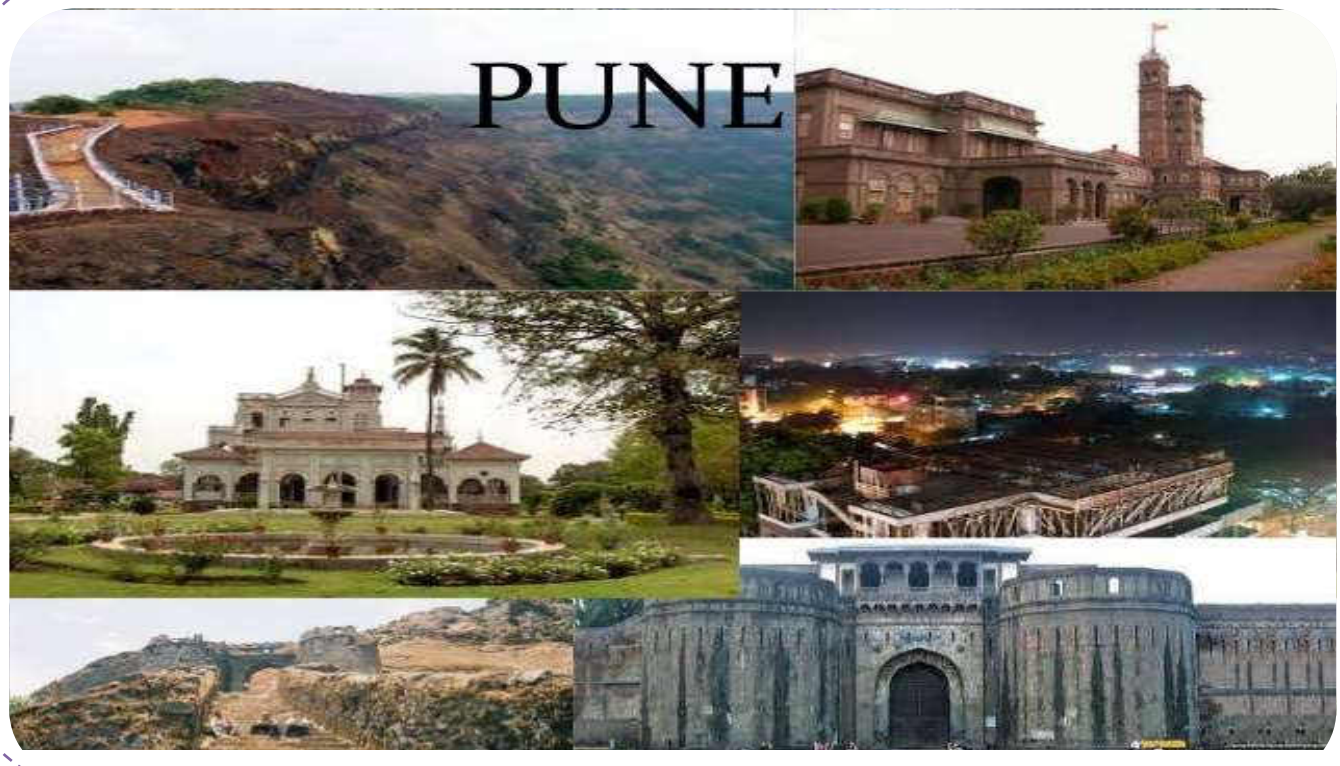
District Environment Plan



Prepared By

Environment Department, Government of Maharashtra

Maharashtra Pollution Control Board

Pune

1.0 Preamble

Hon'ble National Green Tribunal vide order dated 26/09/2019 in O.A. No. 360 of 2018 filed by Shree Nath Sharma Vs Union of India and Others directed that CPCB shall facilitate the District Magistrates in preparation of District Environmental Plan by placing Model plan on its website. This model plan may be adopted as per local requirements by all Districts under supervision of District Magistrate.

The said Order also directs that Department of Environment in respective States / UTs should collect district plans to prepare State Environment Plan, which shall be monitored by respective Chief Secretaries of State/UT by 15/12/2019.

Based on State Environmental plans, CPCB and Ministry of Environment, Forest & Climate Change shall prepare National Environmental Plan, under the supervision of Secretary, MoEF&CC and Chairman, CPCB by 31/01/2020. The National Action Plan needs to be submitted before Hon'ble NGT 15/02/2020.

In compliance to above directions and as per the model DEP prepared by CPCB, Environment Action plan for the District is prepared.

2.0 Introduction

The eighth largest metropolis city in India, Pune is located in the state of Maharashtra. It is the second largest city in the state after Mumbai, and is an important city in terms of its economical and industrial growth. The city leads as the 'veritable heartland' of cultural Maharashtra. Pune also has made its mark as the educational epicentre winning itself the sobriquet, 'The Oxford of the East'. Not just that, it has a growing industrial hinterland, with information technology, engineering and automotive companies sprouting. General Pune district profile is presented in the **Table 1** and location is shown in **Figure 1**.

Table 1 District Profile

Description	Details
Average Climate	Summer: 22°C To 41°C. Winter :8°C T0 25°C. Rainfall: 650 To 700 mm.
Geographical Location	It lies between 18° 32″ North Latitude and 73° 51″ East Longitude. It lies on the foothills of Sahyadri Mountains. The landscape of Pune district is distributed triangularly in western Maharashtra at the foothills of the Sahyadri Mountains and is divided into three parts: "Ghatmatha", "Maval" and "Desh". Pune district forms a part of the tropical monsoon land and therefore shows a significant seasonal variation in temperature as well as rainfall conditions
Area	15,643 Sq. km.
Boundaries	Ahmadnagar district on North - East, Solapur district on the South - East, Satara district on South, Raigad district on the West and Thane district on the North - West
Languages Spoken	Marathi, Hindi, English are major languages but all Indian languages are spoken
Population	Total: 55,59,058 [*According to 2011 Census Report*]
Population Density	603 Per Sq. km.
Literacy Rate	87.2
Rivers	Bhima, Nira , Indrayani, Mula, Mutha, Ghod, Meena ,Kukdi, Pushpavati, Pavna, Ramnadi

Description	Details
ULBs	16 Numbers + 2 Municipal Corporations
Municipal Corporations	2 Numbers 1. Pune Municipal Corporation [PMC] 2. Pimpri-Chinchwad Corporation [PCMC]
Cantonment Boards	3 Numbers Pune, Dehu Road and Khadki
Sub districts	14 Numbers
Villages	1,877 Numbers
Statutory Towns	16 Numbers
Tahsils	14 Numbers Haveli, Punecity, Maval, Mulshi, Shirur, Baramati, Indapur, Daund, Bhor, Velha, Purandar, Khed, Junnar, Ambegaon
Pin code	411001 - 411053

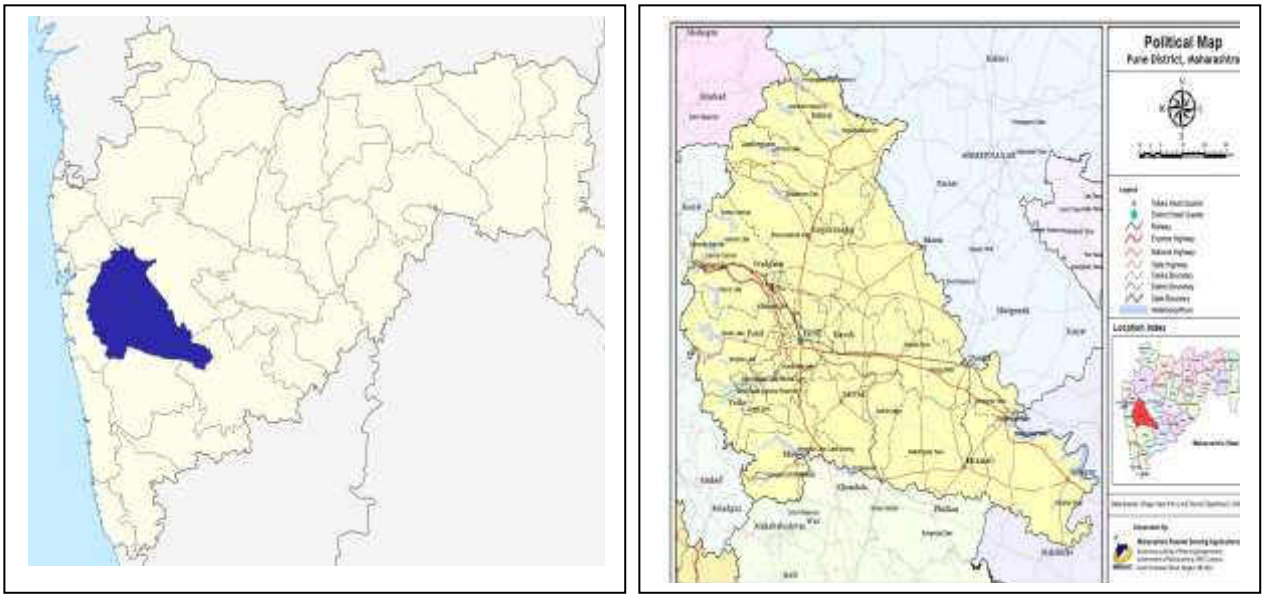


Figure 1 Location of District

3.0 Waste Management Plan

Urban India is facing an ever increasing challenge of providing for the incremental infrastructural needs of a growing urban population. According to the 2011 census, the population of India was 1.21 billion; of this 31% live in cities. It is further projected that by 2050 half of India's population will live in cities. With this increasing population, management of Municipal Solid Waste (MSW) in the country has emerged as a severe problem not only because of the environmental and aesthetic concerns but also because of the sheer quantities generated every day.

Solid waste management is among the basic essential services provided by municipal authorities in the country to keep cities clean. In Pune city primary sources of solid waste are local households, commercial establishments, hospitals, hotels, restaurants, and markets. Local Bodies are responsible for collection, storage, segregation, transportation and disposal of all solid waste generated in the city. There are 18 Urban Local Bodies [ULBs]. in Pune district. **Table 2** represents the list of ULBs along with population. Following section gives insight about waste management of Pune districts.

Table 2 List of ULB With Population

Sr. No.	Urban Local Bodies	Population
1.	Pune Municipal Corporation	3,124,458
2.	Pimpri Chinchwad Municipal Corporation	1,723,629
3.	Baramati	108,152
4.	Daund	49,450
5.	Saswad	31,821
6.	Indapur	25,515
7.	Jejuri	14,515
8.	Bhor	18,453
9.	ALANDI MUNICIPAL COUNCIL	28,645
10.	Lonavla Municipal Council	54,119
11.	Shirur Municipal Council	37,111
12.	Chakan	41,113
13.	Cantonment Board Dehuroad	48,961
14.	Junnar Municipal Council, Junnar	25,325
15.	KHADKI CANTONMENT BOARD	70,933
16.	PUNE CANTONMENT BOARD	71,831
17.	Rajgurunagar Municipal Council	28,592
18.	Talegaon Dabhade Municipal Council	56,435

3.1 Domestic Solid Waste Management Plan

Pune district is having 18 ULBs with 203 Wards. Municipal Solid Waste [Dry & Wet] generated from each ULBs is given in the **Figure 2** and details of Other Types of Waste is presented in **Figure 3** due to its less quantity and for easy representation. As per collected data, total solid waste generation of Pune district is 3,191.2MTD. wherein, Dry Waste generation is 1,318.3MTD and Wet waste is 1,329.9MTD.

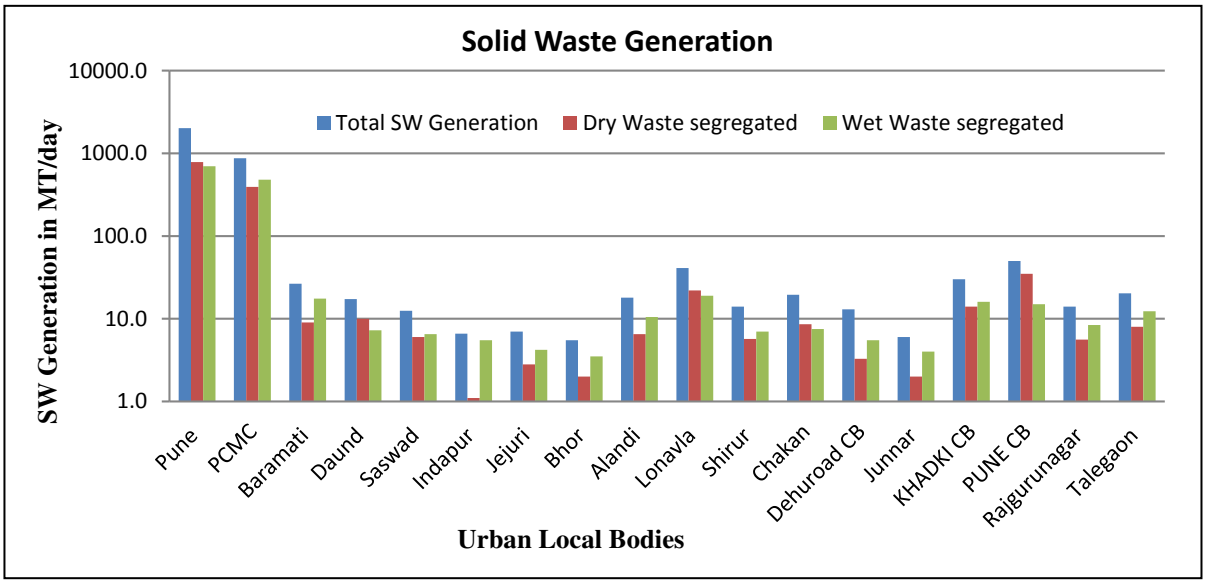


Figure 2 Details of Domestic Solid Waste Generation

It seems that Wet waste comprises of approximately 41.3% of total waste generated of the district and Dry waste contributes 41.6%.] Pune Municipal Corporation stands on top with the highest quantity i.e. 2015MTD out of which dry waste is 783MTD and wet waste is 699MTD. Junnar Municipal Council generates lowest quantity i.e. 6MTD out dry waste is 2MTD and

wet waste is 4MTD. It is observed that quantity of solid waste generation is in line with the respective population of ULBs. As per the data presented in the **Figure 3**, details of other types of waste generation is presented as below;

Pune district generates 40.5MTD of Street Sweeping Waste. Maximum quantity of Street Sweeping Waste is generated by Pune Cantonment Board with total quantity of 20MTD followed by Pune Municipal Corporation with 15MTD and Daund Municipal Council stands lowest with 0.02MTD. Though PCMC is second largest corporation in Pune district, data of Street Sweeping Waste is not estimated.

Total quantity of Drain Silt Waste generated is 685.1MTD. It seems that maximum quantity of Drain Silt Waste is generated by Pune Cantonment Board with total quantity of 500MTD followed by Pune Municipal Corporation with 122MTD. Shirur & Rajgurunagar Municipal Council stands lowest with 0.1MTD. However it is observed that quantity of Drain Silt waste is not estimated by other ULBs like Saswad, Indapur, Jejuri and Alandi.

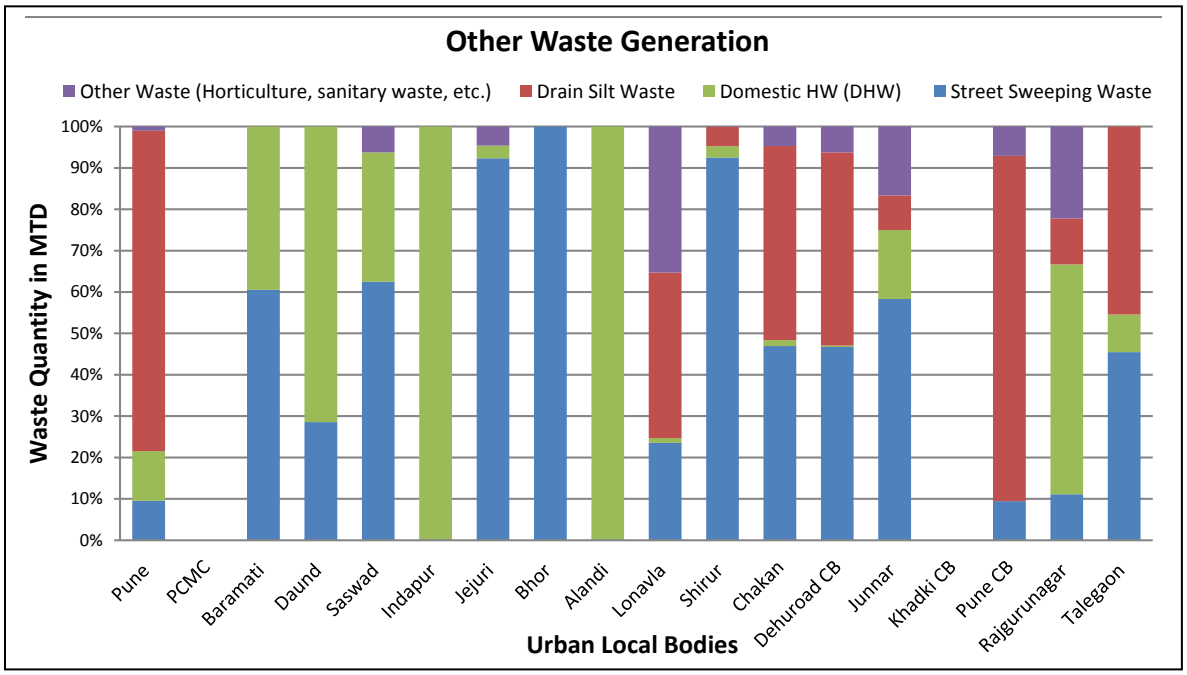


Figure 3 Other Waste Generation of Pune District

Total DHW quantity generated is 20.1MTD. Maximum quantity of DHW is generated by Pune Municipal Corporation with total quantity of 19MTD and Indapur Municipal Council stands lowest with 0.005MTD. Data is not available for PCMC, Bhor, Khadki and Pune Cantonment Board. Total Quantity of Horticulture, Sanitary and other waste is 1615.8MTD. Maximum quantity of Other Waste is generated by Pune Municipal Corporation with total quantity of 1600MTD and Shirur Municipal Council generates lowest quantity i.e. 0.001MTD. Data is not available for PCMC, Baramati, Daund, Indapur, Bhor, Alandi, Khadki and Talegaon Municipal Council. Pune district is having total 1035 bulk Waste Generator with the highest numbers in Pune Municipal Corporation and total number of onsite facility provided for treatment of wet waste is 1941.

3.1.1 Compliance in Segregated Waste Collection

Total Waste generation from Pune district is 3185.5MTD and almost all waste is being segregated. Out of 18 ULBs, 16 of them have provided 100% door to door collection facility. Only Pune Cantonment Board and Jejuri Municipal Council has provide 80% and 90% door to door collection facility respectively.16 ULBs have implemented Mechanical Road

Sweeping and rest of other ULBs have not provided Mechanical Road Sweeping facility. Almost 96% of waste is being transport through segregated waste transport system

Out of 18 ULBs, only 4 ULBs namely Pune, Baramati, Lonavla & Shirur have installed digester with bio-Methanation production capacity of 10%, 25%, 100%, 100% respectively. Pune district generates approximately 1329MTD of wet waste and Out of which 81.7% is treated through composting. Out of 18 ULBs, 14 ULBs is using Multi Re Use Facility to separate and prepare recyclable material whereas 4 ULBs have not installed URF facility. Out of 18 ULBs, 8 ULBs have provision of Sanitary Landfill. 14 ULBs have started reclamation of old dump site using through bio mining process. Only 5 ULBs have linkage with waste to energy boiler / cement plant. 12 ULBs have linkage with recycler whereas 6 ULBs have not started the process yet. All ULBs have issued authorization to the waste pickers. 7 ULBs have linkage with TSDF / CBMWTF whereas no information is available for Indapur, Daund and PCMC.

3.1.2 Adequacy of Infrastructure

Availability of infrastructure to handle the waste generated from the Pune district is presented in **Figure 4**.

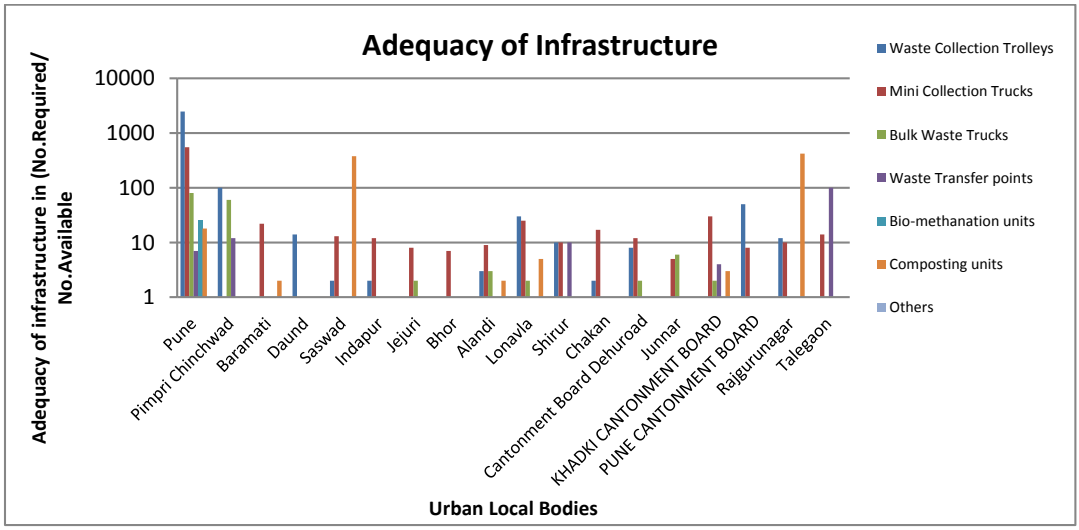


Figure 4 Adequacy of SW Infrastructure

It is observed that There are total 138 waste Transfer points in Pune district with waste trolley of 2718, Mini collection trucks 752 numbers and Bulk transport trucks 161. Total number of Bio - Methanation units are 30 and Pune Municipal Corporation is having highest number of Bio - Methanation units i.e. 25. Composting units available to treat wet waste are 836 [Need to review data as Rajgurunagar is having 420 units]. As per record, Out of 18 ULBs, only 2 ULBs i.e. Dehu and Khadki has not implemented the Solid Waste Management Rules.

3.2 C&D Waste Management Plan

The Construction and Demolition Waste [C&D Waste] generated by Pune district is about 234.8MTD. C&D Waste generated by each ULBs is presented in **Figure 5.** Again being with most populated corporation, Pune Municipal Corporation contribute maximum share of C&D waste to the tune of 200MTD. Least C&D waste is generated by Bhor Municipal Council with the quantity of 0.003MTD whereas it is observed that Khadki Municipal Council not generating any C&D waste which is not practically possible and need to review the data. Non availability of data will not help in preparing ingenuous and executable plan for waste

management of the district hence local bodies must ensure proper sampling and factual measurement of the various types of waste being generated.

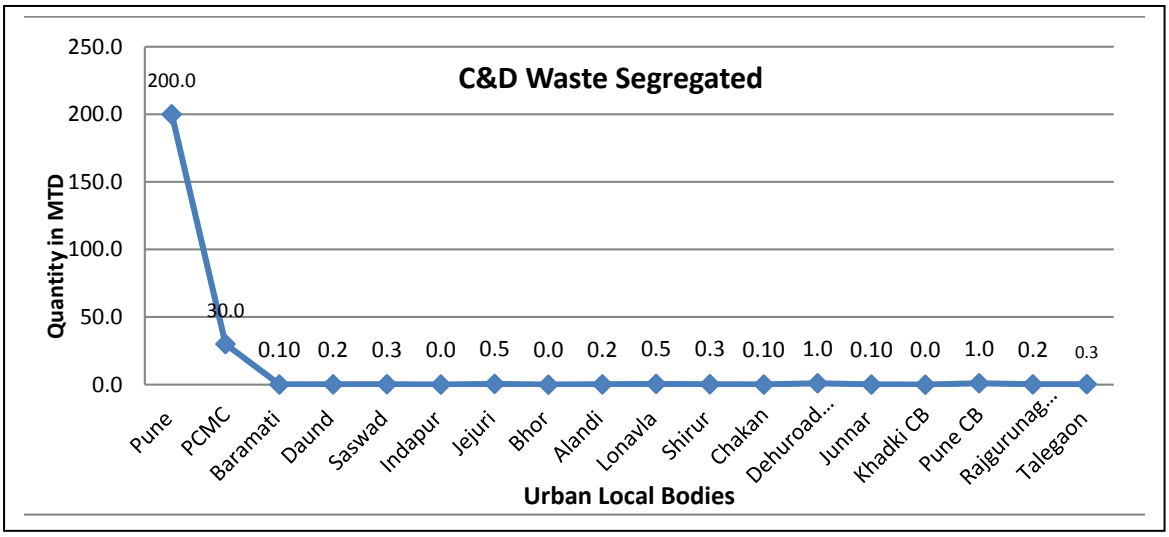


Figure 5 C&D Waste Generation of Pune District

3.3 Plastic Waste Management

Total Plastic waste generated by Pune district is 95.71MTD. With 90MTD quantity, PCMC is the highest plastic waste generator and Jejuri generates 0.008MTD of plastic waste. In almost all ULBs, door to door collection and segregation system is implemented 98% & 94% respectively with 199 Plastic Waste Collection Centre by ULBs and 10 Collection Centres by PROs under EPR Scheme . There are 4047 Plastic Waste Pickers with the authorization for waste collection. District has 4 Plastic Manufacturer and 19 Plastic Waste Recyclers. For Treatment and recycling of generated plastic waste, there are 4 number of Pyrolysis Oil Plant. 163.5MT/Month is being treated in the Pyrolysis Oil Plant and 3.5MT/Month is use in Road making. PW Management Rules, 2016 is implemented in all the ULBs. Plastic to Fuel Plant is installed of 4MTD by Brand owner in the Pune Municipal Corporation.

Figure 6 Details of Plastic Solid Waste Generation

3.4 Biomedical Waste Management

5607 Health Care Facilities including hospitals, Clinic, Veterinary Hospitals, Blood Banks etc. Out of which only 2279 HCF have taken authorization. Total BMW generation from all above mentioned sources is to the tune of 7719kg/day.

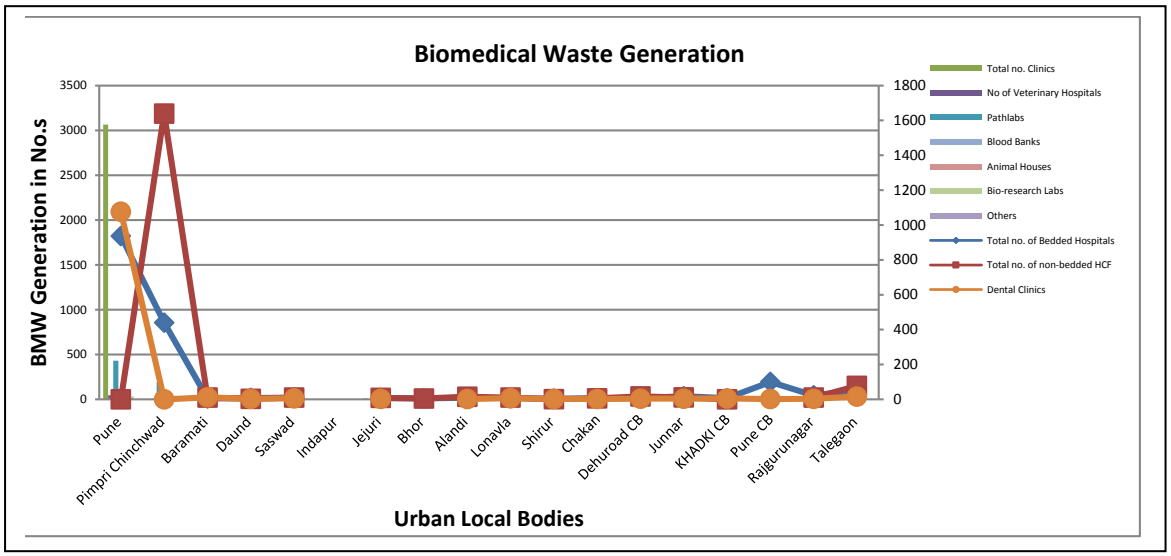


Figure 7 Details of BMW Generation

There are 2 Common Facility available for treatment and disposal of BMW and average BW taken by these facilities are 8,419kg/day. There is requirement of at least one CBWTF in each ULB. Inventory of BMW generating units are mentioned in the **Figure 7.**

3.5 Hazardous Waste Management

1311 Number of industry is established. Total HW generation 66,3371.77 MT/Annually, out of which 79,573.92MT is sent for incineration, 87,808.28 MT is sent for land filling and 495989.57MT/A is sent for recovery / utilization of HW material. One Common Treatment Storage Disposal Facility is present at Ranjangaon, Pune and all industries have taken authorization for HW generation and are members of CHWTDSF.

3.6 E Waste Management

191 Collection Centres are established by ULBs and 6 are established by Producer under EPR scheme. There are 21 number of authorized E-Waste recyclers / Dismantler. Pune Municipal Corporation has conducted 200 Awareness Campaigns whereas Producers and PROs have conducted 40 Awareness Campaigns.

3.7 Action Plan

As per the above mentioned observation, it seems that almost all ULBs are handling solid waste generated as per the Municipal Solid waste Management Rules, however there are certain issues that needs to be addressed for 100% implementation of the rules as mentioned in **Table 3**.

Table 3 Action Plan for Solid Waste Management

Sectors	Gaps	Action Points	Priority
Domestic Solid Waste			
Quantification	▪ Methodology for solid waste quantification should be ascertained ▪ Quantification based on Income group, culture affluence and technology to be considered	▪ Mechanism for graded weighing system either through intermediate transfer station or at the common receiving station to be created. Usually one weigh bridge at any treatment / disposal location required ▪ Quadrate sampling methodology to be adopted in order to reduce quantity as well as quality	Immediate
Collection System & Transport System	▪ Some of the places, efficiency of the collection system is not up to the mark ▪ There is gap of 2% Coverage in door to door collection	▪ Ideally most proven method of SWM is 3 Tier System with door to door, community and transfer station approach ▪ 100% efficiency to be achieved ▪ Intermediate ▪ Additional 2% coverage of collection & transportation to augmented	Short to Mid Term
Infrastructure	▪ Mostly composting is the main treatment methodology with about 80% coverage ▪ MRF facility is also available but limited to few ▪ Sanitary landfill are limited to 2-3 ULBs	▪ Intermediate / Transfer station based decentralized waste treatment facility to be evaluated ▪ Additional 20% alternative treatment such as bio-Methanation can be explored	High
Plastic Waste	▪ Lack of SOP for not only quantification but also life cycle analysis [LCA] ▪ Limited understanding / interpretation of EPR / PRO	▪ Strengthening surveillance of life cycle assessment for type and quantity of Plastic Waste ▪ Effective EPR Policy ▪ Initiation of 100% compliance to PW Rules at the earliest	High & Immediate
C&D Waste	▪ 2 - 3 of the ULB need to establish C&D Waste management system	▪ Minimum 1 such facility at each of the ULB to be established ▪ System for utilization of recovered material and processed C&D waste to be effectively implemented and monitored	High
Biomedical Waste	▪ Rooting and effective collection within 48hrs from the time of generation to be effectively handled ▪ Treatment facility lacks implementation of 2016 Notification in line with CPCB	▪ Regular Inventorization through automatic / digital platform to be developed ▪ Up-gradation of existing facility to meet 2016 CPCB norms ▪ Additional at least 1-2 facilities to cover the of umbrella zone along with increasing burden on the existing coverage area to be	Very High & Immediate

Sectors	Gaps	Action Points	Priority
	audited report ▪ Limited Inventorization ▪	planned ▪ Collection mechanism to be strengthen with additional vehicles to cover vast area and scattered HCF [miniscule quantity]	
Hazardous Waste	▪ Domestic HW being mixed with solid waste posing threat ▪ No separate handling of domestic HW ▪ Not effective segregation of DHW at source	▪ Either decentralized 4 - 5 step segregation practices to be initiated or at least advisory for intermittent storage and collection of domestic HW to be initiated ▪ Inventory to be initiated and maintained	Very High & Immediate
E Waste	▪ Lack of inventory ▪ Limited understanding of E waste rule and management ▪ Neither segregation nor separate transfer / handling facility ▪	▪ Detailed inventory for domestic e waste under 26 different categories ▪ Mass awareness campaign ▪ Every ULB to have at least one E waste management centre and minimum one collection / drop centre in a radius of 25-30km ▪ Atleast one e waste processing unit in a district	Very High & Immediate
Noise	▪ Most of the source related noise areas show exposure beyond compliance ▪ Excessive exposure during noise generating potential events/ festivals ▪	▪ Noise mapping to be carried out for zonation purposes ▪ At source control using ▪ physical or natural attenuation methods to be adopted ▪ In the path noise control methodologies using noise absorbers creating zone of inhibition / silence zone to be done ▪ End of the pipe measures such as PEs acoustic enclosures etc. to be adopted ▪ Event based noise control policy to be effectively implemented	High

4.0 Water Quality Management Plan

There are 9 Rivers in Pune district with 1703km in length.25 numbers of drain / nallas are meeting in to the rivers. Lake / Ponds area is about 5 Ha. There are 4582 number of Bore-well within the district.

The district generates about 1124.8 MLD of sewage with an existing capacity of 702MLD of STP with existing sewage network of 2846.38km length leaving a deficit of 62.4%. However it is also many a time the deficit as a representative of treatment capacity / capability. Even though MPCB has been eying to formulate policy w.r.t. reuse treated sewage as a regulation, lack of reuse conveyance system and more often than not due to the limited options of reutilization of treated sewage worsened with consistent output quality of treated sewage only leads to complicated disposal options.

On the other hand industrial effluent are much more regulated wherein 296 MLD from 850 numbers of industry. ULBs are made to treat almost the entire effluent to the best possible norms as stipulated by their permits, monitored effectively and regularly with the aid of final disposal / treatment in the 1 number of CETP. 575 industries are meeting water discharge standards and 45 industries are not meeting discharge Standards. 5 complaints received against industrial pollution in last 3 months

Detailed Issue based management action plan is provided in **Table 4**.

Table 4 Action Plan for Water Quality Management

Sectors	Gaps	Action Points	Priority
Water Resources	▪ Limited information available on mapping of surface water resources in terms of quantity ▪ Limited Inventorization of quantity, usage, availability exploitation etc. ▪ Limited Rejuvenation / remediation of water bodies ▪ Solid waste dumping i the river bodies	▪ Thorough Mapping of resources to be taken up ▪ Extensive assessment of quality to be done ▪ Criticality indicators to be established for each water body/resource ▪ Extend water quality monitoring network to include representativeness ▪ Based on the criticality initiate Rejuvenation / remediation ▪ Online Monitoring system for surface water bodies to be established ▪ Protection methods to be developed for creative stoppage of dumping of solid waste in the surface water bodies	High
Domestic	▪ Correlation between generation and treatment often misleading ▪ Only 60% treatment is available ▪ Water budgeting exercise often missing ▪ Computation of water footprint missing ▪ Surveillance /Inventorization in cradle to grave approach absolutely never applied ▪ Limited collection system and treatment facility especially in remote area ▪ Often polluting water resources ▪ No established reuse options / reuse network	▪ Digital Platform to accommodate water budgeting / reuse potential ▪ Approximately 425MLD of STP needed ▪ In situ treatment for 1703kms of River stretches to be developed ▪ Strengthen the sewage collection network to cover 100% Population ▪ Policy for reuse / recycle of treated wastewater	Very high & Immediate
Industrial	▪ Limited information of industries discharging	▪ CETP performance to be more effective in line with	High

	wastewater in to the river ▪ Performance of CETP is questionable ▪ Almost 66 number of industries Non compliance of in terms of meeting discharge standards ▪ 45 numbers of industries are not meeting discharge standards	various orders of regulatory bodies / courts ▪ Digital compliance methodology to be developed ▪ Disposal system to be under constant surveillance	

5.0 Air Quality Management

As it is Pune district being one of the most vibrant and outgrowing areas in Maharashtra, Air quality assessment and sectoral management needs are ought to be essentially planned and executed. Both CPCB & MPCB through their NAMP & SAMP programme has set up 4 manual & 1 CAAQM stations across the district.

t seems that PM_{10} is Ambient Air is one of the prime reason of the concern and historically Pune has been in the centre of controversy with regards its air quality management. An exceedance factor 1 to 1.8 reveals as per the monitored data that needs immediate attention as is the case in most of the areas of India. In view of the same the primafacea of every ULB shall be to establish at least one such Ambient Air Monitoring Station and coordinate / collaborate with other monitoring organisation to provide for advisory to general public towards health associations and risk of exposure. Inventory and policy formulation action plan is stated in **Table 5.**

Table 5 Action Plan for Air Quality Management

Sectors	Gaps	Action Points	Priority
Air	▪ Most of the places PM_{10} seems to exceed by a factor of around 1 - 1.8 ▪ Limited CAAQMS to establish / corroborate inferences ▪ Sectoral action plans not effectively established ▪ Pune comes under non attainment cities	▪ Emission inventory and source apportionment supported with dispersion and health based iterative process for science based AQM strategy to be established ▪ Each ULB to have atleast one urban and one rural CAAQMS or three manual stations at least to include criteria pollutants with minimum one location to include parameters of 2009 CPCB notification and meteorological data including cloud cover ▪ Fugitive emission control system for hot spot emission control to be installed ▪ Green barriers / Photo catalyst options to be evaluated ▪ Capacity building to be enhanced ▪ Need to submit and review the action plan with its status for non attainment cities	High & Immediate

6.0 Mining Activity Management plan

There is no mining activity in the Pune district jurisdiction.

7.0 Noise Action Plan

Other than event base monitoring and special projects related / orders monitoring, MPCB carries out annual noise monitoring at 8 locations. Noise quality reveals mainly source specific non compliance such as traffic related in most of the kerb side analysis. Though zoning categories and regulations therein are particularly specified, in limitation of noise regulations has always been challenge to the regulatory authority. Monitoring results spells potential management plan that could be taken up on priority by each of the ULBs. There are complaints received on noise pollution in last 1 year. District authorities have installed Sign boards in towns and cities in silent zones.

8.0 Conclusion

There seems to be vast data gaps and a detailed exercise to collate and validate data gathered through this process needs to be urgently taken up in addition to the adopting a holistic & inclusive consultative process of gathering information, collating & converging it in order to be able to device strategies of future. Also, it is equally important that projection for at least next 20 years be done in order to evaluate management plans for futuristic view to meet the objective of such vast exercise. Digital data availability needs to be one of the prime tasks of government & methods of its validation be created with scope for improvement in near future. The practise needs to be a continual one to be updated regularly in order to monitor progress and effectiveness of this process & shall be linked with financial allocations being designed to be promoted by government of the day. With regards to action plans, the priorities shall be aligned based on sustainability objectives.