

Case Study: Municipal Solid Waste Management, Nagpur, India

Country:		City:	Key Sectors:
India		Nagpur	Municipal Solid Waste
Local Partner Organization		Geography and Population	
Nagpur Municipal Corporation		Nagpur also known as 'Orange City' is spread across an area of 217 sq.km with population of 2.5 million (Census 2011). The city is located at the geographical centre of India. It is also the second capital of the Maharashtra state.	
Contact Information			
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Summary

With 2.5 million population (Census 2011), Nagpur is the third largest city in the state of Maharashtra. The city is an educational hub and also emerging health hub in central India. With growing population coupled with urbanization and increasing floating population, the city is under pressure to meet the growing demands of its citizens. It is estimated that the city will grow to population of 4.3 million by 2041¹. Presently, the city generates 900-1000 TPD of waste, out of which only 150-200 TPD of waste is being processed. Evidently, the waste management system in Nagpur is presently inadequate. Irregular collection services along with limited processing and disposal facilities have led to open dumping of huge quantity of waste, which can have significant environmental and health impacts in future. The city is also poised to develop as a 'Smart City', with support from the Smart Cities Mission of the Government of India. The vision of the smart city proposal by NMC aims to create an inclusive ecosystem. Realizing the urgent need of a systematic municipal solid

¹ Revised City Development Plan 2041, Nagpur

waste management system for the city, it was decided during the discussion with Regional GIZ Urban Nexus and Nagpur Municipal Corporation to undertake a detailed solid waste management study for the city. The advisory services will conduct an overall study of municipal solid waste being generated in the City and provide recommendations to choose the best suited technology for processing the waste.

Rationale

The city of Nagpur, located at the geographical centre of the country has a population of 2.5 million spread across an area of 217 sq.km. It is estimated that the city generates approximately 900-1000 tonnes of waste per day (TPD). Also, the city being an educational hub attracts large floating population. Rapid growth of population coupled with urbanization has put tremendous pressure on Nagpur Municipal Corporation to meet the growing demands of its citizens. However, despite its limited infrastructure, manpower and financial resources, the city is adopting best feasible options to provide adequate services.

The door to door collection of waste for the city is outsourced to a private contractor (Kanak Resources Management Ltd) since 2008 who is also responsible for transporting the waste to landfill site at Bhandewadi. However, the door to door services covers only 5 lakhs of household against the population of 2.5 million. In year 2010, NMC had contracted a private entity 'Hanjer Biotech' to commission and operate the waste processing and disposal facility. However, only 150-200 TPD of waste is being treated and processed at the facility while remaining 800 TPD is dumped at the site. In the last few years, almost 4 lakhs MT of waste is dumped at the Bhandewadi Site. Odor, flies and leachate seeping into the ground is a common sight at the landfill thereby threatening the environment and public health, especially for people residing in the vicinity. The city is facing significant challenges in addressing the system's deficiencies and reducing the environmental impacts due to unscientific solid waste management.

The city of Nagpur is poised to develop as a 'Smart City', with support from the Smart Cities Mission of the Government of India. The overall vision of the smart city proposal developed by NMC, aims to create an inclusive ecosystem. This above mentioned scenario and vision of NMC highlights and supports the need for a holistic approach towards waste management, integrating the existing silos to overcome issues related to capacity at local level, waste segregation, waste management, technical knowhow and stakeholder involvement. Therefore, it was decided to conduct a detailed study on waste management of the City focusing on suitable technologies for processing the waste.

Project Description

Considering the present scenario of waste management in Nagpur, especially the limited processing facility of municipal solid waste taking place, it was decided to provide advisory services to NMC under Urban Nexus project. The idea is to help NMC to choose the best processing technology to treat its waste depending upon its economical and environmental viability, social acceptability and sustainability. The study will help the city to make a well-informed decision while selecting an appropriate technology that would also promote maximum resources utilization, improved efficiency and hence a step towards circular economy.

The study is expected to commence soon.

Stakeholders / Target groups

Stakeholders :

- Nagpur Municipal Corporation (NMC)

- National Environmental Engineering Research Institute (NEERI)
- Citizens of Nagpur City
- Private operators

Target Group: Citizens in Nagpur, especially residents near waste dumping site (Bhandewadi)

Methodology

The size distribution of waste constituents in the waste stream is important because of its significance on the selection of appropriate collection, transportation, processing, treatment, and disposal practices. Since latest reliable data on the composition of municipal solid waste management (MSW) is not available for the city of Nagpur, it is proposed to conduct the physical and chemical characterization for MSW. Depending upon the composition of waste, the optimal treatment and disposal technology suitable for the city based on technical, legal, environmental, economic and commercial parameters will be recommended to NMC.

The study will involve multi-stakeholder approach with NMC, NEERI, Regional GIZ Urban Nexus and ICLEI South Asia involved in designing, monitoring and conducting the study.

Costs / Financing

The proposed integrated solid waste management study is funded under the GIZ Urban Nexus Project. Based on the outcomes of the study, potential funding options for implementing the project will be looked into.

Studies / Reports / Training

- Site visit of engineers from NMC to MYT Solid Waste Management Plant, Hangzhou, Zhejiang, China, 14 – 18 November 2016

Results (Impact)

The following results are expected from the study:

- Enabling the city to make well-informed choices regarding processing technologies
- Helping the city to understand the inter-linkages between the sectors. Waste, when treated scientifically, could be used for energy generation thereby promoting circular economy.
- Support the city to move towards its Smart City vision of creating an inclusive ecosystem