

CHAPTER - VII
SOLID WASTE
MANAGEMENT
BY SMART CITIES

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Solid Waste Management by Smart Cities

7.1 Objectives of Smart Cities

Government of India had introduced Smart City Mission (June 2015) covering 100 cities in the country. Out of the 100 cities in country, two cities (Bhubaneswar and Rourkela) of Odisha have been identified as smart cities.

The objective of Smart City Mission was to promote cities that provide core infrastructure and give a decent quality life to its citizens, a clean and sustainable development. The idea was to develop compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart city Mission guidelines provided ten⁵² core infrastructure elements which would be completed within the mission period of five years (2015-20). The SWM was one of the core elements out of ten infrastructure elements of a Smart City.

7.2 Institutional Mechanism envisaged for Smart Cities

As per the guidelines, implementation of the mission at the city level will be done by a special purpose vehicle (SPV) created for the purpose. The SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart city development projects. Each Smart city shall have a SPV which is headed by Chief Executive Officer and nominees of Central / State Government and ULBs on its Board to implement the project. To monitor the SPV functions under the directions of the Board, there are 13 Directors from Government of Odisha along with five independent directors out of which seven directors are women. The SPV is further advised by a city level advisory forum headed by the mayor and having other members from city leaders for implementation of the smart city projects.

The Board is headed by the Chairman who is ex-officio Development Commissioner-cum-Additional Chief Secretary, Planning and Convergence Department, Government of Odisha. The SPV is spearheaded by Commissioner of Municipal Corporation, as the Managing Director and day to day operations & business affairs are handled by a full time Chief Executive Officer.

7.3 Strategic action plan

As per the guidelines, the smart city proposal (SCP) will consist of strategic action plans for area developments based on the three typologies (a) area improvement (b) city renewal and (c) city extension and at least one city wide (Pan city) initiative that applies smart solutions to the physical, economic, social and institutional infrastructure.

⁵² Ten core elements of Smart city Mission: i) adequate water supply, ii) assured electricity supply iii) sanitation, including solid waste management iv) efficient urban mobility and public transport v) affordable housing, especially for the poor vi) robust IT connectivity and digitalisation vii) good governance, especially e-governance and citizen participation viii) sustainable environment ix) safety and security of citizens, particularly women, children and the elderly and x) health and education.

It was observed that no such strategic action plan was prepared by either of the smart cities for solid waste management as of March 2021.

7.4. Financial action plan

As per the guidelines, the SCP will include financing plan for the complete life cycle of the proposal. This financial plan will identify internal (taxes, rents, licenses and user charges) and external (grants, assigned revenues, loans and borrowings) sources of mobilising funds for capital investments and operation and maintenance over the life cycle of the project. The financial plan will provide source for repayment of project cost over a period of 8-10 years or more, O&M cost and also include resource improvement action plan for financial sustainability of ULBs.

It was observed that no such financial plan was prepared by either of the smart cities for waste management as of March 2021.

7.5 Citizen driven action plan

As per the guidelines, SCP will lead to creation of smart citizenry. The proposal will be citizen driven from the beginning, achieved through citizen consultations, including active participation of group of people, such as resident welfare associations, tax payer's associations, senior citizens and slum dwellers associations. During consultations, issues, needs and priorities of citizens and groups of people will be identified and citizen driven solutions would be generated.

It was observed in audit that no such action plan for SWM was developed by either of the smart cities for involvement of citizens' participation in waste management. As such, ground level inputs by citizen participation in waste management in the smart cities could not be obtained.

7.6 Implementation of SWM component

The implementation of SWM component of Mission at the city level will be done by SPV. The States/ ULBs shall ensure that (a) a dedicated and substantial revenue stream is made available to the SPV so as to make it self-sustainable and could evolve its own credit worthiness for raising additional resources from the market and (b) government contribution for smart city is used only to create infrastructure that has a public benefit outcome. These funds will be utilised only for the purposes for which the grants have been given and subject to the conditions laid down by the Ministry of Urban Development.

Accordingly, the Bhubaneswar Smart City Ltd (BSCL) was established on 08 March 2016 and Rourkela Smart City Ltd (RSCL) on 03 October 2016. The status of solid and other wastes in these smart cities prior to establishment of SPVs is as shown below in the Table:

Table 7.1 : Status of waste generated during 2011-12 to 2014-15(Quantity in Tonnes)

Year	BSCL			RSCL		
	SW	Plastic	C&D wastes	SW	Plastic	C&D wastes
2011-12	450	NA	NA	80	NA	NA
2012-13	450	NA	NA	125	NA	NA
2013-14	450	NA	NA	125	NA	NA
2014-15	450	NA	NA	125	NA	NA

(Source: As per Annual reports of SPCB)

It was observed in audit that SPVs had not made any action plan for waste management in both the smart cities. As a result, waste generated and collected in both the cities could not be processed and was finally dumped in landfills as detailed below:

Table 7.2: Status of different types of waste generation, collection and processing in the Smart cities from 2015-16 to 2019-20

Particular	2015-16	2016-17	2017-18	2018-19	2019-20
Solid waste in tonne per day					
Solid waste Generated	575	575	640	640	640
Solid waste collected	545	545	622	622	622
Solid waste Processed	0	0	0	0	0
Solid waste to landfill	545	545	622	622	622
Plastic waste in tonne per annum					
Plastic waste generated	85*	NA	2160*	15292	17520
Plastic waste collected	85	NA	2160	15292	17520
Plastic waste processed	0	NA	0	0	0
Plastic waste to landfill	85	NA	2160	15292	17520
C&D waste in tonne per annum					
C&D waste generated	NA	NA	NA	67	67
C&D waste collected	NA	NA	NA	67	67
C&D waste processed	NA	NA	NA	0	0
C&D waste to landfill	NA	NA	NA	67	67

(Source: progress report furnished by SPCB * Data for only Rourkela Smart city)

It could be seen from the above table that of 2,956 TPD of solid waste and 35,057 TPA of plastic waste was disposed to land fill without processing during 2015-20. Similarly, 134 TPA of C&D waste collected during 2018-20 was disposed to landfill without processing due to inadequate infrastructure facilities in ULBs as well as in Smart cities. Neither of the Smart cities have taken up SWM projects for processing as of March 2021. This indicates the non-accountability of these SPVs in attaining the objective of a litter-free smart city.

The basic principle to be adopted for managing waste is the hierarchy of 3Rs *i.e.*, **Reduce**-to avoid unnecessary waste generation, **Reuse**-to use again and **Recycle**-to convert unwanted things into and marketable recycled products . It is closely linked to 3R approach, which helps to reduce quantity of waste, cost associated with its handling, and its environmental impacts. The SWM Manuals also stipulated that waste minimisation strategies require policy interventions at National, state and local level.

Audit observed that either of the Smart cities had not initiated any strategy/policy for prevention, minimising, reuse and recycling of waste as of March 2021 resulting in 100 *per cent* waste being deposited at landfill / dump sites during 2015-20 without processing.

7.6.1 Diversion of funds

Smart City Mission guidelines recommended waste management in cities like waste to energy and fuel, waste to compost, waste water to be treated and recycling and reduction of Construction and demolition waste.

Audit observed (December 2020) that for execution of a SWM project “Waste-Lets-Recycle” (*i.e.*, waste to energy and fuel, waste to compost, treatment of waste water and recycling and construction and demolition

waste), BSCL released funds of ₹25.00 crore⁵³ to BMC in two phases (March 2017/ March 2018). However, BMC submitted utilisation certificate (March 2017/ March 2018) for ₹25.00 crore by diverting the funds for expenditure towards hire charges of excavator, water tanker, vehicles, mini truck, transportation of solid waste, supply of bleaching powder, purchase of dustbin, conservancy materials *etc.*, without accomplishing the objective of “Waste-Lets-Recycle”. No Waste management project was taken up by the BSCL to make the Bhubaneswar as clean city despite completion of the mission period. Evidently, the lackadaisical attitude of BSCL proves the fact that the intention of the SPV was to obtain funds under SWM component and not executing projects to attain the goal of clean city and sustainable community. The Smart city Rourkela had not taken up any SWM project as of March 2021.

The Government stated (May 2022) that due to audit objection, the said utilisation certificate issued by then Chief Financial Officer was not considered and BMC executed an agreement with BSCL for utilisation of the fund. The reply was not acceptable as BMC had already utilised the fund for purpose other than for “Waste-Lets-Recycle” project.

7.6.2 Non collection of user charges

As per the guidelines, smart cities as determined shall collect user charges as authorised by the urban local bodies.

Audit observed that no such user charges were collected by Bhubaneswar and Rourkela Smart cities. Bhubaneswar Municipal Corporation also did not collect user charges for solid waste management as of March 2021. Rourkela Municipal Corporation, however, started collection of user charges from May 2020 only and an amount of ₹32 lakh was collected by the Corporation as of March 2021.

7.7 Fluctuation in ranking under ‘Swachha Sarvekshan’ survey

“Swachha Sarvekshan” is a yearly assessment of smart cities under different categories such as cleanliness, hygiene, sanitation, garbage free city *etc.*, by MoHUD. The Bhubaneswar city was number one smart city in the country in 2016 based on the technologies used for resolving urban challenges and improving the lives of the citizens. According to the Swachha Sarvekshan survey, Bhubaneswar was at 24th position in 2016. It slipped down to 274th position in 2019, and again risen up to 144th ranking in the year 2021 improving by 130th position in the annual survey for cleanliness, hygiene and sanitation. Whereas, Rourkela was the only city to get “One Star” ranking⁵⁴. It ranks 57th with population of 1-10 lakh in garbage free city category.

⁵³ For SMW project under Smart City Mission, GoI and State Government released fund (50 per cent each).

⁵⁴ For one Star: (i) Mandatory at least 40 per cent (Door to door collection ,segregation at ward level, sweeping, litter bins, storage bins, waste processing (wet waste), waste processing capacity, waste processing (dry waste), (ii) Essential at least 30 per cent (penalty , spot fine, segregation at city level, user charges, plastic bans, C&D waste collection, scientific landfills availability and use, scientific landfill waste disposal, non visible solid waste in water bodies, and screening of storm water drains/ nalahs)

It has been observed that the veracity of the survey and rankings by MoHUD was incomprehensible as the situation of SWM in these smart cities was not satisfactory as evident from the following:

7.7.1 Lack of monitoring of Smart city mission at State level

There shall be a State level high powered steering committee (HPSC) chaired by the Chief Secretary, which would steer the mission programme in its entirety. The HPSC will have representatives of State Government departments⁵⁵. The Mayor and Municipal commissioner of the ULB relating to the Smart city would be represented in the HPSC. There would also be a State Mission Director who will be an officer not below the rank of Secretary to the State Government, nominated by the State Government. The State mission director will function as the Member-Secretary of the State HPSC. The key responsibilities of the HPSC are i) to provide guidance to the mission and provide State level platform for exchange of ideas pertaining to development of smart city and ii) review the smart city proposals and send to the MoUD for participation in the challenge.

Audit observed that in 3rd and 4th HPSC meeting, smart city proposals for BSCL and RSCL were submitted to GoI during December 2015 and June 2016 respectively. The H&UD department of GoO had delegated (November 2017) the powers to the SPV of both the smart cities for effective implementation/execution of smart city projects under the smart city mission. However, HPSC had not taken any review meetings for the projects executed by these smart cities. It indicates poor support to effective implementation of Smart city projects.

7.7.2 Deficient monitoring of Smart city mission at City level

As per the guidelines, a smart city advisory forum will be established at the city level for all Smart cities to advise and enable collaboration among various stakeholders⁵⁶ for development of the smart city. The SPV is advised by the city level advisory forum headed by the mayor and having other members of the city to monitor the smart city projects

Audit observed that no such city level forum committee was established in both the smart cities to monitor waste management as there was no Mayor in these corporations from January 2019 (BMC)/November 2014 (RSCL) to March 2021 in the absence of ULB elections. As such, community participation in smart city development programme for waste management was missing.

⁵⁵ Composition of High power steering committee: i) Principal Secretary, Finance, ii) Principal Secretary, Planning iii) Principal Secretary/ Director, Town & Country Planning Department iv) Representatives of MoUD v) Select Chief Executive officer of SPV in the State as and when it is formed vi) Select Mayors and Municipal Commissioners/ Chief Executives of the ULBs vii) Secretary/ Engineer-in-Chief, Public Health Engineering Department and viii) Principal Secretary, Urban Development- Member Secretary

⁵⁶ Stake holders includes: District Collector, MP, MLA, Mayor, Chief Executive Officer (CEO) of special purpose vehicle (SPV), local youths, technical experts, and at least one member from the areas who is a i) President/ secretary representing registered resident welfare association ii) Member of registered tax payers association/ rate payers association iii) President/ secretary of slum level federation and iv) Members of a non-governmental organisation or Mahila mandali/ chamber of commerce/ youth associations

**CHAPTER - VIII
MONITORING AND
EVALUATION OF
WASTE
MANAGEMENT
SYSTEM**