephant grass, Reeds, cannas etc. are used for filtration & treatment purpose..
- Some ornamental and flowering plants are used for landscaping purposes.
- Series and parallel modules have been used as per space availability
- Differently sized crushed bricks are used
- The treated sewerage is used as manure for plants.

Final Disposal of Sewerage



- The Nag River which used to be a drain is now in a significantly better condition.
- All areas connected to the Nag river are cleaner and healthier.

Phytorid technology is an eco-friendly and cost effective step to create cleaner and better environment

5 Collection of segregated household waste by informal sector workers, Pune

100%

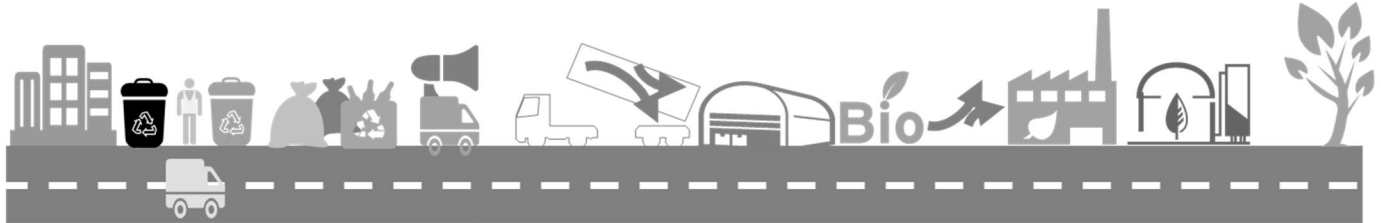
Households (HHs) segregate waste

78.9%

Collection & Transportation Efficiency

50%

Treatment of waste



Waste Collection



- Segregation of waste is performed at the source by individuals into wet & dry waste
- Around 2500 rag pickers are responsible to collect waste covering 40% households
- Green bucket for wet waste & white bucket for dry waste is given by PMC to each household with a capacity of 80kg each
- Remaining 60% households are covered by PMC itself through Ghanta gadi with compartments for wet & dry waste
- 1600 TPD of waste is collected

Transportation & storage



- Ghanta gadi takes the segregated waste to transfer stations
- From transfer stations waste is taken to central processing unit
- Bulk refuse carrier (processing plant) takes the waste to final processing units
- 8 compactors, 25 & 16 Bulk refuse carriers (BRC) of different capacities are used to lift the MSW
- Garbage transfer station where further compaction is performed
- Transportation efficiency is 78.9%

Waste Disposal



- All segregated waste is disposed off at 2 different disposal sites depending on nature of waste
- Dry waste is disposed at the RDF plant of 250TPD capacity
- Biogas plant converts organic waste into methane which is used as home fuel.
- Recyclable waste is also segregated by rag pickers and finally disposed at the disposal site
- Wet waste is disposed at the biogas plant or BioCNG plant.

Public awareness is spread through announcements and putting stickers which help to communicate difference between dry and wet waste

6

Changing Behavior- Creating Sanitation Change Leaders, RB



Intervention Target



- 100 villages of UP and 100 villages of Bihar were chosen to make them ODF
- In Bihar, 52%- 17,772 households (HHs) were identified as committed adopters, 34%- 11,587 HHs as committed but requiring government assistance and rest 14%- 4,771 households as indifferent.
- In UP, 54%- 27,000 HHs were identified as committed adopters, 37%- 18,915 as committed but requiring government assistance and rest 9%- 4601 HHs as indifferent.
- At the launch
 - 1. 30% toilet coverage
 - 2. 74% population not ODF
 - 3. 68% washed hands with soap
 - 4. 63% aware of hygiene & sanitation

Intervention Tools



- Creating change leaders
 - 1. Mothers- 12,0000
 - 2. Frontline health workers- 300
 - 3. Faith based leaders-270
 - 4. Panchayati Raj Institutions' Members
- Strategy
 - 1. 6 interventions/ year for committed adopters
 - 2. 4 interventions/ year for committed but requiring govt. assistance
 - 3. Influenced through nukkad natak and other tools
- BCC tools used by change leaders
 - 1. Baby book- 8000+
 - 2. Android games- 7000 times in 2 months
 - 3. Wall paintings- 120,724 sq. feet
 - 4. Nukkad natak
 - 5. Training kit for change leaders

Impact



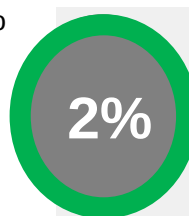
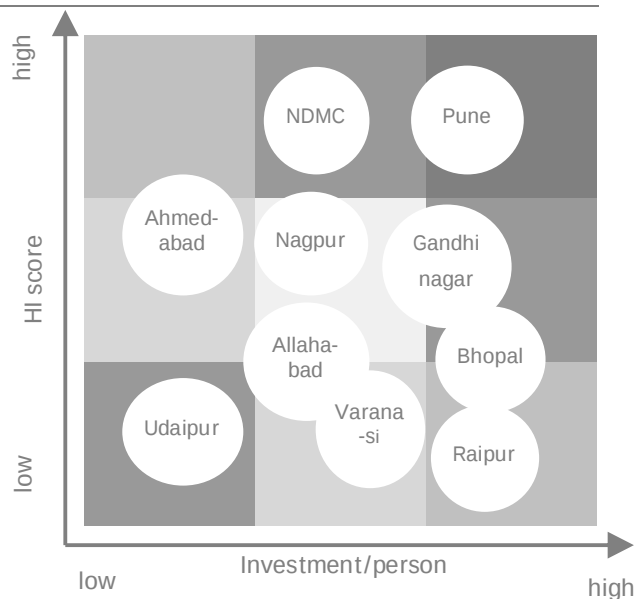
- Change at the village level
 - 1. 100 toilet coverage
 - 2. Sustainable ODF coverage
 - 3. 100% washing hands with soap
 - 4. 100% awareness
- Impact of BCC tools
 - Baby book- 76% mothers found it critically important
 - Android game-85% women appreciated
 - Wall paintings- 66% target audience found effective
 - Nukkad natak- 82% attendees found very informative
- Cost/ person: \$ 2.098
- Total cost: \$ 894,000
- Value to economy: \$ 1.5 million

Awareness is the key to the success of any program. RB aims at creating a world where people are healthier and live better.

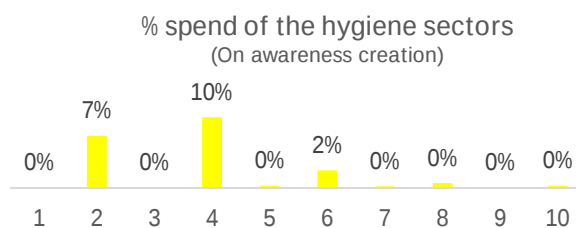
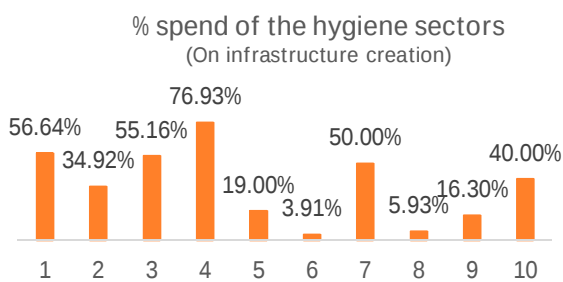
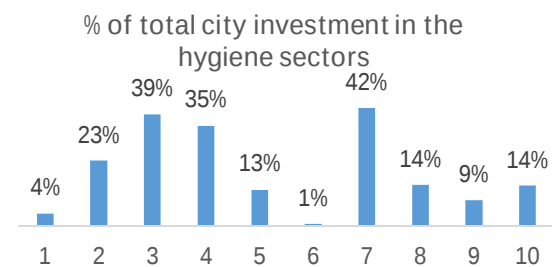
6. Conclusion

The performance of the 10 cities covered under the first phase of the HI programme is shown alongside. Pune and NDMC can be categorised as high performing cities with well-established infrastructure in place and high potential for sustained city performance. For Ahmedabad and Nagpur, the current performance is high even though investment is low. Hence, these cities need to increase their investment to maintain the existing standard of hygiene, while catering to the increasing population. Though Raipur and Bhopal have achieved a low HI score, they have been making high investments in the hygiene sectors, which are likely to improve their ratings in subsequent years.

Udaipur, Allahabad and Varanasi are seen to be lagging behind in the race in terms of both performance and investment. These cities need to assess the situation and plan higher utilisation of funds targeted towards improvement in the hygiene sectors.



Average spend for the 10 cities on BCC activities is very low. Mass awareness programs promoting behaviour change and healthy living habits need to be taken up.



Note:- Cities shown in the above exhibit are in the following order – 1) Ahmedabad, 2) Allahabad 3) Bhopal, 4) Gandhinagar, 5) Nagpur, 6) New Delhi Municipal Corporation (NDMC), 7) Pune, 8) Raipur, 9) Udaipur and 10) Varanasi

- In 2015–16, the cities' percentage spend on the hygiene sectors, as compared to their total annual expenditure, indicates that the water and SWM sectors attracted the highest investment.
- BCC and capacity building activities received the lowest investment, which is an aspect all the cities need to focus more on.
- Investment in the hygiene sectors varies widely across the cities. Pune allocated the highest percentage of its annual expenditure for the hygiene sectors, while NDMC has spent the lowest.
- As the adjacent exhibit shows, cities invest more in infrastructure creation and the regular operation and maintenance works, while, BCC and capacity building activities are overlooked.
- BCC is an integral component to create a pull factor in making the Swachh Bharat Mission a citizen-driven movement.
- Cities are likely to receive more funds through the Swachh Bharat Mission and other initiatives taken by the Government. It is important that they prepare themselves to spend the money as effectively as possible.

Annexures

7.1. List of Abbreviations

Abbreviation	Full Form
AMC	Ahmedabad Municipal Corporation
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BCC	Behaviour Change Communication
BSI	Banega Swachh India
CAGR	Compounded Annual Growth Rate
CB	Capacity Building
CPHEEO	Central Public Health and Environmental Engineering Organization
DJB	Delhi Jal Board
D-to-D/D2D	Door-to-door
EY	Ernst & Young LLP
GDP	Gross Domestic Product
GI	Gastro Intestinal
GIWA	Global Interfaith Wash Alliance
GMC	Gandhinagar Municipal Corporation
HI	Hygiene Index
JNNURM	Jawaharlal Nehru National Urban Mission
KPIs	Key Performance Indicators
M & E	Monitoring & Evaluation
MLD	Million Litre per day
MOEF	Ministry of Environment and Forest
MoUD	Ministry of Urban Development
MSPGCL	Maharashtra State Power Generation Company
MSW	Municipal Solid Waste
NDMC	New Delhi Municipal Council
NDTV	New Delhi Television
NMC	Nagpur Municipal Corporation
NEERI	National Environmental Engineering Research Institute
PMC	Pune Municipal Corporation
NSDF	National Slum Dwellers Federation
NUSP	National Urban Sanitation Policy
ODF	Open Defecation Free
PPP	Public Private Partnership
RB	Reckitt Benckiser
SBA	Swachh Bharat Abhiyan
STP	Sewage Treatment Plant
SWaCH	Solid Waste Collection and Handling
SWM	Solid Waste Management
TSC	Total Sanitation Campaign
UMC	Udaipur Municipal Corporation
USAID	United States Agency for International Development
VMC	Varanasi Municipal Corporation
WASH	Water, Sanitation and Hygiene
WTE	Waste to Energy
WTO	World Toilet Organization

7.2. Partners for HI Initiative

RB, USAID, NDTV and EY have partnered to run this programme successfully.

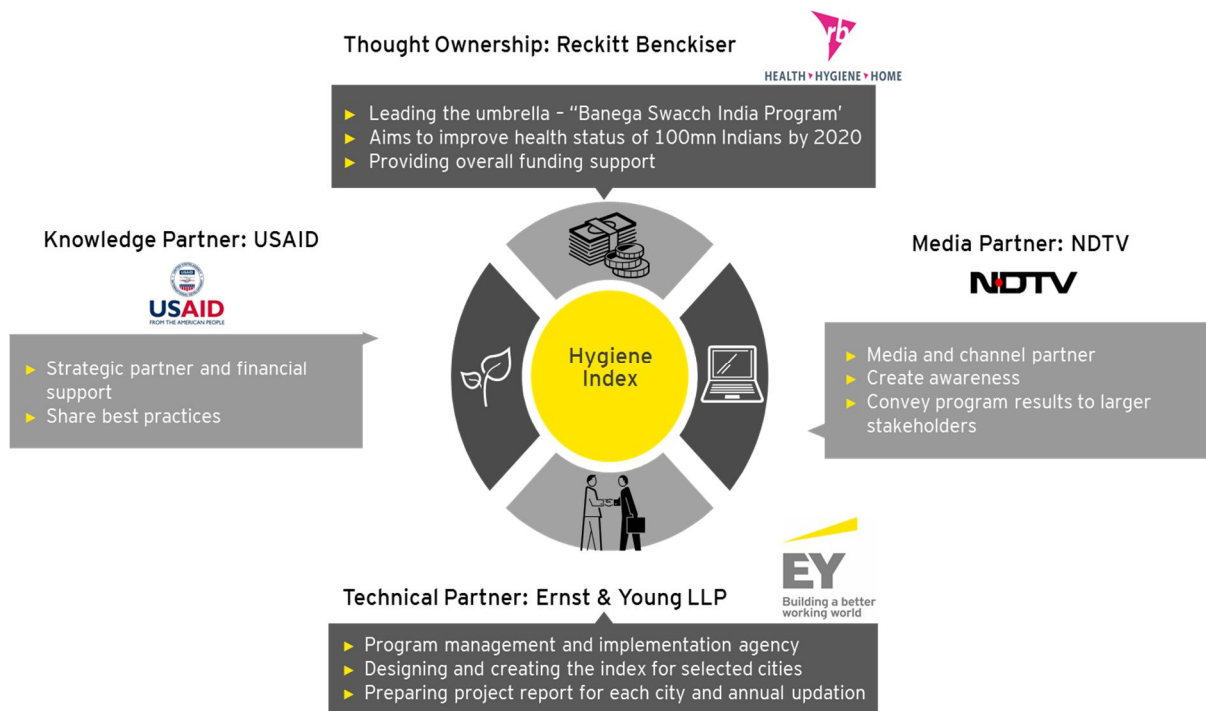
RB initiated the concept of HI and has been extending support to connect with the stakeholders who will support this innovative program.

USAID is co-funding the programme and is strategically supporting the development of HI.

They have put forth the ideas to evolve HI to not only supplement the SBA but also incline the efforts to the AMRUT initiative. Since the programme focuses on urban dwellings, the efforts under HI can complement these two national programs undertaken by the Government of India.

NDTV is the media partner for the programme and will support in engaging with the community, creating awareness and broadcasting the results of the program.

EY, with more than 20 years of experience in the sanitation sector, is the technical partner in the program. EY is the implementation agency of the program and has performed as per the instructions of RB and USAID.



7.3. KPI-wise City Scores⁴⁶

KPI	Ahmedabad	Allahabad	Bhopal	Gandhinagar	Nagpur	NDMC	Pune	Raipur	Udaipur	Varanasi
Access to clean water	5.0	5.0	5.0	4.3	4.5	5.0	5.0	5.0	4.8	5.0
Coverage of water supply connection	4.5	4.2	4.7	4.3	3.9	5.0	3.8	2.1	4.3	1.5
Quality of water supplied	4.9	4.8	5.0	5.0	4.8	5.0	5.0	5.0	5.0	5.0
Coverage of sewerage system	4.5	1.5	1.2	4.3	3.9	5.0	4.5	0.0	0.9	0.8
Quality of sewerage treatment	4.0	4.8	5.0	5.0	5.0	4.8	5.0	0.0	5.0	5.0
Adequacy of capacity of sewerage treatment	4.9	4.7	1.6	5.0	3.9	5.0	3.8	0.0	1.3	2.0
Decentralised sewerage treatment	3.0	5.0	3.0	3.0	3.0	5.0	3.0	2.0	3.0	5.0
Household coverage of SWM services	5.0	1.8	5.0	5.0	3.8	5.0	3.4	2.9	1.0	1.2
Extent of segregation of waste	1.6	1.7	0.0	0.0	1.0	5.0	3.0	1.5	0.0	1.7
Efficiency in collection of solid waste	5.0	4.7	5.0	5.0	5.0	5.0	4.4	4.9	4.0	5.0
Extent of scientific disposal of MSW	1.6	2.2	0.0	5.0	5.0	5.0	5.0	0.0	0.0	3.3
Access to toilets (coverage)	5.0	4.1	4.7	5.0	4.2	5.0	4.9	4.7	4.8	4.8
Public/community toilets	5.0	3.8	5.0	1.4	3.9	2.8	4.7	1.6	5.0	3.8
Incidence of GI disease	2.6	2.0	3.0	2.6	3.0	2.7	3.9	0.6	3.0	2.8
BCC funds utilisation	2.5	2.5	2.5	2.5	3.2	4.5	5.0	4.8	2.5	2.6

7.4. City-wise investment by municipal corporations

City	Investment in BCC	Investment in capacity building	Investment in M&E/O&M	Investment in infrastructure creation	Total investment	Total city investment
Ahmedabad	0	4093	6872	14325	25290	566500
Allahabad	527.24	769.85	3549.4	2600.68	7447.17	32379
Bhopal	0	5696.25	8813.89	17852.24	32362.38	82420
Gandhinagar	407.75	207.75	357.75	3244.75	4218	11934
Nagpur	18.61	0	15253.68	3579.37	18851.66	147492
NDMC	0	2.01	12737.19	519	13258.03	307700

⁴⁶

The KPIs have been decided by the Technical committee of the HI program comprising of Paul Seong, USAID; Ajay Khara, Ministry of Health & Family Welfare; Vineet Chhatwal, EY; Narendra Saini, Global Hygiene Council; T. Sundararaman, TISS; Tinny, Aga Khan Foundation; Shagufta Khan, NDTV; Ravi Bhatnagar, RB; Vipin Yadav, Dure Technologies; JVG Krishnamurthy, FICCI; Indira Chakravarty, Public Health Specialist; Neeraj Jain, Path

City	Investment in BCC	Investment in capacity building	Investment in M&E/O&M	Investment in infrastructure creation	Total investment	Total city investment
Pune	146.14	4.9	224000	224000	448151	448000
Raipur	160	0	30062	1904.05	32126.05	222162
Udaipur	0	0	913.07	177.81	1090.88	11991
Varanasi	0	0	6561.024	4374	10935.04	77972.85

7.5. Sector-wise Score and Investment for All Cities

City	Population	Water	Investment (Lakhs)	Sewerage	Investment (Lakhs)	SWM	Investment (Lakhs)
Ahmedabad	5577940	4.8	12614.3	4.2	2868.2	3.6	6425.8
Allahabad	1420000	4.7	3010.0	3.7	1290.0	2.4	3041.5
Bhopal	2140225	4.9	12614.3	2.2	2868.2	3.0	6425.8
Gandhinagar	225470	4.5	130.0	4.3	130.0	4.0	3086.0
Nagpur	3053646	4.4	7943.0	3.8	2824.6	3.7	8457.3
NDMC	270402	5.0	6615.3	4.97	3975.2	5.0	2602.2
Pune	3658233	4.2	93886.2	4.0	72931.1	3.8	17796.0
Raipur	1116311	4.0	22962.9	0.4	1380.0	2.4	2552.1
Udaipur	500000	4.7	52.8	1.9	534.3	1.2	453.5
Varanasi	1590965	3.8	126.01	2.6	9800	2.5	1003

City	Toilets	Investment (Lakhs)	Health	Investment (Lakhs)	BCC funds utilisation	SBM investment (Lakhs)	Total score
Ahmedabad	5.0	944.9	2.6	2437.9	2.5	0	3.9
Allahabad	4.0	68.6	2.0	37.1	2.5	6.08	3.3
Bhopal	4.9	944.9	3.0	2437.9	2.5	0	3.4
Gandhinagar	3.2	530.0	2.6	342.0	2.5	0	3.6
Nagpur	4.1	84.1	3.0	4.9	3.2	7.25	3.7
NDMC	3.9	63.3	2.72	0.0	4.5	55.8	4.2
Pune	4.8	938.4	3.8	643.3	5.0	16.4	4.4
Raipur	3.1	407.6	0.6	4793.5	4.8	30	2.4
Udaipur	4.9	50.3	3.0	0.0	2.5	0	3.1
Varanasi	4.3	6.0	2.8	0.0	2.6	11.69	3.1

7.6. HPEC's investment and service standards for hygiene sectors

As a result of over two year's efforts of a High Powered Expert Committee (HPEC), a report on Indian Urban Infrastructure and Services was formulated. This report estimated the investment requirements for urban infrastructure services to achieve defined service standards.

The investment requirements varies for different cities depending upon their population. Cities with a population of more than 5 million are classified as class 1A cities, cities with population between 1 million and 5 million are categorised as class 1B cities, while the cities with population between 0.1 million and 1 million are categorised as 1C cities. For all the three type of cities, the annual per capita investment requirement for infrastructure development and operation and management are shown below:

Sector		Class 1A	Class 1B	Class 1C
Water Supply	PCIC	3517	4395	5924
	PCOM	797	613	491
	Total	4314	5008	6415
Sewerage	PCIC	3360	3841	3411
	PCOM	414	373	290
	Total	3774	4214	3701
Solid Waste Management	PCIC	900	393	410
	PCOM	269	189	135
	Total	1169	582	545

PCIC: Per capita investment cost; PCOM: Per capita operation and management cost

The above said investment has been calculated on the basis of the FY 2009-2010 prices and may need to be increased on the need basis. This investment is required to create the following service standards:

Service Standards for Water Supply:

- 100 per cent individual piped water supply for all households, including informal settlements for all classes of cities;
- Continuity of supply: 24x7 water supply for all classes of cities; and
- Per capita consumption norm: 135 litres per capita per day for all classes of cities.

Service Standards and for Sewerage

- Underground sewerage network for all city size classes; and
- 100 per cent collection and treatment of waste water.

Service Standards and Key Assumptions for Solid Waste Management

- 100 per cent of solid waste collected, transported, and treated as per the Municipal Solid Waste 2000 Rules for all city size classes.

7.7. Approval from cities

Devanshu Ralhan

From: smpandey.mcallahabad <smpandey.mcallahabad@gmail.com>
Sent: 14 December 2016 16:27
To: Shipra Pandey
Cc: Sapna M Kedia; Devanshu Ralhan
Subject: Re: Request for Meeting-Hygiene Index-Allahabad

Thanx shipra.got your mail.you are most welcome to allahabad on 19th Dec.we can meet around 12.30 in nagar nigam office.regards sm pandey MC alld

Sent from my Samsung Galaxy smartphone.

----- Original message -----

From: Shipra Pandey <Shipra.Pandey@in.ey.com>
Date: 13/12/2016 16:33 (GMT+05:30)
To: smpandey.mcallahabad@gmail.com
Cc: Sapna M Kedia <Sapna.Kedia@in.ey.com>, Devanshu Ralhan <Devanshu.Ralhan@in.ey.com>
Subject: Request for Meeting-Hygiene Index-Allahabad

Dear Sir,

Greetings from EY!

With reference to our earlier discussions, we would like to request an audience with you early next week on 19th & 20th December (Monday & Tuesday).

I am a part of the Advisory Services at EY and am writing to you to request your consent to include Allahabad in the Hygiene Index (HI) project. HI is a monitoring tool with the ability to reveal how targeted interventions have led to improvement in the hygiene and sanitation situation of a city over the years. HI is a part of Reckitt Benckiser's (RB) India 5 year program - "Banega Swachh India"(BSI). BSI is in-line with the current national flagship program Swachh Bharat Mission (SBM).

The output of the HI tool shall be propagated through a mass media campaign and national events, supported by NDTV and USAID. EY is the program management agency for the initiative.

A Pilot/beta launch of the Hygiene Index is planned for 10 of the 47 smart cities across the country and we have already partnered with Ahmedabad, Pune, Nagpur, Udaipur, NDMC, Gandhinagar, Bhopal, Varanasi and Bhubaneswar. We seek your kind consent to include Allahabad in our Hygiene Index program and would request for data along our pre-defined parameters. As discussed, I am enclosing herewith the excel sheet

mentioning the required indicators and data points and we would be extremely grateful for your kind cooperation in providing these details to us.

Looking forward to your response and support.

Regards,
Shipra Pandey



Shipra Pandey | Senior Consultant | Advisory-PI

Ersnt & Young LLP

Office: 022-61923724 | Mobile: +91 8874969554 | shipra.pandey@in.ey.com

Website: <http://www.ey.com>
15th floor, The Ruby, Senapati Bapat Marg, Dadar, Mumbai 400028

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NAGPUR MUNICIPAL CORPORATION

English Letter -2012

NAYANA GUNDE

Addl. Commissioner



Office : 0712 - 2567002

Fax : 0712 - 2561584

Email : amc@nmonagpur.gov.in

Mahanagarpalika Marg, Civil Lines,
Nagpur - 440001

No. HO/ 323 /Misc

Dated : 16/02/2016

To,

Mr. Anirban Chatterjee
Manager
Water, Waste & Sanitation Strategies
Ernst & Young LLP,
5th Floor, Block B-2 Nirlon Knowledge Park
Goregaon (E)
Mumbai - 400063.

Sub :- Confirmation of your assessment report.

Nagpur Municipal Corporation is thankful for providing support to improve Hygiene status of Nagpur city. We are pleased to confirm the draft assessment report of hygiene status of Nagpur city prepared by you on the basis of inputs given by various departments of NMC. We look forward to get your full assistance and co-operation through which there will be a definite improvement of health status of Nagpur city.

Thanking you.


(Nayana Gunde)
17/2/16

Devanshu Ralhan

From: Devanshu Ralhan
Sent: 21 October 2016 19:07
To: 'chairperson@ndmc.gov.in'; 'n.kumar63@nic.in'; 'drshakuntalandmc@gmail.com'
Cc: Bhawna Prakash; Sapna M Kedia; Praagya Singh
Subject: NDMC support to Hygiene Index
Attachments: Integrated-Communication-Strategy-for-Creating-Awareness-on-Sanitation.pdf; BCC_GSF.PDF; Data Collection Format.xlsx; EY Experience in SBM and WASH Sector.pdf

Dear Sir,

With reference to our initial meeting on 3rd Oct '16 and our follow up communication with Dr. Shakuntala, we are thankful that NDMC has agreed to support the concept of 'Hygiene Index'.

As discussed, 'Hygiene Index' will assess the performance of each city in the sector of Water, Sewerage/Septage, Solid Waste, Sanitation, Health and Behaviour Change and will quantitatively project the hygiene and sanitation situation. In order to build this index, we request for your cooperation on the following:-

- Data collection – Last 5 years data on the performance parameters
- Investment – Last 5 years data on the investment from Central Govt./State/City/NGOs towards behaviour change communication, capacity building, infrastructure creation, monitoring & evaluation and operations & maintenance
- Discussion with concerned personnel of NDMC to understand the working of each sector
- Understanding the good practices adopted by NDMC across the target sectors

Since the pilot/beta launch of the Hygiene Index is scheduled tentatively around mid-November '16, above mentioned action points need to be completed at the earliest. Herewith attached is the revised data collection format for your kind reference.

Furthermore, as necessitated, we are sharing the following documents:-

- Technical paper - Integrated communication strategy for creating awareness on sanitation
- Case study - Behavior Change Communication Strategy on Sanitation and Hygiene
- EY experience in SBM and Water & Sanitation (WASH) sector

Kindly revert in case of any further clarifications.

We look forward to meeting NDMC personnel in the coming week and request for all your support.

Regards,

Devanshu Ralhan | Senior Project Consultant | Advisory, Government & Public Sector

Ernst & Young LLP

Office: +91 8550969922 | devanshu.ralhan@n.ey.com

Thank you for considering the environmental impact of printing this email.

From: Bhawna Prakash
Sent: Monday, October 03, 2016 3:08:10 PM
To: chairperson@ndmc.gov.in; n.kumar63@nic.in
Cc: Praagya Singh; Sapna M Kedia; Shruti Khanna
Subject: NDMC support to Hygiene Index

Dear Sir,

Thank you for meeting us today and discussing the concept of Hygiene Index. Attached herewith a copy of the presentation.

In line with our discussion, I am summarising the key points-

- 1) NDMC is willing to support Hygiene Index (HI) concept and help us accessing the data for building the Index

- 2) We will keep you informed about the formal launch of Hygiene Index and seek your participation
- 3) Going forward, Hygiene Index would also provide a platform to all the participating cities for sharing knowledge and best practices across the indicators.

In addition, we will share reference IEC Action Plan for other cities and select EY creds in SBM space.

Look forward to connect with you further,

Thank you!

Regards,
Bhawna

Bhawna Prakash | Senior Manager | Advisory, Government & Public Sector
Ernst & Young LLP
Office: +91 98116 80229 | bhawna.prakash@in.ey.com
Thank you for considering the environmental impact of printing this email.

OFFICE OF MUNICIPAL CORPORATION UDAIPUR (RAJ.)

Sr No :- 377-47/16-17/17

Date :- 27-05-16

To,
Mr. Ravi Bhatnagar
Manager External Affairs, RB

**Sub: - Launch of Hygiene Index and Modular School Education program,
An initiative of RB under "Banega Swachh India" (BSI)**

Dear Sir,

I am happy to inform you that we accept your proposal for launching Hygiene Index & Modular School education programme.

I look forward to speedy conclusion of the initiative.


(Sidharth Sihag) I.A.S
Commissioner
Municipal Corp. Udaipur

Nagar Nigam- Varanasi

To,

1. Chief Medical Officer, Varanasi
2. City Health Officer, VNN
3. Chief Engineer, VNN
4. Executive Engineer, Jal Nigam, Varanasi
5. In-charge JICA PMU VNN
6. In-charge SBM PMU VNN

Subject: Support to EY team in data collection for developing Hygiene Index

Letter no.: 192/M.C/2016-17

Date: 19 October 2016

Dear All,

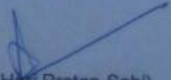
In support of India's nationwide sanitation programme "Swachh Bharat Abhiyan", RB (*erstwhile Reckitt Benckiser*) has launched a 5 year programme "Banega Swachh India" (BSI). BSI aims to reach out and improve health status of 100 million people by 2020.

One of the initiatives, under BSI, is the "Hygiene Index" (HI). HI is planned as a monitoring tool with the ability to reveal how targeted interventions in the Water, Sanitation and Health (WASH) sector, have led to improvement in the hygiene and sanitation situation over the years. This will help each city in showcasing its:

- Improvement in WASH situation over the years
- Leading practices in WASH

EY is a technical partner to develop Hygiene Index (HI). EY has designed the index with RB, and we are partnering with various cities, for collecting data from the city municipality or local body for developing the City's Hygiene Index and further analysis. The data shall be collected in sectors such as: Water, Sewerage, Solid Waste, Sanitation, Health and Behaviour Change.

I request all of you to co-operate with EY team and share data required to develop Hygiene Index (HI) for Varanasi.


(Shri Hari Pratap Sahi)
Municipal Commissioner
Varanasi Nagar Nigam,
Sagra, Varanasi