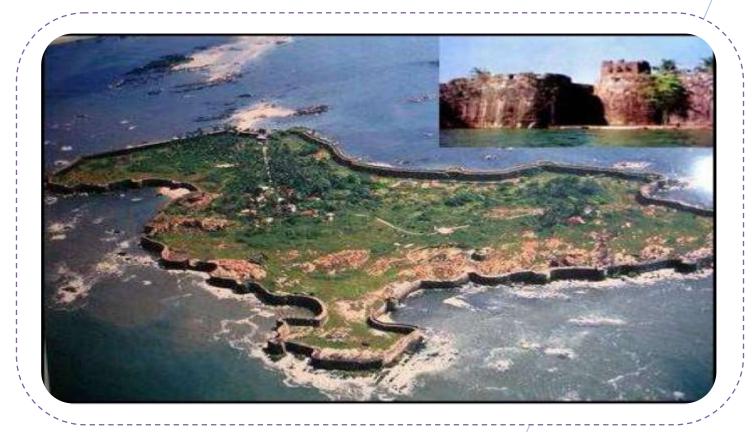
District Environment Plan



Prepared By



Environment Department, Government of Maharashtra



Maharashtra Pollution Control Board

Sindhudurg

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, CPCB has prepared a model District Environment Plan (DEP) that covers following thematic areas;

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

2.0 Introduction

Sindhudurg is an administrative district in the state of Maharashtra in India, which was carved out of the erstwhile Ratnagiri District. The district headquarters are located at Oros. The district occupies an area of 5207 km² and has a population of 849,651 of which 12.59% were urban.

General Sindhudurg district profile is presented in the **Table 1** and location is shown in **Figure 1**.

Table 1 Sindhudurg District Profile

Description	Details
Average	Summer: 32 °C. Winter: 8°C TO 25°C. Rainfall: 3240.10 mm.
Climate	
Geographical Location	It lies between 16.3492° North Latitude and 73.5594° East Longitude. Sindhudurg is an administrative district in the state of Maharashtra in India, which was carved out of the erstwhile Ratnagiri District. The district headquarters are located at Oros. The district occupies an area of 5207 km² and has a population of 849,651 of which 12.59% were urban.
Area	5,207 Sq. km.

Description	Details
Boundaries	Sindhudurg is bordered on the north by Ratnagiri District, on the south by the state of Goa, on the west by the Arabian Sea, and to the east across the crest of the Western Ghats or Sahyadris is Kolhapur District.
Languages Spoken	Marathi, Hindi, English are major languages but all Indian languages are spoken
Population	Total: 849,651; Male: 417,332 Female: 432,319 [According to 2011 Census Report] Population shared in Excel sheet is not matching with District Population disclosed in 2011 Census
Population Density	163 Per Sq. km.
Literacy Rate	85.56
Rivers	Terekhole, Gad, Curley, Waghotan.
ULBs	8
Municipal	3 Numbers
Corporations	Malvan Municipal Council
	Sawantwadi Municipal Council
	3. Wangurley Municipal Council
Sub districts	3 Numbers
Villages	1 Numbers
Statutory	16 Numbers
Towns	
Tahsils	8 Numbers Devgad, Two way, Dough, Spade, Malvan, Sawantwadi, Vaibhavwadi, Vangurla
Pin code	416510



Figure 1 Location of Sindhudurg District

3.0 Waste Management Plan

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 Sindhudurg District 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 8 Urban Local Body [ULB]. inSindhudurg district. **Table 2** represents the list of ULB along with population. Following section gives insight about waste management of Sindhudurg districts.

Table 2 Sindhudurg District Profile

Sr. No.	Urban Local Bodies	Population
1.	Malvan Municipal Council	18,648
2.	Sawantwadi	23,851
3.	Vengurla	12,392
4.	Kankavali	16,398
5.	Kudal	19,474
6.	Kasai-Dodamarg	3,811
7.	Vabhve-Vaibhvwadi	2,297
8.	Devgad-Jamsande	15,957

3.1 Domestic Solid Waste Management Plan

Sindhudurg district is having 8 ULB. As per collected data, total solid waste generation of Sindhudurg district is 30.4MTD. Wherein, Dry Waste generation is 10.59 MTD and Wet waste is 17.54 MTD.

It seems that Dry waste comprises of approximately 34.8% of total waste generated of the district and were else Wet waste contributes 57.69%.

Fig 1 indicates the total solid waste generation of 11 ULB's of Sindhudurg district further categorizing it into dry and wet waste of each ULB

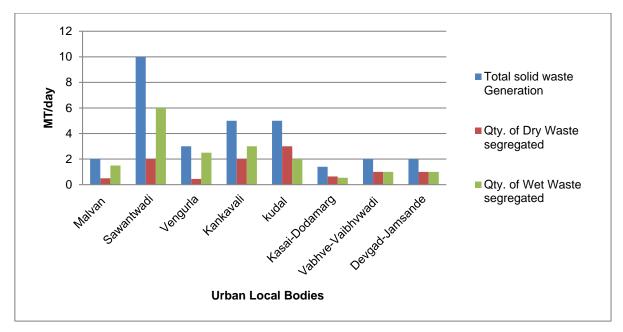


Figure 1.1 Domestic Solid Waste Generation

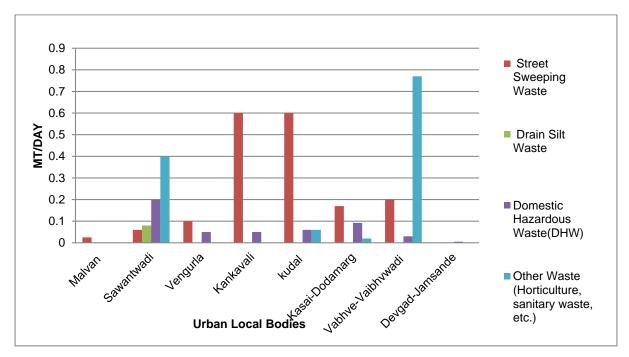


Figure 2 Other waste Generation

Fig 2 depicts the other solid waste generation of 8 ULB's of Sindhudurgh district categorizing it into Street Sweeping, Drain silt, Domestic Hazardous Waste, Horticulture, sanitary waste, etc.

In line, with Fig 2 it can be seen that,

- a. Street Sweeping Waste: Total Street sweep generation is 1.76MT/D wherein,
 - ✓ Maximum generation is at Kudal&Kankavli [i.e, 0.6MT/D each]

- ✓ Minimum generation is at Malvan Municipal Council [i.e, 0.025 MT/D]
- ✓ Qty of street sweeping waste is not estimated in Devgad-Jamsande
- **b. Drain Silt**: Total Drain Slit waste generation is 0.08MT/D at Sawantwadi. Other ULBs do not estimate the Drain Silt.
- c. Domestic Hazardous Waste (DHW): Total DHW generation is 0.49MT/D wherein,
 - ✓ Maximum generation is at Sawantwadi [i.e, 0.2MT/D]
 - ✓ Minimum generation is at Malvan Municipal Council [i.e, 0. 0.0003MT/D]
- **d. Other Waste (Horticulture, sanitary waste, etc.)**: Total Other waste generation is 1.25MT/D wherein,
 - ✓ Maximum generation is at Vabhve-Vaibhvwadi [i.e, 0.77MT/D]
 - ✓ Minimum generation is at Kasai-Dodamarg [i.e, 0.02MT/D]

3.1.1 Collection and Transport

In line with the total Solid waste generated, 5 ULBs except Devgad-Jamsande are provided with Dumpsite facility followed by no Sanitary Landfills in Sindhudurg district. Sindhudurg district comprises of 113 wards.

There are in total 10 nos. of Bulk Waste generations in Sindhudurg district comprises of 6 ULB's providing 308 nos. of onsite facility for wet waste maximum at Vengurla.

All ULB's have 100 percent facility of door to door collection of Solid waste. Some of the local bodies have not initiated Mechanical Road Sweeping facility however, district has 100 percent Manual Road sweeping facility too. The district has 80 - 100 percent segregated waste transport for all ULB's. Segregated wet waste is further utilized for composting.

Material recovery facility (MRF) is introduced among all ULB's except Malvan Municipal Council.

No Local body uses Sanitary Landfill facility for safe decomposition of the solid waste collected.

Devgad-Jamsandehave initiated authorization of waste pickers, and issuance of ID card of personnel's involved in management of solid waste.

Sindhudurgh District has initiated with Reclamation of old dump site in some of its local bodies. Sawantwadi have called for tender of Bio-remediation while Kankavali have called for tender of biomining. Only Vengurla Linkage with waste to energy Boilers/Cement plants.

3.1.2 Adequacy of Infrastructure

Availability of infrastructure to handle the waste generated from the Sindhudurg district is presented in Fig 3

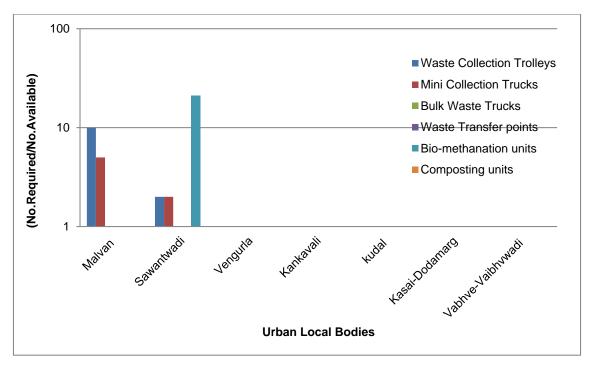


Figure 3 Adequacy of Infrastructure

Above graph depicts that Sindhudurg district have 12 trolley & 8 mini truck solid waste collection facility limited to Malvan&Sawantwadi Municipal Council. Among all the 8 ULB's 5 ULB's have the Segregated Transport system to collect the waste in the range of 100%. Further District doesn't provide the Bulk Waste Trucks, Bio-methanation units. District only have 21 Waste Transfer point at Sawantwadi

There are in total 48 Composting units among 2 ULB's maximum at Sawantwadi&Malvan Municipal council. It can be concluded that none of the ULB's in The Sindhudurg district requires Refuse dry waste [RDF] facility.

Furthermore, it can be seen that ULB's requires other decomposition facilities like Plastic crusher unit available, Briquetting unit along with Sawantwadi Council has sanitary napkin incinerator machine available in all schools in city for processing sanitary napkin incinerator machine in major Municipal Councils and other ULB's

Each ULB's in Sawantwadi district ensure the implementation of applicable by-laws.

3.2 C&D Waste Management Plan

The Construction and Demolition Waste [C&D Waste] generated by Sindhudurg district is about 380.09MTA. 0.195MTA waste is recycled. 300MTA of C&D waste is disposed by landfilling without processing or filling low lying area. There are in total 4 Storage Facilities for C&D Waste Storage. 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. Issuance of Permissions by ULB is been already initiated. District has established is Deposition Points. Sawantwadi municipal council has pass resolution and taken decision that C & D waste will be used for filling 4 low lying areas. District has 5 TPD of waste recycling Plant. It can be observed that, Sindhudurg district has already implemented any By-Laws for C&D Waste Management in its local bodies.

3.3 Plastic Waste Management

Plastics are integral part of society and have varied application. Total Plastic waste generated by Sindhudurg district is 1.60MTD.

Sindhudurg have 100% door to door collection system and 80 - 100% of segregation system in its major ULBs. District have 2 Plastic Waste Collection Centre. 11 nos. of Authorization for waste collection centres are developed in District. District has 1 Plastic Manufacturer whereas, 15 Waste recyclers. For Treatment and recycling of generated plastic waste, there are no Pyrolysis Oil Plant. PW Management Rules, 2016 is implemented in the ULBs.

District has implemented the PW Management Rules, 2016 in its 6 ULB's resulting in Sealing of units producing < 50-micron plastic, prohibiting sale of carry bags < 50 micron followed by Ban on Carry bags and other single use plastics as notified by State Government.

On other hand, there are no producers associated with ULB's to produce Plastic nor any Infrastructure is supported by Producers / Brand owners to ULBs.

There's no Implementation of Extended Producers Responsibility (EPR) through Producers / Brand owners in Sindhudurg

3.4 Biomedical Waste Management

Bio-medical waste refers to any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or research activities pertaining there to or in the production or testing of biological or in health camps, etc

Sindhudurgh district generate in total 245kg/d which is completely treated with its treatment facility provided.

It can be concluded that there are about 27 bedded hospitals in Sindhudurgh district. Threre are in total 8865 nos. of clinics. Sindhudurgh district do have 26 nos. of Clinics with 5 nos. of

Dental clinics followed by 3 Pathalogoy labaratories . District have 1 no. of Veterinary Hospitals, Blood Banks, Animal Houses, etc

Authorization of 5 Bedded HCFs has been done by SPCBs / PCCs. District have any 1 common Biomedical Waste Treatment and Disposal Facilities (CBMWTFs) which is adequate. Sindhudurgh district also have Linkage with other CBMWTFs for disposal of Biomedical waste.

Partial Segrigation of waste is complying by the District.

3.5 Hazardous Waste Management

There are 2 Hazardous Waste generating industries in Sindhudurgh District from where 3.5MT/Annum of Hazardous waste is generated. 0.58 MT/A qty of waste is Incinierable waste while 2.89MT/A qty of waste is land-fillable waste. Based on the type of waste it is further sent for treatment i.e either landfilling or Recyclable/Utilizable waste. As per standard norms 2 industries have displayed a board of Hazardous Waste generation in industry. Due to unavailability of Hazarodus waste disposal site, the generated waste is sent to CHWTSDF of other district within state.

3.6 E Waste Management

No Collection Centres are established by ULBs neither any ULBs have established by Producer under EPR scheme. There are no authorized E-Waste recyclers / Dismantler and 2 numbers are Authorized E-Waste collectors. 1 Collection centre is established by ULB in District

Citizens are not able to deposit or provide E-Waste through Toll-free Numbers in the District. The top class mobile companies have provided their collection centres from where the discarded mobiles are collected. There is no E-waste recycler nor the local bodies have linked up for same with anyone. To create awareness among the people The District administration arranges District level 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		 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 	Immediate
		quantity as well as quality	
Collection System& Transport System	 Some of the places, efficiency of the collection system is not up to the mark Almost 30.95MTD of waste is not collected at door to door 	 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 Approximately 6 GhantaGadi would be required 	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 	 Strengthening surveillance of life cycle assessment for type and quantity of Plastic Waste Effective EPR Policy Initiation of 100% compliance to 	High &Immediate

Sectors	Gaps	Action Points	Priority
C&D Waste	/ interpretation of EPR / PRO • Only two ULBs lacking implementation of PW notification • 2-3 of the ULB need to establish C&D Waste management system	 PW Rules at the earliest Minimum 1 such facility at each of the ULB to be established System for utilization of recovered material and processed C&D 	High
	System	waste to be effectively implemented and monitored	
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 audited report Limited Inventorization 	 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 planned Collection mechanism to be strengthen with additional vehicles to cover vast area and scattered HCF [miniscule quantity 	Very High& Immediate
Hazardous Waste	 Domestic HW being mixed with solid waste posing threat No separate handling of domestic HW Not effective segregation 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

Sectors	Gaps	Action Points	Priority
E Waste	■ Lack of inventory	■ Detailed inventory for domestic e	Very High &
	Limited understanding	waste under 26 different	Immediate
	of E waste rule and	categories	
	management	Mass awareness campaign	
	■ Neither segregation	■ Every ULB to have at least one E	
	nor separate transfer /	waste management centre and	
	handling facility	minimum one collection / drop	
	•	centre in a radius of 25-30km	
		■ Atleast one e waste processing	
		unit in a district	

4.0 Water Quality Management Plan

There are no Rivers in Sindhudurg district rather have coastline of 8km. ULB generate about 6.7MLD of sewage with no provision of STP leaving a deficit of 100%. Most of the deficit is accounted due to lack of sewage conveyance system which in most of the ULBs range to the tune of 100%. 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.

Industrial effluent is much more regulated wherein 0.52MLD from 15 numbers of industry, limited to 1 ULB are made to treat almost the entire effluent to the best possible norms as stipulated by their permits, monitored effectively.

There is 1 complaint received or number of recurring complaints 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	■ Limited information available	■ Thorough Mapping of	High
Resources	on mapping of surface water	resources to be taken up	
	resources in terms of	■ Extensive assessment of	
	quantity	quality to be done	
	■ Limited Inventorization of	■ Criticality indicators to be	
	quantity, usage, availability	established for each water	

	exploitation etc. Limited Rejuvenation / remediation of water bodies Solid waste dumping i the river bodies		
Domestic	 Correlation between generation and treatment often misleading 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 10MLD of STP needed In situ treatment for River stretches to be developed Strengthen the sewage collection network to cover 100% Population Policy for reuse / recycle of 	Very high & Immediate
Industrial	 Limited information of industries discharging wastewater in to the river No CETP is available 	 CETP needs to be established. Digital compliance methodology to be developed Disposal system to be under constant surveillance 	

5.0 Air Quality Management

As Sindhudurg 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. Neither CPCB & MPCB through their NAMP & SAMP programme has set up manual or CAAQM stations across the district.

PM10 is Ambient Air is one of the prime reason of the concern and historically Sindhudurg has been in the centre of controversy with regards its air quality management. An exceedance factor 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 priamafece 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 visory 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	■ No CAAQMS to	■ Emission inventory and source	High
	establish / corroborate	apportionment supported with	
	inferences	dispersion and health based	
	■ Sectoral action plans	iterative process for science based	
	not effectively	AQM strategy to be established	
	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	

6.0 Mining Activity Management plan

Mining waste is the high-volume material that originates from the processes of excavation, dressing and further physical and chemical processing of wide range of metalliferous and non-metalliferous minerals by opencast and deep shaft methods. Sindhudurgh district has

Iron-ore mining activities carried out among its local bodies. There are in total 3 working and 14 non-working Iron-ore mining in the district. 1193.16 Hectar of area is covered under mining activity. 16.98km² of area is covered under Sand mining activity.

It can be observed that all the 3 Mining areas are meeting Environmental Clearance Conditions. No any Mining operations are suspended for violations to environmental norms nor any odd directions are issued by SPCBs for the mining areas in the district.

1 complaint is received against Mining Operations in last 1 year. 9 Mining areas meeting Consent Conditions of SPCBs / PCCs.

7.0 Noise Action Plan

The goal of noise management is to maintain low noise exposures, such that human health and well-being are protected. The specific objectives of noise management are to develop criteria for the maximum safe noise exposure levels, and to promote noise assessment and control as part of environmental health programmes.

There is no noise measuring devices with district administration to monitor the noise levels while 4noise measuring devices with SPCBs. No any other data for Noise monitoring is collected in the district.

Table 5 spells potential management plan that could be taken up on priority by ULBs.

Table 5 Action Plan for Noise Pollution Management

Sectors	Gaps	Action Points	Priority
Noise	Noise monitoring is not carried out in the district.	•	Immediate

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.