Identifying Market for Dry Waste
A Case of Maharashtra

Regional Centre for Urban & Environmental Studies
All India Insititute of Local Self-Government, Mumbai

Supported by Ministry of Housing and Urban Affairs, Government of India

MARCH 2018

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The Regional Centre for Urban and Environmental Studies (RCUES), All India Institute of Local Self-Government (AIILSG), Mumbai

The Regional Centre for Urban & Environmental Studies (RCUES) at AIILSG, Mumbai was established by the Ministry of Housing and Urban Affairs (MoHUA), Government of India (GoI) to undertake urban policy research, technical advisory services and strengthening work capabilities of municipal officials and elected members from the States of Goa, Gujarat, Maharashtra, Rajasthan and UT's of Diu, Daman, Dadra & Nagar Haveli and Lakshadweep in the Western Region and States of Assam and Tripura in the North East Region. RCUES, Mumbai is recognized as a National Training Institute (NTI) and is fully supported by the MoHUA, GoI. The Principal Secretary, Urban Development Department of Government of Maharashtra (GoM) is the ex-officio Chairperson of the Advisory Committee of the RCUES, Mumbai, which is constituted by the MoHUA, GoI.

AIILSG, Mumbai houses the Solid Waste Management (SWM) Cell backed by the GoM for capacity building of municipal bodies and provide technical advisory services to ULBs in the State. Ministry of Urban Employment and Poverty Alleviation (MoUE&PA), GoI and UNDP have set up the `National Resource Centre on Urban Poverty' (NRCUP), which is anchored by RCUES at AIILSG, Mumbai.

AIILSG, Mumbai in partnership with CEPT University, Ahmedabad funded by the Bill and Melinda Gates Foundation has conducted more than 200 workshops with urban local bodies (ULBs) in Maharashtra for mainstreaming SLBs at ULB level. AIILSG is now supporting implementation of Swachh Bharat Mission in urban areas of Maharashtra. The Change Management Unit (CMU) and the State SLB Cell of Maharashtra were established at AIILSG, Mumbai in 2010 by Water Supply & Sanitation Department (WSSD), Government of Maharashtra.

In 2010, RCUES, Mumbai was entrusted the work of preparation of City Sanitation Plans for 19 Municipal Corporations and 15 Class A Municipal Councils in Maharashtra by GoM which was supported by the MoHUA, GoI. Also, Waste Management & Research Centre was established at AIILSG, Mumbai in 2011, by WSSD, GoM.

In 2013, AIILSG, Mumbai is empanelled by Ministry of Housing and Urban Affairs, Government of India, for providing technical support to the ULBs in the field of water supply, sanitation, sewerage and drainage systems. Later in 2015, RCUES, Mumbai is identified as a technical service provider in Municipal Solid Waste Management projects under Swachh Bharat Mission (SBM) launched by the MoHUA, GoI.

Over the years, RCUES of AIILSG Mumbai has been working in close coordination with state and local Governments to provide strategic, advisory, technical and capacity building support for assessment and improvement in infrastructure service delivery in the cities.

Along with ULBs, it is also engaging with multiple stakeholders like NGOs/CBOs, SHGs, private sector organisations, financial institutions at city level for providing technical and strategic support focusing on preparing action plans/strategies, technical assessment reports, CSPs/CDPs/DPRs as well as on-ground support by engaging with communities for improvement in various urban sectors to ensure improved quality of life to the citizens. AIILSG Mumbai is also working at the grassroot level in cities through field visits, guiding ULB officials, conducting situation assessments with the objective of bridging the gap between the cities and state for sustainable sanitation solutions under Swachh Bharat Mission Urban.

In 2017, AIILSG was empanelled among one of the 35 agencies in India for conducting integrated capacity building programmes. AIILSG Mumbai is supporting the states of Maharashtra, Rajasthan and Goa for the same.

Through all these activities, RCUES of AIILSG Mumbai is striving to transform the notion of capacity building by not limiting itself to trainings/workshops but engaging with the state and local governments at multiple levels. With a small but enthusiastic team, RCUES will continue to strive towards improving the capabilities of municipal officials with a broader objective towards developing able governments thereby enabling better cities.

For more information, please visit: http://www.aiilsg.org/rcues/

Mr. Ranjit Chavan	**Mr. Rajiv Agarwal**	**Ms. Utkarsha Kavadi**
President	**Director General**	**Director**

ACKNOWLEDGEMENT

The study "Identifying Market Potential for Recyclable Solid Waste in Maharashtra" is an outcome of the collective efforts and contributions of several individuals. RCUES, Mumbai would like to acknowledge their contribution and thank them for their invaluable support.

We are truly grateful to Honourable Principal Secretary, Urban Development Department, Government of Maharsahtra, Mrs. Manisha Mhaiskar without whom this study would not have taken shape. We would like to thank her for her constant support and inspiring RCUES to conduct this research.

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This document would not have been completed without the technical support provided at every stage by National Solid Waste Association of India (NSWAI) and editorial support of the entire RCUES team throughout this study.

We would like to thank our Director- General, Mr. Rajiv Agarwal, for his guidance & support. A special thanks to Ms. Utkarsha Kavadi, Director, RCUES, AIILSG for her guidance and constant motivation.

We have been enriched by the experience gained in this process and sincerely hope that document will contribute towards knowledge sharing.

RCUES, AIILSG, Mumbai Team

FOREWORD

It is well known that the problem of solid waste in urban areas, especially metropolitan cities has reached alarming proportions. The sheer quantity of solid waste generated is gigantic and the question facing us is how to manage the waste.

Immediate action to tackle this problem is the need of the hour given the implications it has on the environment and health. Apart from collection of solid waste it is extremely important to treat the waste and dispose it scientifically. Swachh Bharat Mission has given great importance to solid waste management and has pushed cities to address this issue. Most cities have achieved success in managing their wet waste, however, a lot is yet to be done when it comes to dry waste.

On similar lines, this book focuses on the possible options for dry waste management and identifying a suitable market for the same, taking a case of Maharashtra.

All India Institute of Local Self Government, Mumbai is a premier research and training institution in India which is actively involved in research and capacity building programmes. The Regional Centre for Urban and Environmental Studies (RCUES) of All India Institute of Local Self-Government, Mumbai is established by the Ministry of Housing and Urban Affairs, Government of India to undertake policy research, technical advisory services, and building work capabilities in six states in India. RCUES of AIILSG has published several thematic studies in urban sector for last two decades.

I would like to acknowledge the sincere efforts made by RCUES, AIILSG, Mumbai team in preparation of this book. I hope that readers will find this book useful as reference material to implement ideas in their respective cities.

Rajiv Agarwal
Director General

PREFACE

Municipal solid waste is a major concern worldwide and in developing countries like India the problem is much bigger due to the low priority given to waste sector and lack of awareness. Under the Swachh Bharat Mission, Urban and in accordance with the SWM Rule 2016, it is mandated that all the urban local bodies (ULBs) in India should achieve 100% segregation of waste, primarily into wet waste and dry waste. As a result of various Government initiatives and interventions, extensive awareness generation and ULB level actions, it is observed that the number of ULBs have begun with segregation of waste. Although 100% segregation isn't achieved, it is partially achieved with the methods adopted for segregating waste. Moreover, the methods for treating and/or disposing the wet waste are proven and are well known to the ULBs.

However, the dry waste which is being sorted further into various categories like paper, plastic, glass, metals etc., many a times does not find a proper destination. While every small ULB is making an effort to increase the percentage of segregation and sorting of waste, it is necessary that they are provided with adequate options for managing the sorted dry waste.

With this background, an effort has been made by RCUES, AIILSG team to assess the market potential for recyclable solid waste in Maharashtra. This study attempts to address the issues and challenges faced by the ULBs in recycling their dry waste by identifying the potential markets for segregated and recyclable dry waste and suggests a sustainable revenue generating model for the ULBs.

I would like to appreciate the efforts and enthusiasm by the RCUES team for conducting this research study. We hope that this document becomes a useful resource for practitioners, managers as well as officials who are striving for improving solid waste management in Indian cities.

Utkarsha Kavadi

Director, RCUES

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ABBREVIATIONS

ADB	Asian Development Bank
CH4	Methane
CO	Carbon monoxide
CO2	Carbon dioxide
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
FICCI	Federation of Indian Chambers of Commerce & Industry
IPF	Intermediate Processing Facility
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
MBT	Mechanical Biological Treatment
MCGM	Municipal Corporation of Greater Mumbai
MoEF	Ministry of Environment and Forest
MoUD	Ministry of Urban Development
MPCB	Maharashtra Pollution Control Board
MRF	Material Recover Facility
MT	Metric Tons
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
NEERI	National Environmental Engineering Research Institute
NGO	Non-governmental Organization
NGT	National Green Tribune
NIUA	National Institute of Urban Affairs
NUSP	National Urban Sanitation Policy
PCPD	Per Capita Per Day
PMC	Pune Municipal Corporation
RCUES	Regional Center for Urban and Environmental Studies
RDF	Refuse Derived Fuel
SPCB	State Pollution Control Board
SJSRY	Shahari Rozgar Yojana
SLB	Service Level Benchmarking
TMC	Thane Municipal Corporation
TPD	Tons per Day
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
ULB	Urban Local Body

SECTION 1

RESEARCH STUDY OUTLINE

1 INTRODUCTION

1.1 INTRODUCTION

Under the Swachh Bharat Mission, Urban and in accordance with the SWM Rule 2016, it is mandated that all the urban local bodies (ULBs) in India should achieve 100% segregation of waste, primarily into wet waste and dry waste. As a result of various Government initiatives and interventions, extensive awareness generation and ULB level actions, it is observed that the number of ULBs have begun with segregation of waste. Although 100% segregation isn't achieved, partially with the methods adopted for segregating waste, methods for treating and/or disposing the wet waste are proven and are well known to the ULBs.

However, the dry waste which is being segregated further into various categories like paper, plastic, glass, metals etc., many a times does not find a proper destination. While every small ULB is making an effort to increase the percentage of segregation of waste, it is necessary that they are provided with expert guidance on how to manage the segregated waste.

This report therefore, attempts to address the issues and challenges faced by the ULBs in recycling their dry waste by identifying the potential markets for the segregated and recyclable dry waste and suggesting a sustainable revenue generating model for the ULBs. A comprehensive and tailor-made research outline and methodology are required which are elaborated below.

1.2 RESEARCH OUTLINE

1.2.1 AIM

Support Local Bodies in understanding methods of recycling/reusing of dry waste and identifying/exploring market for recyclable waste.

1.2.1.1 Hypothesis

A viable market exists for recycling segregated dry waste generated by local bodies.

1.2.1.2 Assumption

Local bodies are already collecting, identifying and segregating dry waste.

1.2.2 OBJECTIVES

- To understand the different categories of dry waste being segregated by the local bodies.
- To understand the existing pattern of dry waste management in cities where it is being implemented
- To explore the existing market/network for recycling dry waste for the urban local bodies within Maharashtra State
- To identify market potential options for various dry waste recyclables for the urban local bodies within Maharashtra State

- To identify and recommend sustainable and viable business or financial recycling models for the urban local bodies within Maharashtra State

The assumption along with the objectives laid down, form paved way to the project's overall scope and also certain limitations that arose due to the nature of the study conducted

1.2.3 SCOPE AND LIMITATIONS OF THE STUDY

Solid waste data is largely unreliable. Due to lack of availability of primary data on per capita waste generation, inadequate data on waste characteristics and influence of informal sectors, various studies on the subject provide different and sometimes contradicting values and projections. Due to these inconsistencies in data recording, definitions, collection methods, and seasonal variations, the reference data procured for the current study can only be considered approximate, albeit more accurate than most.

In addition, the geographical extent to which the study can be applied to is vast. To ensure that appropriate scale is maintained, a sample study area has been narrowed down in Maharashtra state in which select cities have been identified to conduct research and analysis.

The number of categories of dry waste cannot be included in such a study in entirety. Hence, the commonly segregated categories as identified by ULBs have been selected for the study.

It is to be noted that a lot of plastic and other dry recycling industries are informal. These cannot be taken into account for the current study. Livelihood protection of Informal rag pickers and scrap merchants is not part of the study

1.3 RESEARCH METHODOLOGY

In line with the established aim and objectives, the study has been envisaged to adopt a combination of select primary and secondary research methods. Critical observations from this endeavor have also complimented in spatial representation of the surveyed areas.

1.3.1 PRIMARY RESEARCH

The primary methods chosen are questionnaires and interviews of the stakeholders mapped.

Primary surveys were also conducted in understanding the existing journey of dry waste materials from its start at dump yard until it reaches the recycling industry.

1.3.2 SECONDARY RESEARCH

Literature Review: A thorough review of available literature has been conducted which referred wide range of sources including but not limited to various government reports and acclaimed publications. The secondary sources of data collection also included government websites and journal articles.

Case studies are an essential resource, as the research study is an in-depth investigation of the current scenario of the ULBs in being able to recycle their dry waste post segregation and generating revenue for themselves and therefore, a review of available examples is fundamental to the study.

The data thus collected is analyzed and discussed, followed by a recommendation for the ULBs.

1.3.2.1 Stakeholder Mapping

- **Public Sector**: Local authorities and local public departments at city level
- **Private Formal Sector**: small & large registered enterprises doing collection, transport, treatment, disposal and recycling, Industries and innovative start-ups buying the waste
- **Private Informal sector**: small scale – non – recognized private sector and comprises of waste pickers, dump pickers, itinerant-waste buyers, traders and non-registered small – scale enterprises
- Community representatives: NGOs
- Recycling Industries

The stakeholder mapping contributes to a holistic but appropriate criteria for identifying the ULBs that will be considered for the purpose of the study. The primary criteria are provided below.

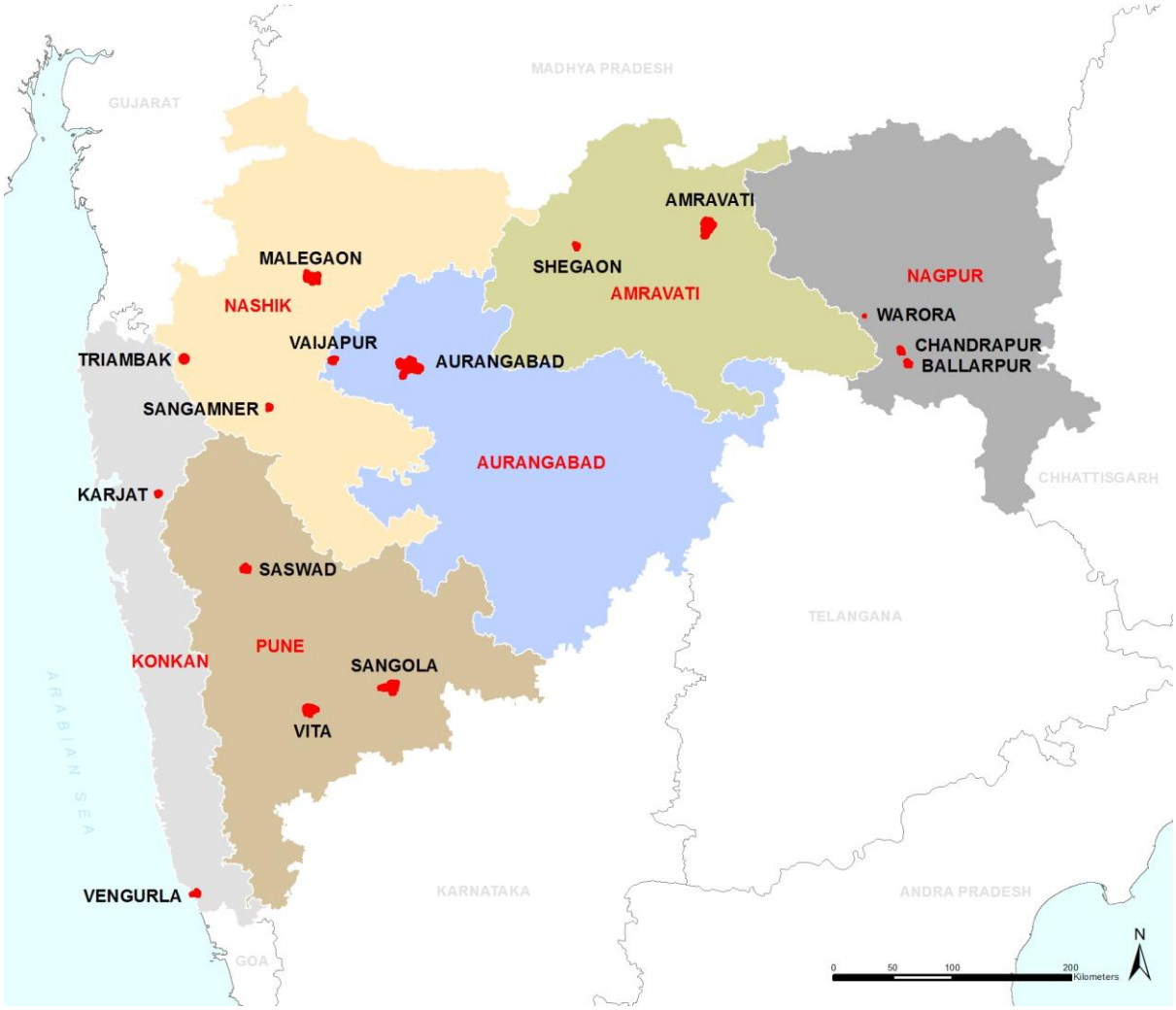
1.3.2.2 Selection Criteria of Urban Local Bodies

The selection criteria of ULBs was not only based on a high percentage of segregation of dry and wet waste but also includes the ULBs who have/are:

- Initiated the process of recycling dry waste into as many categories as possible
- Established some kind of networks with the potential markets for selling the dry waste categories
- Set up a revenue generating model for their local bodies through selling the dry waste
- Facing challenges in initiating any of the above steps.

Map 1.1 represents the selected cities based on the above criteria.

Map 1.1 : Selected Cities for Case Study



Source: Created through GIS, 2017

1.4 REPORT STRUCTURE

This section elucidates the report layout that has been adopted as per the study and research conducted. It is expected that the intended format helps the urban local bodies in identifying the potential markets for selling their recyclable dry waste and thus generate revenue for themselves.

Chapter 1 of this report, which is the current chapter, provides a brief outline of the research study, its aim and objectives with a brief methodology.

Chapter 2 reviews the current national level and state level policies in MSW management. The chapter also includes the status of MSW and its management in RCUES mandated states of Maharashtra, Rajasthan, Gujarat, Assam, Goa and Tripura.

Chapter 3 details out the various dry waste categories that constitute MSW and focuses on the recycling process and the various types of recycling industries available.

Chapter 4 explains the administrative profile and demographic profile of Maharashtra, as well as the status of MSW and dry waste generation at State, revenue division level, district level and also describes the various dry waste categories that ULBs in Maharashtra sort.

Chapter 5 analyses the quantity of plastic waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 6 analyses the quantity of glass waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 7 analyses the quantity of thermocol waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 8 analyses the quantity of paper & cardboard waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 9 analyses the quantity of cloth waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 10 analyses the quantity of footwear waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 11 analyses the quantity of metal waste generation and consumption options at state level, revenue division level, district level and highlights case studies of recycling options.

Chapter 12 discuss other disposal options for dry waste.

Chapter 13 analyses the primary survey data collected for the selected case studies to understand the current MSW scenario in handling dry waste in various ULBs of Maharashtra across its 6 revenue divisions. It also analyses the revenue and expenditure models of solid waste management department for 2017-18 financial year.

Chapter 14 concludes with a list of available markets for dry waste recycling for ULBs in Maharashtra and suggests revenue-generating models for the ULBs.

SECTION 2

OVERVIEW OF MUNICIPAL SOLID WASTE (DRY) MANAGEMENT IN INDIA

2 CURRENT STATUS IN INDIA

Any study that dwells into Solid Waste Management will need to present an overall but precise picture of the existing conditions prevailing in a region. Therefore, this chapter begins by throwing light on the status of MSWM in India with some key statistics and observations. This is supplemented by an overview of MSWM Components and its life cycle followed by the existing Policies, Programmes and Legal Framework surrounding the MSWM. The section then concludes by highlighting the current status of cities mandated by Regional Center of Urban and Environmental Studies (RCUES).

2.1 MUNICIPAL SOLID WASTE IN INDIA

The increase in quantity of solid waste generation is directly proportional to the rate of urbanization and migration of rural masses to urban areas. Furthermore, the composition of solid waste is largely dependent on citizen lifestyle, consumer patterns and food habits.

As per the Central Pollution Control Board Report (CPCB, 2015)[1], India's urban population of 377 million (Census 2011)[2], which is 31% of the total population, generates 1, 43, 449 metric tons per day of municipal solid waste and 62 million tons of municipal solid waste per annum (Planning Commission Report, 2014)[3]. To further add to the problem, the total number of towns (statutory and census) in the country have also increased from 5,161 in 2001 to 7,936 in 2011, thus increasing the number of municipal waste generation by 2,775 within a decade (MoUD, 2016)[4].

Municipal solid waste management (MSWM), is a critical element towards sustainable development, comprises segregation, storage, collection, relocation, transportation, processing, and disposal of solid waste to minimize its adverse impact on environment. Unmanaged MSW becomes a factor for propagation of innumerable ailments (Kumar et al., 2009)[5].

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[1] CPCB Report (2015). Implementation of Municipal Solid Wastes (Management and Handling) Rules, 2000, An Annual Review Report : 2014-15. India, Central Pollution Control Board, 2015.

[2] Census of India (2011). Rural Urban Distribution of Population Census of India 2011 (Provisional Population Totals) Available at: http://censusindia.gov.in/2011-prov-results/paper2/data_files/india/Rural_Urban_2011.pdf [Accessed on 11th December 2017]

[3] Planning Commission Report (2014). Reports of the task force on waste to energy (Vol-I) (in the context of Integrated MSW management). Retrieved from http:// planningcommission.nic.in/reports/genrep/rep_wte1205.pdf

[4] MoUD (2016). Municipal Solid Waste Management Manual Part II: The manual. Swachh Bharat Mission. Central Public Health and Environmental Engineering Organisation (CPHEEO), Ministry of Urban Development, 2016.

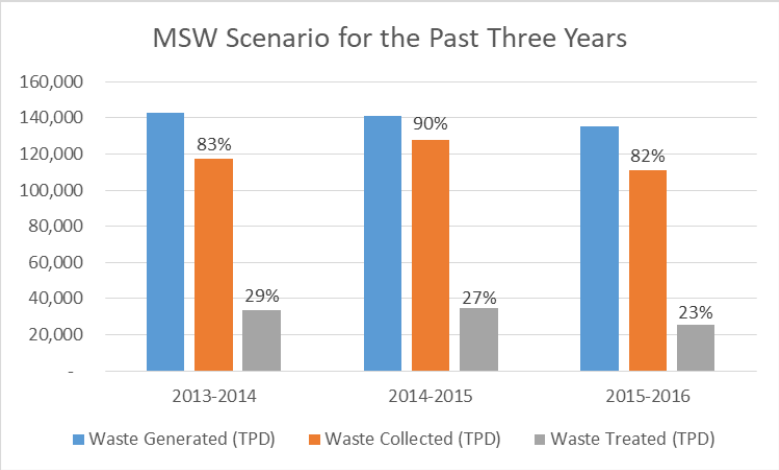
[5] Kumar, S., Bhattacharyya, J. K., Vaidya, A. N., Chakrabarti, T., Devotta, S., & Akolkar, A. B. (2009). Assessment of the status of municipal solid waste management in metro cities, state capitals, class I cities, and class II towns in India: An insight. Waste Management, 29, 883–895. http://dx.doi.org/10.1016/j.wasman.2008.04.011

The management of municipal solid waste in India has surfaced or continued to be a severe problem not only because of environmental and aesthetic concerns but also because of the enormous quantities generated every day.

As per the CPCB annual review report for the period of 2015-16, a total quantity of 1, 35,198 TPD is generated and out of which 1, 11, 028 TPD is collected, 25, 572 TPD is treated and 47,456 TPD is landfilled (CPCB, 2016)[6]. The MSW collected for the year 2015-16 accounts to approximately 82% of the total MSW generated whereas the annual review report for the period of 2014-15, suggests that, a total quantity of 1, 41,064 TPD is generated and out of which 1, 27,531 is collected. It is noted that 34, 752 TPD is treated and 4,515 is landfilled (CPCB, 2015). The MSW collected accounts to approximately 90% of the total waste generated.

The Graph 2.1 below reflects the scenario of MSW Management for the last three years:

Graph 2.1: Scenario of Waste Generation, Collection and Treatment



Source: (CPCB, 2016); (CPCB, 2015); (CPCB, 2014)[7]

The statistics states that the amount of waste collected has decreased considerably from year 2014-2015 to year 2015-2016, questioning the applicability and implementation of proper solid waste management rules in the country. The amount of waste treated has also been presenting disappointing figures of reduction over past 3 years.

Various initiatives taken by government, NGOs, private companies and local public drastically increased in past few decades. Nonetheless, land filling is still the dominant solid waste management option for India (Agarwal, Chaudhary and Singh, 2015)[8].

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[6] CPCB Report (2016). Consolidated Annual Review Report on Implementation of Solid Waste Management Rules, 2016. India, Central Pollution Control Board, 2016.

[7] CPCB Report (2014). Implementation of Municipal Solid Wastes (Management and Handling) Rules, 2000 - Annual Review Report: 2013-14. India, Central Pollution Control Board, 2014.

[8] Agarwal, Chaudhary and Singh (2015).Waste Management Initiatives in India for Human Well Being. Agarwal Dr. Raveesh, Chaudhary Mona, Singh Jayveer. European Scientific Journal, June 2015.

2.1.1 COMPONENTS AND COMPOSITION OF MUNICIPAL SOLID WASTE

Municipal Solid Waste majorly consists of everyday items one uses and then throws away. Waste composition is influenced by many factors, such as level of economic development, cultural norms, geographical location, energy sources, and climate. As Country urbanizes and populations become wealthier, consumption of inorganic materials (such as plastics, paper, and aluminum) increases, while the relative organic fraction decreases. Generally, low-income and middle-income countries have a high percentage of organic matter in the urban waste stream, ranging from 40 to 85% of the total. Paper, plastic, glass, and metal fractions increase in the waste stream of middle-income and high-income countries (Worldbank, 2012)[9].

Major categories of MSW found in India are stated in Table 2.1.

Table 2.1: Categorization of Municipal Solid Waste

Types	Categories	Source
Wet Waste	**Biodegradable Waste**	Food and kitchen waste, green waste (vegetables, flowers, leaves, fruits) and paper
Dry Waste	**Recyclable Material**	Paper, glass, bottles, cans, metals, certain plastics, etc
	Inert Waste Matter	C&D, dirt, debris
	Composite waste	Waste clothing, Tetra packs, waste plastics such as toys
	Domestic Hazardous Waste	Waste medicine, e-waste, paints, chemicals, light bulbs, fluorescent tubes, spray cans, fertilizer and pesticide containers, batteries, and shoe polish

Source: Joshi & Ahmed, 2016[10]

It is considered that waste composition in the MSW play a critical factor in understanding the micro level economies that can evolve, which forms an important element of the study.

2.1.2 THE LIFE CYCLE OF MUNICIPAL SOLID WASTE

The life cycle of the waste management starts once, a material is considered as waste by the owner and discards it in the waste collection bins. The life cycle of MSW is depicted by the dotted line (Flowchart 2.1)

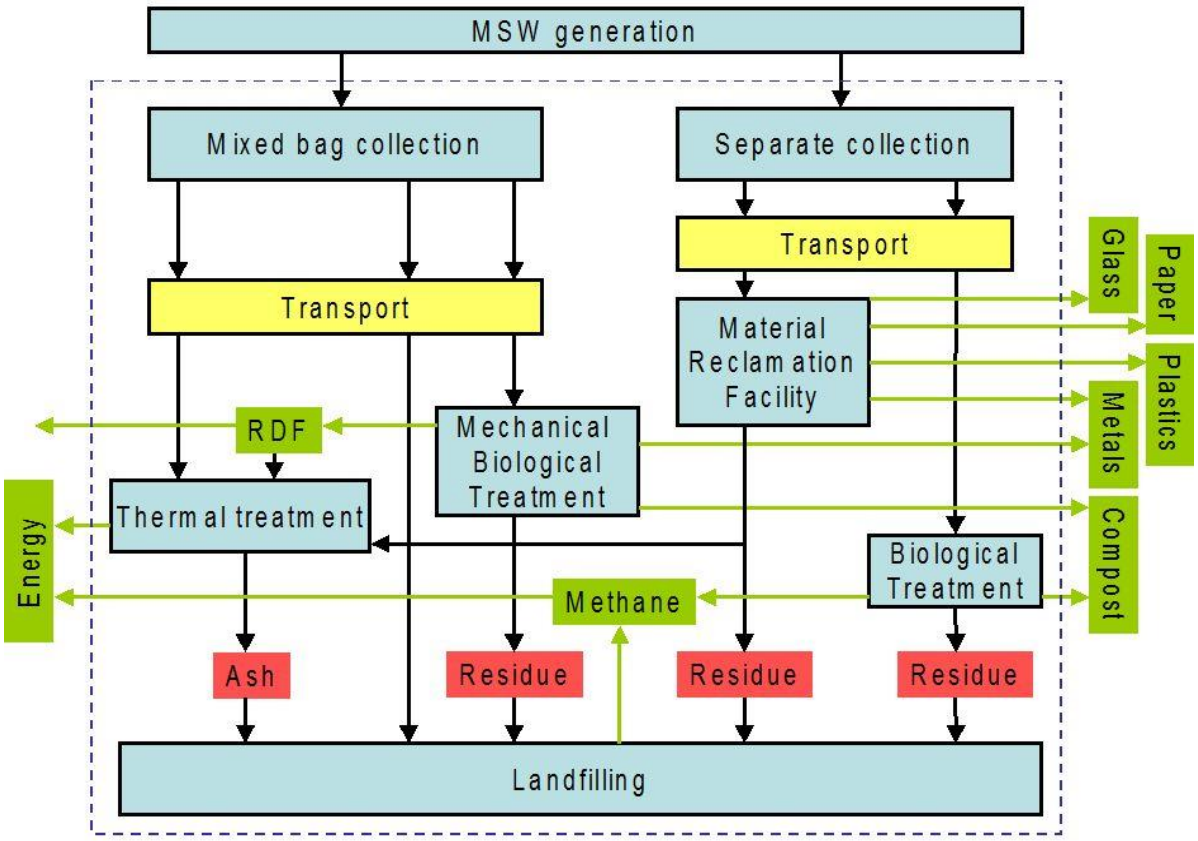
MSW is collected either via mixed-bags or via separate collection. Majority of ULBs encourage segregation of waste at source. Each collection method requires its own infrastructure, i.e. dedicated bins and collection vehicles. The transportation stage follows. Ideally, the mixed bag waste can go either to the landfill, the waste-to-energy facility or to the Mechanical Biological Treatment plant (MBT). The source-separated waste, if it is a dry waste (paper and cardboard,

[9] Worldbank (2012). Chapter 5: Waste Composition, Urban Development Series – Knowledge Papers, Worldbank Site Resources. Available at http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1334852610766/Chap5.pdf [Accessed on 13th December 2018]

[10] Joshi & Ahmed (2016). Status and challenges of municipal solid waste management in India: A review, Rajkumar Joshi & Sirajuddin Ahmed, Cogent Environmental Science (2016), 2: 1139434.

plastics, glass, tin, aluminum, etc.), can go to the material recovery/reclamation facility (MRF) or if it is a wet waste (kitchen leftovers, garden trimmings, etc.) can go directly to the biological treatment facility such as composting, vermi-composting etc. (Abeliotis, 2011).[11]

Flowchart 2.1: Municipal Solid Waste Flow Diagram



Source: Abeliotis, 2011

2.2 POLICIES, PROGRAMMES AND LEGAL FRAMEWORK

The Ministry of Environment and Forests and Climate Change (MoEFCC), the Ministry of Urban Development (MoUD), the National Environmental Engineering Research Institute (NEERI), Central Pollution Control Board (CPCB), and State Pollution Control Boards (SPCBs) govern administrative and regulatory responsibilities of waste management in India, whilst the ground level implementation responsibility lies with ULBs (Joshi & Ahmed, 2016). The management of municipal solid waste is one of the main functions of all ULBs in the Country. All ULBs are required to meticulously plan, implement and monitor all systems of urban service delivery especially that of municipal solid waste (MoUD, 2016).

[11] Konstadinos Abeliotis (2011). Life Cycle Assessment in Municipal Solid Waste Management, Integrated Waste Management - Volume I, Mr. Sunil Kumar (Ed.), InTech, DOI: 10.5772/20421. Available from: https://www.intechopen.com/books/integrated-waste-management-volume-i/life-cycle-assessment-in-municipal-solid-waste-management

The paragraphs below explain various national level, state level, regional level and district level policies and strategies in conducting Municipal Solid Waste management.

2.2.1 NATIONAL AND STATE POLICIES/STRATEGIES AND THEIR GOALS

The Government of India intervention on MSWM can be tracked wayback to 1960s. The section below, provides choronological order for the national policies that were identified in past (MOUD, 2016).

Important policy landmarks and intiatives by Government of India on Solid Waste Management are presented in Table 2.2.

Table 2.2: Important policy level landmarks and initiatives by Government of India on Solid Waste Management

Year	Rules, Policies, Schemes, Financial Plans
1989	The Hazardous Waste (M&H) Rules
1994– 95	MSWM strategy paper by NEERI
1994- 95	J.S. Bajaj Committee (The High Powered Committee on Urban Solid Waste Management)
1998	Bio-medical Waste (M&H) Rules
1998	Supreme Court appointed Barman Committee
2000	MSW (M&H) Rules
2000	CPHEEO Manual on MSW
2005	Report of the Technology Advisory Group on SWM
2005	JNNURM (2005-2012)–40 MSW projects costing Rs. 2,186 Cr sanctioned from a total of 65 cities covered
2005	UIDSSMT (2005-2012)–51 MSW projects costing Rs. 327 Cr sanctioned from a total of 632 cities covered
2005	12th Finance Commission (2005-2010)–Rs. 2,500 Cr for 423 Class I cities
2006	Strategy and Action Plan-Use of compost in cities
2007	11th Five-Year Plan (2007-2012)–Rs. 2,210 Cr for MSWM
2008	National Urban Sanitation Policy (NUSP)
2008	Service Level Benchmarks (SLBs) in MSWM
2008	Hazardous Waste (Management, Handling & Transboundary Movement) Rules
2008	National Mission on Sustainable Habitat (NAPCC)
2010	13th Finance Commission (2010–2015)—Establishing standards for delivery of essential services
2011	Plastic Waste (M&H) Rules
2011	E-Waste (M&H) Rules
2011	Draft Bio-medical Waste (M&H) Rules
2014	Swachh Bharat Mission, October 2014
2016	Waste Management Rules
2016	2016 comprising of Solid Waste Management Rules

2016	Plastic Waste Management Rules
2016	Bio-Medical Waste Management Rules
2016	E-Waste Management Rules
2016	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016
2016	Construction and Demolition Waste Management Rules, 2016.

Source: MOUD, 2016

2.2.1.1 Direction of Hon'ble National Green Tribunal (NGT)

Hon'ble National Green Tribune (NGT) in OA No. 199 of 2014 (Almitra H. Patel Vs Union of India) on 5th February, 2015 directed that "The Central Pollution Control Board shall submit its independent comment in relation to formulation of a national policy with regard to collection and disposal of a municipal solid waste as a National policy to be adopted. Accordingly, CPCB has developed a National Policy providing indicative strategy and broad framework which states may refer to derive the needs in-terms of tools and tackles, equipment and suggested technological options (ADB, 2016)[12].

2.2.1.2 Municipal Solid Waste Management Rules, 2016

Under the patronage of Swachh Bharat Mission, the Ministry of Environment Forests and Climate Change has recently revised the rules and renamed it as Solid Waste Management Rules, 2016. Swachh Bharat Mission, a flagship programme launched by the Government of India in 2014, aims to provide basic infrastructural and service delivery with respect to sanitation facilities to every family, including toilets and adopting the scientific methods to collect, process and disposal of municipal solid waste. The mission focuses on quality and sustainability of the service provision as well as emphasising on the commitment on every stakeholder to bring about a visible change in society (MoUD, 2016).

The Municipal Solid Waste (Management and Handling) Rules lay down the steps to be taken by all municipal authorities to ensure management of solid waste according to best practice. The Government has revamped the Municipal Solid Wastes (Management and Handling) Rules 2000 and notified the new Solid Waste Management Rules, 2016 on April 8, 2016. The Rules also specify responsibilities of all the stakeholders involved in the solid waste management right from waste generators to different Ministries involved in the recycling and disposal methods.

2.2.2 STATE LEVEL/REGIONAL/DISTRICT SWM STRATEGIES/POLICIES

Status of MSW management varies from city-to-city. However, overall status is based on approach / strategy adopted by the local bodies (CPCB, 2015).

In compliance with Hon'ble NGT order dated 22 December 2016 & 7 February 2017, each states are required to prepare state action plan addressing MSW management. As per the the MSW management rules-2016, each state will have to assess the local situation and considereing preparedness of the local bodies. The state plan is needed to provide advise to the local bodies

[12] ADB (2016). Handbook of Technologoes for Solid Waste Management. Asian Development Bank .

and finalise modalities for setting up of individual or formulating combined waste processing and disposal facilities. This will have to be done based on Regional / Cluster approach besides decentralised facilities. The state policy is also required to address the final incentivies and penal provisons of the local bodies (CPCB, 2015).

Further to the state action plan, each municipal body is needed to prepare an action plan in consultation with State urban Department after assessing the status of waste generation and composition. Local body is needed to work-out requirement of tools and equipment to ensure proper segregation, material recovery, storage, transportation, process and disposal of waste and document it in form of DPR. This plan will meet the provisions as per the Solid Waste Management Rules, 2016 (MoUD, 2016). A clustered approach adopted in states of Gujarat and Punjab were citied as feasible examples in conducting centralised RDF/composting facilities (CPCB, 2015).

2.2.2.1 MAHARASHTRA STATE POLICIES

a. Maharashtra Non-Biodegradable Garbage (Control) Act 2006

The State government of Maharashtra has legislated special enactment entitled Maharashtra Non-biodegradable Garbage (control) Act 2006 to regulate the non-biodegradable municipal solid waste generated in the urban areas. As per Maharashtra Municipal Solid Waste Rules 2006, notified under this Act; no person, by himself or through another shall knowingly or otherwise throw/ cause to throw any non-biodegradable garbage, Construction debris or any biodegradable garbage in any drain, ventilation shaft, pipe & fittings, sewage lines, natural or manmade lake, wetlands; which is likely to interrupt the drainage & sewage system, interfere with the free flow or affect the treatment & disposal of drain & sewage contents, be dangerous or cause a nuisance or be prejudicial to public health and damage the

lake, river water & wetland. Also no person shall knowingly or otherwise, place or permit to place any biodegradable or non-biodegradable garbage in any public place or open to public view.

The Act also states that, it shall be the duty of the owners and occupiers of every land and building to store and segregate the waste generated by them into a minimum of two receptacles one for biodegradable waste and one for non-biodegradable waste (ADB, 2016).

b. Maharashtra Plastic Carry Bags (Manufacture and Usage) Rules 2006

To minimize the environment and health impact of plastic waste State government issued Maharashtra plastic Carry Bags (Manufacture and Usage) Rules 2006 under Maharashtra Non-biodegradable Garbage Control Act 2006. To control plastic waste generation, manufacturing (and stocking, distributing or selling) plastic carry bags made of virgin or recycled plastic of thickness less than 50 micron and of the size 8 x 12 inches are banned in the State (ADB, 2016).

Certain states and cities has intiated implementing municipal solid waste management in more strategised way, thus streamlining the entire supply chain of MSW. Paragraphs below explains such cases from states/cities in india.

c. Maharashtra Plastic Bottles Manufacturers

The Maharashtra State Government has stipulated water bottle manufacturers to set up a reverse supply mechanism and recycling plants, failing which a complete plastic ban will be enforced.

Effective March 2018, a ban on plastic water bottles will be implemented in government and corporate offices and in 5-star hotels.

The move is aimed at extending the responsibility of the plastic item manufacturers of getting the plastic back from the consumer. Some of the salient requirements of this initiative are as follows:

- Adopt a buy-back mechanism
- Must have the capacity to recycle and reuse
- The manufacturers have to set up a system based on a reverse supply chain in which they collect used plastic bottles

Additionally the state government is planning to crackdown on all unauthorized plastic bottle manufacturers. Within the same initiative, there will be a complete ban on usage of plastic.

A complete ban on plastic bags will also be brought into effect. There will be hefty penalties levied and possible imprisonment for shopkeepers, if they are found using plastic bags. To this effect, plastic milk packets will make way for glass bottles ensuring the ban applies to the dairy industry as well.

To ensure a successful and seamless implementation, four study groups have been formed to survey in Bangalore, Sikkim, Madhya Pradesh and Himachal Pradesh in an attempt to adopt their methods on the plastic ban implementation.

2.3 STATUS IN REGIONAL CENTER OF URBAN & ENVIRONMENTAL STUDIES (RCUES) MANDATED CITIES

2.3.1 RAJASTHAN

2.3.1.1 State Administrative Profile and MSW Scenario (Table 2.3).

Table 2.3 : Administrative Profile and MSW Scenario - Rajasthan

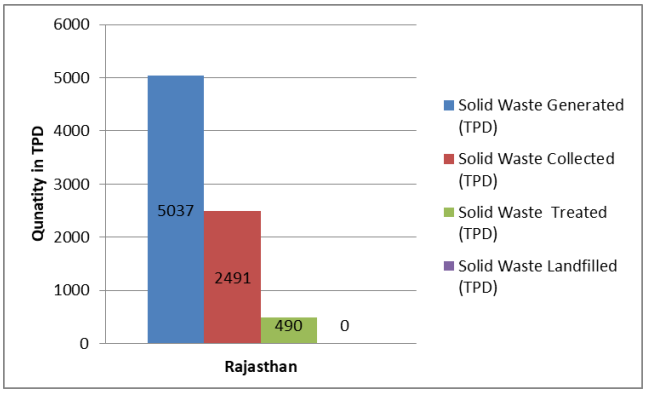
Administrative Profile	Number	MSW Scenario	Tons/day
Urban Local Bodies	188	**Waste Generated**	5037
Municipal Corporation	7	**Waste Collected**	2491
Municipal Council	34	**Waste Treated**	490
Nagar Panchayat / Municipal Boards	147	**Landfill**	-
Town Committee	-		

Source: CPCB, 2015

2.3.1.2 Municipal Solid Waste Statistics

Graph 2.2 represents the statistics available from CPCB Report, which represents consolidated MSW quantities for the years 2013-14, 2014-15, 2015-16 (till December). It is to be noted that the total MSW collected is approximately 49.45% of the total solid waste generated in the Rajasthan sate. Of the 49.45% waste collected only 19.67% of waste was treated.

Graph 2.2: MSW Solid Waste Generation Scenario – Rajasthan State



2.3.2 GUJARAT

2.3.2.1 State Administrative Profile and MSW Scenario (Table 2.4)

Table 2.4: Administrative Profile and MSW Scenario - Gujarat

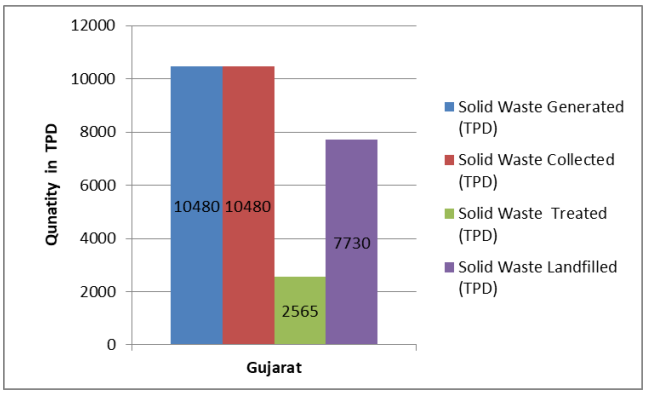
Administrative Profile	Number	MSW Scenario	Tons/day
Urban Local Bodies	170	**Waste Generated**	10480
Municipal Corporation	8	**Waste Collected**	10480
Municipal Council	162	**Waste Treated**	2565
Nagar Panchayat / Municipal Boards	-	**Landfill**	7730
Town Committee	-		

Source: Government of India, 2015

2.3.2.2 Municipal Solid Waste Statistics

Graph 2.3 represents the statistics available from CPCB report, which represents the consolidated MSW quantities for the years 2013-14, 2014-15, 2015-16 (till December). It is to be noted that the total MSW collected is 100% of the total solid waste generated in the Gujarat state. However, only 24.48% of the waste is getting treated. 73.76% of the waste is let into the landfill site.

Graph 2.3: MSW Solid Waste Generation Scenario – Gujarat State



2.3.3 MAHARASHTRA

2.3.3.1 State Administrative Profile and MSW Scenario (Table 2.5).

Table 2.5: Administrative Profile and MSW Scenario - Maharashtra

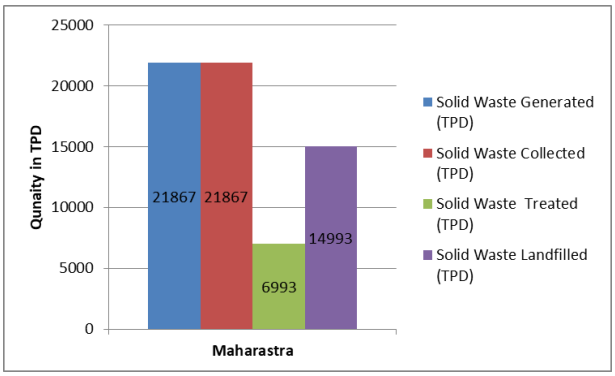
Administrative Profile	Number	MSW Scenario	Tons/day
Urban Local Bodies	384	**Waste Generated**	21867
Municipal Corporation	27	**Waste Collected**	21867
Municipal Council	228	**Waste Treated**	6993
Nagar Panchayat / Municipal Boards	129	**Landfill**	14993
Town Committee	-		

Source: CPCB, 2015

2.3.3.2 Municipal Solid Waste Statistics

Graph 2.4 represents the statistics available from CPCB report, which represents the consolidated MSW quantities for the years 2013-14, 2014-15, 2015-16 (till December). It is to be noted that the total MSW collected is 100% of the total solid waste generated in the Maharashtra state. However, only 31.98% of the waste is getting treated. 68.56% of the waste is let into the landfill site.

Graph 2.4: MSW Solid Waste Generation Scenario – Maharashtra State



2.3.3.3 Best Practices in Maharashtra

a. SWaCH segregated waste collection initiative in Pune Municipal Corporation (PMC)

PMC is one of those aspiring cities that reflected a thrust in improving door-to-door collection and waste segregation at source. SWaCH's segregated waste collection initiative in Pune is fully endorsed and supported by the PMC. The collaborative partnership between PMC and SWaCH is not a contracted agency but an equal partner to PMC in implementing a sustainable solid waste management system in the city. While SWaCH is responsible for collecting segregated waste from households, commercial establishments and institutes, PMC plays the role of facilitator by educating and informing citizens about waste segregation, and tasking them to pay a user fee to SWaCH for their services. PMC has also provided as operational grant to SWaCH for a period of five years and partially subsidized the cost of waste collection form slums. Pune was the first city in India to formally register waste pickers way back in 1995.

PMC has committed themselves to make Pune a zero landfill city. The key achievements of SWaCH initiative in the past 5 years of implementation has resulted in improvement of the performance of

MSW management system. The PMC-SWaCH initiative has been able to divert 60 MT of waste away from landfills every day. Currently 80-85% of the waste generated in the city's being recycled/processed (NIUA, 2015)[13].

b. Parisar Vikas Program in Mumbai

The Municipal Corporation of Greater Mumbai (MCGM) has provided sorting sheds in addition to providing dry waste collection tempos, in the city under the infrastructure development component of Shahari Rozgar Yojana (SJSRY) (NIUA, 2015).

c. Generating Revenue from Thermocol Waste: Pune Municipal Corporation

Pune Municipal Corporation (PMC) has set up a thermocol waste processing plant recycle the 3.65 lakh kilograms of thermocol waste generated in the city every year. Every day, about 1000 kg of thermocol waste is disposed in garbage bins, rivers or nullahs leading to pollution. The recycled thermocol is converted into cheap furniture and thus furniture is stated to be fireproof and durable (Clean India Journal, 2012)[14].

d. Generating Revenue from Thermocol Waste: Thane Municipal Corporation

Thane Municipal Corporation (TMC) is another city that is intending to process its own thermocol and generate revenue out of the processing. Thane generates 300 tons of thermocol waste annually. The thermocol waste will be treated through electric melting process and the product will be lumps of polystyrene, which will then be sold to the plastic manufacturing companies, hence generating revenue out of it. Under this pilot project, a ten-year contract has been signed with Insupac Company. Depending on the success rate, the other two civic bodies – Brihanmumbai Municipal Corporation and Navi Mumbai Municipal Corporation after a year will implement it (Karelia, 2017)[15].

2.3.4 GOA

2.3.4.1 State Administrative Profile and MSW Scenario (Table 2.6).

Table 2.6 : Administrative Profile and MSW Scenario - Goa

Administrative Profile	Number	MSW Scenario	Tons/day
Urban Local Bodies	14	**Waste Generated**	450
Municipal Corporation	1	**Waste Collected**	400
Municipal Council	13	**Waste Treated**	182
Nagar Panchayat / Municipal Boards	-	**Landfill**	-

[13] NIUA (2015). Urban Solid Waste Management in Indian Cities. National Institute of Urban Affairs. 2015

[14] Clean India Journal (2012). Thermocol Waste Processing Plant at PMC. Clean India Journal. Available at: https://www.cleanindiajournal.com/thermocol_waste_processing_plant_at_pmc/ [Accessed on: 19th December 2017]

[15] Karelia Gopi (2017), Thane in Maharashtra to start recycling of thermocol waste. Banega Swach India

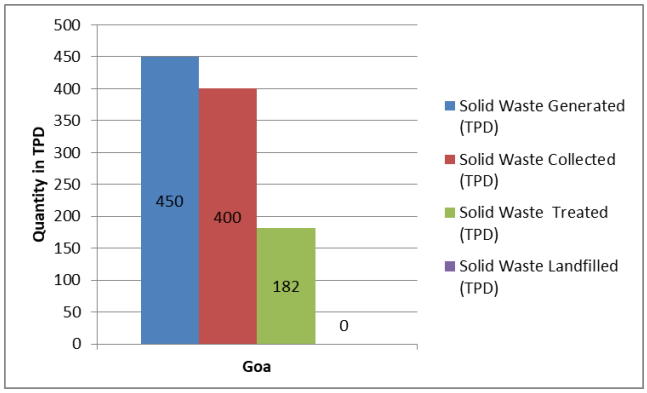
Town Committee	-		

Source: Goa State Urban Development Agency, 2017 *Source: CPCB, 2015*

2.3.4.2 Municipal Solid Waste Statistics

Graph 2.5 represents the statistics available from CPCB report, which represents the consolidated MSW quantities for the years 2013-14, 2014-15, 2015-16 (till December). It is to be noted that the total MSW collected is 88.89% of the total solid waste generated in the Goa State. However, only 45.50% of the waste is getting treated.

Graph 2.5: MSW Solid Waste Generation Scenario – Goa State



2.3.5 ASSAM

2.3.5.1 State Administrative Profile and MSW Scenario (Table 2.7).

Table 2.7 : Administrative Profile and MSW Scenario - Assam

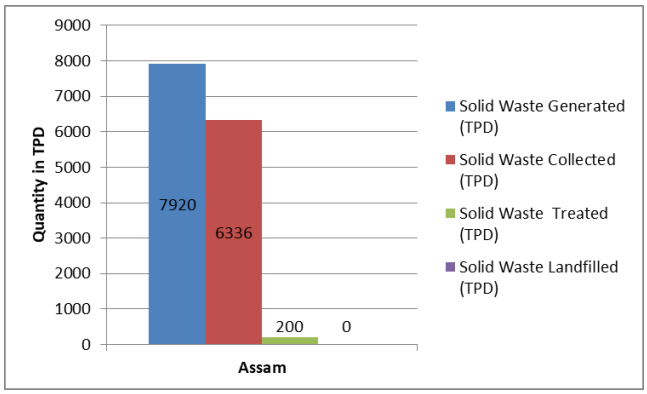
Administrative Profile	Number	MSW Scenario	Tons/day
Urban Local Bodies	94	**Waste Generated**	7920
Municipal Corporation	1	**Waste Collected**	6336
Municipal Council	-	**Waste Treated**	200
Nagar Panchayat / Municipal Boards	33	**Landfill**	-
Town Committee	60		

Source: CPCB, 2015

2.3.5.2 Municipal Solid Waste Statistics

Graph 2.6 represents the statistics available from CPCB report, which represents the consolidated MSW quantities for the years 2013-14, 2014-15, 2015-16 (till December). It is to be noted that the total MSW collected is 80.00% of the total solid waste generated in the Assam State. However, only 3.16% of the waste is getting treated.

Graph 2.6: MSW Solid Waste Generation Scenario – Assam State



2.3.6 TRIPURA

2.3.6.1 State Administrative Profile and MSW Scenario (Table 2.8).

Table 2.8 : Administrative Profile and MSW Scenario - Tripura

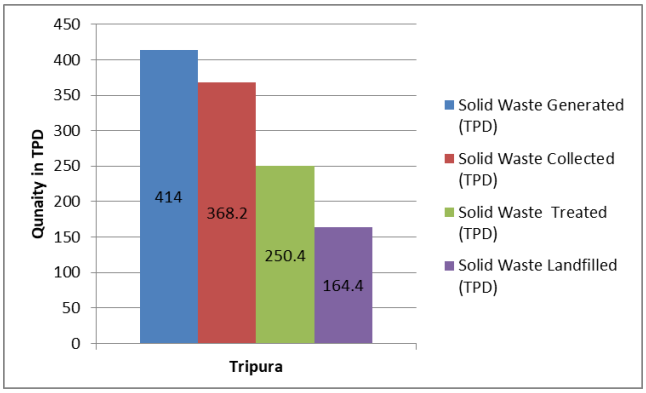
Administrative Profile	Number	MSW Scenario	Tons/day
Urban Local Bodies		**Waste Generated**	414
Municipal Corporation		**Waste Collected**	368.2
Municipal Council		**Waste Treated**	250.4
Nagar Panchayat / Municipal Boards		**Landfill**	164.4
Town Committee			

Source: CPCB, 2015

2.3.6.2 Municipal Solid Waste Statistics

Graph 2.7 represents the statistics available from CPCB report, which represents the consolidated MSW quantities for the years 2013-14, 2014-15, 2015-16 (till December). It is to be noted that the total MSW collected is 80% of the total solid waste generated in the Maharashtra state.

Graph 2.7: MSW Solid Waste Generation Scenario – Tripura State



SECTION 3

DRY WASTE CATEGORIES

3 DRY WASTE CATEGORIES

After a thorough understanding on the overview of MSWM in India currently, this section now focuses on the Dry Waste area within the MSWM. The section begins by identifying the dry waste categories generated from commercial and household activities.

This is followed by a narrowed down selection of categories and some background of how the corresponding waste is recycled along with their characteristics, key facts and figures where applicable. This background setting is vital for the subsequent sections of the study and this report in particular where the study areas in Maharashtra are identified and the necessary investigation along with research has taken place in line with the categorization of dry waste.

3.1 VARIOUS DRY WASTE CATEGORIES GENERATED IN MUNICIPAL SOLID WASTE

The dry waste generated in MSW from households and commercial units could be categorized into 29 types (Box 3.1). These are:

Box 3.1: Dry Waste Categories that Constitute in MSW

1. Plastic bags	11. Cotton	21. Foam
2. Plastic bottles	12. Jute	22. Ash
3. Plastic Wrappers	13. Shoes/sandals	23. Coal
4. Rubber tube	14. Leather	24. Cardboard
5. Tyres	15. Electrical Tube	25. Silt
6. Thermocol	16. Bulbs	26. Rexin Bags
7. Paper	17. Diaper/Sanitary Napkin	27. Dry waste from street waste & municipal cleaning waste
8. Glass bottles		
9. Ceramics	18. Metal	28. Mobile/Battery/T.V./
10. Clothes	19. Wood Waste	29. Computer/Electronic goods
	20. Hair	30. Construction and Demolition

For this study, we are focusing on 6 dry waste categories which majority of the local bodies are sorting and are in need to identify the existing markets for selling and recycling purpose. These categories are further discussed in detail in the below sections.

3.1.1 PLASTIC BAGS/BOTTLES

Recycling of plastics is one of the foremost steps towards innovation and sustainability in this industry. Plastics is one area where recycling has drastically developed. Currently in India, number of organized recycling units for plastics is ~3,500 along with additional ~4,000 unorganized recycling units' (FICCI, 2014)[16]. Most of the plastics (PE-Polyethylene, PP-Polypropylene, PVC-Polyvinyl Chloride, PET-Polyethylene Terephthalate) etc. could be recycled via mechanical route.

[16] FICCI (2014). Potential of Plastics Industry in Northern India with Special Focus on Plasticulture and Food Processing. Federation of Indian Chambers of Commerce and Industry

Whereas, engineering plastics like PBT, SAN, Nylon etc. are recycled by selected recyclers (Masakazu et al., 2014)[17].

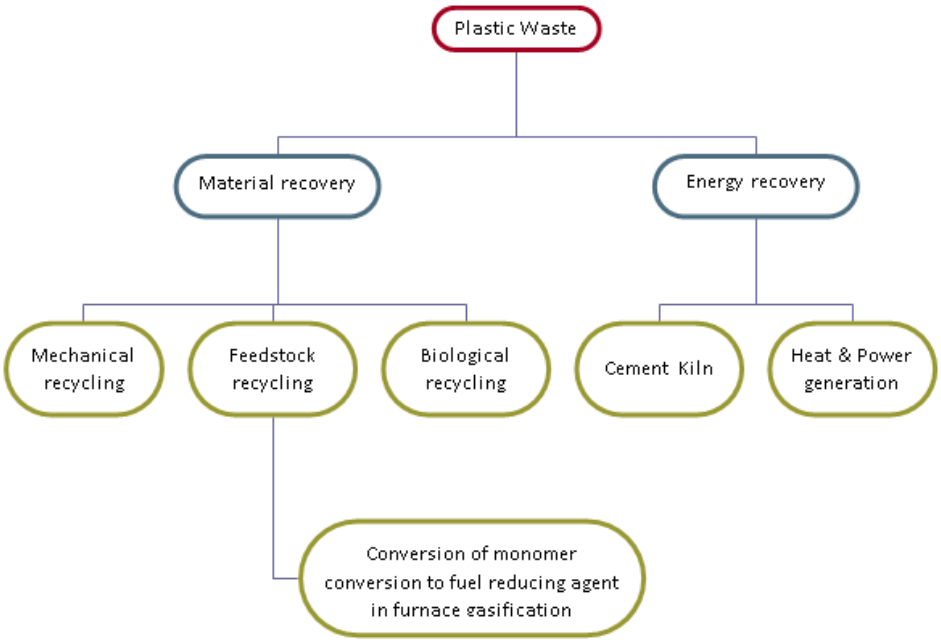
PET is one of the most widely used plastics today. PET bottles are ubiquitous in our day-to-day lives–one has to just look around to spot a PET bottle containing mineral water or soft drink or used for other applications. Kabadiwallahs or waste traders, who employ people to segregate, sort and further sell it to large vendors or recyclers (NCL Innovations), buy these bottles.

Collected PET plastic containers are delivered to MRF or plastics Intermediate Processing Facility (IPF) to begin the recycling process. The value of the post-consumer PET plastic and its ability to be economically remanufactured into new products is dependent on the quality of the material as it passes through the recycling process.

The caps, neck rings, labels (non-PET components) are removed, and the bottles are shredded, washed, and sold as what is called 'washed flakes'. These washed flakes are then used to make (predominantly) polyester fiber, which is used as filling material for cushions, pillows, and converted to fabrics for use in clothing, upholstery, etc. (NCL Innovations, Pune)[18].

The Plastic waste recycling flow is explained below in Flowchart 3.1.

Flowchart 3.1: Plastic recycling flow diagram



Source: (FICCI, 2014)

[17] Masakazu Yamashita Kazuto Suzuki (2014). Human Society Viewed from the Perspective of 3R-Eco Activities and Environmental Measures: Part II - Relationships between the Use of Waste Paper, Recycling of Used Paper, and Environmental Burden.

[18] NCL Innovations. Understanding PET Recycling Landscape in India (a division of the CSIR-National Chemical Laboratory, Pune). Available at: http://www.petrecycling.in/ [Accessed on 20th December 2017]

Apart from Cement Kiln industries and Heat & Power generating industries such as thermal power stations, various other industries use recycled plastics for manufacturing goods. Some of these industries are listed below in Box 3.2.

Box 3.2: Manufacturing Industries that use recycled plastic

- Belts
- Blankets
- Boat hulls
- Business cards
- Caps
- Car parts bumper, distributor caps and exterior panels
- Carpets
- Egg Cartons
- Furniture
- Insulation
- Landfill Liners
- Overhead transparencies
- Paint brush bristles
- Pillows
- Polyester fabric for upholstery, T-shirts, sweaters, backpack, athletic wear and shoes
- Recycling bins
- Sails
- Scouring pads
- Strapping
- Stuffing for ski jackets, cushions, mattress, sleeping bags and quilts
- Tennis ball cans / Tennis ball felt
- Traffic cones
- Twine
- Welcome mats

Source: (Masakazu et al., 2014)

3.1.2 PAPER AND CARDBOARD

India's paper industry is expected to grow at 6 to 7 percent year over year, 5 with the packaging industry poised to grow at 22 to 25 percent annually. Advances in education, a fast-growing middle class, strong growth in sectors like fast-moving consumer goods (FMCG)—pharmaceuticals, liquor, cosmetics, and the like-and organized retailing are the main drivers of demand for paper and packaging products (Deloitte, 2012)[19].

In India, the informal sector mainly performs the collection of waste paper through door-to-door collectors, kabadi system, and waste pickers. The informal sector carries out as much as 95% of the collection of waste paper in the country. The value chain comprises:

(i) direct collection from various source points and small shops, where primary sorting of waste into different categories takes place;

(ii) zonal segregation centres owned by wholesalers, where the waste material gets collected from small shops and baled; and

(iii) finally dispatched to end users, which are usually paper mills (MoUD, 2016).

[19] Deloitte. (2012). Turning the page on India's paper industry-A new chapter in investment potential and growth. Available at: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Manufacturing/gx_us_consulting_Turningthepage_06212012.pdf [Accessed on: 22nd December 2017]

Table 3.1 represents typical paper products generated out of recycled pulp. According to the India IPMA, 44 percent of the industry's fiber needs are met by recycled fiber.. An effective system and infrastructure for sorting, collecting, and grading of recycled paper does not exist in India (Deloitte, 2012).

Table 3.1 : Typical paper products made of recycled pulp

Recycled Paper Products	% of recycled pulp
Cardboard	80%
Comics and other magazines for children	100%
Boxes for sweets (excluding outer boxes)	80%
Newspaper	40%

Source- (Masakazu et al., 2014)

The indian handmade paper industry is no less and competing in the paper industry. The industry produces a variety of paper and paper products mainly by using wastepaper collected from various sources (e.g., schools and colleges) and other materials such as cotton rags, tailor cuttings, hosiery, cuttings, etc. Other agro-based fibres available in the North Eastern region like jute, sabai grass, ramie, banana, straw, angelie grass, elephant grass, etc. are also used to blend with the primary fibres for mottling effects and to manufacture special varieties of thin paper (MoUD, 2016).

3.1.3 GLASS BOTTLES

Reuse of glass containers is preferable to recycling according to the waste hierarchy. The glass component in municipal waste is usually made up of bottles, broken glassware, light bulbs and other items (AGI, 2011)[20]. Glasses contribute to a considerable component (approx. 1%) of the household waste quantities (Sharholyet al., 2007)[21]

An interesting point about the glass recycling process is that glass can be recycled as many times as required, without any deterioration in quality. Glass recycling is the process of turning waste glass into usable products. Glass waste should be separated by chemical composition, and then, depending on the end use and local processing capabilities, might also have to be separated into different colors. Many recyclers collect different colors of glass separately since glass retains its color after recycling. The most common types used for consumer containers are colorless glass, green glass, and brown/amber glass (AGI, 2011).

Recycled glass is used in several applications other than its use in glass industry itself. They are (AGI, 2011):

[20] AGI (2011). Galss Recycling in India. Government & NGO Support in Glass Recycling. AGI glaspac (An SBU of HSIL Ltd.) 29th June 2011. Available at: http://www.aigmf.com/govt-ngo-glass-recycling.pdf [Accessed on 22nd December 2017]

[21] Sharholy, M., Kafeel, A., Mahmood, G., & R.C, T. (2007). Municipal Solid Waste Management in Indian Cities - A Review. Elsevier. Available at: https://www.unc.edu/courses/2009spring/envr/890/002/readings/SolidWasteIndiaReview2008.pdf [Accessed on 23rd December 2017]

1. Glass in ceramic, sanitary ware production
2. Glass as a flux agent in brick manufacture
3. Glass in Astroturf and related applications
4. Glass as water filtration media
5. Glass as an abrasive

Mixed glass waste streams can also be recycled and converted into an aggregate.

3.1.4 METAL

Metals are valuable materials that can be recycled repeatedly without degrading their properties. Scrap metal has value, which motivates people to collect it for sale to recycling operations (LeBlanc, 2016). Scrap metal consitutes to approximatley 1% in the MSW composition (MOUD, 2016). Millions of tonnes of nonferrous scrap (aluminium, copper, lead, zinc, nickel, titanium, cobalt, chromium) are recovered annually and used by smelters, refiners, ingot makers, foundries, and other manufacturers. The use of scrap metal has become an integral part of the modern steelmaking industry, improving the industry's economic viability and reducing environmental impact. Almost 40% of the world's steel production is made from scrap. India Imports 9-10 million tonnes of metal scrap every year at an average. Clearly, there exists a demand-supply mismatch. Given the size of India's economy, this demand supply mismatch need not have been there to be fulfilled through imports (FICCI, 2015)[22].

Flow Chart 3.1represents metal recycling process usually conducted in the metal recyling industry.

[22] FICCI (2015), A Brief Perspective on the Indian Metals Recycling Industry Arnab Kumar Hazra Director, FICCI, 2015

Flow Chart 3.1 Metal Recycling Process

Collection: It simply involves collecting all materials that are made of metals where people are encouraged to collect different metals, take them there and be paid for what they have collected.

↓

Sorting: Once the metals have been collected, the next important step is to sort the metals. This involves separating what can be recycled form what is non-recyclable. A high quality recycled product or item can only be created if the original materials used in the recycling process are of good quality.

↓

Processing: All the recycle materials are squeezed and squashed using machines so that they do not occupy so much space in the conveyor belts.

↓

Shredding: The metals are broken down into tiny pieces or sheets to allow further processing. Normally, steel is changed into steel blocks while aluminum is converted into sheets.

↓

Melting and Purification: Melting of metal takes place in a large furnace. Each metal is taken to a furnace that is specifically designed to melt that particular metal based on its properties.

↓

Purification: Metals are purifies using different methods depending on the needs of the materials. Electrolysis is one of the methods of purifying some metals.

↓

Solidifying of the metal: After the purification process, the molten metal is carried by the conveyor belt to a cooling chamber where it is cooled and solidified. Other chemicals are then added into the molten metal to make it acquire its density and other properties.

↓

Transportation of metal bars: Once metals are cooled and solidified and ready to use. They are then transported to various factories where they are used as raw material for production of brand new products

Source: LeBlanc, 2016

3.1.5 THERMOCOL (POLYSTYRENE)

Thermocol or Styrofoam, scientifically known as expanded polystyrene, is produced from a mixture of about 90%–95% polystyrene and 5%–10% gaseous blowing agent (pentane gas or carbon dioxide). Thermocol is an excellent material for packaging goods (especially electronic goods) and for the construction and decorating industry because it is light and has good insulating properties. Environmentally sound recycling of thermocol still remains to be commercially established in India, and thermocol recycling regulation is yet to be notified. Different methodologies are available for recycling thermocol, e.g., grinding and mixing it with new beads, shredding it into fine powder, reducing its volume using solvents (Bhabha Atomic Research Centre [BARC] process), etc (MoUD, 2016).

3.1.6 CLOTHES, COTTON AND OTHER TEXTILE WASTE

Textile waste constitutes to approximately 1% of the MSW composition (Sharholyet al., 2007). Owing to significant social meaning held by textiles, clothing is rarely discarded. Instead, it is frequently recycled for both the domestic and global markets.

Textile or apparel waste is generally categorized as either preconsumer or post-consumer waste. The pre-consumer waste consists of by-product material from the yarn, textile and apparel industries. Post-consumer textile waste mainly originates from household sources and consists of garments or textiles which the owner no longer needs as it was (Bairagi, 2014)[23].

Post consumer textile market is well established in india. Damaged clothes or items that often joins second hand trade of old garmets are bought in india, specifically to Panipat in northern India which is known as the world's "cast off capital". The post consumer textile is intially sorted in large pile to their colour and later process in batches with similar coloured garments through machines. This is then fed into a bigger machine which mixes wool, silk, cotton and any man-made fibre like polyester and feeds into a carding machine which starts to spin into yarn. The shoddy fabric is used largely to make blankets and they are used as relief material distributed during disasters (Shilpa Kannan-BBC, 2017)[24].

Application of pre-consumer textile has numerous applications based on the fiber composition. Cotton waste has a number of applications like paper making, surgical products like bandages and pads, ppen end spinning, automobile industry, tissue paper manufacturing or in the nonwoven industry, bedding, manuring for mushrooms, and more. Cotton waste is also exported to other foreign countries from India after it is cleaned and the required standard is attained. The silk wastes from the export oriented silk industries in and around Bangalore, India are also bought by the small traders for manufacture of a number of silk accessories and products like bangles, scarfs, tassels, silk embroidery yarn, Christmas decors, etc (Bairagi, 2014).

3.1.7 FOOTWEAR - SHOES/SANDALS & LEATHER

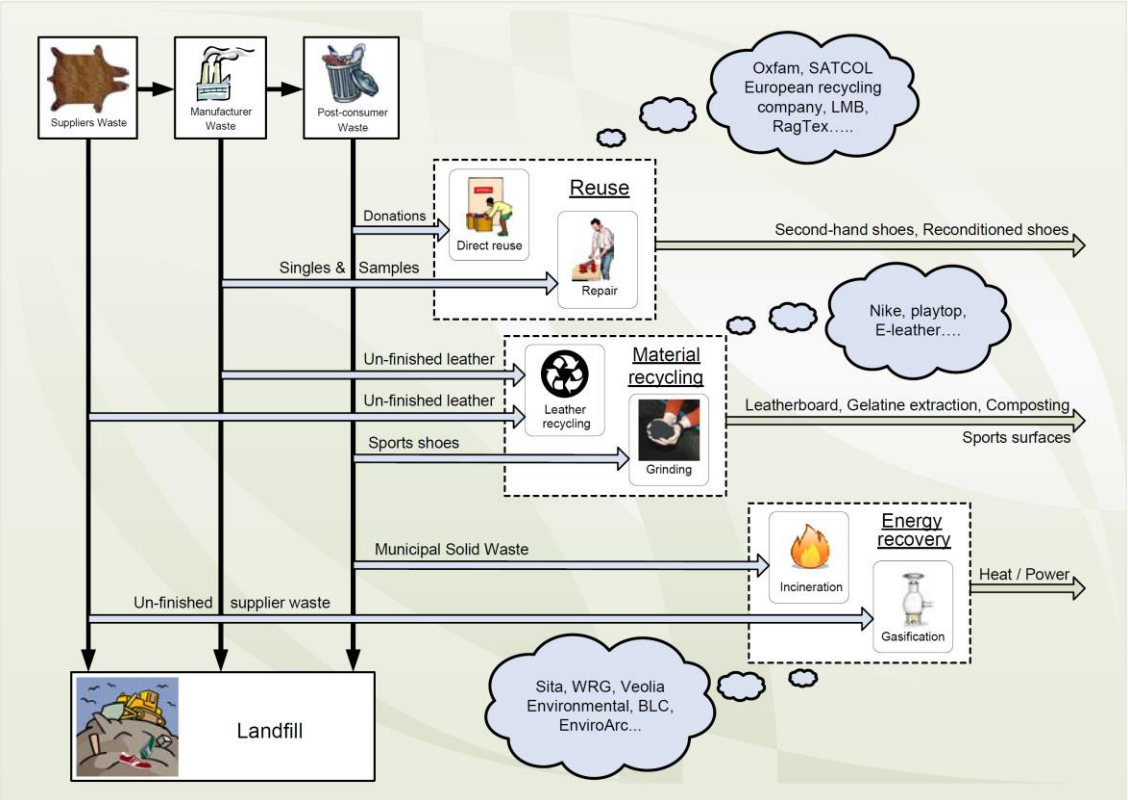
The response of the footwear industry to the increasing problems associated with shoe waste has been negligible. The current recycling solutions available for various types of waste in the footwear sector are depicted in Flow Chart 3.1 (Rahimifard et al, 2007)[25].

[23] Bairagi, N. (2014). Recycling of textiles in India. Department of knit wear design, National institute of fashion technology, Bengaluru, India, textile science and engineering

[24] Shilpa Kannan-BBC. (2017). Where many of the clothes you throw away end up. BBC News. Available at http://www.bbc.com/news/business-40352910

[25] Dr Shahin Rahimifard, Dr Theodoros Staikos, Dr Gareth Coates (2007). Recycling of Footwear Products. A Position Paper Prepared by Centre for Sustainable Manufacturing and Reuse/recycling Technologies (SMART) Loughborough University, United Kingdom. December 2007

Flow Chart 3.1 : Current Recycling Options in Footwear



Source: (Rahimifard et al, 2007)

Several shoe manufacturers have initiated shoe recycling and reuse program. One of the world's most instantly recognizable brands to actively participate in footwear recycling is Nike. Programs conducted by them include material vendor take-back programs and grinding rubber outsoles back into new outsoles, including testing and exploring new ways to increase the level of scrap content that can be mixed back into new outsole rubber (LeBlanc, 2016)[26].

[26] Rick LeBlanc .n.d.). (2017) The Balance - Shoe initiative program by shoe manufacturers. Available at: https://www.thebalance.com/shoe-recycling-initiatives-by-footwear-manufacturers-2878120. [Accessed on 24th December 2017]

SECTION 4

MUNICIPAL SOLID WASTE (DRY) MANAGEMENT IN MAHARASHTRA

4 CURRENT SCENARIO

The earlier sections of the report have, in order of appearance, started with outlining the research along with the methodology of the study. This is followed by explaining the current set up and status of MSWM in India. Such literature paves way for identification of the dry waste categories that will form the crux of the current study. This forms the background and criteria for the focus areas in Maharashtra starting with the Administrative Profile with state, revenue level statistics followed by the MSW statistics at revenue division level. A cumulative analysis and findings that arose out of such study have also been provided.

4.1 ADMINISTRATIVE PROFILE

The population of Maharashtra as per 2011 census is about 11, 23, 74, 333, which comprises 5.08 crore Urban population. Maharashtra, with a 9.29 percentage share of total India's population is the second largest State in India in terms of size of population.

The state has 6 Revenue Divisions, 36 Districts and 394 ULBs, which comprises 27 Municipal Corporations, 228 Municipal Councils, 10 Cantonment Boards and 129 Nagar Panchayats. The 228 Municipal Councils are further categorized into 11 A Class Councils, 60 B Class Councils and 157 C Class Councils. Table 4.1: Administrative Profile of Maharashtra captures the number of ULBs in each revenue division as per the hierarchy of the ULBs followed by a spatial representation of the same in Map 4.1: Hierarchy Wise Spatial Representation of all the ULBs

Table 4.1: Administrative Profile of Maharashtra

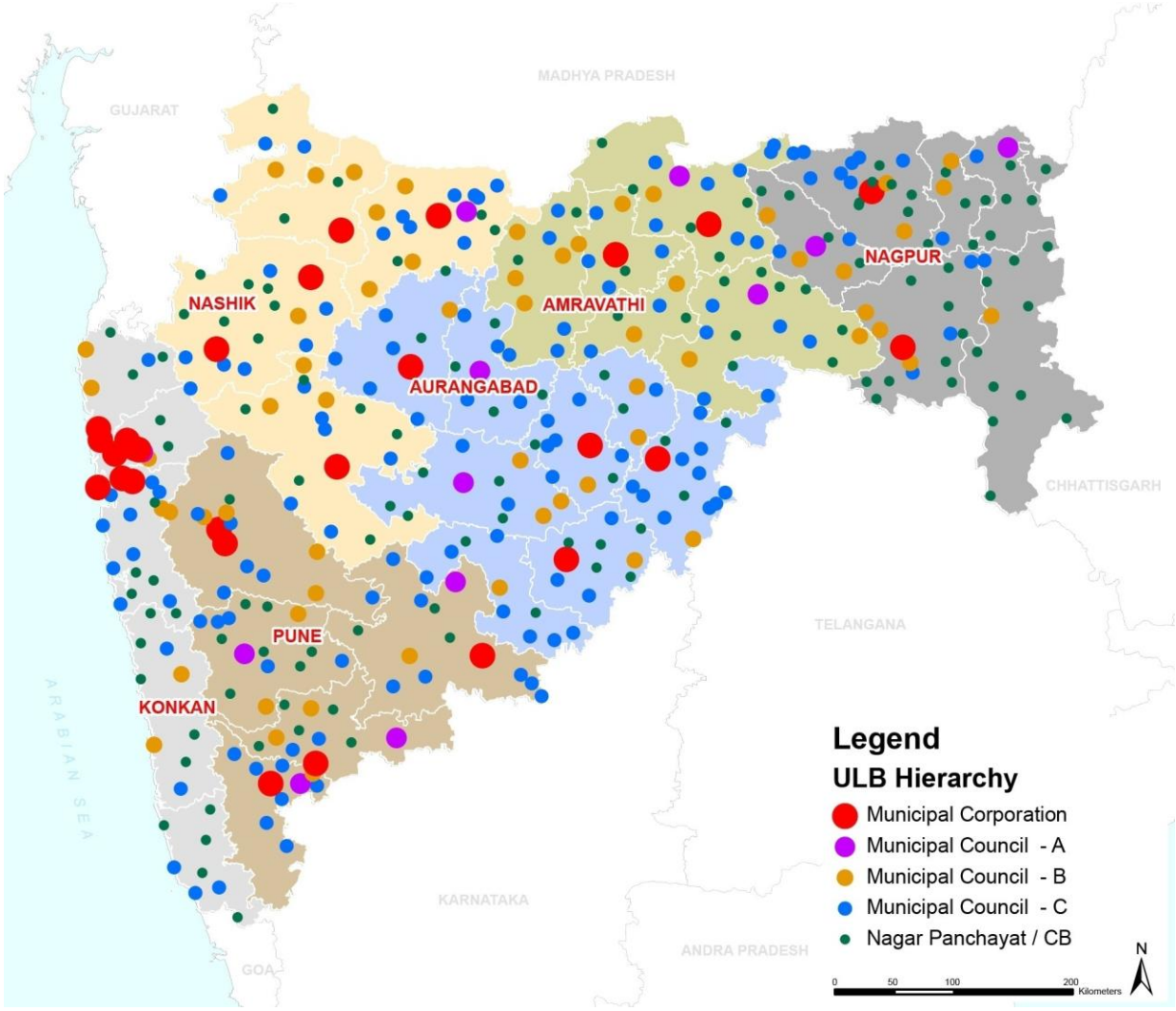
Sr. No.	Divisions	Districts	Municipal Corporations	A Class Councils	B Class Councils	C Class Council	Nagar Panchayats
1	Amravati	5	2	2	11	25	17
2	Aurangabad	8	4	2	10	38	27
3	Nagpur	6	2	2	11	16	41
4	Nasik	5	5	1	11	23	20
5	Konkan	7	9	1	6	15	20
6	Pune	5	5	4	11	28	17
Total		**36**	**27**	**11**	**60**	**157**	**129**

It is to be noted here that Maharashtra Government has updated the Urban Status of many Local bodies. For e.g. Panvel Municipal Council has been updated from 'A' Class Council to Municipal Corporation, 125 Gram Panchayats have been given urban status etc. Therefore, all the secondary data pertaining to solid waste segregation and treatment is given for the 262 Local bodies. The latest report of MPCB published in 2016 on Implementation of Solid Waste Management Rules, 2016. *FOR THE STATE OF MAHARASHTRA (2015-16), also captures data for 262 Local Bodies' (comprising of 26 Municipal Corporations, 13- 'A' Class Municipal Council, 57- 'B' Class Municipal Council, 151- 'C' Class Municipal Council, 09- Nagar Panchayat, 06-Cantonment Board). The below table shows the comparison of the distribution of ULBs before the GR and after the GR.*

No. of local bodies	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
2017	27	12	60	157	129	**384**
2016	26	13	57	151	09/06*	**262**

*06- Cantonment Board

Map 4.1: Hierarchy Wise Spatial Representation of all the ULBs



Source: Created through GIS, 2017

4.2 DEMOGRAPHIC PROFILE

The population distribution across all the 6 divisions of the State shows that the Konkan Division has the maximum population at 26.2% and Nagpur Division has the lowest population with 9.88% Table 4.2). However, the household distribution shows Pune Division has the highest no. of households at 46.55% and Amravati Division has the least no. of households at 5.73%.

Table 4.2: Revenue Division Profile of Maharashtra

Sr. No.	Division	Population	Area (sq km)	Density (persons/ sq km)	Households
1	Amravati	11,266,653	46062.59	244.59	569,977
2	Aurangabad	18,731,872	65663.38	285.27	905,185
3	Nagpur	10,665,939	30690.14	347.54	894,718
4	Nasik	18,571,611	51598.73	359.92	1,014,945
5	Konkan	28,739,397	56449.85	509.11	1,934,910
6	Pune	19,973,761	57090.93	349.86	4,632,194
Total		**1,07,949,233**	**307555.62**	**350.99**	**9,951,929**

Source: Census 2011

4.3 MUNICIPAL SOLID WASTE GENERATION

4.3.1 STATE LEVEL

As per the calculations based on 2017 population, all the 384 ULBs in the state of Maharashtra, generates MSW of about 29, 748.16 MT/day. This is approximately 27.35% increase from the total waste generated by Urban Maharashtra in the year 2016-17 as per the MPCB report, which is 23,359.66 MT/day. However, it is to be noted that this figure is for the 256 ULBs only which includes (Municipal Corporations, Municipal Councils: A, B, C, Nagar Panchayats). The total waste generated in the year 2016-17 including the 6 Cantonment Boards is 23, 449.66 MT/day.

The below Table 4.3 and Table 4.4 tabulates the total waste generated in Maharashtra as per the MPCB report (2016-17) and the current waste generated in the city in 2017 respectively.

Table 4.3: MSW Statistics ULB Type Wise: as per MPCB Report 2016-17

2016-17	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	26	13	57	151	09	**256**
Waste generated in MT/day	20,334	675	1,281	992	78	**23,360**
	87.05%	2.89%	5.48%	4.25%	0.33%	

Source: Annual Report on Implementation of Solid Waste Management Rules, 2016, For the State of Maharashtra, 2016-17, MPCB

Table 4.4: MSW Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	27	11	60	157	129	**384**
Waste generated in MT/day	25,227	849	1,655	1,634	383	**29,748**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

The waste generation varies across its 6 revenue divisions and 36 districts. The below section details out the variations.

4.3.2 REVENUE DIVISION LEVEL

The total waste generation across the 6 Revenue Divisions varies based on its population.

As per the MPCB Report, 2016 as well the calculations for the current waste generation in 2017 for all the 6 divisions shows that, Konkan division generates the highest amount of waste and Amravati division generates the least. The main reason behind Konkan division generating the highest quantity of waste could be attributed to the presence of 9 Municipal Corporations with a population of 28,739,397 (as per Census 2011) which is 26.2% of the total population and has a coastal line with beautiful beaches attracting a lot of tourist population which in turn adds to the waste generated.

Table 4.5 below tabulates the total waste generated in the year 2016-17 by the 256 ULBs and the current waste being generated by the 384 ULBs.

Table 4.5 Solid Waste Statistics Revenue Division Wise

Sr. No.	Division	MSW Generated (MT/day) 2016	MSW Generated (MT/day) 2017	% Increase
1	Amravati	786	1,320	**67.93**
2	Aurangabad	1,549	1,989	**28.47**
3	Nagpur	1,570	1,865	**18.75**
4	Nashik	1,741	2,927	**68.14**
5	Konkan	13,726	16,329	**18.97**
6	Pune	3,988	5,318	**33.35**
Total		**23,360**	**29,748**	**27.35**

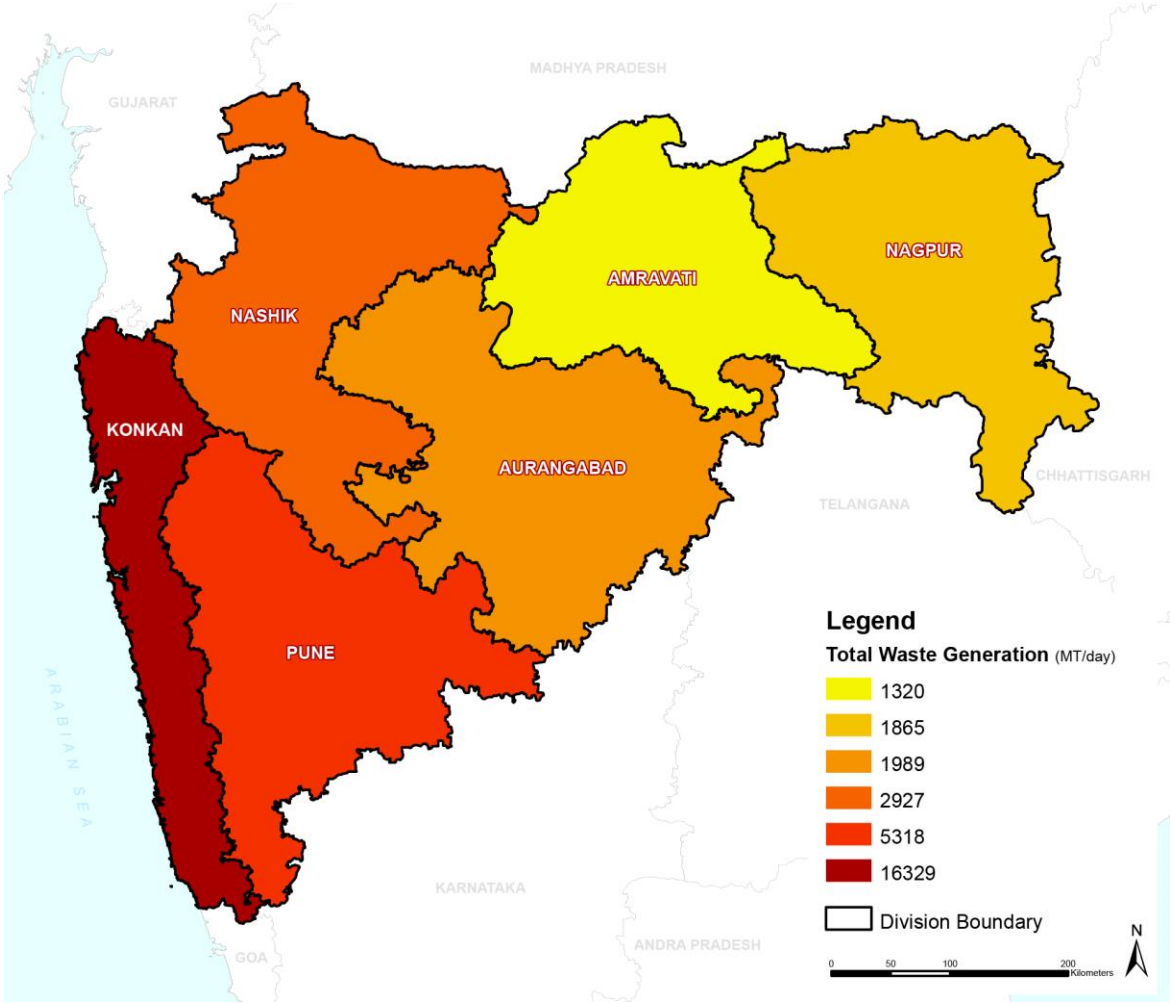
Source: Annual Report on Implementation of Solid Waste Management Rules, 2016, For the State of Maharashtra, 2016-17, MPCB and calculations based on 2017 population

It is seen that, the percentage of waste generation in Nagpur division and Konkan Division to the total MSW generation of the state has decreased from 6.72% to 6.27% and from 58.76% to 54.89% respectively from the year 2016-17 to 2017.

The table also shows the percentage increase in total solid waste generation for the state from the year 2016-17 to the year 2017, which is almost 27.35%. Amravati Division shows the highest percentage increase in solid waste generation with 67.93% and Nagpur Division shows the least percentage increase with 18.75%.

Further, the Map 4.2 below shows the solid waste generated as per 2017 population across the revenue divisions.

Map 4.2: Revenue Division Wise Solid Waste Generated



Source: Created through GIS, 2017

Table 4.6 and Table 4.7 stated below further divides the quantity of waste generated as per the hierarchy of ULBs in each revenue division based on MPCB report (2016-17) and the current waste generated in the city in 2017 respectively. The figures of waste generated when correlated to the no. of local bodies in each hierarchy explains the highest amount of waste being generated in municipal corporations of Konkan Division.

Table 4.6 Revenue Division Wise Solid Waste Generated across types of ULBs in 2016

Divisions	Total Solid Waste Generated (MT/day)					
	M. Corp	A Class	B Class	C Class	NP / CB	Total
Amaravati	370	58	188	162	8	**786**
Aurangabad	915	125	239	268	2	**1,549**
Nagpur	1220	70	191	89	0	**1,570**
Nashik	1265	47	241	171	17	**1,741**
Konkan	13284	149	161	100	32	**13,726**
Pune	3280	226	262	202	19	**3,988**
Total	**20,334**	**675**	**1,281**	**992**	**78**	**23,360**

Source: Annual Report on Implementation of Solid Waste Management Rules, 2016, For the State of Maharashtra, 2016-17, MPCB

Table 4.7 Revenue Division Wise Solid Waste Generated across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Generated (MT/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	550	145	282	297	46	**1,320**
Aurangabad	996	211	281	425	79	**1,989**
Nagpur	1236	86	261	196	86	**1,865**
Nashik	2120	77	320	343	66	**2,927**
Konkan	15829	118	226	108	49	**16,329**
Pune	4498	212	285	266	57	**5,318**
Total	**25,227**	**849**	**1655**	**1634**	**383**	**29,748**

Source: Calculated based on 2017 population, 2017

4.3.3 DISTRICT LEVEL

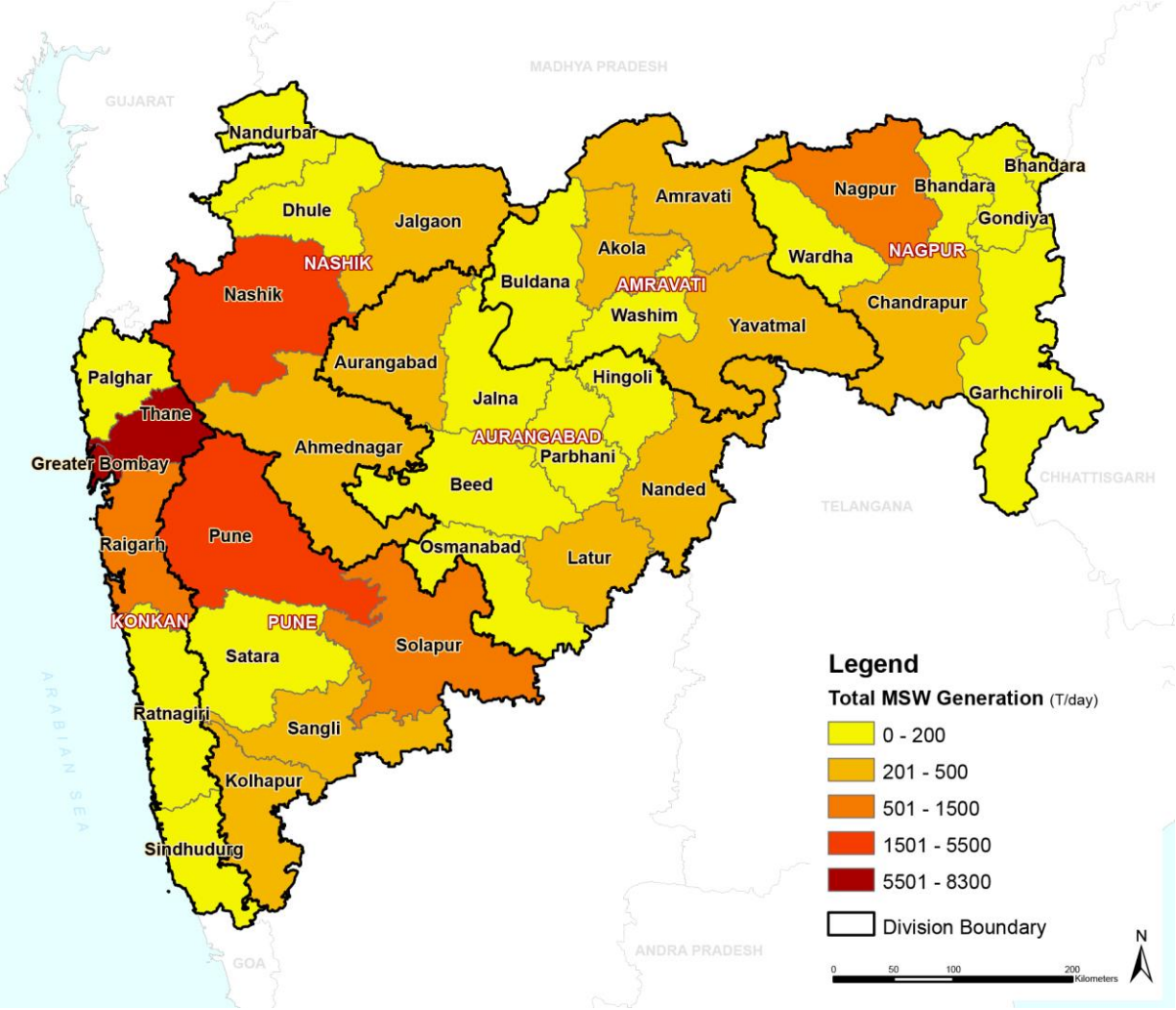
Subsequently, the district level MSW generated shows that the 36 districts of Maharashtra generates MSW ranging from 28 T/day in Sindhudurg District to 8238 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The table below captures distribution of all the 36 districts based on the quantity of MSW generated in Tons per day.

Distribution of Districts in Maharashtra based on the Quantity of MSW Generated (T/day)	
5501 - 8300	Gretaer Mumbai, Thane
1501 - 5500	Nashik, Pune
501 - 1500	Nagpur, Raigarh, Solapur
201 - 500	Akola, Amravati, Ahmednagar, Aurangabad, Chandrapur, Jalgaon, Kolhapur, Latur, Nanded, Sangli, Yavatmal
0 - 200	Beed, Bhandara, Buldana, Dhule, Garhchiroli, Gondiya, Hingoli, Jalna, Nandurbar, Osmanabad, Palghar, Parbhani, Ratnagiri, Sindhudurg, Washim, Wardha

The detailed information is provided as an annexure.

Further, the Map 4.3 below shows the spatial distribution of MSW generated across the districts as per 2017 population across the revenue divisions.

Map 4.3: District Wise Solid Waste Generated



Source: Created through GIS, 2017

4.4 DRY WASTE GENERATION

4.4.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that Western India generates recyclables - dry waste of about 21.44%[27] of the total MSW, the 384 ULBs in the state of Maharashtra, generate dry waste of about 6, 378 MT/day.

The below

[27] Annepu R (2012), Sustainable Solid Waste Management in India by Ranjith Kharvel Annepu, Columbia University in the City of New York, Waste-to-Energy Research and Technology Council (WTERT), Columbia University – Earth Engineering Center

Table 4.8 shows the total dry waste generated in Maharashtra in 2017.

Table 4.8: Dry Waste Generation Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	27	11	60	157	129	**384**
Dry Waste generated in MT/day	5409	182	354	350	82	**6378.01**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

The variation in dry waste generation across the 6 revenue divisions and 36 districts is detailed out in the below sections.

4.4.2 REVENUE DIVISION LEVEL

The total dry waste generation across the 6 Revenue Divisions, calculated based on 2017 population, is about 6,378 MT/day, of which, Konkan Division generates the highest amount of dry waste, i.e. 3500 MT/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 283 MT/day, which is 4.44%.

Table 4.9 shows the total dry waste generated across the 6 revenue divisions viz-a-viz types of ULBs.

Table 4.9: Revenue Division Wise Dry Waste Generated across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste (Dry) Generated (MT/day)						
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total	%
Amaravati	118	31	60	64	10	**283**	4.44
Aurangabad	213	45	60	91	17	**427**	6.69
Nagpur	265	18	56	42	18	**400**	6.27
Nashik	455	17	69	74	14	**628**	9.84
Konkan	3,394	25	48	23	11	**3,501**	54.89
Pune	964	45	61	57	12	**1,140**	17.88
Total	**5,409**	**182**	**355**	**350**	**82**	**6,378**	100.00

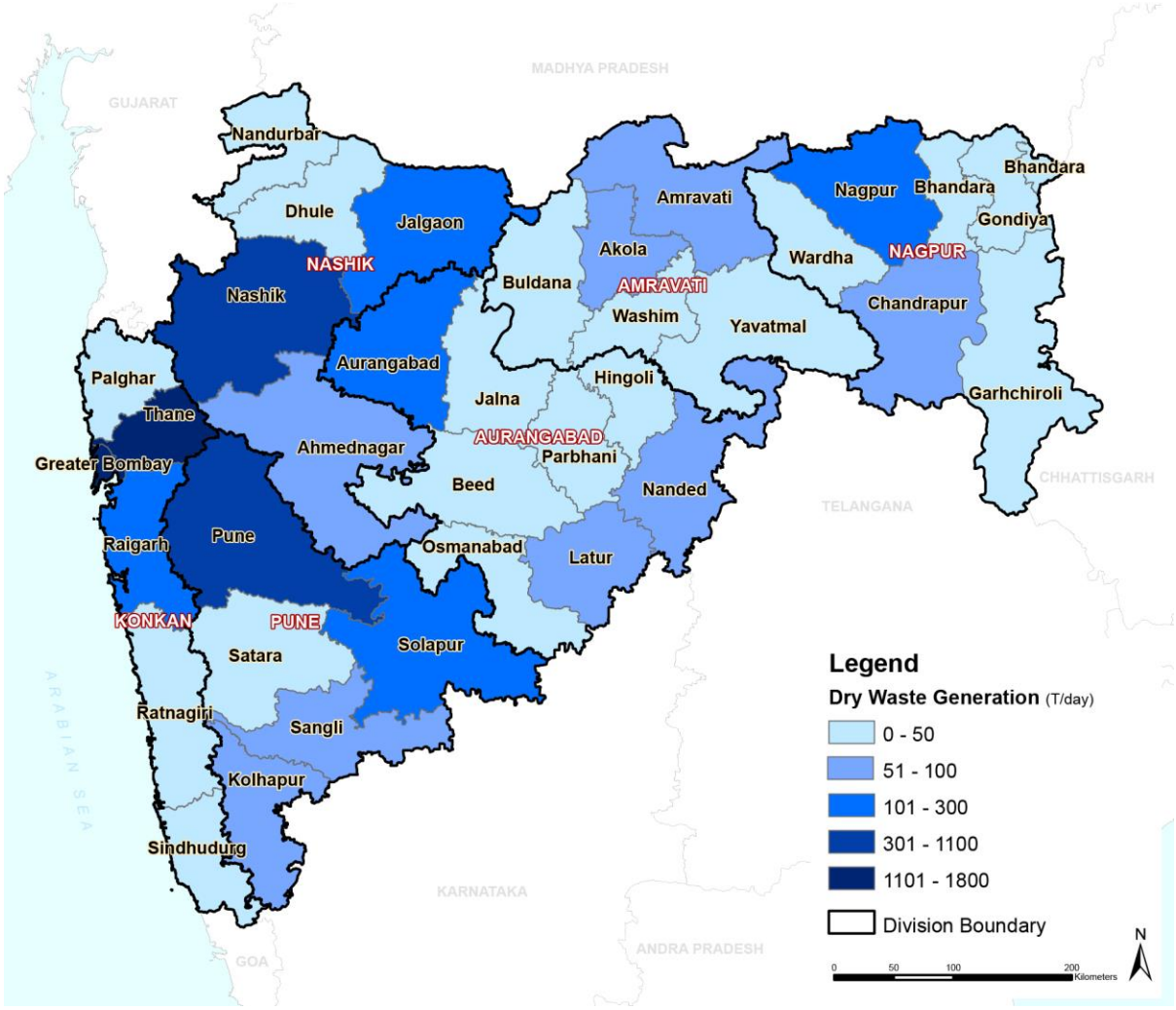
Source: Calculated based on 2017 population, 2017

4.4.3 DISTRICT LEVEL

The district level dry waste generated shows that the 36 districts of Maharashtra generates MSW ranging from 6 T/day in Sindhudurg District to 1766 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, the Map 4.4 below shows the spatial distribution of dry waste generated across the districts as per 2017 population across the revenue divisions.

Map 4.4: District Wise Dry Waste Generated

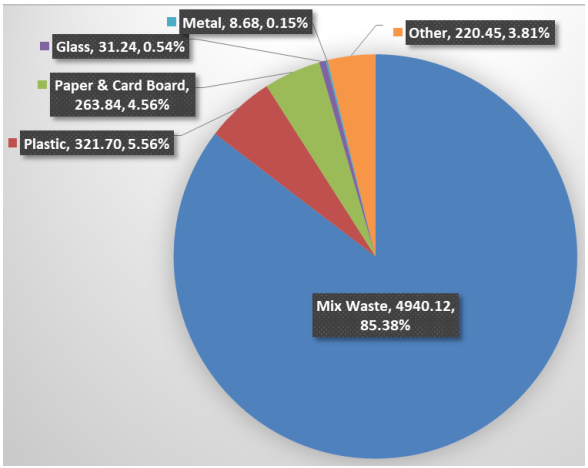


Source: Created through GIS, 2017

4.5 CATEGORY WISE DRY WASTE SORTED BY ULBs IN MAHARASHTRA

As per the primary surveys conducted, it is seen that, the ULBs are sorting the dry waste manually and are able to sort 11 types of different categories including, plastic which is the major contributor of dry waste in various types such as bottles, polythene bags, wrappers, packaging material etc.,. About 5.56% of the total dry waste arriving at the dump yard constitutes of plastics. Paper and Cardboard together is the next major contributer of the municipal dry waste, which comprises of about 4.56% of the total dry waste.

Graph 4.1: Percentage wise distribution of dry waste categories being sorted by ULBs in Maharashtra



Source: Calculated based on primary data collected through questionnaires, 2017

Glass waste contribute 0.54% of the total dry waste. Glass waste includes both glass bottles and broken glass pieces. Metal waste includes 0.15% of the total dry waste.

The remaining categories include Hair (0.47%), Cloth (0.64%), Footwear (0.57%), Rexin Bags (1.1%), Thermocol (0.21%) and Rubber tubes/tyres (0.82%) which are considered as others.

Due to the absence of required sorting machinerys, the ULBs, inspite of sorting 11 categories, are still left with a major portion of dry waste which is considered as mixed dry waste and constitutes of 85.38% of the total dy waste.

Of the 11 categories, only eight categories are majorly being sorted by the ULBs, which are, plastic, paper, cardboard, glass, metal, thermocol, cloth and footwear. This study tries to understand these eight categories in detail along with identifying markets for recycling these wastes.

Table 4.10 below elaborates the quantities of dry waste arriving at dump yard across types of ULBs in the eight categories that are majorly being sorted currently in Maharashtra.

Table 4.10 Quantities of Various Types of Dry Waste Arriving at Dump Yard across Types of ULBs (TPD)

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Plastic	273	9	18	18	4	**322**
Glass	27	1	2	2	1	**31**
Paper & Cardboard	224	8	15	15	3	**264**
Metal	7	1	1	1	1	**9**
Thermocol	10	1	1	1	1	**13**
Cloth	31	1	2	2	1	**37**
Footwear	28	1	2	2	1	**33**
Rexin Bags	54	2	4	4	1	**64**
Hair	23	1	2	2	1	**27**
Rubber Tubes	40	2	3	3	1	**48**
Mix Waste	4789	141	275	271	64	**4940**
Total	**4907**	**165**	**322**	**318**	**75**	**5786**

Source: Calculated based on 2017 population, 2017

The below sections describe in detail each of the waste category in detail incuding the quantity of waste arriving at dump yard at state level, revenue division level and district level. Further it also explains the possible recycling and consumption options including spatial representation of the recycling industries mapped and case studies covered under the research study.

SECTION 5

ANALYSIS AND FINDINGS

5 PLASTIC BAGS/BOTTLES WASTE

5.1 PLASTIC WASTE ARRIVING AT DUMP YARD

5.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that plastic waste arriving at dump yard in Maharashtra is about 5.56%[28] of the total dry waste, it is calculated that the plastic waste arriving at dump yard in all the 384 ULBs in the state of Maharashtra is about 322 T/day.

The below Table 5.1 shows the total plastic waste arriving at dump yard in Maharashtra in 2017.

Table 5.1: Plastic Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population (TPD)

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Plastic Waste	273	9	18	18	4	**322**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

5.1.2 REVENUE DIVISION LEVEL

The total plastic waste arriving at dump yard across the 6 Revenue Divisions, calculated based on 2017 population, is about 322 T/day, of which, the highest amount of plastic waste arriving at dump yard is from Konkan Division, i.e. 177 T/day, which is 54.89% and the least amount of dry waste arriving at dump yard is from Amravati Division, i.e. 14 T/day, which is 4.44%.

Table 5.2 shows the total plastic waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 5.2 Revenue Division Wise Plastic Waste Arriving at Dump Yard across Types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	6	2	3	3	1	**14**
Aurangabad	11	2	3	5	1	**22**
Nagpur	13	1	3	2	1	**20**
Nashik	23	1	3	4	1	**32**
Konkan	171	1	3	2	1	**177**
Pune	49	2	3	3	1	**58**
Total	**273**	**9**	**18**	**18**	**4**	**322**

Source: Calculated based on 2017 population, 2017

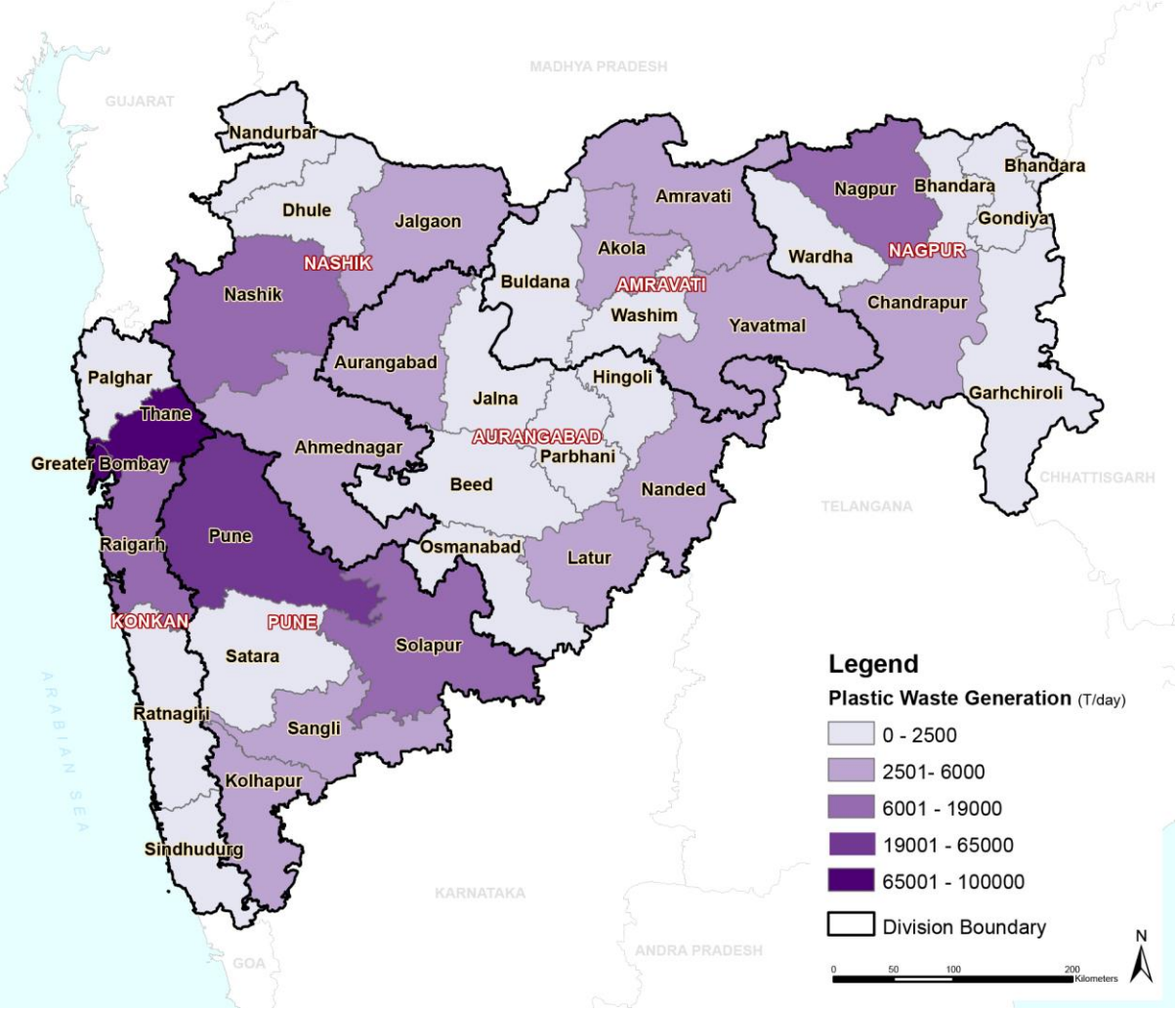
[28] Calculated by taking an average of the quantities generated by the ULBs selected as case studies.

5.1.3 DISTRICT LEVEL

The district level plastic waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 34 T/day in Sindhudurg District to 98,206 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, the Map 5.1 below shows the spatial distribution of plastic waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 5.1: District Wise Plastic Waste Arriving at Dump Yard



Source: Created through GIS, 2017

5.2 PLASTIC WASTE CONSUMPTION OPTIONS

5.2.1 PLASTIC WASTE CAN BE USED IN ROAD CONSTRUCTION

As per the G.S.R. 320 (E) [18-03-2016]: Plastic Waste Management Rules 2016, local bodies shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or energy recovery or waste to oil etc.

Already, it is observed that, many ULBs have started practicing recycling plastic waste for road construction.

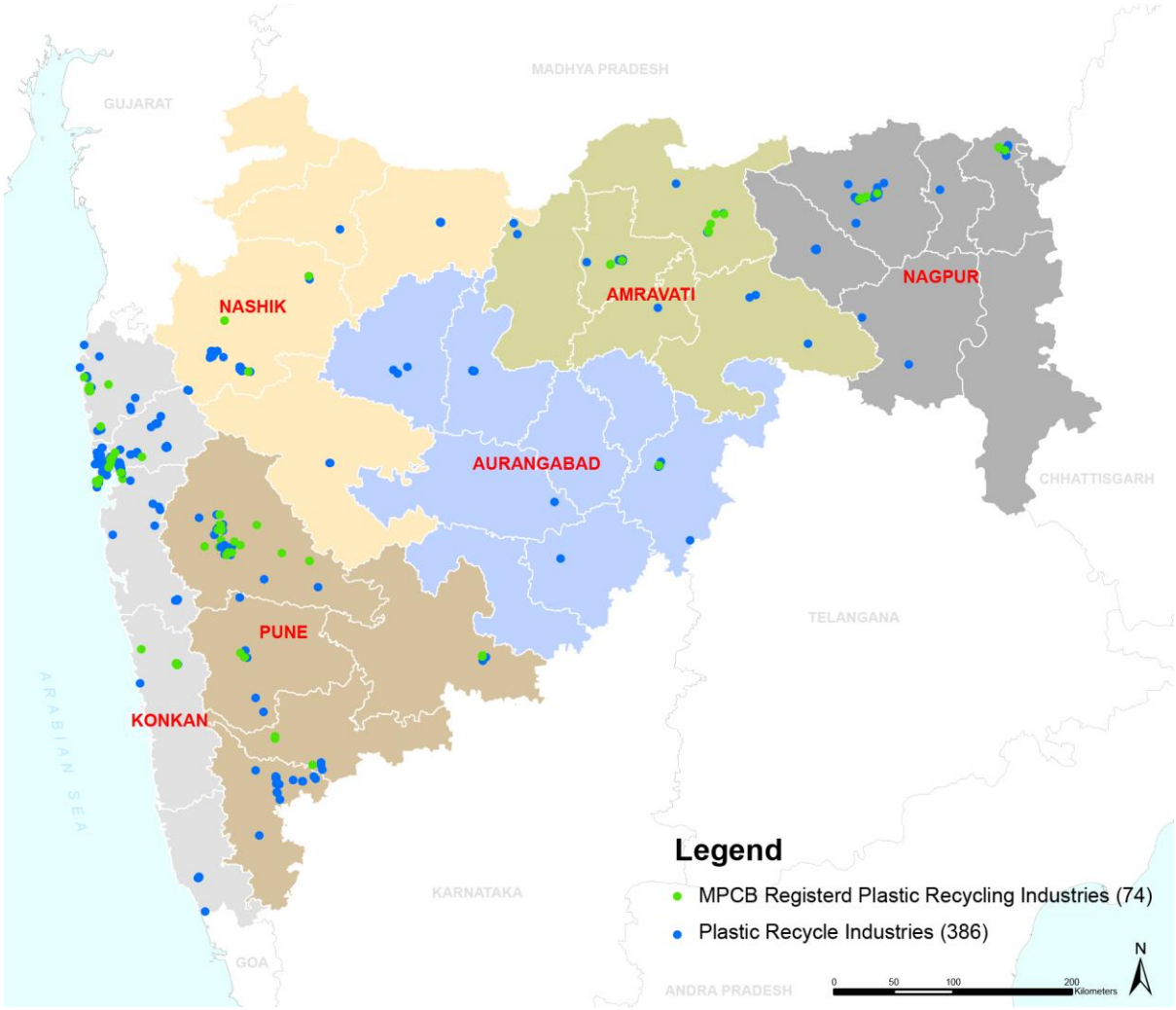
5.2.2 PLASTIC WASTE CAN BE USED BY PLASTIC RECYCLING INDUSTRIES

Maharashtra has about 460 plastic recycling industries out of which 74 industries are registered with MPCB and the rest 386 recycling industries are formally registered. These plastic recycling industries are mostly located in and around Mumbai and Pune in Konkan and Pune Division respectively. There are a few recycling industries in and around the Nashik and Malegaon city which are formal and informal both. However, for this study purpose only formal recycling industries have been taken into account.

These recycling industries use good quality plastic bags to recycle and make palates (gitti) which are further used to make Agriculture Pipes, Textile Yarns etc. There are some industries which use plastic waste to manufacture fuel and some of them make plastic granules in different colours and reuse them in making plastic buckets etc.

Map 5.2 shows the locations of these potential plastic recycling industries spatially to understand the coverage within Maharashtra and its divisions and districts.

Map 5.2: Potential Plastic Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

ANNEXURE – III: LIST OF PLASTIC RECYCLING INDUSTRIES REGISTERED BY MPCB IN MAHARASHTRA gives a list of all the MCPB registered plastic recycling industries, the quantity of plastic waste required for each of these industries viz a viz ULBs that can cater to the waste required within a radius of 10 km, 20 km and 30 km.

Similarly, **Error! Reference source not found.** gives a list of all the formally registered plastic recycling industries viz a viz ULBs that can cater to the waste required within a radius of 10 km, 20 km and 30 km.

5.3 CASE STUDIES

5.3.1 PLASTIC RECYCLING INDUSTRY: PLASTO CARE UPCYCLING AGENCY, WARORA, CHANDRAPUR DISTRICT, NAGPUR DIVISION

The Plasto Care Upcycling Agency is a newly set up small scale recycling industry set up in Warora. It is an innovative industry that recycles plastic waste to manufacture garden benches, manhole covers, tree guards, fencing poles etc. The recycling industry can accept waste up to 1000 Kg/day. The innovation is an idea of Dr. Balmukund Paliwal, who belongs to Chandrapur and has guided the agency. The machinery is also locally designed to suit the experiment and is yet to receive permission from MPCB.



Different types of sitting benches

Manhole Cover

Tree Guard

Source: Primary Survey Conducted, 2018

Currently, these recycled items have been put to different type of tests such as kept in open under the sun at 50 degrees centigrade, heavy weights have been placed on them to check their strength and durability, and no issues have been found.

Many such benches have been put up at Warora and Chandrapur in public areas.

WARORA MUNICIPAL COUNCIL

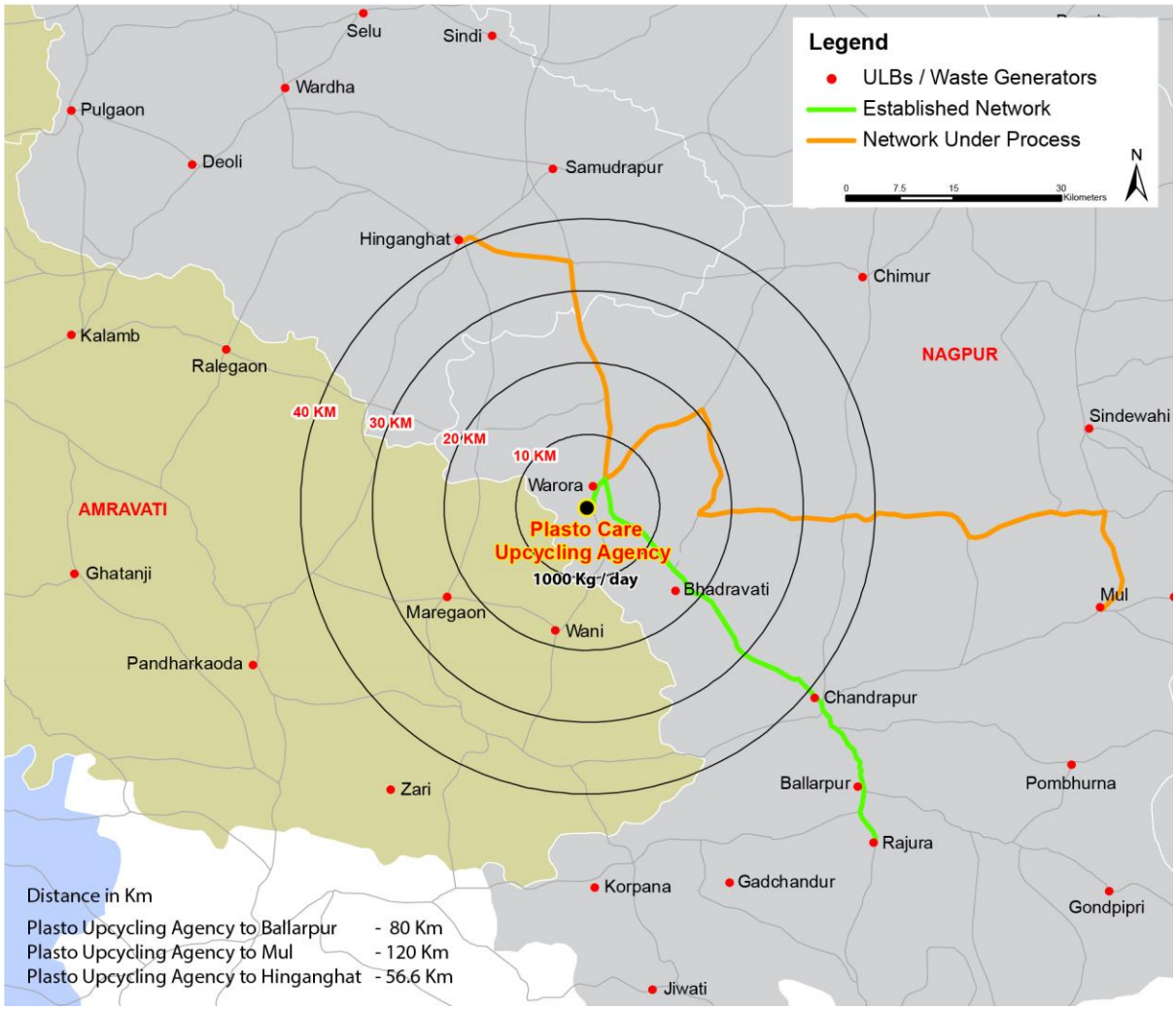
The council has encouraged an innovative plastic recycling industry to set up its unit in the Council's dump yard by providing a shed for machinery. The recycling industry, in turn, uses all the plastic waste that is being sorted from the segregated dry waste in Warora.

Warora Council is expecting to finish all its plastic waste, segregated and collected in last 2-3 months, effectively in the next three months.

Warora Council is not generating any revenue by giving its plastic waste to Plasto Care Upcycling Agency. However, it is helping them clear off their dump yard.

Map 5.3 shows the existing network of ULBs and Proximity of other ULBs to Plasto Care Upcycle Agency, Warora.

Map 5.3: Existing Network of ULBs and Proximity of other ULBs to Plasto Care Upcycle Agency, Warora



Source: Primary Survey, 2018

5.3.1.1 Demand Supply Analsysis of Plasto Care Upcycling Agency

The demand supply analysis for Plasto Care Upcycling Agenecy shows that apart from Warora, Plasto Care Upcycling Agenecy can accept plastic waste from 4 other ULBs within 40 km radius as shown below.

Demand (Plasto Care Upcycle Agency)	:	**1 TPD**
Current Waste Suppliers:		
Warora Council (B)	:	**0.18 TPD**
Deficit	:	**0.82 TPD**
Potential Suppliers:		
Bhadravati Council (B)	:	**0.23 TPD**
Wani Council (B)	:	**0.22 TPD**
Maregaon NP	:	**0.02 TPD**
Hinganghat Council (B)	:	**0.45 TPD**

5.3.2 PLASTIC RECYCLING INDUSTRY: MANORAMA INFRASTRUCTURE PVT. LTD., BALLARPUR, CHANDRAPUR DISTRICT, NAGPUR DIVISION

Similar to Plasto Case Upcycling Agency and under the guidance of Dr. Balmukund Paliwal, Manorama Infrastructure Pvt. Ltd., is also a newly set up small scale recycling industry set up in Ballarpur. It is an innovative industry that recycles plastic waste to manufacture garden benches, manhole covers, tree guards, fencing poles etc. The recycling industry can accept waste up to 800 Kg/day. The innovation is an idea of Dr. Balmukund Paliwal, who belongs to Chandrapur and has guided the agency. The machinery is also locally designed to suit the experiment and is yet to receive permission from MPCB.

Sitting benches

Manhole Cover

Tree Guard

Source: Primary Survey Conducted, 2018

Currently, these recycled items have been put to different type of tests such as kept in open under the sun at 50 degrees centigrade, heavy weights have been placed on them to check their strength and durability, and no issues have been found.

Ballarpur has placed 50 such manhole covers in different areas of the city. Since, these are made of recycled plastic, fear of breaking and theft is nil unlike the cement manhole covers and is helping Ballarpur Council save an amount of Rs. 30 Lakhs.

BALLAPUR MUNICIPAL COUNCIL

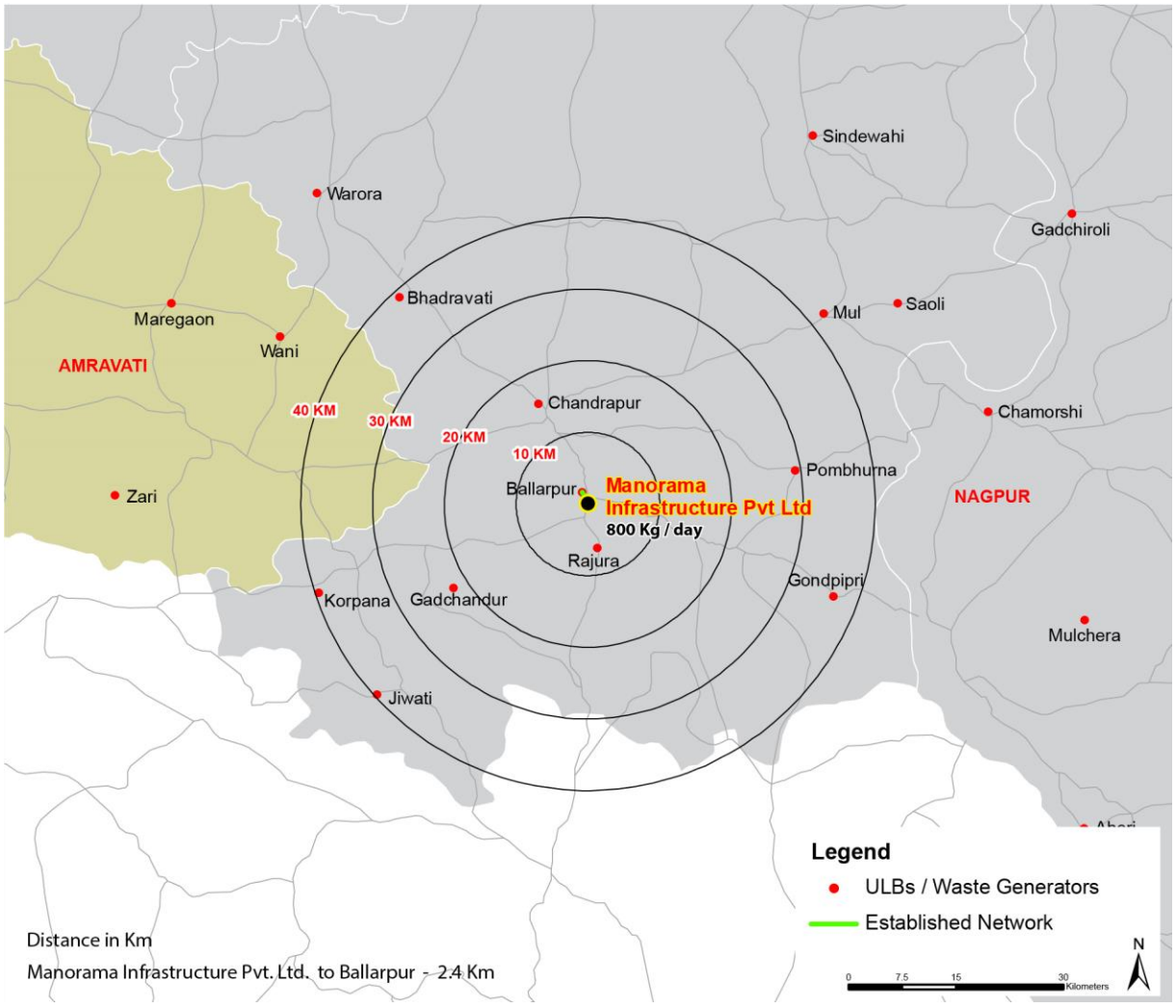
The council has encouraged an innovative plastic recycling industry to set up its unit in the Council's dump yard by providing a shed for machinery. The recycling industry, in turn, uses all the plastic waste that is being sorted from the segregated dry waste in Ballarpur.

Ballarpur Council is expecting to finish all its plastic waste, segregated and collected in last 6 months, effectively in the next three months.

Ballarpur Council is not generating any revenue by giving its plastic waste to Manorama Infrastructure Pvt. Ltd. However, it is helping them clear off their dump yard.

Map 5.4 shows the existing network of ULBs and Proximity of other ULBs to Manorama Infrastructure Pvt. Ltd, Ballarpur.

Map 5.4 Existing Network of ULBs and Proximity of other ULBs to Manorama Infrastructure Pvt. Ltd, Ballarpur



Source: Primary Survey, 2018

5.3.2.1 Demand Supply Analsysis of Manorama Infrastructure Pvt. Ltd., Ballarpur

The demand supply analysis for Manorama Infrastructure Pvt. Ltd shows that apart from Ballarpura, Manorama Infrastructure Pvt. Ltd has an option of accepting plastic waste from any of the 8 ULBs within 40 km radius as shown below.

Demand (Manorama Infrastructure Pvt. Ltd)	**:**	**0.8 TPD**
Current Waste Suppliers:		
Ballarpur Council (B)	**:**	**0.35 TPD**
Deficit	**:**	**0.45 TPD**
Potential Suppliers:		
Rajura Council (C)	**:**	**0.13 TPD**
Chandrapur Corp.	**:**	**1.63 TPD**
Gadchandur Council (C)	**:**	**0.14 TPD**
Pombhurna NP	**:**	**0.02 TPD**
Gondpipri NP	**:**	**0.02 TPD**
Bhadravati Council (B)	**:**	**0.23 TPD**
Korpana NP	**:**	**0.01 TPD**
Jiwati NP	**:**	**0.01 TPD**

5.4 DEMAND SUPPLY SCENARIO OF PLASTIC WASTE AT STATE LEVEL

As per the calculations based on 2017 population and an assumption that Maharashtra generates plastic waste of about 5.56% of the total dry waste, it is calculated that the 384 ULBs in the state of Maharashtra generates plastic waste of about 322 T/day. This implies that all the 384 ULBs in Maharashtra can supply plasic waste of about 322 T/day.

SUPPLY: 322 T/day

On the other hand, the 74 MPCB registered plastic recycling industries can accept upto 241 T/day[29].

DEMAND: 241 T/day

Therefore, in this scenario, supply is more than demand, and in this case, it is 81 T/day. The remaining 81 T/day of platic waste can be consumed by the 386 formally registered plastic recycling industries.

[29] Calculated as per the Plastic Registration List (As on 28/12/2016) prepared by MPCB.

6 PAPER AND CARDBOARD WASTE

6.1 PAPER & CARDBOARD WASTE ARRIVING AT DUMP YARD

6.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that paper & cardboard waste arriving at dump yard in Maharashtra is about 2.86% and 1.70%[30] of the total dry waste, it is calculated that the 384 ULBs in the state of Maharashtra generates paper and cardboard waste of about 165 T/day and 98 T/day respectively.

The below Table 6.1 shows the total paper and cardboard waste arriving at dump yard in Maharashtra in 2017.

Table 6.1 Paper & Cardboard Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population (TPD)

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Paper Waste	140.33	4.72	9.21	9.09	2.13	**165**
Cardboard Waste	83.41	2.81	5.47	5.40	1.27	**98**
Total Paper & Cardboard Waste	223.75	7.53	14.68	14.49	3.40	**264**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

6.1.2 REVENUE DIVISION LEVEL

The total paper waste generation across the 6 Revenue Divisions, calculated based on 2017 population, is about 165 T/day, of which, Konkan Division generates the highest amount of plastic waste, i.e. 91 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 7 T/day, which is 4.44%.

Table 6.2 shows the total paper waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 6.2: Revenue Division Wise Paper Waste Arriving at Dump Yard across Types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	3.06	0.81	1.57	1.65	0.26	**7.34**
Aurangabad	5.53	1.17	1.56	2.36	0.44	**11.07**
Nagpur	6.88	0.48	1.45	1.09	0.48	**10.37**

[30] Calculated by taking an average of the quantities generated by the ULBs selected as case studies

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Nashik	11.79	0.43	1.78	1.91	0.37	**16.28**
Konkan	88.05	0.65	1.26	0.60	0.27	**90.83**
Pune	25.02	1.18	1.59	1.48	0.32	**29.58**
Total	**140.33**	**4.72**	**9.21**	**9.09**	**2.13**	**165.48**

Source: Calculated based on 2017 population, 2017

The total cardboard waste generation across the 6 Revenue Divisions, calculated based on 2017 population, is about 98 T/day, of which, Konkan Division generates the highest amount of plastic waste, i.e. 54 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 4 T/day, which is 4.44%.

Table 6.3 shows the total cardboard waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 6.3: Revenue Division Wise Cardboard Waste Arriving at Dump Yard across Types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	1.82	0.48	0.93	0.98	0.15	**4.36**
Aurangabad	3.29	0.70	0.93	1.41	0.26	**6.58**
Nagpur	4.09	0.28	0.86	0.65	0.28	**6.17**
Nashik	7.01	0.26	1.06	1.13	0.22	**9.68**
Konkan	52.34	0.39	0.75	0.36	0.16	**53.99**
Pune	14.87	0.70	0.94	0.88	0.19	**17.58**
Total	**83.41**	**2.81**	**5.47**	**5.40**	**1.27**	**98.36**

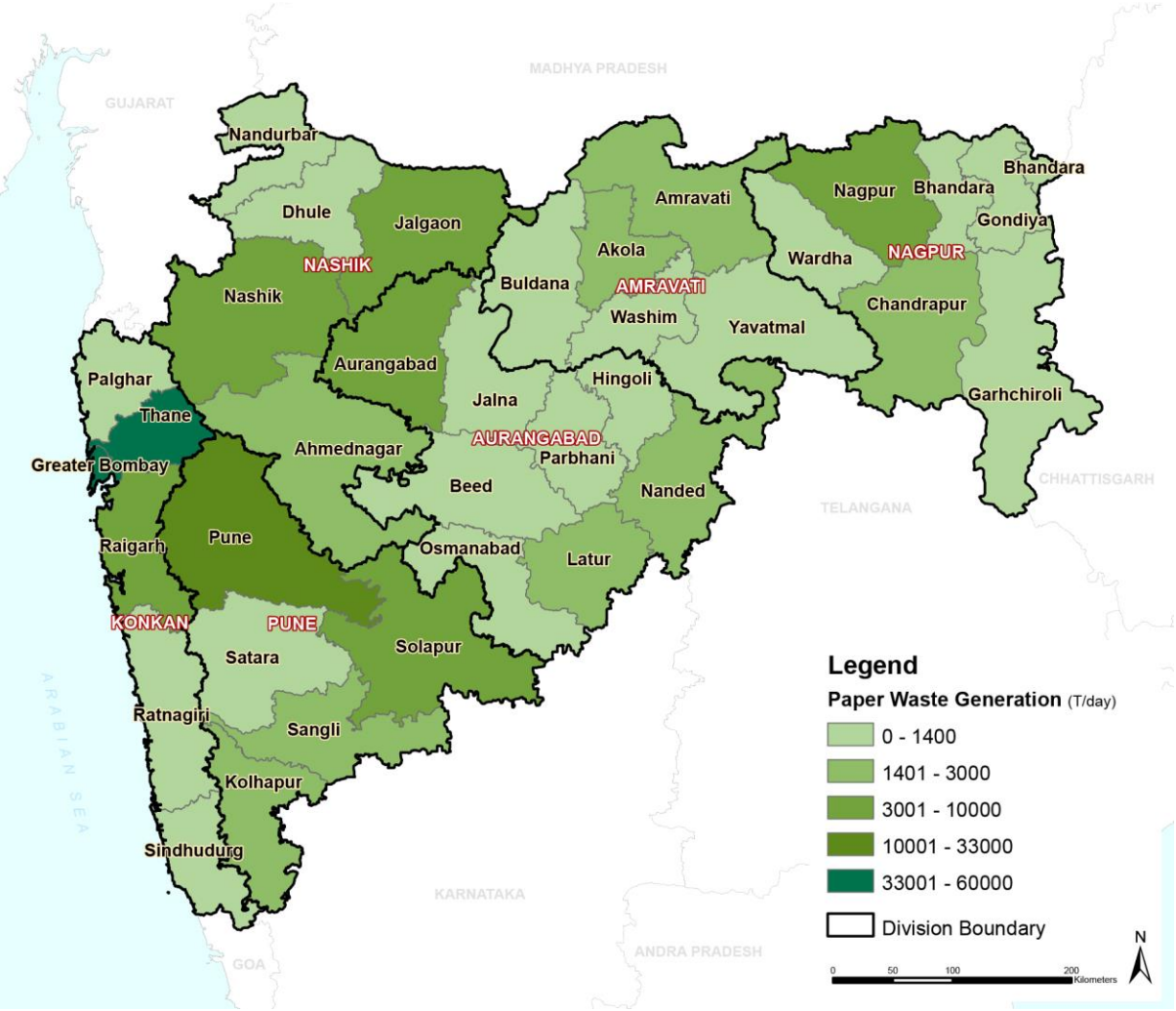
Source: Calculated based on 2017 population, 2017

6.1.3 DISTRICT LEVEL

The district level paper waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 170 T/day in Sindhudurg District to 50516 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, Map 6.1 below shows the spatial distribution of paper waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 6.1: District Wise Paper Waste Arriving at Dump Yard

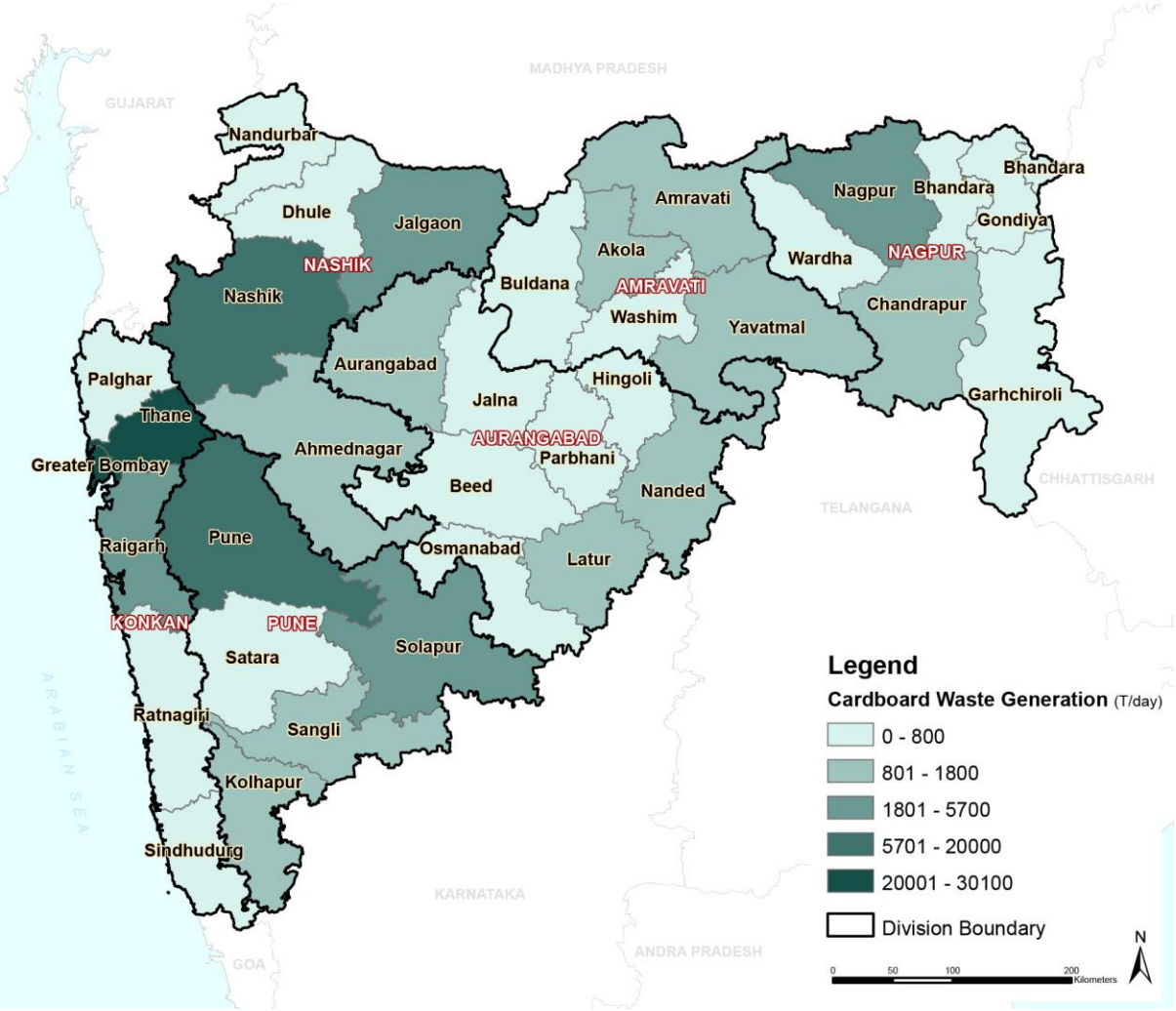


Source: Created through GIS, 2017

The district level cardboard waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 101.15 T/day in Sindhudurg District to 30,026.89 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, the Map 6.2 below shows the spatial distribution of cardboard waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 6.2: District Wise Cardboard Arriving at Dump Yard



Source: Created through GIS, 2017

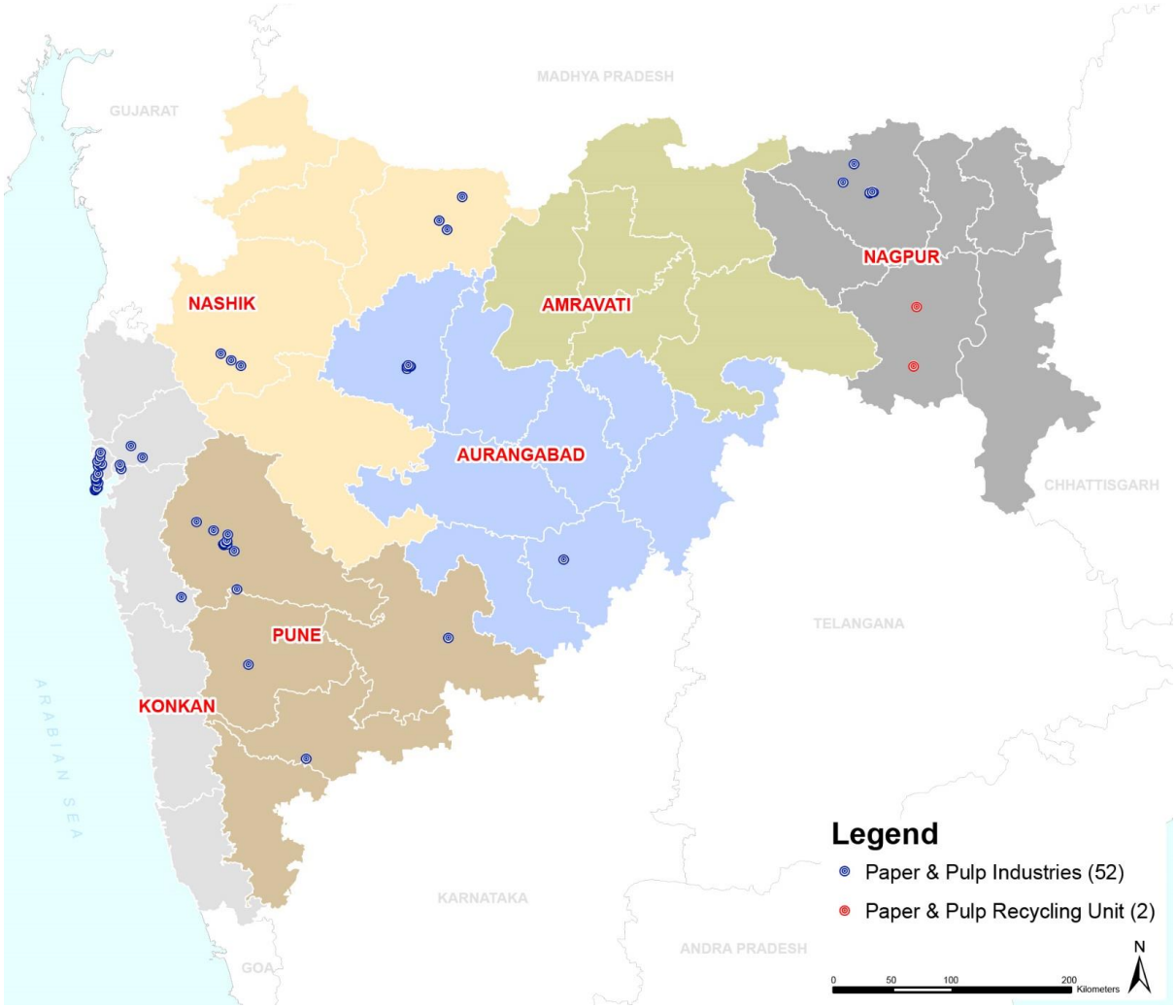
6.2 PAPER AND CARDBOARD WASTE CONSUMPTION OPTIONS

6.2.1 PAPER & CARDBOARD WASTE RECYCLING INDUSTRIES

The Paper Manufacturers Association has shared that 65% of the paper manufactured in most of the manufacturing units is from recycling the waste paper. However, the details of the quality and type of paper waste accepted by these manufacturing units varies from unit to unit. Maharashtra has about 54 such industries, which recycle paper and cardboard.

Map 6.3 shows the location of paper and cardboard recycling industries in Maharashtra.

Map 6.3: Potential Paper and Cardboard Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

ANNEXURE – VI: LIST OF PAPER & CARDBOARD RECYCLING INDUSTRIES IN MAHARASHTRA gives a list of all the paper and cardboard recycling industries, the quantity of waste required for each of these industries viz a viz ULBs that can cater to the waste required within a radius of 10 km, 20 km and 30 km.

6.3 CASE STUDIES

6.3.1 PAPER & CARDBOARD WASTE RECYCLING INDUSTRY: PADMAVATI PULP & PAPER MILLS, AMBERNATH, THANE DISTRICT, KONKAN DIVISION

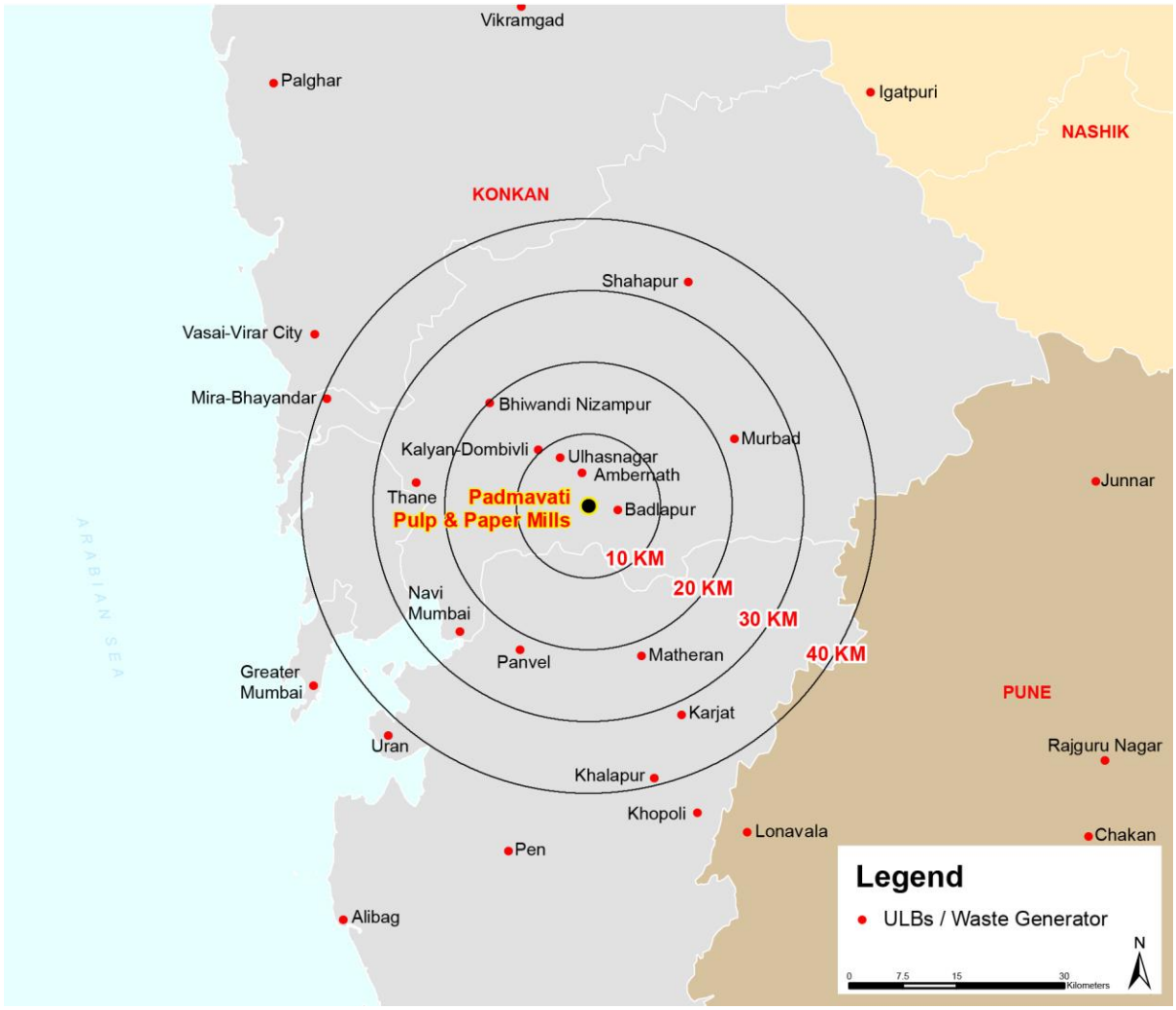
The Padmavati Pulp & Paper Mills is a manufacturing unit located in Ambernath, which recycles cardboard waste. Currently, they import cardboard from the UK. They are extremely willing to collaborate with the ULBs and consume all types of paper and cardboard waste, if quality is maintained. They accept waste of about 50 TPD.

Cardboard waste stored for recycling

Source: Primary Survey Conducted, 2018

Map 6.4 shows the ULBs that has the potential to establish the network in future and are within 40 km of proximity to the recycling industry.

Map 6.4: Proximity of ULBs to Padmavati Pulp & Paper Mills, Ambernath, Thane District



Source: Created through GIS, 2017

6.3.1.1 Demand Supply Analsysis of Padmavati Pulp & Paper Mills, Ambernath

The demand supply analysis for Padmavati Pulp & Paper Mills, Ambernath has an option of accepting paper and cardboard waste from any of the 14 ULBs within 40 km radius as shown below.

Demand (Padmavati Pulp & Paper Mills)	:	**50 TPD**
Current Waste Suppliers:		
None	:	**--**
Deficit	:	**50 TPD**
Potential Suppliers:		
Badlapur Council (B)	:	**0.14 TPD**
Ambernath Council (A)	:	**1.04 TPD**
Ulahasnagar Corp.	:	**2.5 TPD**
Kalyan Dombivali Corp.	:	**9.72 TPD**
Bhiwandi Nizampur Corp.	:	**3.47 TPD**
Navi Mumbai Corp.	:	**6.44 TPD**
Panvel Corp.	:	**8.04 TPD**
Matheran Council (C)	:	**0.96 TPD**
Murbad NP	:	**0.05 TPD**
Thane Corp.	:	**13.15 TPD**
Navi Mumbai Corp.	:	**6.44 TPD**
Panvel Corp.	:	**8.04 TPD**
Shahpur NP	:	**0.02 TPD**
Karjat Council (C)	:	**0.10 TPD**
Khalapur NP	:	**0.02 TPD**
Mira Bhayendar Corp.	:	**6.56 TPD**

6.4 DEMAND SUPPLY SCENARIO OF PAPER AND CARDBOARD WASTE AT STATE LEVEL

As per the calculations based on 2017 population and an assumption that Maharashtra generates paper and cardboard waste of about 4.56% of the total dry waste, it is calculated that the 384 ULBs in the state of Maharashtra generates plastic and cardboard waste of about 264 T/day. This implies that all the 384 ULBs in Maharashtra can supply lastic and cardboard waste of about 264 T/day.

SUPPLY: 264 T/day

On the other hand, some of the extremely willing paper and cardboard recycling industries can accept upto 522 T/day[31].

[31] Calculated as per the Plastic Registration List (As on 28/12/2016) prepared by MPCB.

DEMAND: 522 T/day*

** calculated for only the most willing industries who were ready to collaborate with the ULBs and share their information during the primary surveys.*

Therefore, in this scenario, supply is less than demand, and in this case, it is 258 T/day excess demand.

There are total 54 paper and cardboard recycling industries mapped in this study for Maharashtra. If the remaining industries can be convinced about the quality of plastic and cardbard waste being sorted at the dumpyard, many of the ULBs will be benefitted in terms of distance and acess.

7 GLASS BOTTLES/BROKEN GLASS WASTE

7.1 GLASS WASTE ARRIVING AT DUMP YARD

7.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that glass waste arriving at dump yard in Maharashtra is about 0.54%[32] of the total dry waste, it is calculated that the glass waste arriving at dump yard in all the 384 ULBs in the state of Maharashtra is about 31 T/day.

The below Table 7.1 shows the total glass waste arriving at dump yard in Maharashtra in 2017.

Table 7.1: Glass Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population (TPD)

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Glass Waste	26	1	2	2	0	**31**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

7.1.2 REVENUE DIVISION LEVEL

The total glass waste arriving at dump yard across the 6 Revenue Divisions, calculated based on 2017 population, is about 31 T/day, of which, the highest amount of glass waste arriving at dump yard is from Konkan Division, i.e. 17 T/day, which is 54.89% and the least amount of dry waste arriving at dump yard is from Amravati Division, i.e. 14 T/day, which is 4.44%.

Table 7.2 shows the total glass waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 7.2: Revenue Division Wise Glass Waste Arriving at Dump Yard across Types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.58	0.15	0.30	0.31	0.05	**1.39**
Aurangabad	1.04	0.22	0.30	0.45	0.08	**2.09**
Nagpur	1.30	0.09	0.27	0.21	0.09	**1.96**
Nashik	2.23	0.08	0.34	0.36	0.07	**3.07**
Konkan	16.62	0.12	0.24	0.11	0.05	**17.15**
Pune	4.72	0.22	0.30	0.28	0.06	**5.59**
Total	**26**	**1**	**2**	**2**	**0**	**31**

Source: Calculated based on 2017 population, 2017

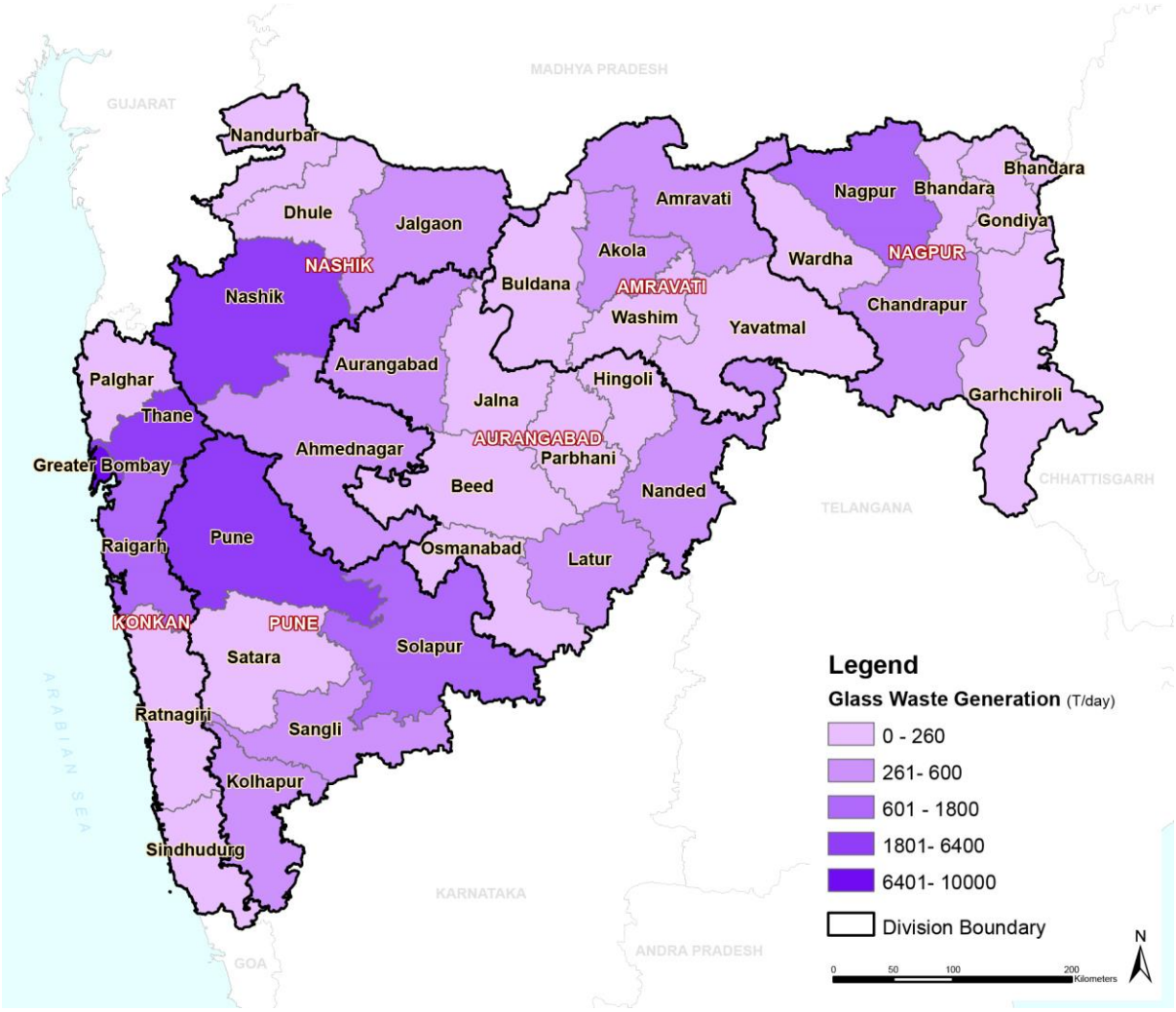
[32] Calculated by taking an average of the quantities generated by the ULBs selected as case studies.

7.1.3 DISTRICT LEVEL

The district level glass waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 32 T/day in Sindhudurg District to 9538 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, Map 7.1 below shows the spatial distribution of glass waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 7.1: District Wise Glass Waste Arriving at Dump Yard



Source: Created through GIS, 2017

7.2 GLASS WASTE CONSUMPTION OPTIONS

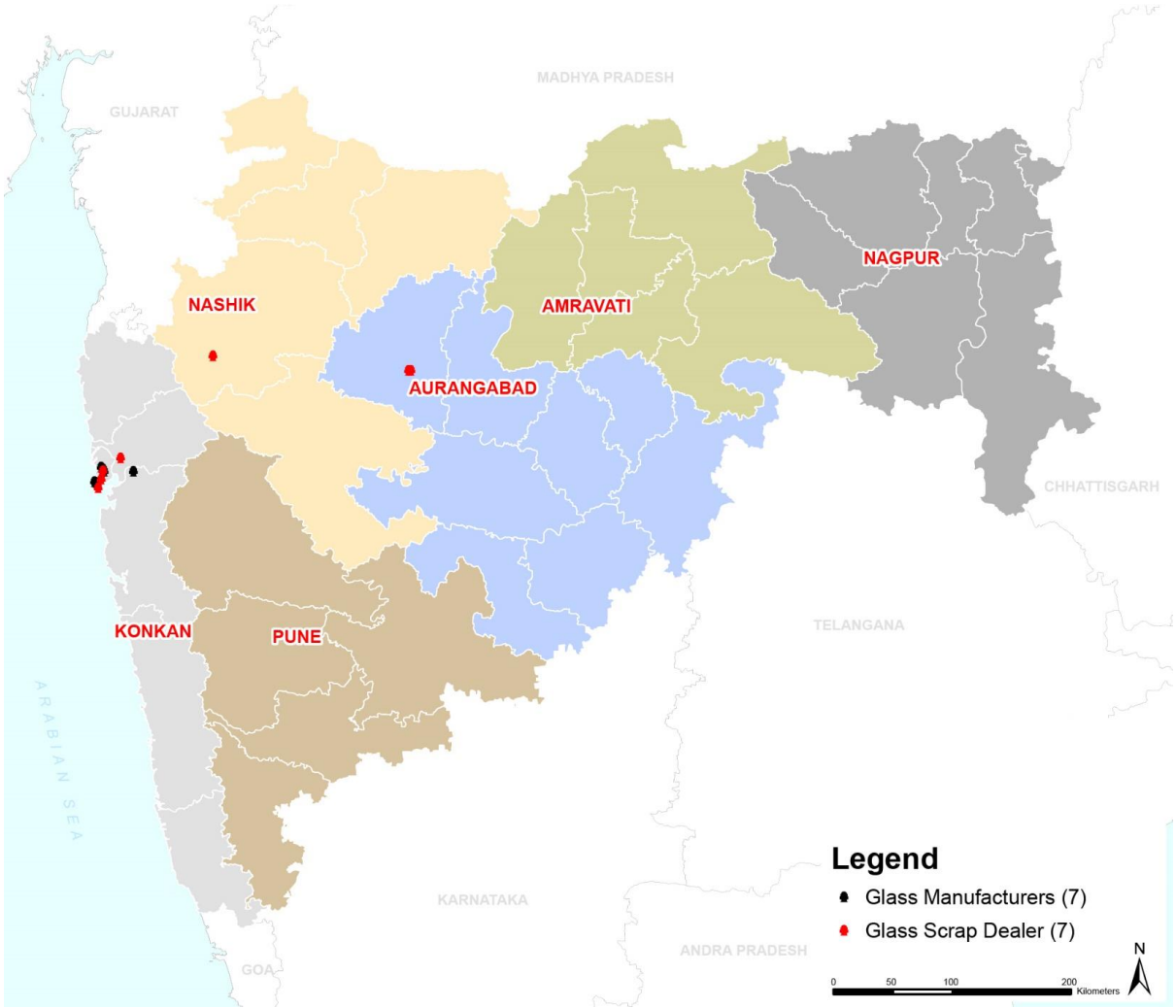
7.2.1 GLASS WASTE RECYCLING INDUSTRIES

Glass waste can be consumed by the glass manufacturing items, ceramic and sanitary ware production and as a flux agent in brick manufacturing. However, the details of the quality and type of glass waste accepted by these manufacturing units varies from unit to unit. Maharashtra has about 7 such industries, which recycle glass. Currently, due to the quality issues, none of these

industries are willing to accept glass waste from the ULBs. At present, the ULBs are selling the glass waste to local recyclers.

Map 6.3 shows the location of glass manufacturing and recycling industries in Maharashtra.

Map 7.2: Potential Glass Manufacturing and Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

ANNEXURE – VII: LIST OF GLASS MANUFACTURING industries IN MAHARASHTRA gives a list of all the glass recycling industries.

8 THERMOCOL WASTE

8.1 THERMOCOL WASTE ARRIVING AT DUMP YARD

8.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that thermocol waste arrivint at dump yard in Maharashtra is about 0.21%[33] of the total dry waste, it is calculated that the thermocol waste arriving at dump yard in all the 384 ULBs in the state of Maharashtra is about 12 T/day.

It is also understood from the primary surveys that during the Ganesh Festival, the thermocol waste increases many folds; however, an approximate quantity of the waste could not be determined at this stage.

The below Table 8.1 shows the total thermocol waste arriving at dump yard in Maharashtra in 2017.

Table 8.1: Thermocol Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Thermocol Waste	10	0.35	1	1	0.16	**12**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

8.1.2 REVENUE DIVISION LEVEL

The total thermocol waste generation across the 6 Revenue Divisions, calculated based on 2017 population, is about 12.15 T/day, of which, Konkan Division generates the highest amount of thermocol waste, i.e. 6.67 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 0.54 T/day, which is 4.44%.

Table 8.2 shows the total thermocol waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 8.2: Revenue Division Wise Thermocol Waste Arriving at Dump Yard across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.22	0.06	0.12	0.12	0.02	**0.54**
Aurangabad	0.41	0.09	0.11	0.17	0.03	**0.81**

[33] Calculated by taking an average of the quantities generated by the ULBs selected as case studies.

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Nagpur	0.50	0.04	0.11	0.08	0.04	**0.76**
Nashik	0.87	0.03	0.13	0.14	0.03	**1.20**
Konkan	6.47	0.05	0.09	0.04	0.02	**6.67**
Pune	1.84	0.09	0.12	0.11	0.02	**2.17**
Total	**10.30**	**0.35**	**0.68**	**0.67**	**0.16**	**12.15**

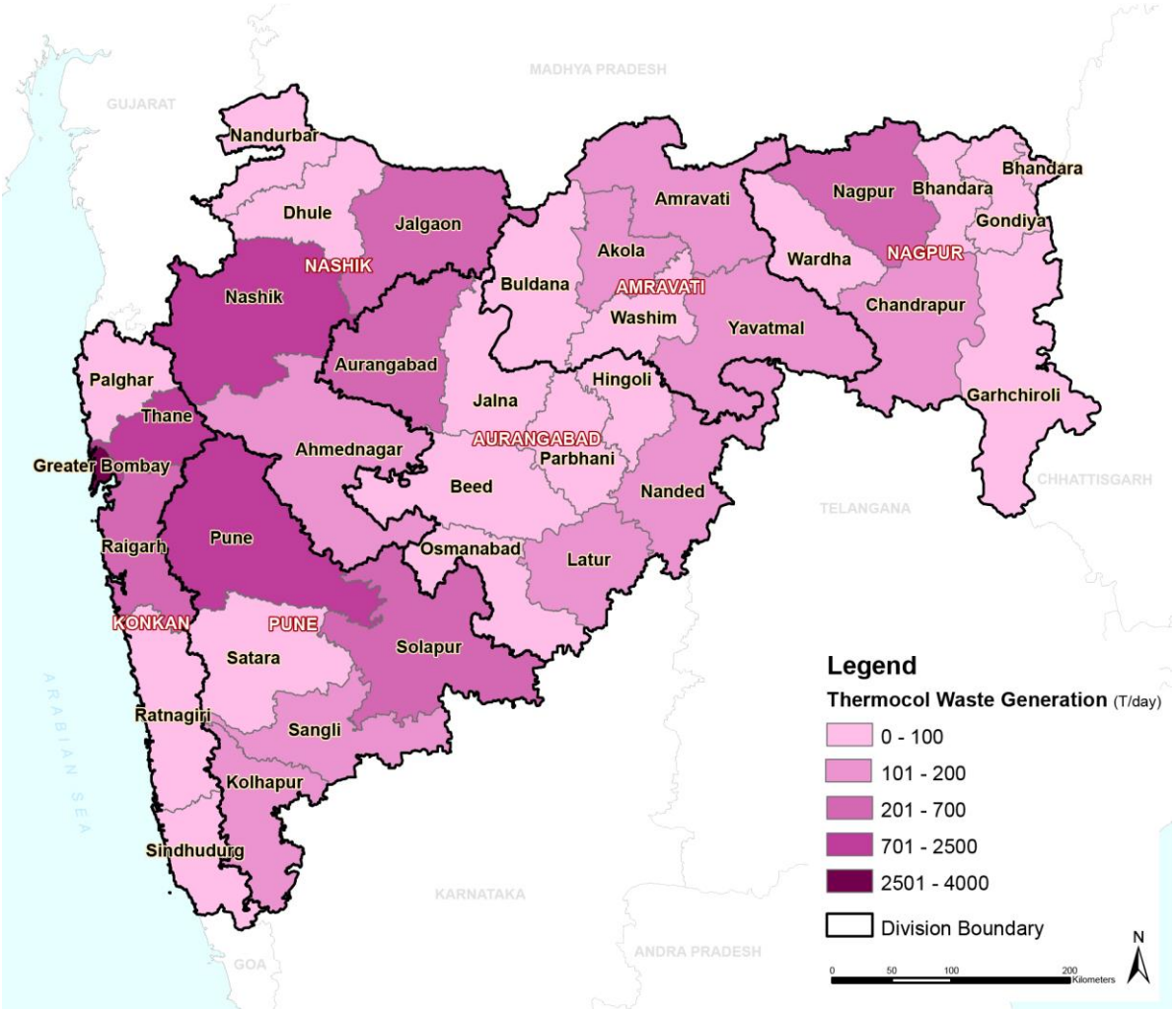
Source: Calculated based on 2017 population, 2017

8.1.3 DISTRICT LEVEL

The district level thermocol waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 12.49 T/day in Sindhudurg District to 3709.20 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, the Map 8.1 below shows the spatial distribution of thermocol waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 8.1: District Wise Thermocol Waste Arriving at Dump Yard



Source: Created through GIS, 2017

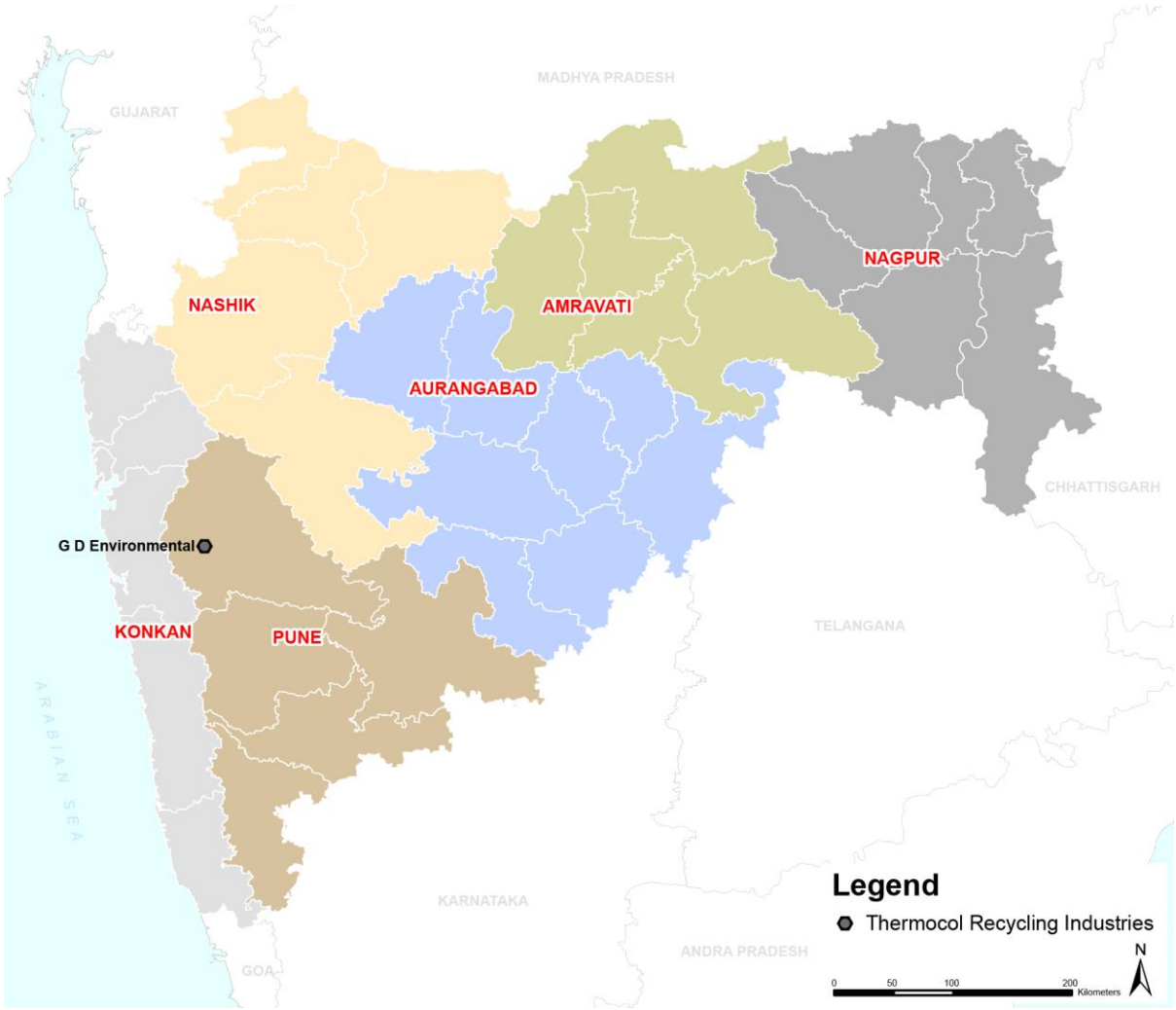
8.2 THERMOCOL WASTE CONSUMPTION OPTIONS

8.2.1 THERMOCOL WASTE CAN BE USED TO DERIVE FUEL

In India, it is a recently established and proved experiment that thermocol waste can be used as a raw material in deriving fuel. Maharashtra has only one thermocol recycling industry, which is located in Pune division. This particular recycling industry uses thermocol to recycle and make oil, which can further be used as fuel.

Map 8.2 shows the spatial location of thermocol recycling industry in Maharashtra.

Map 8.2: Potential Thermocol Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

8.3 CASE STUDIES

8.3.1 THERMOCOL WASTE RECYCLING INDUSTRY: G D ENVIRONMENTAL PVT. LTD., PUNE DISTRICT, PUNE DIVISION

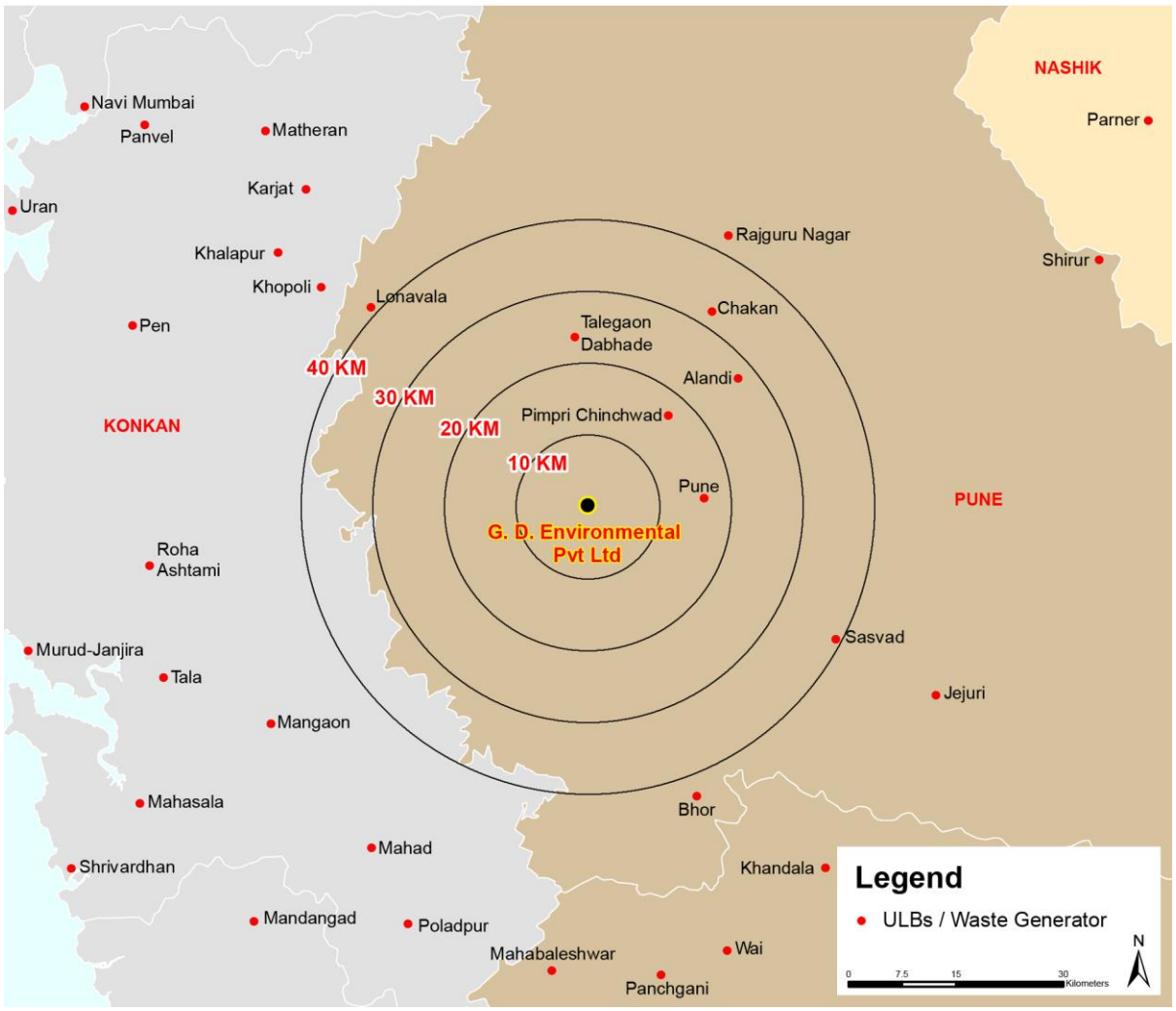
The G D Environmental Pvt. Ltd. is recycling industry set up in Pune District. It is an innovative industry that uses thermocol waste as a raw material in aglo form (substance formed after dissolving thermocol in the solvent) which is made from a solvent and in turn use it to manufacture

fuel from plastic. The recycling industry, manufactures the required solvent as well that can dissolve thermocol. One liter solvent can dissolve up to 1 kg thermocol. The Cost of this solvent is Rs. 52/liter. They can accept waste up to 100 Kg/day. Currently, the recycling unit is accepting thermocol waste from the surrounding villages at free of cost. However, they are willing to accept thermocol waste from the ULBs as well.

Modus Operandi: The recycling industry sends the solvent in a barrel in which thermocol needs to be dissolved and once dissolved it manufactures aglo, which the ULBs are supposed to send back. This aglo is further used in manufacturing plastic to oil.

Map 8.3 shows the ULBs that has the potential to establish the network in future and are within 40 kms of proximity to the recycling industry.

Map 8.3: Proximity of ULBs to G. D. Environmental Pvt. Ltd., Pune District



Source: Created through GIS, 2017

8.3.2 THERMOCOL WASTE RECYCLING INDUSTRY: MANE GROUP OF COMPANIES, PUNE, PUNE DISTRICT, PUNE DIVIION

Mane Group of Companies, Pune was srarted in 1993 by Mr. Ramdas Mane, to essentialy build thermocol machines. Mr. Mane has also been given a patent for the thermocol recycling machine and his company makes toilets out of thermocol with cement coating, in two hours. His toilets are

supplied all over the country and has supplied over 22,000 toilets. The business of building toilets is run on no loss, no profit basis.

Toilets made of Thermocol

9 CLOTH WASTE

9.1 CLOTH WASTE ARRIVING AT DUMP YARD

9.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that cloth waste arriving at dump yard in Maharashtra is about 0.64%[34] of the total dry waste, it is calculated that the cloth waste arriving at dump yard in all the 384 ULBs in the state of Maharashtra is about 37 T/day.

The below Table 9.1 shows the total cloth waste arriving at dump yard in Maharashtra in 2017.

Table 9.1: Cloth Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Cloth Waste	31.40	1.06	2.06	2.03	0.48	**37**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

9.1.2 REVENUE DIVISION LEVEL

The total cloth waste arriving at dump yard across the 6 Revenue Divisions, calculated based on 2017 population, is about 373 T/day, of which, Konkan Division generates the highest amount of cloth waste, i.e. 203 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 1 T/day, which is 4.44%.

Table 9.2 shows the total cloth waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 9.2: Revenue Division Wise Cloth Waste Arriving at Dump Yard across Types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.68	0.18	0.35	0.37	0.06	**1.64**
Aurangabad	1.24	0.26	0.35	0.53	0.10	**2.48**
Nagpur	1.54	0.11	0.32	0.24	0.11	**2.32**
Nashik	2.64	0.10	0.40	0.43	0.08	**3.64**
Konkan	19.70	0.15	0.28	0.13	0.06	**20.33**
Pune	5.60	0.26	0.36	0.33	0.07	**6.62**
Total	**31.40**	**1.06**	**2.06**	**2.03**	**0.48**	**37.03**

Source: Calculated based on 2017 population, 2017

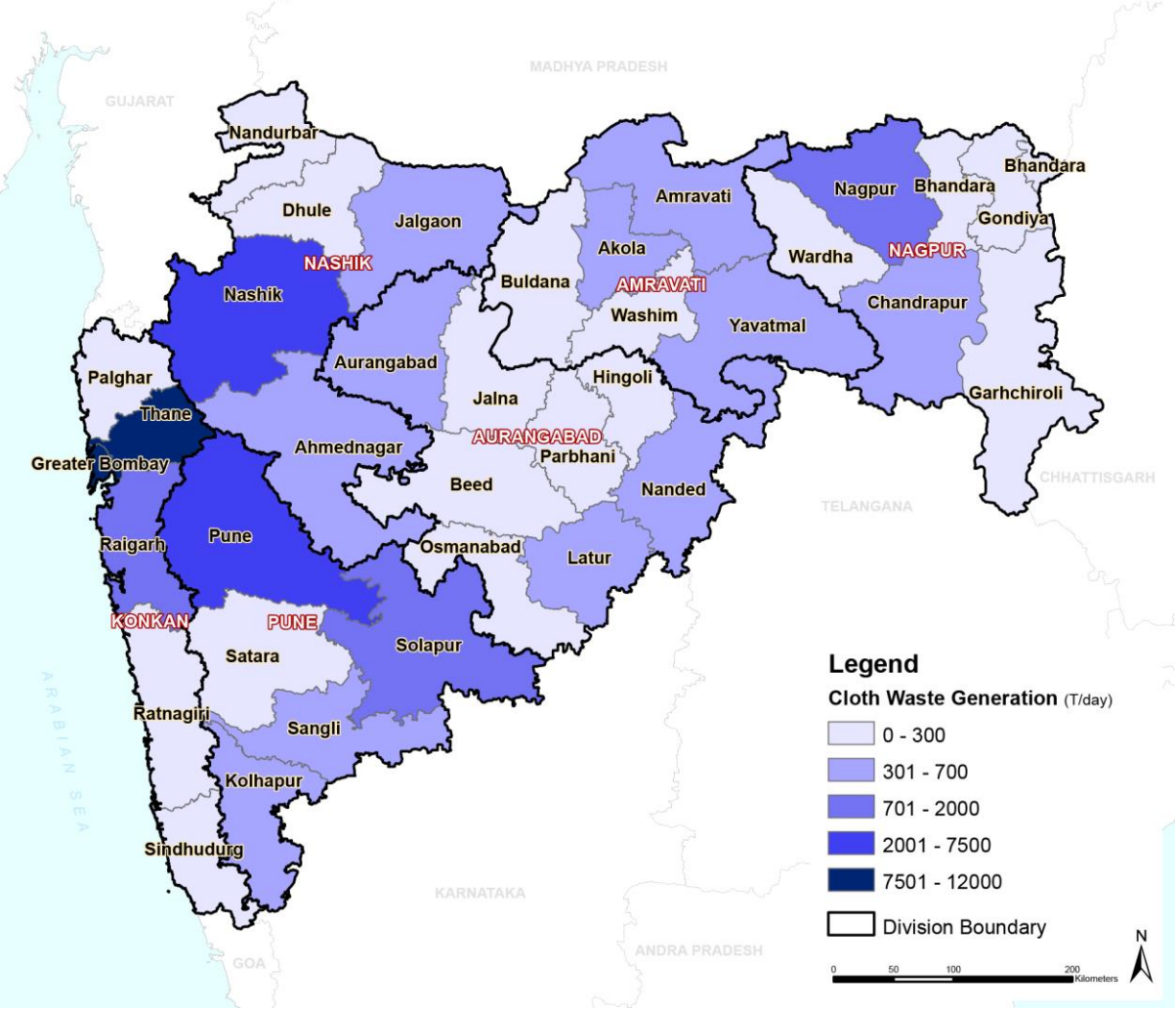
[34] Calculated by taking an average of the quantities generated by the ULBs selected as case studies.

9.1.3 DISTRICT LEVEL

The district level cloth waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 38 T/day in Sindhudurg District to 11304 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, the Map 9.1 below shows the spatial distribution of cloth waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 9.1: District Wise Cloth Waste Arriving at Dump Yard



Source: Created through GIS, 2017

9.2 CLOTH WASTE CONSUMPTION OPTIONS

9.2.1 CLOTH WASTE CAN BE REUSED

Discarded cloth waste can be reused by the homeless people if in a decent condition. Otherwise, it can also be used by the automobile cleaning and repairing workshops for cleaning purposes. This option is viable only for councils that generate less amount of cloth waste.

9.2.2 CLOTH WASTE CAN BE DISPOSED-OFF IN INCINERATORS

10 DISCARDED CLOTH WASTE CAN BE DISPOSED-OFF BY BURNING AT HIGH TEMPERATURES IN INCINERATORS UNDER CONTROLLED ENVIRONMENT THAT DO NOT GENERATE EMISSIONS. CHAPTER 12 METAL WASTE

10.1 METAL WASTE ARRIVING AT DUMP YARD

10.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that metal waste arriving at dump yard in Maharashtra is about 0.15% of the total dry waste, it is calculated that the metal waste arriving at fump yard in all the 384 ULBs in the state of Maharashtra is about 9 T/day.

The below Table 13.1 shows the total footwear waste arriving at dump yard in Maharashtra in 2017.

Table 13.1: Metal Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Metal Waste	7.36	0.25	0.48	0.48	0.11	**8.68**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

10.1.2 REVENUE DIVISION LEVEL

The total metal waste arriving at dump yard n across the 6 Revenue Divisions, calculated based on 2017 population, is about 8.68 T/day, of which, Konkan Division generates the highest amount of metal waste, i.e. 4.76 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 0.39 T/day, which is 4.44%.

Table 13.2 shows the total metal waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 13.2: Revenue Division Wise Metal Waste Arriving at Dump Yard across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.16	0.04	0.08	0.09	0.01	**0.39**
Aurangabad	0.29	0.06	0.08	0.12	0.02	**0.58**
Nagpur	0.36	0.03	0.08	0.06	0.03	**0.54**
Nashik	0.62	0.02	0.09	0.10	0.02	**0.85**
Konkan	4.62	0.03	0.07	0.03	0.01	**4.76**
Pune	1.31	0.06	0.08	0.08	0.02	**1.55**

Total	**7.36**	**0.25**	**0.48**	**0.48**	**0.11**	**8.68**

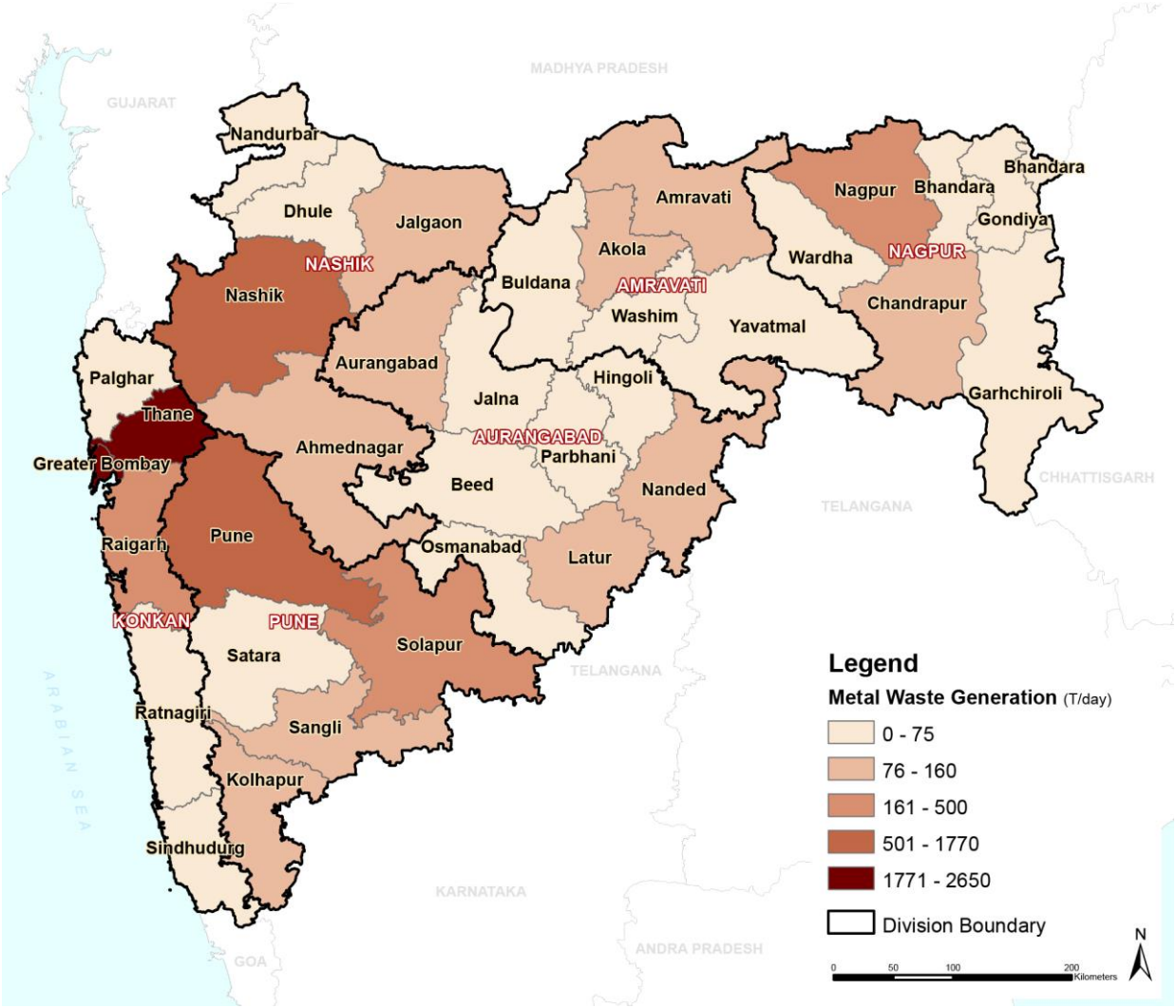
Source: Calculated based on 2017 population, 2017

10.1.3 DISTRICT LEVEL

The district level metal waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 8.92 T/day in Sindhudurg District to 2649.43 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, Map 14.1 below shows the spatial distribution of metal waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 13.1: District Wise Metal Waste Arriving at Dump Yard



Source: Created through GIS, 2017

10.2 METAL WASTE CONSUMPTION OPTIONS

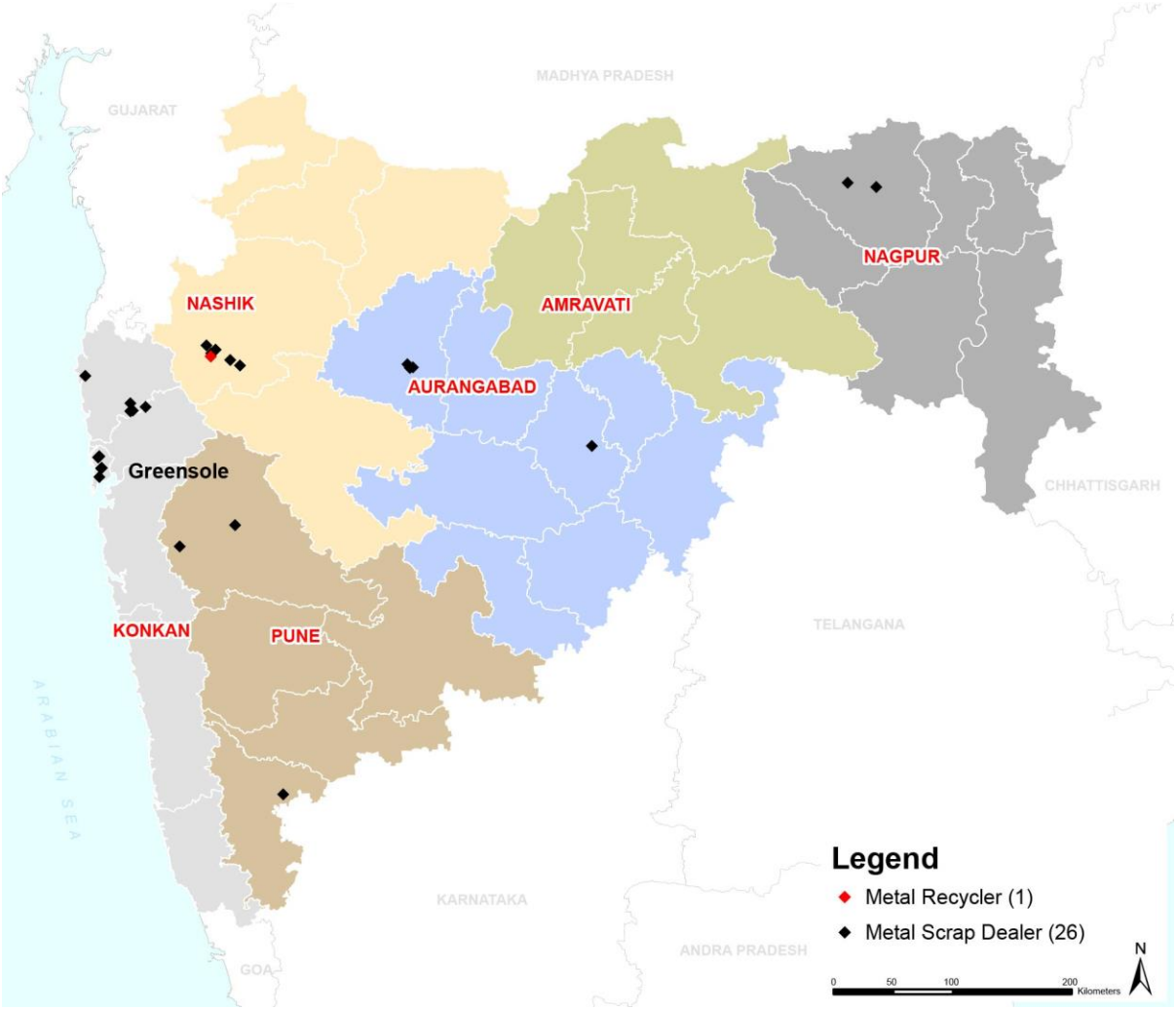
10.2.1 METAL WASTE CAN BE RECYCLED

Ferrous Metal are mainly composed of iron and have magnetic properties. Steel, an iron alloy containing carbon, is by far the most-recycled material in the world. The most commonly recycled

items are scrap from industrial processes, end-of-life products such as containers, vehicles, appliances, industrial machinery and construction materials.

Map 14.2 shows the location of metal waste recycling industry as well as metal scrap dealers in Maharashtra.

Map 13.2: Potential Metal Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

DRY WASTE DISPOSAL OPTIONS further explains it.

11 FOOTWEAR WASTE

11.1 FOOTWEAR WASTE ARRIVING AT DUMP YARD

11.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that footwear waste arriving at dump yard in Maharashtra is about 0.57%[35] of the total dry waste, it is calculated that the footwear waste arriving at dump yard in all the 384 ULBs in the state of Maharashtra is about 33 T/day.

The below Table 11.1 shows the total footwear waste arriving at dump yard in Maharashtra in 2017.

Table 11.1: Footwear Waste arriving at dump yard Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Footwear Waste	27.97	0.94	1.83	1.81	0.43	**32.98**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

11.1.2 REVENUE DIVISION LEVEL

The total footwear waste arriving at dump yard across the 6 Revenue Divisions, calculated based on 2017 population, is about 33 T/day, of which, Konkan Division generates the highest amount of footwear waste, i.e. 18 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 1 T/day, which is 4.44%.

Table 11.2 shows the total footwear waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 11.2: Revenue Division Wise Footwear Waste Arriving at Dump Yard across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.61	0.16	0.31	0.33	0.05	**1.46**
Aurangabad	1.10	0.23	0.31	0.47	0.09	**2.21**
Nagpur	1.37	0.10	0.29	0.22	0.10	**2.07**
Nashik	2.35	0.09	0.36	0.38	0.07	**3.24**
Konkan	17.55	0.13	0.25	0.12	0.05	**18.10**

[35] Calculated by taking an average of the quantities generated by the ULBs selected as case studies.

Pune	4.99	0.23	0.32	0.29	0.06	**5.90**
Total	**27.97**	**0.94**	**1.83**	**1.81**	**0.43**	**32.98**

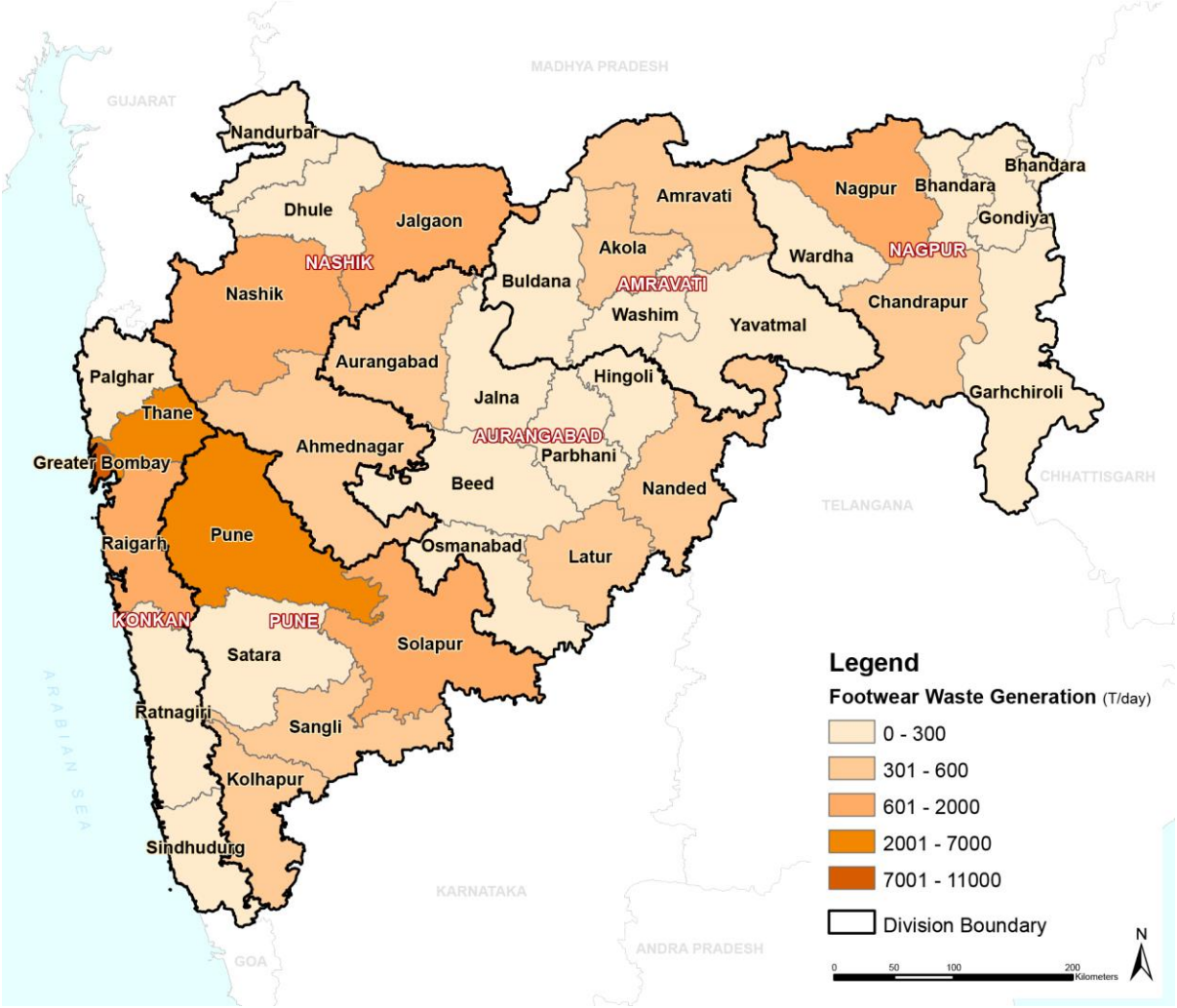
Source: Calculated based on 2017 population, 2017

11.1.3 DISTRICT LEVEL

The district level footwear waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 33.91 T/day in Sindhudurg District to 10067.84 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, Map 11.1 below shows the spatial distribution of footwear waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 11.1: District Wise Footwear Waste Arriving at Dump Yard



Source: Created through GIS, 2017

11.2 FOOTWEAR WASTE CONSUMPTION OPTIONS

11.2.1 FOOTWEAR WASTE CAN BE DISPOSED-OFF IN INCINERATORS

12 FOOTWEAR WASTE THAT IS DISCARDED CAN BE DISPOSED-OFF BY BURNING AT HIGH TEMPERATURES IN INCINERATORS UNDER CONTROLLED ENVIRONMENT THAT DO NOT GENERATE EMISSIONS. THIS IS FURTHER EXPLAINED IN CHAPTER 11 OF THE REPORT: METAL WASTE

12.1 METAL WASTE ARRIVING AT DUMP YARD

12.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that metal waste arriving at dump yard in Maharashtra is about 0.15% of the total dry waste, it is calculated that the metal waste arriving at fump yard in all the 384 ULBs in the state of Maharashtra is about 9 T/day.

The below Table 13.1 shows the total footwear waste arriving at dump yard in Maharashtra in 2017.

Table 13.1: Metal Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Metal Waste	7.36	0.25	0.48	0.48	0.11	**8.68**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

12.1.2 REVENUE DIVISION LEVEL

The total metal waste arriving at dump yard n across the 6 Revenue Divisions, calculated based on 2017 population, is about 8.68 T/day, of which, Konkan Division generates the highest amount of metal waste, i.e. 4.76 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 0.39 T/day, which is 4.44%.

Table 13.2 shows the total metal waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 13.2: Revenue Division Wise Metal Waste Arriving at Dump Yard across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.16	0.04	0.08	0.09	0.01	**0.39**
Aurangabad	0.29	0.06	0.08	0.12	0.02	**0.58**
Nagpur	0.36	0.03	0.08	0.06	0.03	**0.54**
Nashik	0.62	0.02	0.09	0.10	0.02	**0.85**
Konkan	4.62	0.03	0.07	0.03	0.01	**4.76**
Pune	1.31	0.06	0.08	0.08	0.02	**1.55**

Total	**7.36**	**0.25**	**0.48**	**0.48**	**0.11**	**8.68**

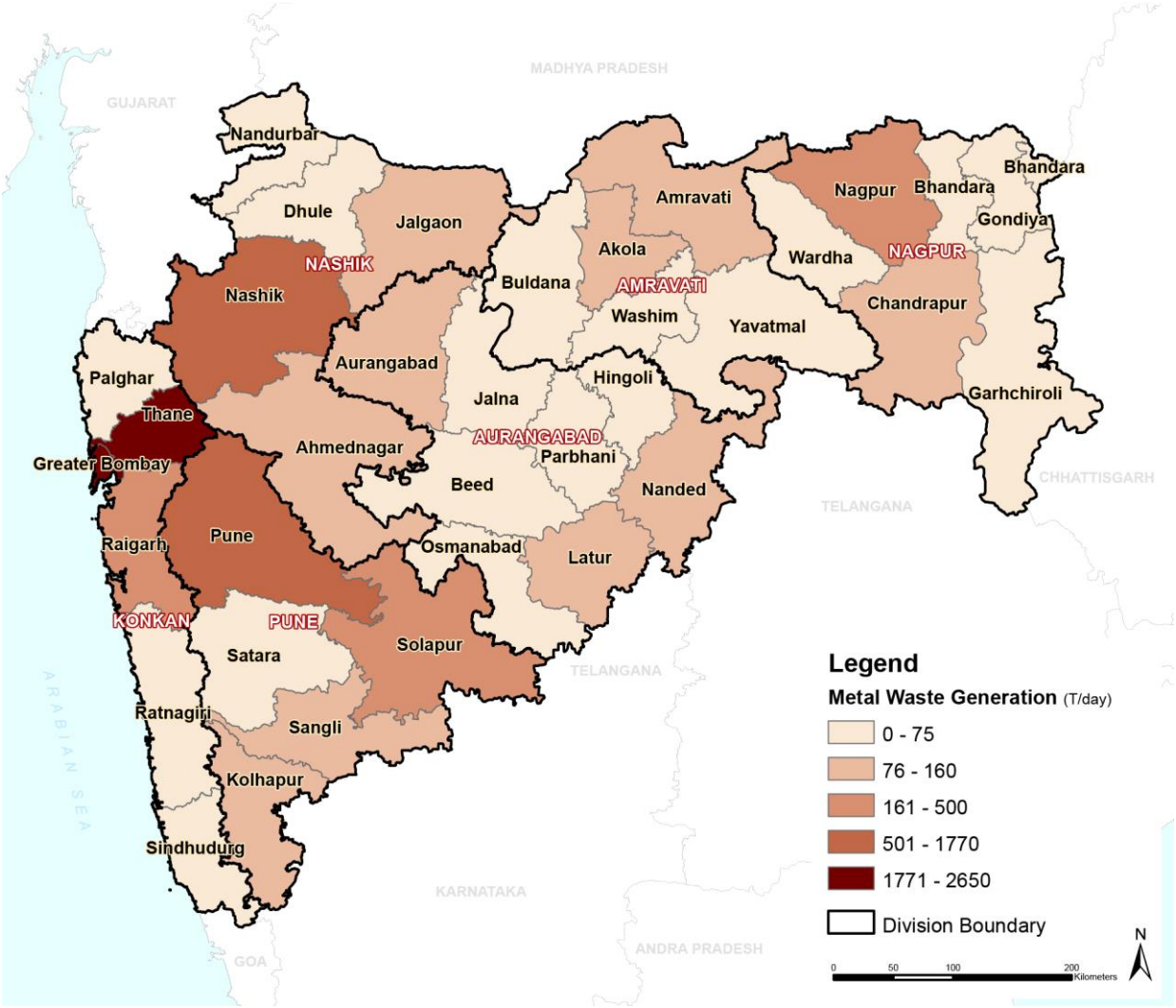
Source: Calculated based on 2017 population, 2017

12.1.3 DISTRICT LEVEL

The district level metal waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 8.92 T/day in Sindhudurg District to 2649.43 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, Map 14.1 below shows the spatial distribution of metal waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 13.1: District Wise Metal Waste Arriving at Dump Yard



Source: Created through GIS, 2017

12.2 METAL WASTE CONSUMPTION OPTIONS

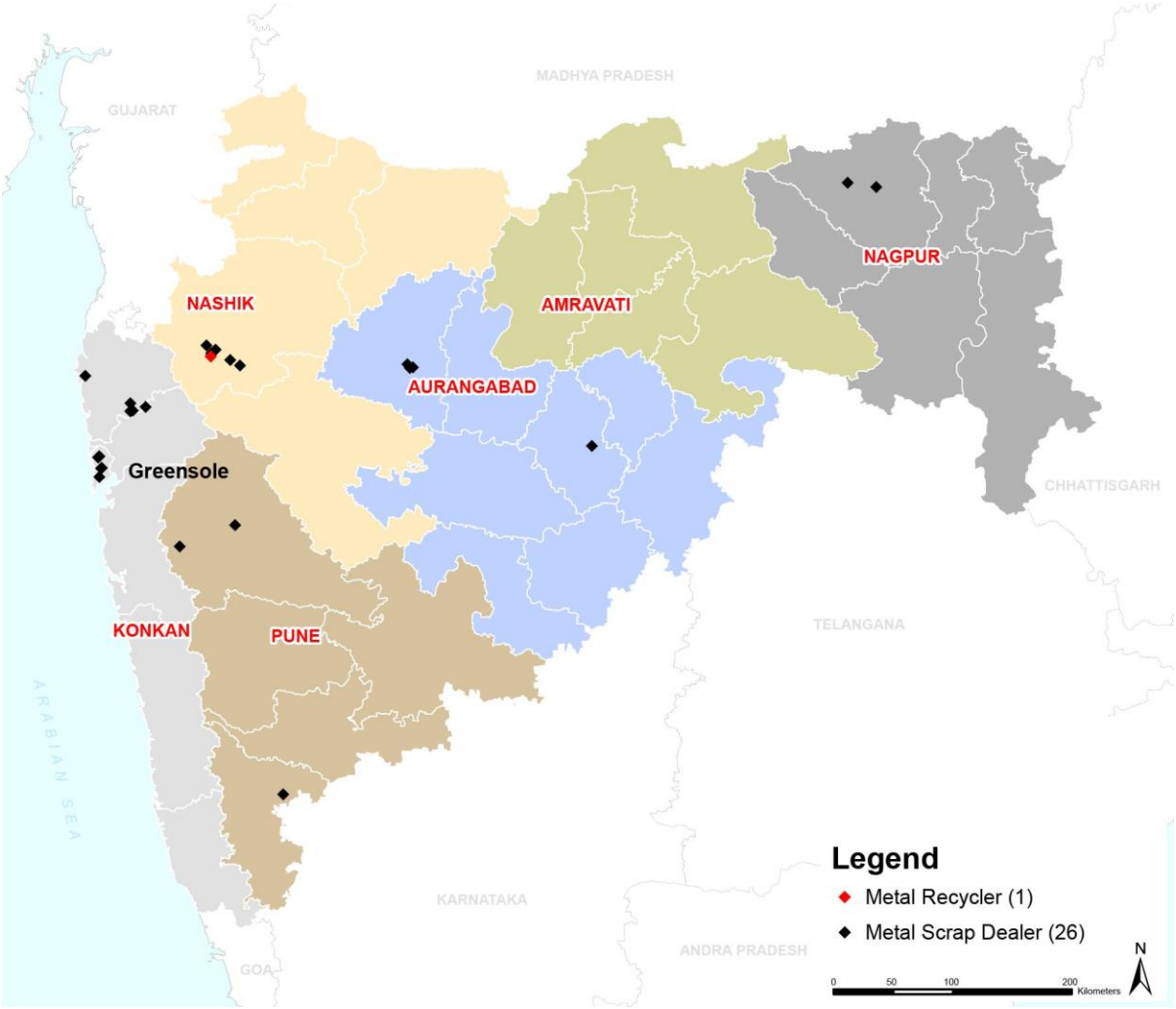
12.2.1 METAL WASTE CAN BE RECYCLED

Ferrous Metal are mainly composed of iron and have magnetic properties. Steel, an iron alloy containing carbon, is by far the most-recycled material in the world. The most commonly recycled

items are scrap from industrial processes, end-of-life products such as containers, vehicles, appliances, industrial machinery and construction materials.

Map 14.2 shows the location of metal waste recycling industry as well as metal scrap dealers in Maharashtra.

Map 13.2: Potential Metal Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

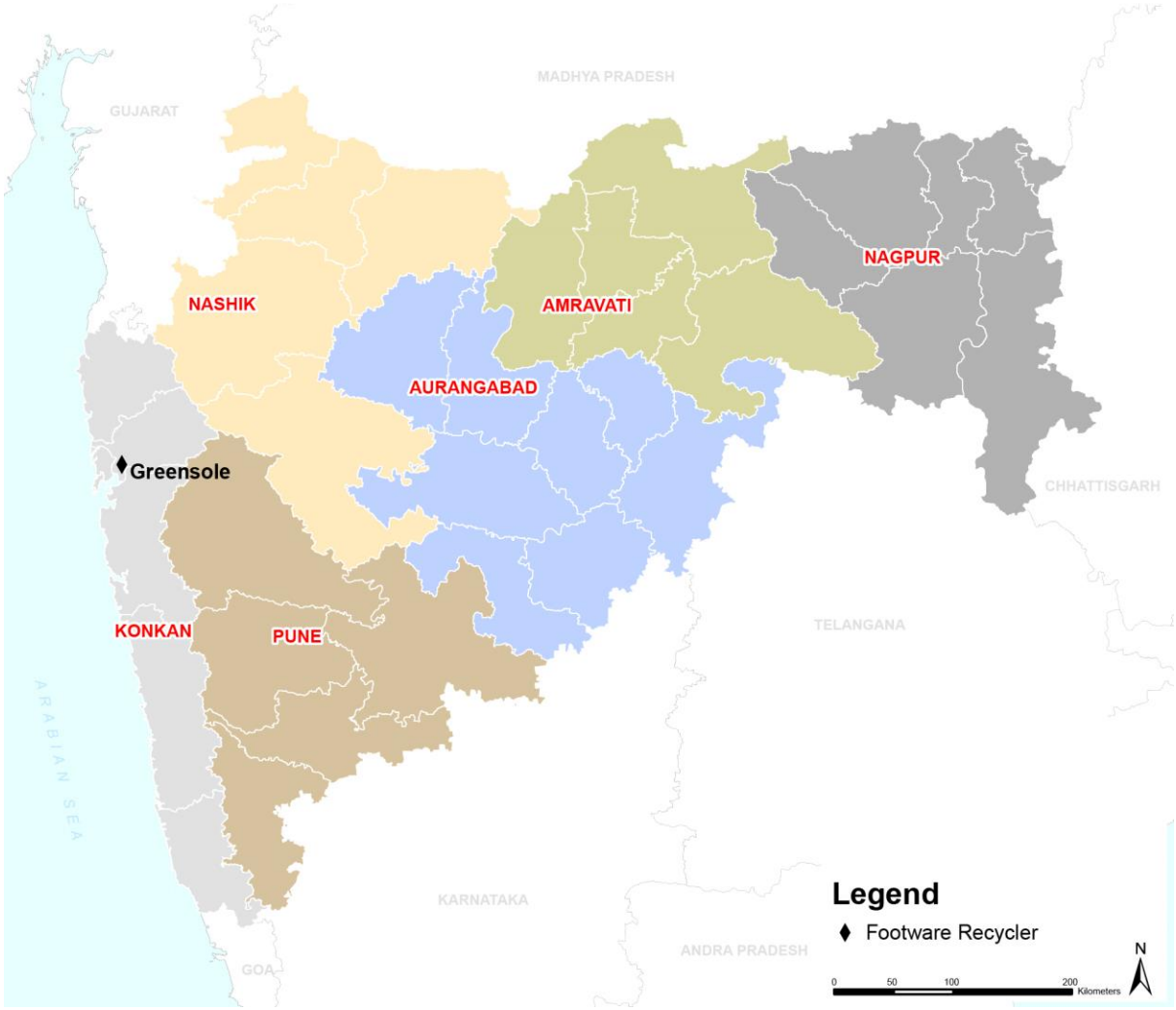
DRY WASTE DISPOSAL OPTIONS.

12.2.2 FOOTWEAR WASTE CAN BE REUSED

In India, the concept of recycling footwear waste in an innovative way is still being research upon. However, Maharashtra has one such footwear recycling unit, an NGO which is located in Navi Mumbai. This particular NGO recycles footwear waste and brings it to reusable condition.

Map 12.1 shows the location of footwear waste recycling industry in Maharashtra.

Map 12.1: Potential Footwear Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

12.3 CASE STUDIES

12.3.1 FOOTWEAR WASTE RECYCLING OPTION: GREENSOLE, NAVI MUMBAI, RAIGARH DISTRICT, KONKAN DIVISION

Greensole is an innovative company, which recycle old shoes and refashion into trendy slippers that are also eco-friendly, and donate them to the unshod. They are based out of Navi Mumbai,

Raigad District. Greensole's business model is to help the underprivileged with footwear and also save the environment from carbon emissions.

Greensole has tie-ups with schools, sports clubs, and organisations who provide them with discarded shoes. They purchase recycled ropes from suppliers to make the upper part of the chappals.

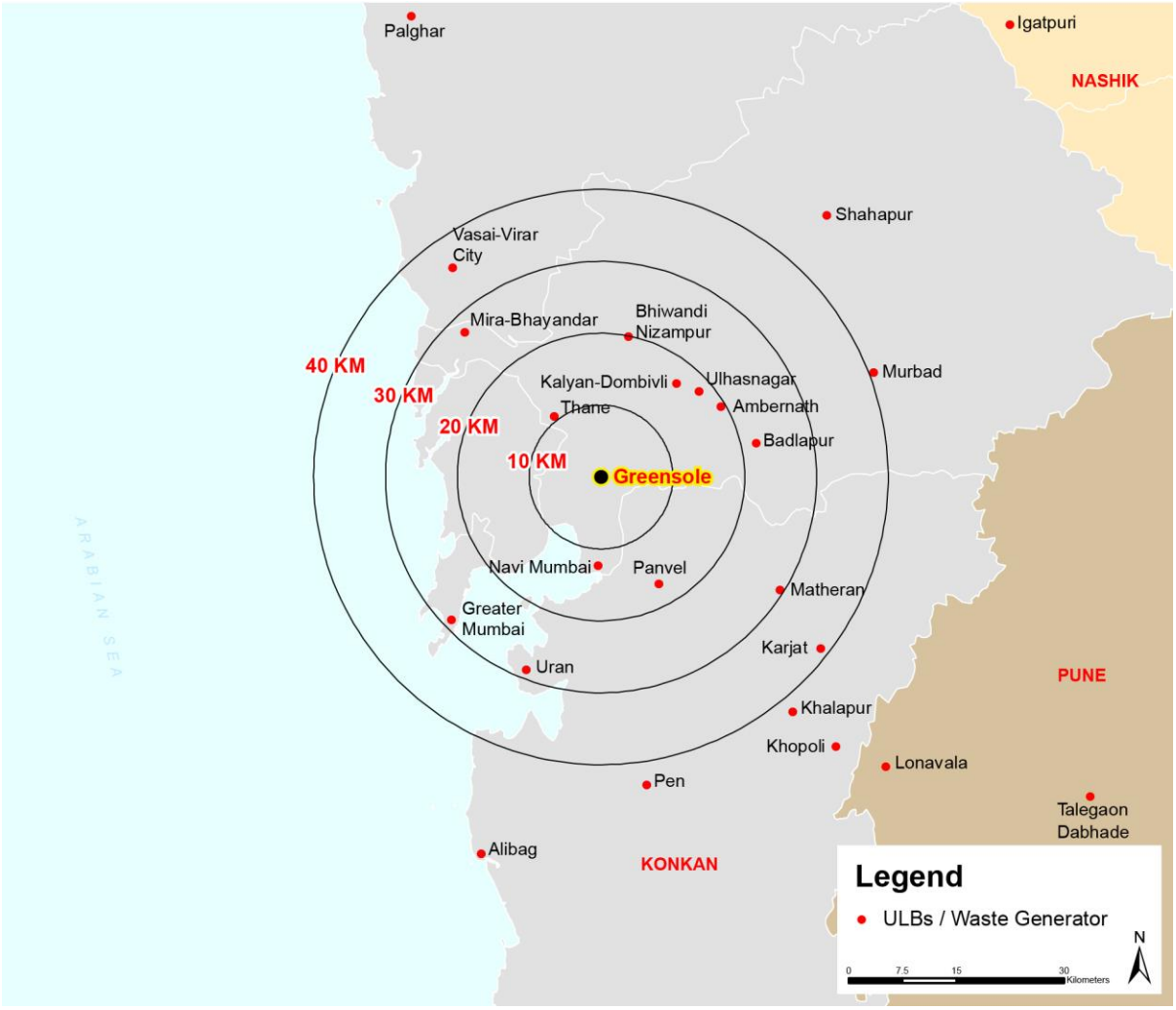
They have placed drop boxes at public places in Mumbai, Ajmer and Siliguri, where people can donate their old shoes. One can also courier the old shoes to them.

The discarded shoes go through a cleaning process before getting a new look at Greensole's unit.

The ULBs in and around Navi Mumbai could definitely explore this option of sending their footwear waste to Greensole.

Map 12.2 below shows the proximity of ULBs to Greensole within the range of 10 km to 40 km.

Map 12.2: Proximity of ULBs to Greensole, Navi Mumbai



Source: Created through GIS, 2017

13 METAL WASTE

13.1 METAL WASTE ARRIVING AT DUMP YARD

13.1.1 STATE LEVEL

As per the calculations based on 2017 population and an assumption that metal waste arriving at dump yard in Maharashtra is about 0.15%[36] of the total dry waste, it is calculated that the metal waste arriving at fump yard in all the 384 ULBs in the state of Maharashtra is about 9 T/day.

The below Table 13.1 shows the total footwear waste arriving at dump yard in Maharashtra in 2017.

Table 13.1: Metal Waste Arriving at Dump Yard Statistics ULB Type Wise: calculated as per 2017 population

2017	M Corp.	Municipal Councils			Nagar Panchayats	Total
		A Class	B Class	C Class		
No. of local bodies	**27**	**11**	**60**	**157**	**129**	**384**
Metal Waste	7.36	0.25	0.48	0.48	0.11	**8.68**
	84.80%	2.85%	5.56%	5.49%	1.29%	

Source: Calculated based on 2017 population, 2017

13.1.2 REVENUE DIVISION LEVEL

The total metal waste arriving at dump yard n across the 6 Revenue Divisions, calculated based on 2017 population, is about 8.68 T/day, of which, Konkan Division generates the highest amount of metal waste, i.e. 4.76 T/day, which is 54.89% and Amravati Division generates the lowest amount of dry waste, i.e. 0.39 T/day, which is 4.44%.

Table 13.2 shows the total metal waste arriving at dump yard across the 6 revenue divisions viz-a-viz types of ULBs.

Table 13.2: Revenue Division Wise Metal Waste Arriving at Dump Yard across types of ULBs – calculated as per 2017 population

Divisions	Total Solid Waste Arriving at Dump Yard (T/day)					
	M. Corp	A Class	B Class	C Class	Nagar Panchayat	Total
Amaravati	0.16	0.04	0.08	0.09	0.01	**0.39**
Aurangabad	0.29	0.06	0.08	0.12	0.02	**0.58**
Nagpur	0.36	0.03	0.08	0.06	0.03	**0.54**
Nashik	0.62	0.02	0.09	0.10	0.02	**0.85**
Konkan	4.62	0.03	0.07	0.03	0.01	**4.76**
Pune	1.31	0.06	0.08	0.08	0.02	**1.55**
Total	**7.36**	**0.25**	**0.48**	**0.48**	**0.11**	**8.68**

Source: Calculated based on 2017 population, 2017

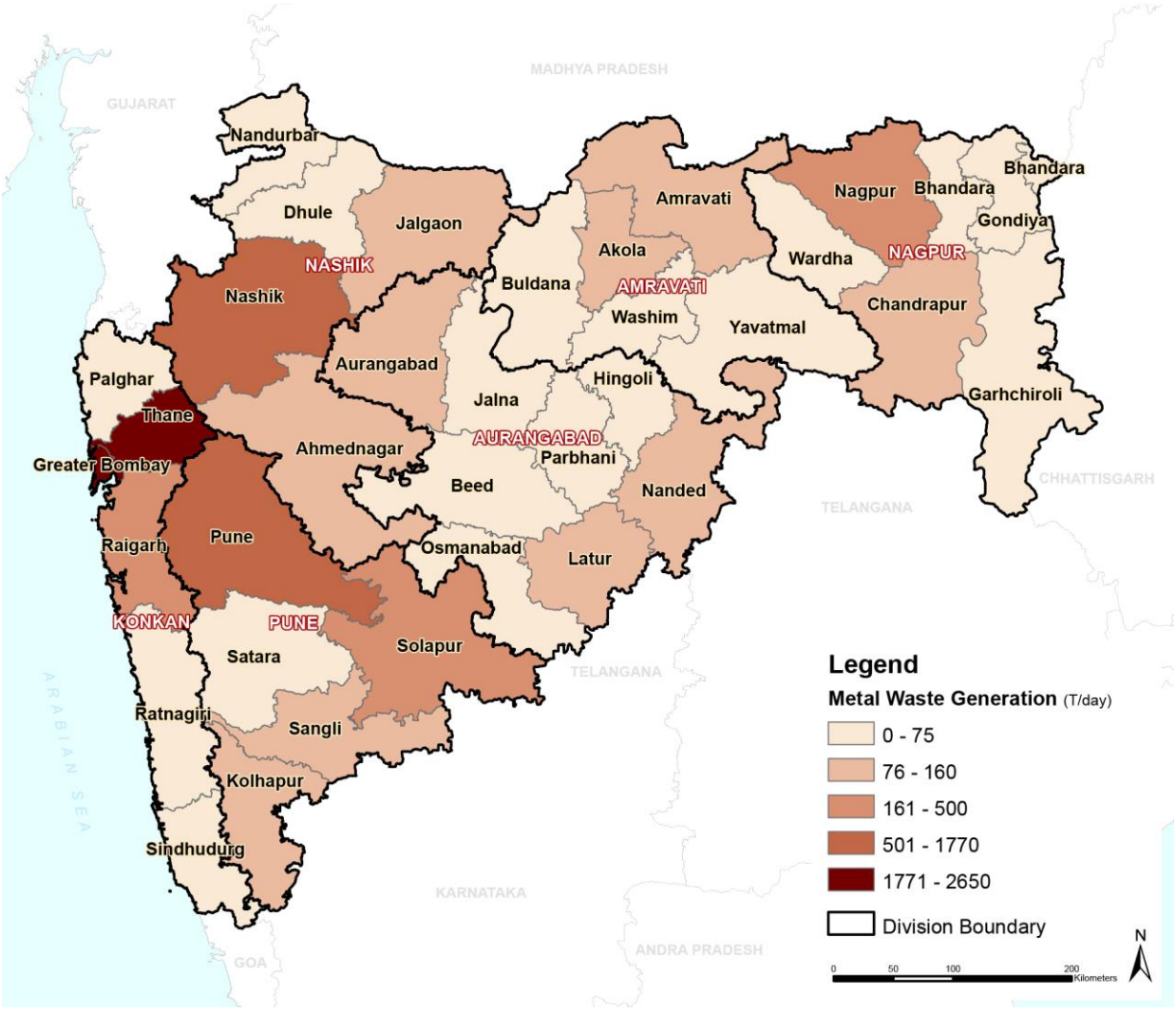
[36] Calculated by taking an average of the quantities generated by the ULBs selected as case studies.

13.1.3 DISTRICT LEVEL

The district level metal waste arriving at dump yard shows that the 36 districts of Maharashtra generates MSW ranging from 8.92 T/day in Sindhudurg District to 2649.43 T/day in Mumbai district (Mumbai City district and Mumbai Suburban district). The detailed information is provided as an annexure.

Further, Map 14.1 below shows the spatial distribution of metal waste arriving at dump yard across the districts as per 2017 population across the revenue divisions.

Map 13.1: District Wise Metal Waste Arriving at Dump Yard



Source: Created through GIS, 2017

13.2 METAL WASTE CONSUMPTION OPTIONS

13.2.1 METAL WASTE CAN BE RECYCLED

Ferrous Metal are mainly composed of iron and have magnetic properties. Steel, an iron alloy containing carbon, is by far the most-recycled material in the world. The most commonly recycled items are scrap from industrial processes, end-of-life products such as containers, vehicles, appliances, industrial machinery and construction materials.

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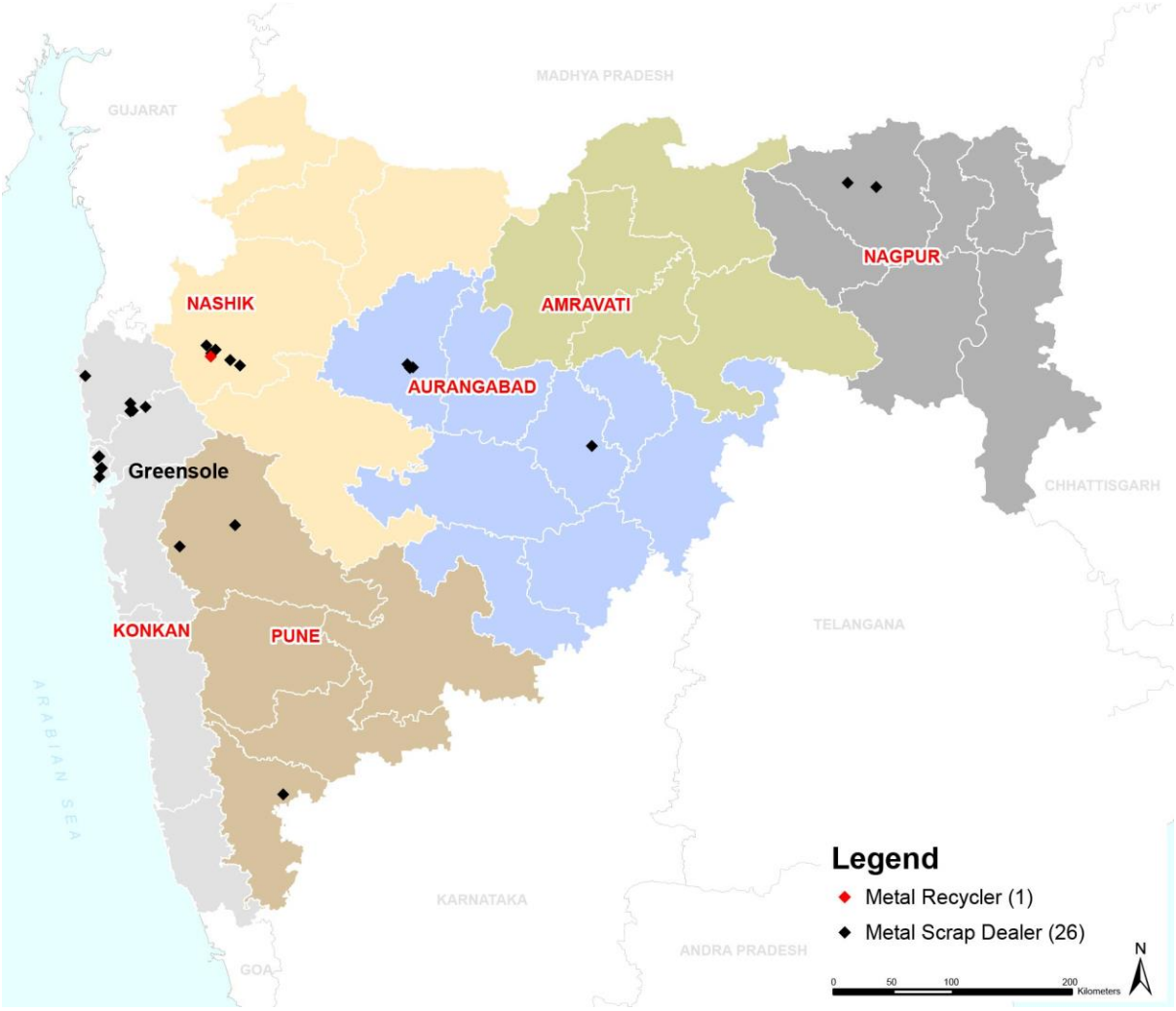
Map 13.2: Potential Metal Recycling Industries for ULBs in Maharashtra



Source: Created through GIS, 2017

14 DRY WASTE DISPOSAL OPTIONS

14.1 CASE STUDIES

14.1.1 CEMENT CLINKER MANUFACTURER: GEOCYCLE INDIA, MARATHA UNIT, AMBUJA CEMENT, CHANDRAPUR

The cement clinker-manufacturing units absorb high calorific plastic waste and polythene waste for energy recovery thereby replacing fossil fuel to conserve the natural resources. This process has proved to be useful and does not show any negative impact on the clinker quality.

Currently, Maharashtra has only one such clincker-manufacturing unit in Chandrapur, Nagpur Division: Geocycle India, Maratha Unit, Ambuja Cement, which has the pre-processing facility that can accept MSW. A primary survey conducted at the cement industry revealed that Maratha unit could accept dry waste up to 500 T/day. Box 14.1 shows the acceptable MSW categories for the kiln at this particular unit in the green boxes below:

Box 14.1: List of Dry Waste Categories accepted by the Clinker Manufacturing Unit

1. Plastic bags
2. Plastic bottles
3. Plastic Wrappers
4. Rubber tube
5. Tyres
6. Thermocol
7. Paper
8. Glass bottles
9. Ceramics
10. Clothes
11. Cotton
12. Jute
13. Shoes/sandals
14. Leather
15. Electrical Tube
16. Bulbs
17. Diaper/Sanitary Napkin
18. Metal
19. Wood Waste
20. Hair
21. Foam
22. Ash
23. Coal
24. Cardboard
25. Silt
26. Rexin Bags
27. Dry waste from street waste & municipal cleaning waste
28. Mobile/Battery/T.V./
29. Computer/Electronic goods
30. Construction and Demolition

Source: Primary Survey, 2018

It is important to note here that the pre-processing facility cannot accept waste such as: Metal, Rubber tubes, glass bottles, E-Waste (including batteries), C & D and any other toxic and hazardous waste. In addition, any waste that is more than 75 mm cannot be accepted.

At present, Ballarpur Municipal Council has signed contract with Geocycle India, Maratha Unit for sending its dry waste and Chandrapur Municipal Corporation is considering as an option for sending its dry waste. Geocycle India, Maratha Unit are willing to accept MSW waste as long as it is sorted into acceptable dry waste categories.

BALLARPUR MUNICIPAL COUNCIL

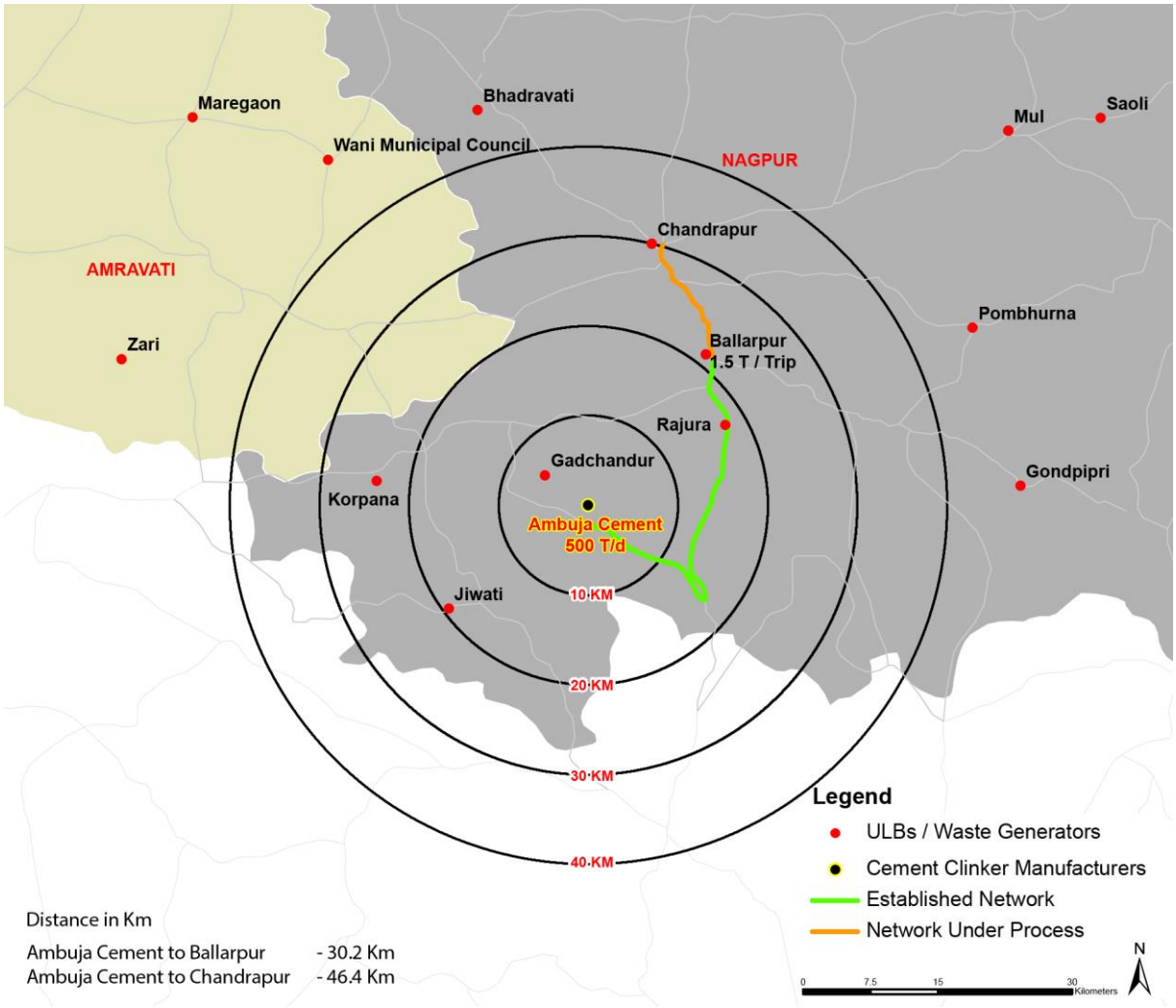
Ballarpur Municipal Council sends all the remaining dry waste, such as: thin plastic below 50 micron, multilayer plastic wrappers etc., which doesn't have any market for

recycling to the Cement Manufacturer to dispose off the waste and clear the dump yard. Ballarpur council is spending around Rs. 7000 per trip, which is 30.2 km away. Currently, it has made 8 trips and is expecting to make another 14 trips to clear off its dump yard. Once cleared, it is expecting to send 1.5 Tons of the remaining dry waste in future to Ambuja Cement.

Ballarpur Council is not generating any revenue by sending its remaining invaluable dry waste to Ambuja Cement. However, it is helping them clear off their dump yard.

Map 14.1 shows the ULBs who have established network and are considering establishing network with Ambuja Cement and the ULBs, which has the potential to establish the network in future and are within 40 kms of proximity to the cement clinker manufacturer.

Map 14.1: Existing Network of ULBs and Proximity of other ULBs to Geocycle India, Maratha Unit, Ambuja Cement, Chandrapur



Source:Primary Survey, 2018

14.1.2 CEMENT CLINKER MANUFACTURER: ACC CEMENT, WADI, KARNATAKA

From the primary surveys conducted, it is also understood that, Vengurla Municipal Council is sending its MSW to ACC Cement Factory in Wadi, Karnataka and Karjat Municipal Council is considering the option of ACC Cement Factory, Wadi to send its MSW.

VENGURLA MUNICIPAL COUNCIL

Vengurla Municipal Council sends its remaining invaluable dry waste such as: contaminated oiled paper, contaminated pouches, which is waste rejected from plastic industries that is not being recycled and reused and has calorific value, to the ACC Cement factory in Wadi, Karnataka which is 471 Km away.

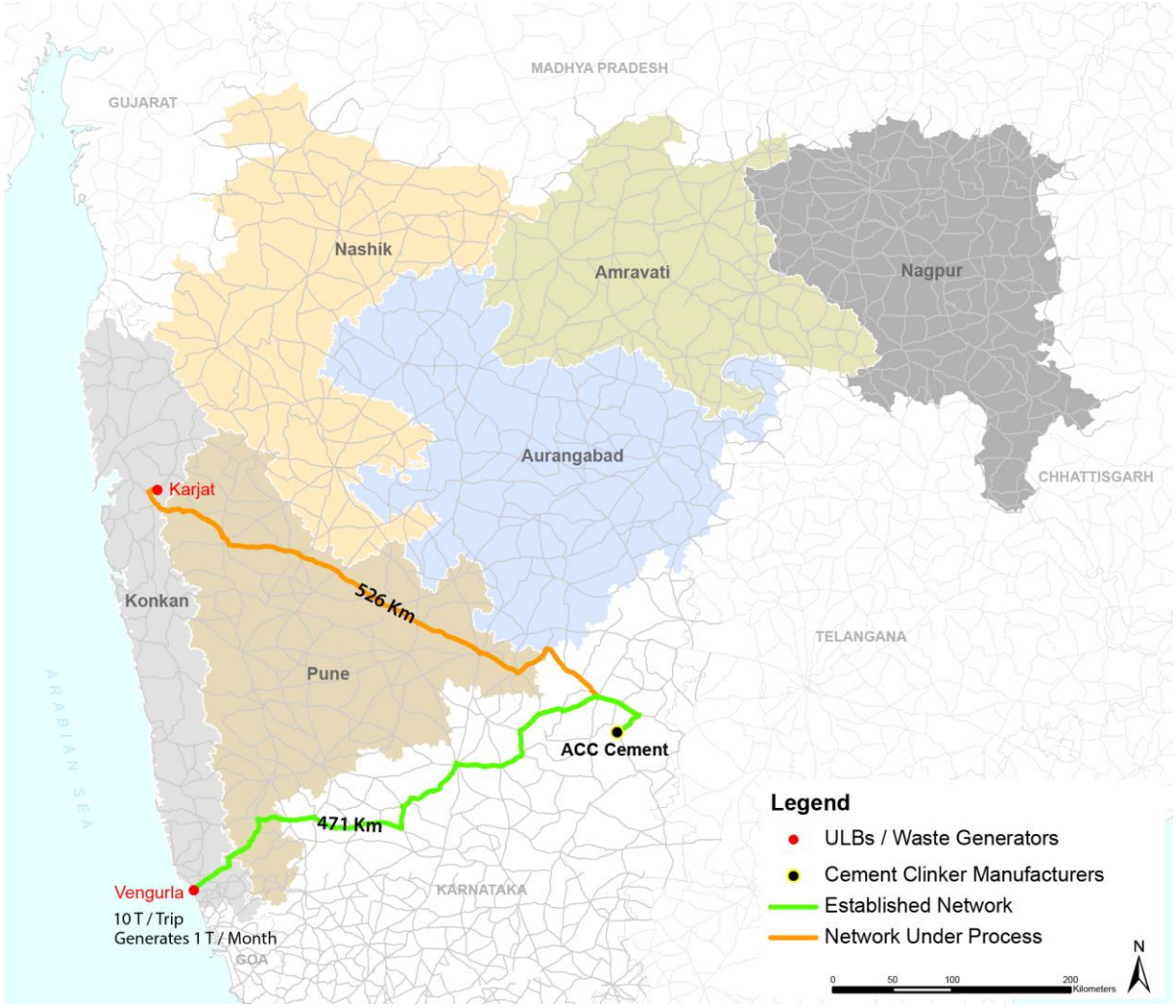
This type of waste is harmless, odorless and perishable material, therefore it is stored at a place till it becomes 10 Ton (approximately in a month 1 ton of such rejected waste is generated and arrives at the dump yard).

At present, the Cement factory shares 25% of the travel allowance, which is Rs. 5000/ trip.

Vengurla Council is not generating any revenue by sending its remaining invaluable dry waste to ACC Cement. However, it is helping them clear off their dump yard.

Map 14.2 shows the current existing network map of ULBs in Maharashtra sending their MSW to ACC Cement, Wadi.

Map 14.2: Existing Network of ULBs in Maharashtra sending its MSW to the ACC Cement, Wadi



Source: Primary Survey, 2018

The next chapter brief the primary survey analyses and findings n the current life cycle of muncipal dry waste in Maharashtra, consolidated spatial representation of the existing established networks between the various ULBs and waste takers and correlation of the existing operational models and revenue generation of the ULBs covered in the primary survey.

15 PRIMARY SURVEY ANALYSIS AND FINDINGS

15.1 CURRENT LIFE CYCLE OF MUNICIPAL DRY WASTE IN MAHARASHTRA

As per the primary surveys conducted, the current MSWM existing in cities have different stakeholders participating at different overlapping networks. A broad framework of this overlapping network has been explained below with the help of a Flowchart 15.1.

The MSWM of any city begins with the local body taking an initiative. The chain begins with waste collector, who collects waste from households and commercial establishments, usually in segregated forms: dry and wet and transport it to dump yards. Either, the local body employs the waste collectors for the activity of waste collection and transportation to be carried out in-house or the whole activity is out-sourced to a contractor/third-party agent. Sometimes NGOs play a part of overlooking the work. Once the waste reaches the dump yard, wet waste goes for composting and dry waste is further sorted manually into as many categories as possible. This usually happens in Material Recover Facility Center with appropriate machinery in place. However, currently, many cities do not have a separate MRF and sorting centers. Therefore, a portion of land within the dump yard is used for sorting dry waste.

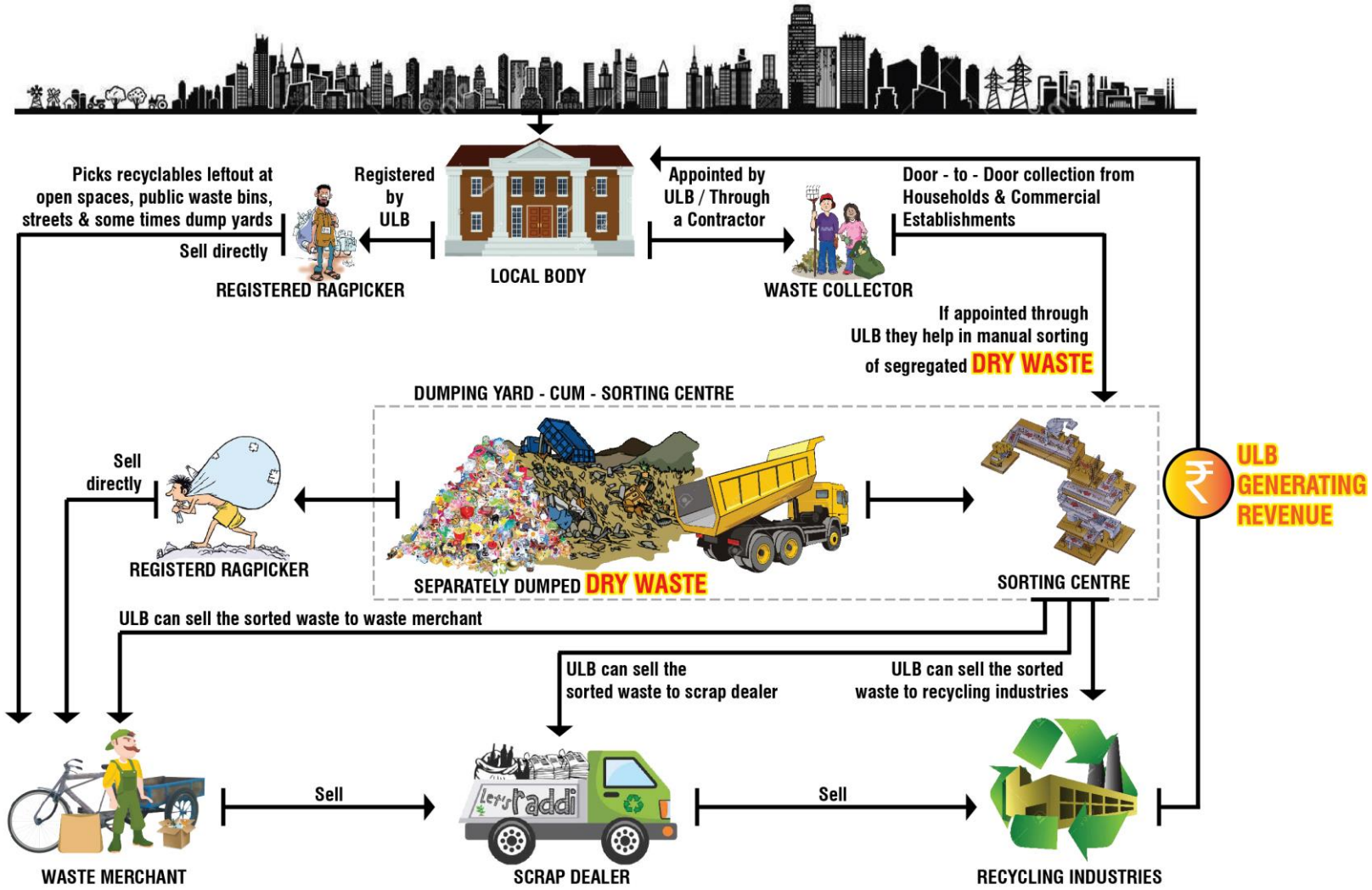
In cases, where local body does the work in-house, the onus of selling the recyclable dry waste is on the local body themselves. They either sell it to a recycling industry or waste merchant or waste trader based on the type of waste, quantity of waste, distance from the sorting center and other logistic modalities and availability of these stakeholders. This type of model, lets the local body generate its own revenue through waste.

In cases, where the local body outsources the door-to-door collection and transportation of waste to the dump yard to a contractor / third party agent, the contractor takes the responsibility of selling the waste to a waste merchant or waste trader or lets his employees, waste collectors, to pick the waste and sell it to the waste merchant.

A sizable amount of recyclable dry waste—such as wastepaper, plastic, broken glass, metal, and packaging material—is not picked up or left out at open spaces, public waste bins, the streets and sometimes the dump site. This generally happens because the waste is either soiled substantially or is directly buried under a huge pile of waste in the bin or due to lack of proper sorting machinery and is left open as mixed waste at the disposal site. Here, the rag pickers who are informal and yet an important part of the solid waste management network play a part. Quite often, these rag pickers focus their search and recovery on a few varieties of recyclables that have good returns.

As per the MSW Rules of Solid Waste Management, 2016, many local bodies have registered these rag pickers. Some of the local bodies have gone to the extent of allocating areas to each of the registered rag picker. Rag pickers collect and sort recyclables and sell them to intermediaries, who have the space to further clean, sort, and store the waste. The intermediaries sell the material to merchants with sufficient means of transport, who then resell the material in bulk to the recycling industries.

Flowchart 15.1: Life Cycle of Municipal Dry Waste in Maharashtra



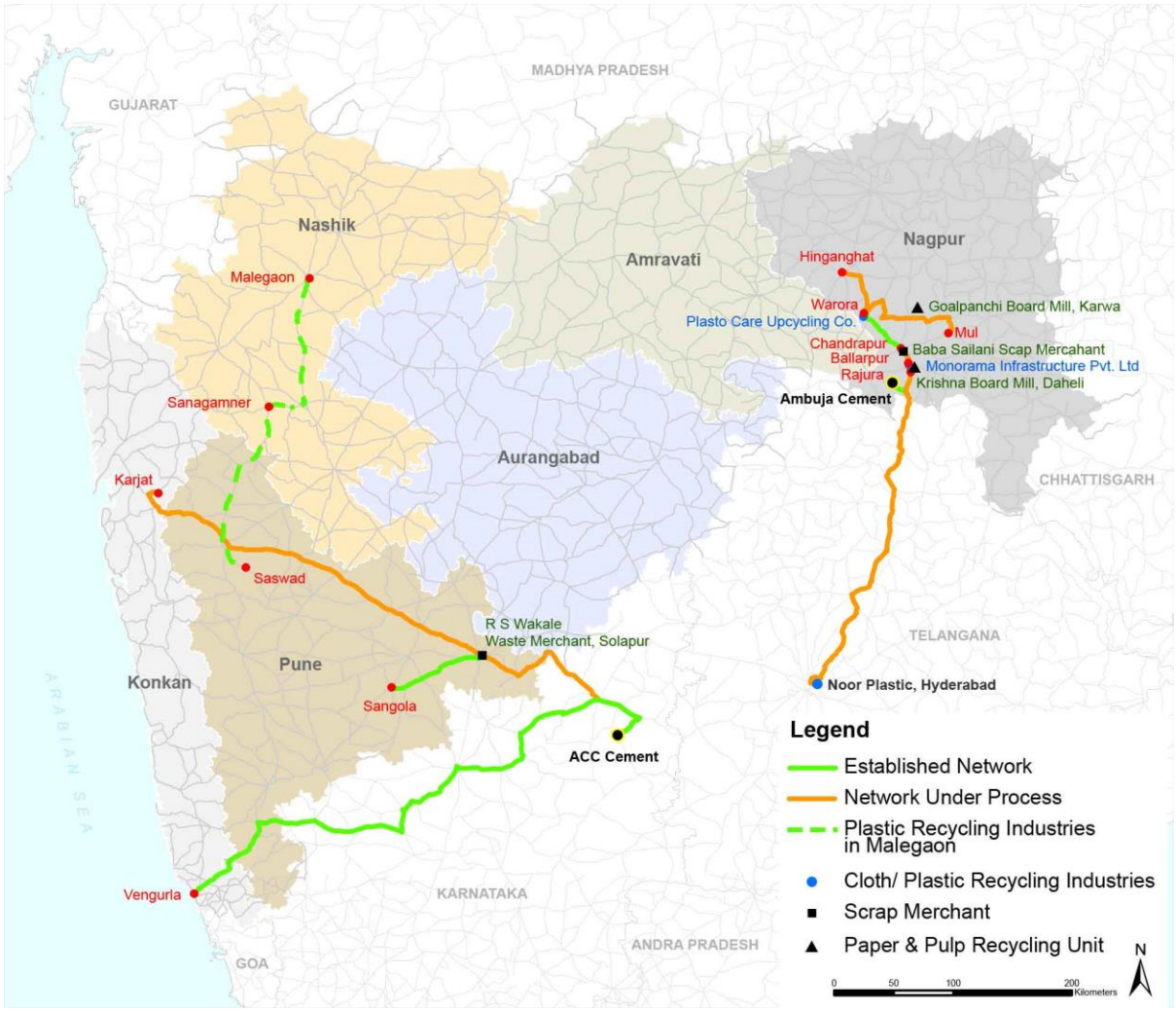
Source: Created to suit the research study, 2017

15.2 EXISTING ESTABLISHED NETWORK IN MAHARASHTRA

The primary survey conducted in all the 15 cities across the six revenue divisions shows that the ULBs are not only collecting segregated waste from door-to-door but also taking initiatives to sort dry waste and identify potential waste takers and establish networks to help clearing their dump yards.

Map 15.1 spatially represents some of these networks based on the data collected through primary interviews.

Map 15.1: Existing Established Network between ULBs and Waste Takers in Maharashtra



Source: Primary Survey, 2018

15.3 CORELATION BETWEEN EXISTING OPERATIONAL MODELS AND REVENUE GENERATION PATTERN FOR THE YEAR 2017-18 IN SELECTED CASE STUDIES

The primary survey revealed that though there is no set Standard Operating Procedure (SOP) for the ULBs to follow in terms of managing their dry waste, they are, with the limited resources; machinery; awareness and technical expertise are taking up the responsibility and designing their own methodology that suits the best to their city.

Though the mandatory function of an ULB is to manage their solid waste, few ULBs are also able to generate revenue out of waste to make it a sustainable model.

Some of the life cycle assessments that emerged from the primary surveys along with their performance in generating revenue is discussed below.

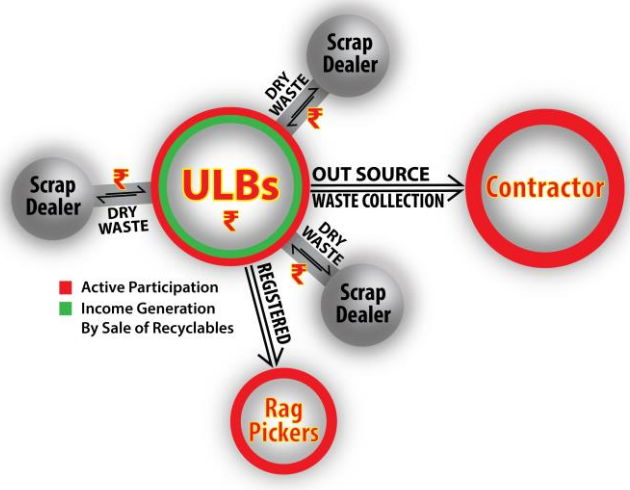
The major actors involved in lify cycle of dry waste are ULB's themselves, ragpickers who are registered by the ULBs, third-part contractors for collecting waste, scrap dealers, recycling industries and NGOs.

The revenue expenditure of the ULBs considered for this study consists of waste collection (driver/s emoluments, collection personnel emoluments, emoluments of municipal staff involved in SWM); waste transportation (fuel and maintenance bill); disposal facilities (employee costs in running the machinery and cost spent on transporting dry waste to waste takers); operation and maintenance (running cost of machinery); monitoring activities; training personal and awareness programs.

Similarly, revenue income considere for this study consists of user charges / fees for residential, commercial and hotels, fine collected, sale of dry waste recyclables, sale of compost, costs recovered through waste to energy and biogas generation.

15.3.1 ULB DRIVEN SWM ACTIVITY – REVENUE GENERATION

MODEL 1:



- ULB controls the Activity
- Waste Collection Activity Outsourced
- Registered Rag pickers help in sorting dry waste

ULB generates income by sale of recyclables (E.g. : Vita and Sangola)

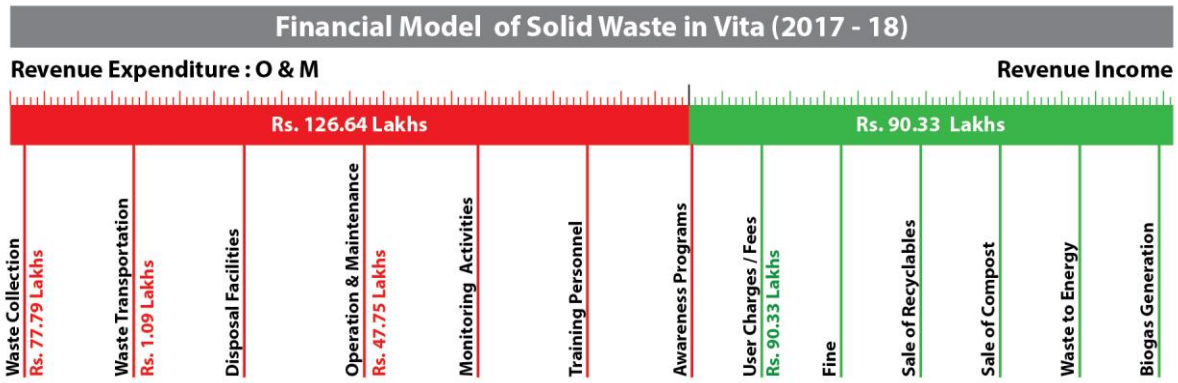
In this type of model, ULB shows an active participation. Though the waste collection activity is outsourced, the sorting of dry waste activity has been monitored by the ULB and identifying the potential waste takers is the responsibility of the ULB, which in turn helps the ULB in generating revenue through sale of recyclables. The ULB has also registered rag pickers who help them pick up the dry waste from streets and open areas.

For example, Sangola Municipal Council in Solapur District and Vita Municipal Council in Sangli District of Pune Division are following this model. They are able to establish networks with waste takers to generate revenue for their ULBs.

Sangola Council is able to establish networks with two scrap merchants for selling plastic bags, plastic bottles and cloth in Sangola and Solapur.

Vita is in the process of establishing network with a scrap merchant in Tung Village. Graph 15.1 shown below explains the amount of revenue Vita Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is in the process of selling its waste the sale of recyclables category under the revenue income head is zero currently.

Graph 15.1: Financial Model of Solid Waste in Vita (2017-18)



MODEL 2:

- ULB controls the Activity
- Waste Collection Activity In-house
- Registered Rag pickers help in sorting dry waste

ULB generates income by sale of recyclables (E.g. : Vengurla and Karjat)

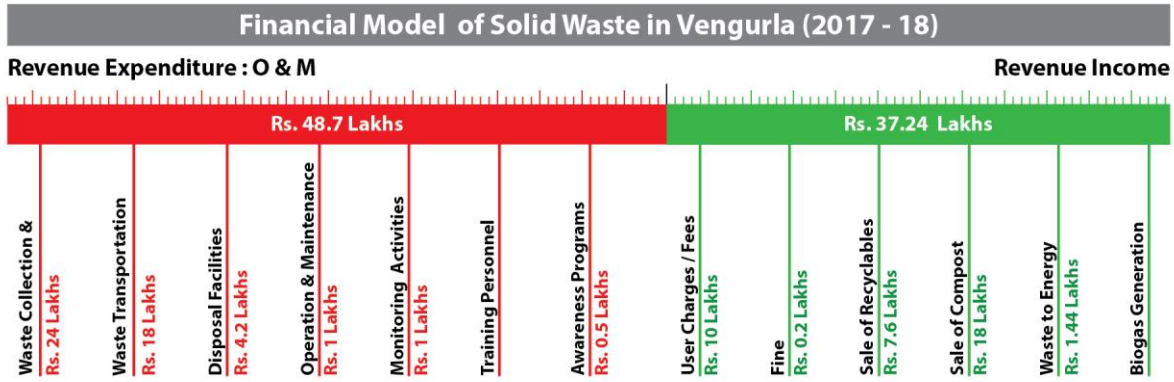
In this type of model, ULB is the key performer. Both the waste collection activity and sorting of dry waste activity is taken care by the ULB and therefore identifying the potential waste takers is

also the responsibility of the ULB, which in turn helps the ULB in generating revenue through sale of recyclables. The ULB has also registered rag pickers who help them pick up the dry waste from streets and open areas.

For example, Vengurla Municipal Council in Sindhudurg District and Karjat Municipal Council in Raigadh District of Konkan Division are following this model. They are able to establish networks with waste takers to generate revenue for their ULBs.

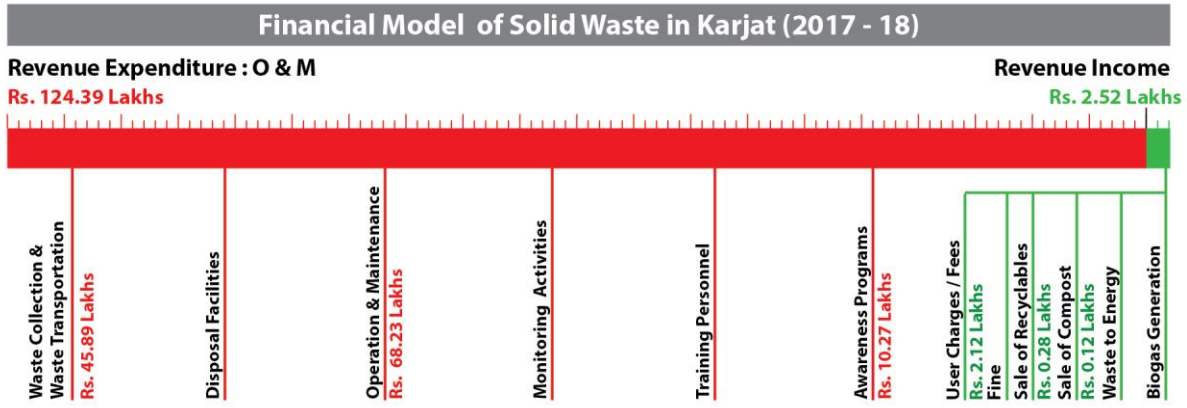
Vengurla is in fact, one of the first ULBs in Maharashtra to have initiated and accomplished the activity of dry waste sorting, identifying the waste takers and successfully generating revenue through sale of recyclables. It is one of the first ULBs to have accomplished zero waste city and zero waste dumping ground. Graph 15.2 shown below explains the amount of revenue Vengurla Council is spending on SWM activities and the amount it is being able to generate through SWM activities. The council, through sale of its recyclables has generated revenue income of about Rs. 7,60,000 in the current financial year 2017-18. It is the only ULB whose revenue income is almost equal to its revenue expenditure making it economically and environmentally sustainable model.

Graph 15.2: Financial Model of Solid Waste in Vengurla (2017-18)



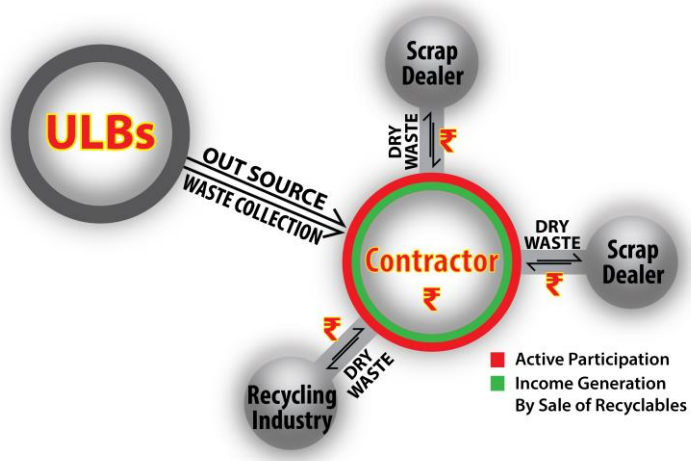
Karjat is also following Vengurla Model in managing its dry waste. Karjat is currently in the process of establishing network with scrap merchants in Karjat. Graph 15.3 shown below explains the amount of revenue Karjat Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is in the process of selling its waste the sale of recyclables category under the revenue income head is zero currently.

Graph 15.3: Financial Model of Solid Waste in Karjat (2017-18)



15.3.2 ULB DRIVEN SWM ACTIVITY – NO REVENUE GENERATION

MODEL 3:



- Waste Collection Activity Outsourced
- Contractor handles dry waste sorting and recycling

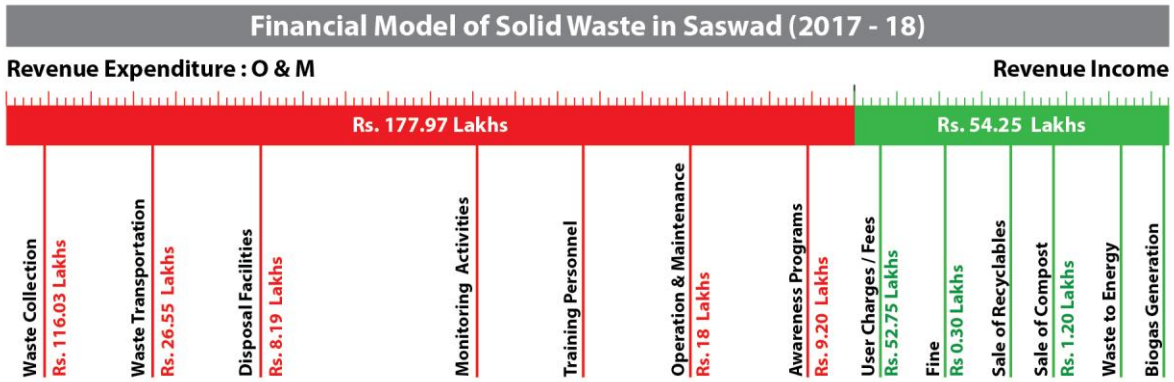
Contractor generates income by sale of recyclables (E.g. : Saswad and Sangamner)

In this type of model, ULB is not an active performer. The waste collection activity is outsourced and the contractor is encouraged to sort the waste and sell the recyclables. The Contractor is an active participant here and generates revenue himself by tying up with the scrap dealers. The ULB does not generate any revenue in this model. However, the mandatory function of ULB to manage its waste is taken care. The ULB has also registered rag pickers, which help them pick up the dry waste from streets and open areas.

For example, Saswad Municipal Council in Pune District of Pune Division and Sangamner Municipal Council in Ahmadnagar District of Nashik Division are following this model.

Saswad has outsourced its SWM activity and has encouraged its contractor to sell the recyclables and clear the dump yard. Graph 15.4 shown below explains the amount of revenue Saswad Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is not an active performer in managing its dry waste, the sale of recyclables category under the revenue income head is zero.

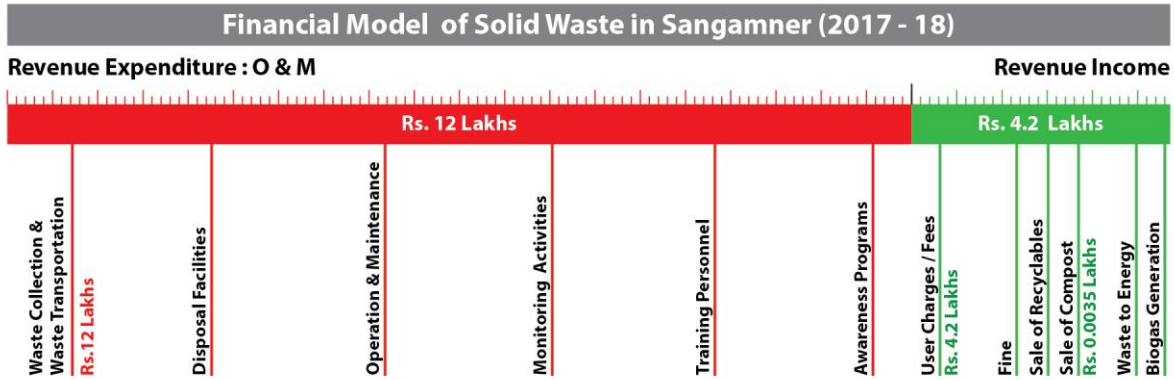
Graph 15.4: Financial Model of Solid Waste in Saswad (2017-18)



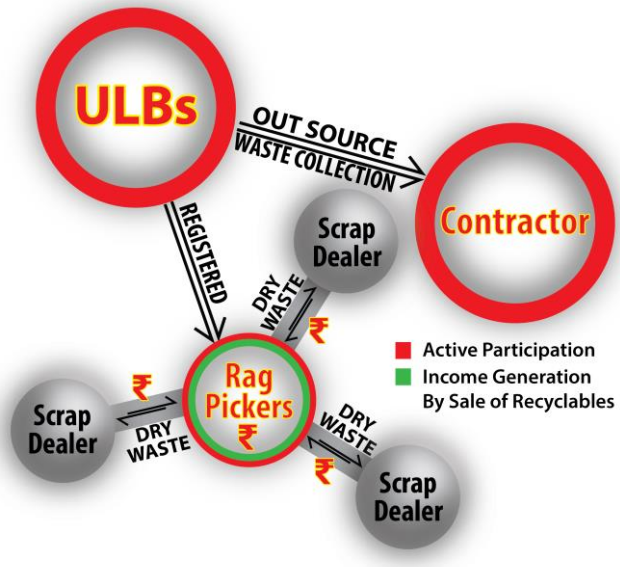
Sangamner follows a similar model to Saswad. It has also outsourced its SWM activity and has encouraged its contractor to sell the recyclables and clear the dump yard. Graph 15.5 shown

below explains the amount of revenue Sangamner Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is not an active performer in managing its dry waste, the sale of recyclables category under the revenue income head is zero.

Graph 15.5: Financial Model of Solid Waste in Sangamner (2017-18)



MODEL 4:



- Waste Collection Activity In-house
- Registered Rag pickers help in sorting dry waste and sell the recyclables

Rag Pickers generates income by sale of recyclables (E.g. : Traimbak)

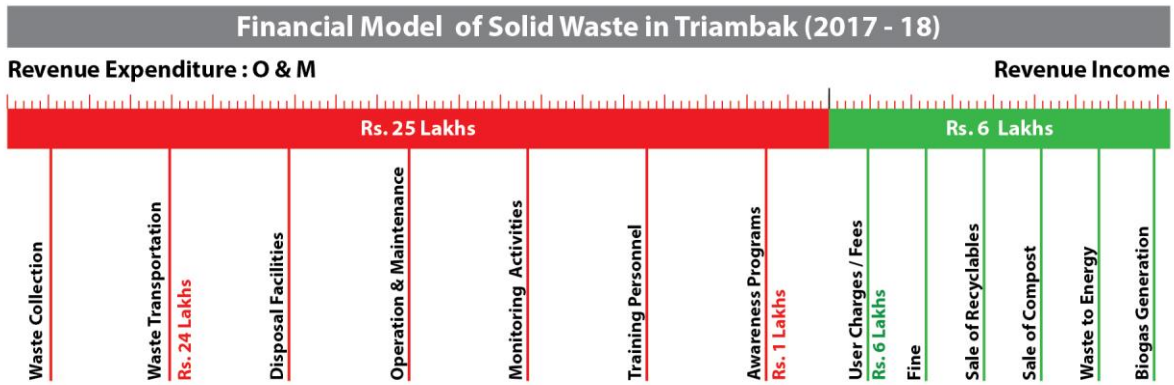
In this type of model, though ULB is an active performer, the waste collection activity is outsourced and the ULB registered rag pickers are encouraged to sort the waste and sell the recyclables. The rag pickers generate revenue in this model by selling the recyclable waste to the scrap dealers. The ULB does not generate any revenue in this model. However, the mandatory function of ULB to manage its waste is taken care. The remaining registered rag pickers help them pick up the dry waste from streets and open areas.

For example, Triambak Municipal Council in Nashik District of Nashik Division is following this model.

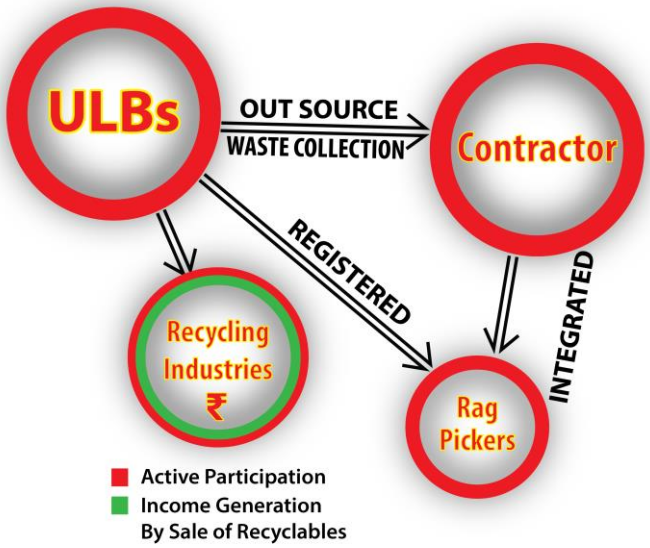
Triambak has outsourced its SWM activity and has encouraged its rag pickers to sell the

recyclables and clear the dump yard. Graph 15.6 shown below explains the amount of revenue Triambak Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is not an active performer in managing its dry waste, the sale of recyclables category under the revenue income head is zero.

Graph 15.6: Financial Model of Solid Waste in Triambak (2017-18)



MODEL 5:



- Waste Collection Activity Outsourced
- Recycling Industry helps in clearing the dump by taking required waste
- Registered Rag pickers help in sorting dry waste

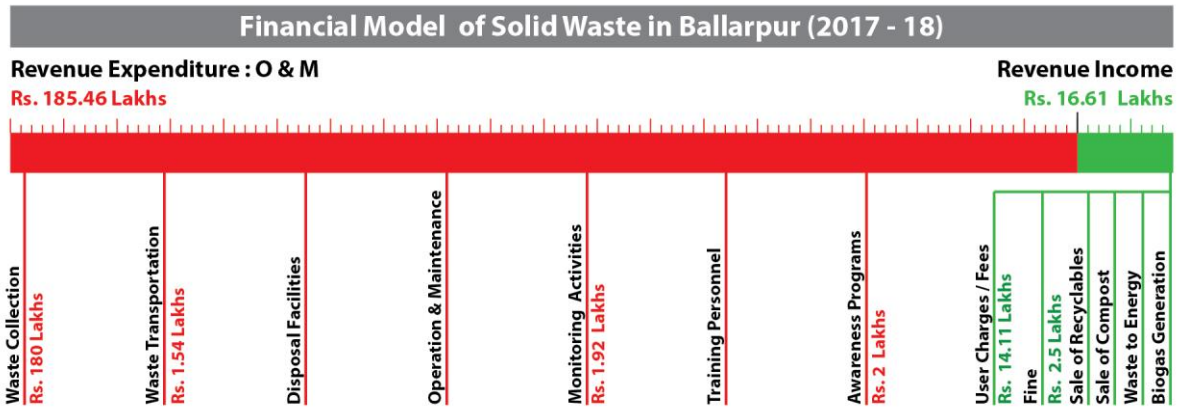
Recycling Industry generates income by selling recycled products (E.g. : Ballarpur and Warora)

In this type of model, though ULB is an active performer, the waste collection activity is outsourced, the ULB registered rag pickers are encouraged to sort the waste and recycling industry has been given a place to set up its unit within the city to use up the required waste sorted in the dump yard. The recycling industries generate revenue in this model by utilizing the required recyclable waste and selling its manufactured units. The ULB does not generate any revenue in this model. However, the mandatory function of ULB to manage its waste is taken care. The remaining registered rag pickers help them pick up the dry waste from streets and open areas.

For example, Ballarpur Municipal Council and Warora Municipal Council in Chandrapur District of Nagpur Division is following this model.

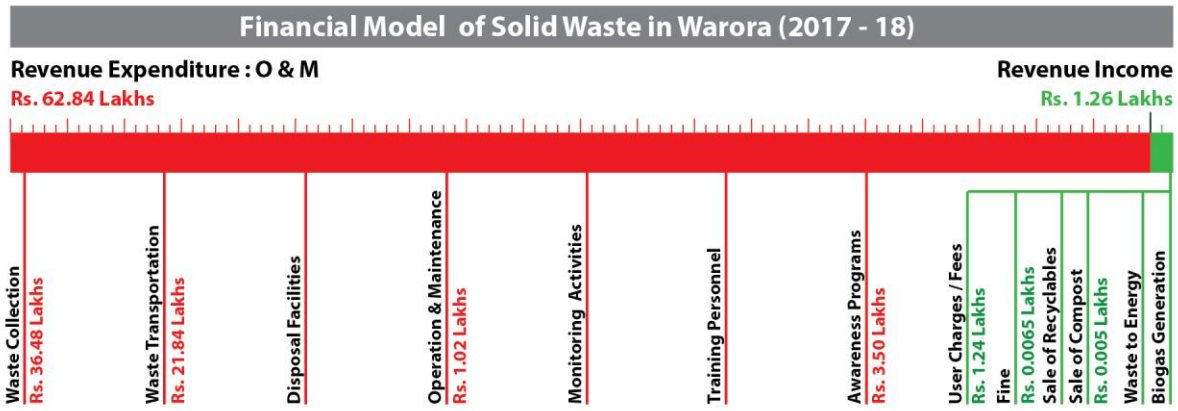
Balllarpur has outsourced its SWM activity and has encouraged its contractors, rag pickers and the recycling industry to sell the recyclables and clear the dump yard. Graph 15.7 shown below explains the amount of revenue Ballarpur Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is not an active performer in managing its dry waste, the sale of recyclables category under the revenue income head is zero.

Graph 15.7: Financial Model of Solid Waste in Ballarpur (2017-18)



Warora has outsourced its SWM activity and has encouraged its contractors, rag pickers and the recycling industry to sell the recyclables and clear the dump yard. Graph 15.8 shown below explains the amount of revenue Warora Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is not an active performer in managing its dry waste, the sale of recyclables category under the revenue income head is zero.

Graph 15.8: Financial Model of Solid Waste in Warora (2017-18)



MODEL 6:

- NGO overlooks the Activity
- Waste Collection Activity Outsourced
- Registered Rag pickers help in sorting dry waste

Rag Pickers generates income by sale of recyclables (E.g. : Aurangabad and Vaijapur)

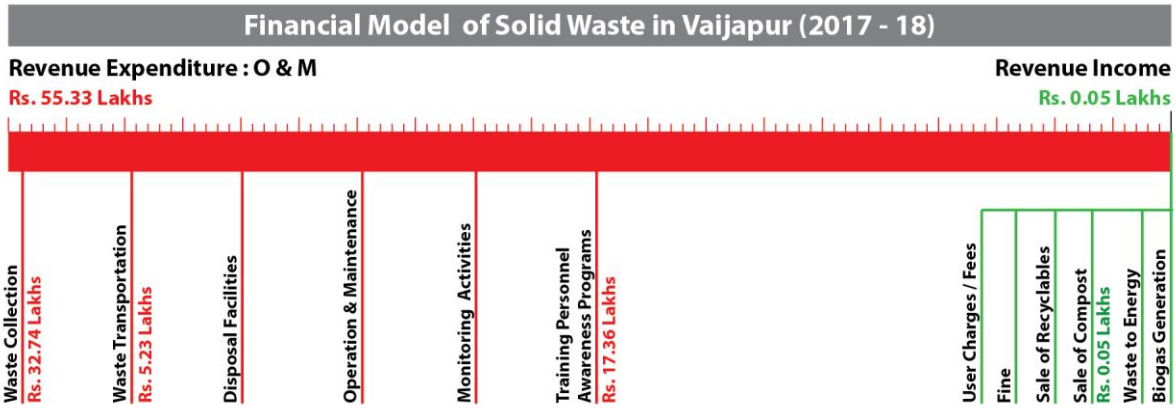
In this type of model, though ULB is an active performer, the waste collection activity is outsourced, the ULB registered rag pickers are encouraged to sort the waste and an NGO is appointed for capacity building, training and monitoring the activities carried out bu the contractor's team and rag pickers. The rag pickers generate revenue in this model by utilizing the required recyclable waste and selling its manufactured units. The ULB does not generate any revenue in this model.

However, the mandatory function of ULB to manage its waste is taken care. The remaining registered rag pickers help them pick up the dry waste from streets and open areas.

For example, Vaijapur Municipal Council and Aurangabad Municipal Corporation in Aurangabad District of Aurangabad Division is following this model.

Vaijapur has outsourced its SWM activity and has encouraged its rag pickers to sort the waste and sell the recyclables under the monitoring of an NGO. Graph 15.9 shown below explains the amount of revenue Vaijapur Council is spending on SWM activities and the amount it is being able to generate through SWM activities. Since, the council is not an active performer in managing its dry waste, the sale of recyclables category under the revenue income head is zero.

Graph 15.9: Financial Model of Solid Waste in Vaijapur (2017-18)



The next chapter concludes with a list of available markets for dry waste recycling for ULBs in Maharashtra and suggests revenue-generating models for the ULBs.

SECTION 6

RECOMMENDATIONS

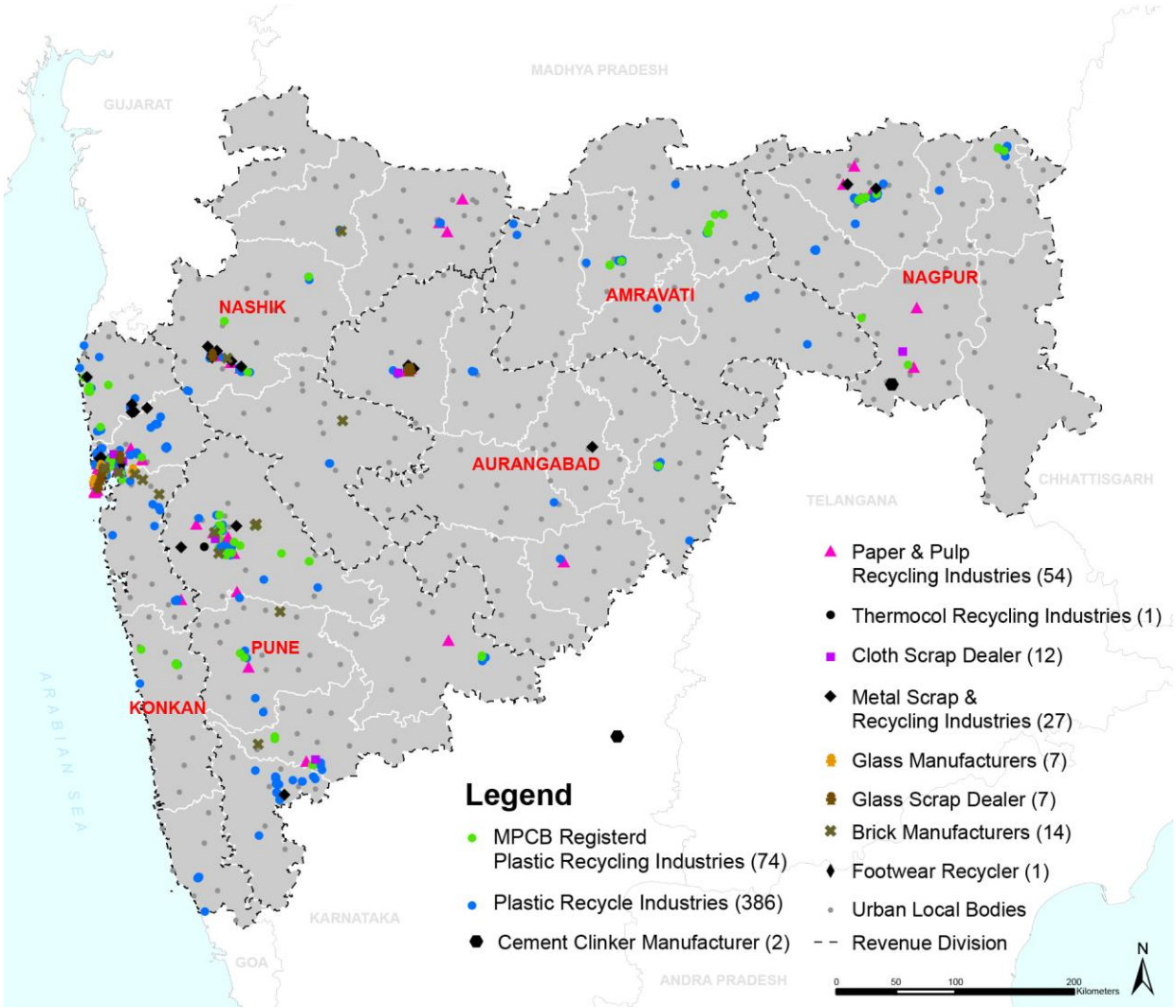
16 RECOMMENDATIONS

16.1 MARKET AVAILABILITY FOR ULBs FOR DRY WASTE MANAGEMENT

The research study, post its primary and secondary research has identified the various waste takers available for different dry waste categories within Maharashtra and has attempted to spatially map the same along with the location of the 384 ULBs and the district and division boundaries.

Map 16.1 consolidates all the possible waste takers such as recycling industries for plastic, waste glass waste, thermocol waste, footwear waste etc., as well as scrap dealers for cloth and glass.

Map 16.1: Market Availability for ULBs for Dry Waste Management



Source: Created through GIS, 2017

16.2 RECOMMENDED REVENUE GENERATION MODEL FOR ULBs

The research study, after analyzing some of the existing models of SWM especially for dry waste, suggests the following model as the most efficient, economically and environmentally sustainable and financially viable option for ULBs. Figure 1 explains the recommended model for the ULBs.

Figure 1: Recommended Revenue Generation Model

Here, the ULB has to be the key performer. Both the waste collection activity and sorting of dry waste activity should be taken care by the ULB and also take the initiative to identify the potential waste takers in and around the city and help the ULB in generating revenue through sale of recyclables. The ULB should try to sort as many dry waste categories as possible and then identify the waste takers for each. In case, for any waste category, waste takers is not available then it is encouraged to dispose it off using an incinerator. This will help the ULB in clearing its dump yard and sending as less waste as possible to the landfill.

16.3 RCUES RECOMMENDS

- Empower ULBs undertake all the responsibility to strictly implement the regulation under waste management for Segregation, Recycle and Reuse of particularly dry waste and make it marketable ULB to monitor strictly this activity
- Proper use of funds and accountability by ULBs to establish the system of scientific segregation of waste which is the product for someone so that the marketability is economically and environmentally sustainable and generate revenue for ULBs

- Establish motivational aspects and activities like promotion, awards and Rewards for Collective and Individual efforts for Waste management and developing innovative methods and technologies in Recycling, reuse and reduction of the generation
- Show case the Best Practices which are found out from our studies to be followed by ULBs and utilise their expertise for better Practices
- Give adequate and proper information to the ULBs on waste reuse and recyclers of all kind of Waste which are within Maharashtra
- Set up Warehouses for Dry waste management Category wise and provider a Centre of Exchange by barter System and Business activity to encourage Entrepreneurship among the Community while ULB being the Nodal Agency
- Propagate and make aware of Business facility Centers set up by ULBs and guiding the stakeholders
- ULBs, Citizens, Students and Stakeholders jointly undertaking extensive awareness drive on SWATCH and REUSE of Waste generated being treated as a Product
- Establish Centralized Collection system of Sanitary Land fill and avoid multiple dumping Sites.
- Convert all the Dumping Sites into SLS(Sanitary Landfill Sites) as these are MPCB approved sites and merge them to bring in SINGLE SLS for an area of 20 km radial distance where in Ware House for Dry Waste and Waste exchange Centre also be created/set up
- Form expert group to select technology suitable to different group of ULB's. and Site Selection for Disposal
- No grant shall be released to the ULB's if no provision in the plan for MSW management and no progress.
- May consider of creating authority for selecting, providing and operating the MSW facility by itself or on BOOT basis at each ULBs and states
- Speedy identification and handing over landfill and waste processing sites by State Government to concerned local bodies.
- Low cost standard models shall be made available for 'B' & 'C' class Councils.
- Provision of adequate funds to ULB for effective implementation of SWM Rules, 2016.

SECTION 6

ANNEXURES

17 ANNEXURE – I: SURVEY QUESTIONNAIRES

Questionnaire for Interviews with Local Bodies

Section I: Details of the interviewer / interviewee

1	Name of the interviewer Contact Number Email	
2	Date of the interview	

3	Name of the interviewee	
4	Designation	
5	Contact number	
6	Email id	

Section II: Details of the local body

7	Name of Local Body				
8	Name of CO				
	Contact Details				
9	Address	_____ City: _____ District: _____ Revenue Division: _____			
10	Type of Council	M. Corp	Type of Council (A/B/C)	Nagar Panchayat	Cant. Board

	(Tick the appropriate)				
11	Area in *sq. Km*		Wards		
12	Population *(Census 2011)*				
13	Total no. of households				
	Commercial units				

Section III: Details of the waste generators

(Please write the notes where ever additional details are available next to the answer)

14	**Type of Land Use**	**Quantity of waste generated (T/d)**		
		Total	**Dry**	**Wet**
	Households			
	Commercial			
	Markets			
	Slaughter house			
	Public places			
	Transportation			
	Educational Institutes			
	Small scale Industries			
	Large Industries			
	Construction & Demolition Waste			
	Hospital Waste			
	Horticulture Waste			
	Any other:			

	Total			
15	Average no. of carcass removed in a day?			
16	If dry waste is more than wet waste, explain in detail the reasons.			

Section IV: Details of Solid Waste Management

(Please write the notes where ever additional details are available next to the answer)

<table>
<tr><td>17</td><td>Does your local body have a Solid Waste Management as per state policy?</td><td colspan="5"></td></tr>
<tr><td rowspan="2">18</td><td>Whose responsibility it is to collect dry waste?</td><td colspan="2">Local Body</td><td colspan="2">Outsourced to Private</td></tr>
<tr><td>If outsourced, authorised Agency contact details</td><td colspan="4"></td></tr>
<tr><td>19</td><td>Are there any voluntary groups, NGOs/ Third party contractors engaged? (Provide details as a separate attachment)</td><td colspan="5"></td></tr>
<tr><td rowspan="4">20</td><td colspan="6">Waste Storage Depots</td></tr>
<tr><td>No.</td><td>Area
(in sq. km)</td><td>Mode of transmission</td><td>Distance from city centre in Km</td><td>Distance from Landfill site</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>How many different types of Waste Storage Depots are identified? (Name them)</td><td colspan="2">1. _____
2. _____
3. _____</td><td colspan="2">6. _____
7. _____
8. _____</td></tr>
</table>

<table>
<tr><td></td><td></td><td colspan="2">4. _____
5. _____</td><td>9. _____
10. _____</td></tr>
<tr><td rowspan="4">21</td><td rowspan="4">How many material recovery facility (MRF) / secondary storage facilities centers are available with the local body?</td><td>No.</td><td>Area
(in sq. km)</td><td>Mode of transmission</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="2">Quantity recovered (T/d)</td><td colspan="2">Quantity disposed (T/d)</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>22</td><td>Are you aware of any other material recovery facility (MRF) nearby / in your district/ division?</td><td colspan="2">Where? (Name and Distance)
_____
_____</td><td colspan="2">Do you Use it? (Yes/No)
_____
_____</td></tr>
<tr><td rowspan="5">23</td><td colspan="4">Details of landfill site:</td></tr>
<tr><td colspan="2">Area (in sq. km)</td><td colspan="2"></td></tr>
<tr><td colspan="2">How far from the city limits?</td><td colspan="2"></td></tr>
<tr><td colspan="2">Local Body/ Private / Shared</td><td colspan="2"></td></tr>
<tr><td colspan="2">Is it managed as per MPCB guidelines</td><td colspan="2"></td></tr>
</table>

24. Category of dry waste & inert waste	**Quantity of waste generated**		**Processed**	**Type of processing**	**Selling it to Industry**	**Selling it to Intermediates**	**How far it is from the local body?**	**Mode of transport**	**Money spent on transport**
	Kg/ day	*Ton/ day*	*(Yes/No)*	*(Shredding/ densifying)*	*Name and Location*	*Name and Location*	*(distance from city centre in km)*		*(in Rs.)*
1. Plastic – Shredded									
Plastic – Densified									
2. Plastic bottles									
3. Wrappers									
4. Rubber tube									
5. Tyres									
6. Thermocol									
7. Paper#									
8. Glass bottles									
9. Ceramics									

24. Category of dry waste & inert waste	**Quantity of waste generated**		**Processed**	**Type of processing**	**Selling it to Industry**	**Selling it to Intermediates**	**How far it is from the local body?**	**Mode of transport**	**Money spent on transport**
	Kg/ day	*Ton/ day*	*(Yes/No)*	*(Shredding/ densifying)*	*Name and Location*	*Name and Location*	*(distance from city centre in km)*		*(in Rs.)*
10. Clothes									
11. Cotton									
12. Jute									
13. Shoes/sandals									
14. Leather									
15. Electrical Tube									
16. Bulbs*									
17. Diaper									
18. Sanitary Napkin									
19. Metal									
20. Wood Waste									

24. Category of dry waste & inert waste	**Quantity of waste generated**		**Processed**	**Type of processing**	**Selling it to Industry**	**Selling it to Intermediates**	**How far it is from the local body?**	**Mode of transport**	**Money spent on transport**
	Kg/ day	*Ton/ day*	*(Yes/No)*	*(Shredding/ densifying)*	*Name and Location*	*Name and Location*	*(distance from city centre in km)*		*(in Rs.)*
21. Hair									
22. Foam									
23. Ash									
24. Coal									
25. Cardboard									
26. Silt									
27. Rexine bags									
28. Mix Waste									
29. Dry waste from street waste & municipal cleaning waste (Wood &Tree									

24. Category of dry waste & inert waste	**Quantity of waste generated**		**Processed**	**Type of processing**	**Selling it to Industry**	**Selling it to Intermediates**	**How far it is from the local body?**	**Mode of transport**	**Money spent on transport**
	Kg/ day	*Ton/ day*	*(Yes/No)*	*(Shredding/ densifying)*	*Name and Location*	*Name and Location*	*(distance from city centre in km)*		*(in Rs.)*
branches)									
E-Waste									
30. Mobile/ Battery/ T.V./ Computer/ Electron-ic goods									
31. Construction & Demolition Waste									

25. Category of dry waste	**Quantity stored/ stocked before being dispatched**	**Frequency of dispatch**	**Selling price**	**Any variation in the amount of dry waste generation seasonally?**	**If yes, then in which season it is high / low?**	
	(in kg)		*Rs. /Kg*	*(Yes/No)*	*High*	*Low*
1. Plastic – Shredded						
Plastic – Densified						
2. Plastic bottles						
3. Wrappers						
4. Rubber tube						
5. Tyres						
6. Thermocol						
7. Paper						
8. Glass bottles						
9. Ceramics						
10. Clothes						

25. Category of dry waste	**Quantity stored/ stocked before being dispatched**	**Frequency of dispatch**	**Selling price**	**Any variation in the amount of dry waste generation seasonally?**	**If yes, then in which season it is high / low?**	
	(in kg)		*Rs. /Kg*	*(Yes/No)*	*High*	*Low*
11. Cotton						
12. Jute						
13. Shoes/sandals						
14. Leather						
15. Electrical Tube						
16. Bulb						
17. Diaper						
18. Sanitary Napkin						
19. Metal						
20. Wood Waste						
21. Hair						
22. Foam						

25. Category of dry waste	**Quantity stored/ stocked before being dispatched**	**Frequency of dispatch**	**Selling price**	**Any variation in the amount of dry waste generation seasonally?**	**If yes, then in which season it is high / low?**	
	(in kg)		*Rs. /Kg*	*(Yes/No)*	*High*	*Low*
23. Ash						
24. Coal						
25. Cardboard						
26. Silt						
27. Rexine bags						
28. Mix Waste						
29. Dry waste from street waste & municipal cleaning waste						
E-Waste						
30. Mobile/ Battery/ T.V./ Computer/ Electronic goods						
31. C & D Waste						

Section V: Details of the financial aspects

(Please write the notes where ever additional details are available next to the answer)

26	Financial Details										
1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programmes in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential										
	b. Commercial										
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Cardboard	Cloth	Leather	Wood
	Rs./kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

(Kindly attach the budget sheet of your local body)

27	Cost of machinery *(Initial setup cost)*		
	Name	Status	Cost *(in Rs.)*
	1. Plastic Shredding Machine		
	2. Plastic Densifier		
	3. Sanitary Incinerator incl. (automation)		
	4. Weigh Bridge		
	5. Mechanical Compost (Wet Waste)		
	6. Wood Palate Mill		
	7. Landfill Site (Remaining Mix Waste)		
	8.		
	9.		
	10.		
	Total		

Section VI: Any other details

(Please write the notes where ever additional details are available next to the answer)

28	Has your local body framed byelaws considering the provisions of the Solid Waste Management Rules, 2016?				
29	Does the local body hold any inventory management?				
30	Has the local body registered any **rag pickers**?		If Yes, how many?		
	What are the incentives provided?				
31	Are there any **rag-pickers association** working with the local body?				
	If yes, how many? Provide the details. If registered, provide the details.	Name	Contact Details	Registration No.	
		1.			
		2.			
		3.			
		4.			

	In what way do they contribute?		
32	Are there any NGOs or community organisations that work with the local body?		
	If yes, how many? Provide the details.	Name	Contact Details
		1.	
		2.	
		3.	
		4.	
	In what way do they contribute?		
33	What is the linkage with local body interim finance etc.?		
34	What is the expectation of the local body to benefit by any additional information on the dry waste vendors/recyclers?		
35	What are the proposals to enhance the productivity and financial resources?		
36	Any implications of GST on the scrap dealing (Dry waste)? *(Yes/No)*		

Kindly add any other information:

18 ANNEXURE – II: CASE STUDIES

CASE STUDY 1: SANGOLA MUNICIPAL COUNCIL 'C CLASS'

Location Map

Facts & Figures

Sangola is a town with a municipal council in Solapur District. It is situated near the borders of Satara, Sangli and Solapur Districts. It is located at the intersection of state highways SH-161, SH-3, and SH-71. Sangola's economy is primarily driven by agriculture, with textile mills (including cotton), grape processing factories and sugar factories found in the area. It is famous for pomegranate production.

Area (in sq km)	**68.82**
Population (2011 Census)	48,000
Households (no.)	8,990
Commercials Units (no.)	1,500
Total Solid Waste Generated (t/d)	10
Dry Waste	5.5
Wet Waste	4.5

Photo Documentation of Sorted Dry Waste Categories

Plastic bags stored in bigger plastic bags after sorting

Sorted thermocol storage compartment

Sorted hair storage compartment

Sorted rubber tube storage compartment

Sorted glass bottles storage compartment

Sorted shoes/sandals/leather storage compartment

Sorted cloth storage compartment

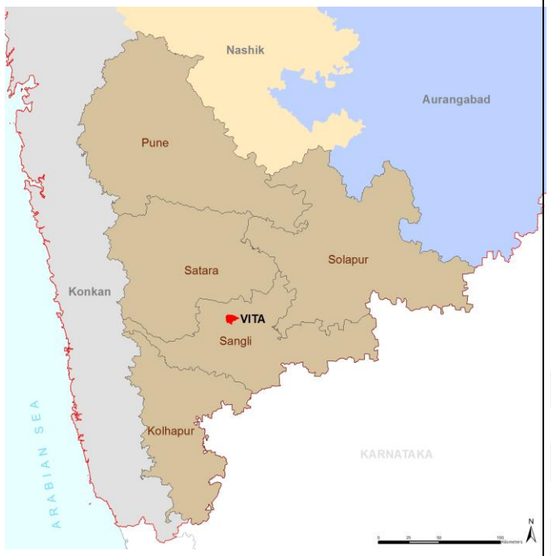
Mixed waste left in open

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	d. Vehicles Capital Cost										
	e. Fuel bill										
	f. Maintenance bill										
1.3	Disposal Facilities										
	g. Cost of dump yard										
	a. Capital cost of machinery deployed										
	h. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential										
	b. Commercial										
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 2: VITA MUNICIPAL COUNCIL 'B CLASS'

Location Map



Facts & Figures

Vita is a town and a municipal council in Sangli district. In spite of water scarcity, people in Vita have displayed entrepreneurship in Jewellery, Agriculture, Textile, Poultry farming and has MIDC which provide jobs. Vita is known to produce excellent grapes. Sugarcane and pomegranates are also produced in abundance. It is a town where 2 state highways connect with each other at 90-degree angle. The roads are well connected to the others parts of Maharashtra like Pune, Kolhapur, Solapur etc. & states like Karnataka & Andhra Pradesh. It is among few towns in Maharashtra to have signages all over the town.

Area (in sq km)	54
Population (2011 Census)	48,289
Households (no.)	11,500
Commercials Units (no.)	3,300
Total Solid Waste Generated (t/d)	15
Dry Waste	5
Wet Waste	4.3

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic for shredding

Sorted plastic for densifying

Densified plastic

Sorted shoes/sandals/leather storage compartment

Sorted paper storage compartment

Mixed waste left in open

Financial details of Solid Waste Department

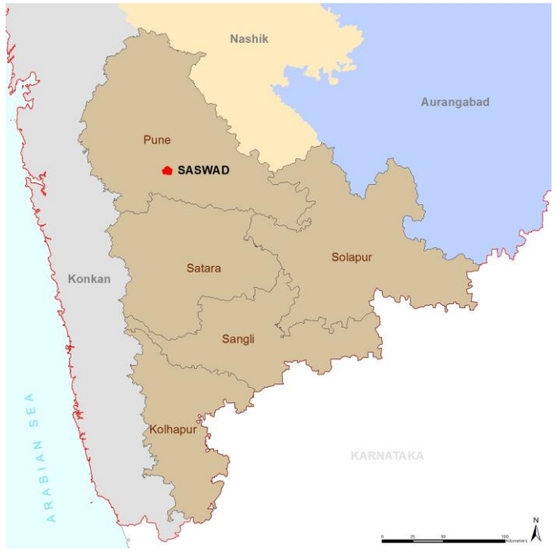
1	Operating Costs of Waste Management	
1.1	Waste collection	
	a. Driver/s emoluments	Contract basis – Rs. 7,779,453/-
0	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	
	a. Vehicles Capital Cost	
	b. Fuel bill	
	c. Maintenance bill	Rs. 1,09,080/-
1.3	Disposal Facilities	Rs. 2,491,442/-
	a. Cost of dump yard	
	b. Capital cost of machinery deployed	
	c. Employee costs in running the machinery	
1.4	Operation & Maintenance	
	a. Running cost of machinery	-
1.5	Monitoring the activities	Rs. 39,10,492
1.6	Training the Personnel	-
1.7	Awareness programs in the community	-
2	Revenue Generation	
2.1	User Charges/fees	Rs. 90,33,321/-
	a. Residential	-
	b. Commercial	-
	c. Hotels	-
2.2	Fine	-

2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg	10									
	Per month	1 Ton									

2.4	Sale of compost	Rs. 53,000/- (Rs. 4/- per kg)
2.5	Waste to Energy	-
2.6	Biogas generation	-

CASE STUDY 3: SASWAD MUNICIPAL COUNCIL 'C CLASS'

Location Map



Facts & Figures

Saswad is a city and a municipal council in the Pune district of Maharashtra. It is situated on the banks of Karha River and is a place with long history. It was on the ancient trade route connecting the coastal Konkan ports to the Deccan interiors. Being on a trade route also made it a center for Buddhist Monasteries. Saswad is just 25 km away from Pune city.

Area (in sq km)	22.5
Population (2011 Census)	31,829
Households (no.)	7,500
Commercials Units (no.)	3,000
Total Solid Waste Generated (t/d)	11.3
Dry Waste	5.08
Wet Waste	6.2

Photo Documentation of Sorted Dry Waste Categories

Trucking loaded with plastic waste leaving for Malegaon

Sorted plastic bottles storage compartment

Sorted waste cloth and footwear storage

Sorted plastic bottles storage compartment

Financial details of Solid Waste Department

1	Operating Costs of Waste Management	
1.1	Waste collection	Rs. 1,289,195/- per month
	a. Driver/s emoluments	
	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	
	a. Vehicles Capital Cost	Rs. 3,000,000/- (5 bolero, 1 Tractor & 1 Compactor)
	b. Fuel bill	Rs. 275,000/- per month
	c. Maintenance bill	Rs. 20,000/- per month
1.3	Disposal Facilities	
	a. Cost of dump yard	Land Cost- Rs. 1,800,000
	b. Capital cost of machinery deployed	Rs. 10,500,000/-
	c. Employee costs in running the machinery	Rs. 91,000/- per month
1.4	Operation & Maintenance	
	a. Running cost of machinery	Rs. 2,00,000/- per month
1.5	Monitoring the activities	Cost including in 1.3 (c)
1.6	Training the Personnel	Cost including in 1.3 (c)
1.7	Awareness programs in the community	Rs. 1,84,000/- per month
2	Revenue Generation	
2.1	User Charges/fees	
	a. Residential	Rs. 30 per property per month Rs. 2,796,840/-
	b. Commercial	Rs. 100 per property per month Rs. 229,200/-
	c. Hotels	Rs. 500 per property per month Rs. 186,000/-
	d. Mix	Rs. 500 per property per month Rs. 2,616,000/-
2.2	Fine	Rs. 30,000/- for the year
2.3	Sale of recyclables	

	Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
Rs/kg	2	8	1	0.5	15	3	5	0.5	0.5	2.5
Per month	80,000	1,20,000	3,560	4,000	30,000	60,000	69,500	4,705	500	500

2.4	Sale of compost	Rs. 1,20,000/- per month
2.5	Waste to Energy	-
2.6	Biogas generation	-

CASE STUDY 4: SANGAMNER MUNICIPAL COUNCIL 'B CLASS'

Location Map

Facts & Figures

Sangamner is a city and a municipal council located in the Ahmednagar District. Situated on the Pravara River, it is one of the most developed cities in the area. The city got its name because it is on the site of the sangam (confluence) of three rivers in the area: Pravara, Mhalungi, and Mahanuti. Industries include a cloth market, educational facilities, a sugar factory, agriculture, and tobacco products.

Area (in sq km)		6.30
Population (2011 Census)		65,804
Households (no.)		14,000
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		25
	Dry Waste	6.27
	Wet Waste	15.27

Photo Documentation of Sorted Dry Waste Categories

Mixed waste left in open in the dump yard

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection							Rs. 12 Lakh/ month			
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential							Rs. 20			
	b. Commercial							Rs. 100			
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost							Rs. 7/kg in 50kgs bags			
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 5: TRIAMBAK MUNICIPAL COUNCIL 'C CLASS'

Location Map

Facts & Figures

Triambak is a city and a municipal council located in the Nashik District. The village of Triambak is 36 km from Nashik and is famous for the Trimbakeshwar Temple and as the source of the Godavari River. It attracts close to 45,000 floating population per day.

Area (in sq km)	13.89
Population (2011 Census)	13,383
Households (no.)	
Commercials Units (no.)	
Total Solid Waste Generated (t/d)	6
Dry Waste	2
Wet Waste	4

Photo Documentation of Sorted Dry Waste Categories

Separate compartment for storing the cloth waste

Separate compartment for storing the plastic waste

Financial details of Solid Waste Department

1	Operating Costs of Waste Management	
1.1	Waste collection	
	a. Driver/s emoluments	
	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	Rs. 24 Lakhs
	a. Vehicles Capital Cost	
	b. Fuel bill	
	c. Maintenance bill	
1.3	Disposal Facilities	
	a. Cost of dump yard	
	b. Capital cost of machinery deployed	
	c. Employee costs in running the machinery	
1.4	Operation & Maintenance	
	a. Running cost of machinery	
1.5	Monitoring the activities	
1.6	Training the Personnel	
1.7	Awareness programs in the community	Rs. 1 Lakh
2	Revenue Generation	
2.1	User Charges/fees	Rs. 6 Lakhs
	a. Residential	
	b. Commercial	
	c. Hotels	
2.2	Fine	
2.3	Sale of recyclables	

	Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
Rs/kg										
Per month										

2.4	Sale of compost	
2.5	Waste to Energy	
2.6	Biogas generation	

CASE STUDY 6: MALEGAON MUNICIPAL CORPORATION 'D CLASS'

Location Map

Facts & Figures

Malegaon is a city and Municipal Corporation in Nashik District. It is the second largest city of North Maharashtra & after the Nashik city itself. It is at the confluence of two Rivers: the Mausam and Girna Rivers. Malegaon is major hub for cloth weaving using early 20th century power looms. Malegaon is also a regional centre for PVC pipes.

Area (in sq km)	
Population (2011 Census)	5,76,425
Households (no.)	
Commercials Units (no.)	
Total Solid Waste Generated (t/d)	
Dry Waste	
Wet Waste	

Photo Documentation of Sorted Dry Waste Categories

Sorted shoes/sandal waste	Sorted glass bottles and broken glass waste	Coconut waste	Dump yard without any fencing/walls

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential										
	b. Commercial										
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 7: AURANGABAD MUNICIPAL CORPORATION

Location Map

Facts & Figures

Aurangabad is the fifth largest city in the Aurangabad district of Maharashtra state. It is the Tourism Capital of Maharashtra. The city is a tourism hub, surrounded by many historical monuments, including the Ajanta Caves and Ellora Caves, which are UNESCO World Heritage Sites, as well as Bibi Ka Maqbara and Panchakki.

Area (in sq km)		
Population (2011 Census)		1,175,116
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		182.4
	Dry Waste	28.77
	Wet Waste	153.63

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic and paper waste

Disposable plastic waste

Dry Waste Sorting Center

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential										
	b. Commercial										
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 8: VAIJAPUR MUNICIPAL COUNCIL 'C CLASS'

Location Map

Facts & Figures

Vaijapur is a city and a municipal council in Aurangabad district in the Indian state of Maharashtra. It is bordered by Nashik district to the west, Kannad tehsil to the north, Gangapur tehsil to the east, and Ahmednagar districts to the south. Vaijapur is the headquarters of Vaijapur tehsil and also known as the Gateway of Marathwada.

Area (in sq km)		
Population (2011 Census)		41,296
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		2.56
	Dry Waste	0.83
	Wet Waste	1.73

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic waste before packing

Sorted plastic waste

Sorted thermocol waste

Dump yard

Financial details of Solid Waste Department

1	Operating Costs of Waste Management	
1.1	Waste collection	
	a. Driver/s emoluments	
	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	
	a. Vehicles Capital Cost	
	b. Fuel bill	
	c. Maintenance bill	
1.3	Disposal Facilities	
	a. Cost of dump yard	
	b. Capital cost of machinery deployed	
	c. Employee costs in running the machinery	
1.4	Operation & Maintenance	
	a. Running cost of machinery	
1.5	Monitoring the activities	
1.6	Training the Personnel	
1.7	Awareness programs in the community	
2	Revenue Generation	
2.1	User Charges/fees	
	a. Residential	
	b. Commercial	
	c. Hotels	
2.2	Fine	
2.3	Sale of recyclables	

	Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
Rs/kg										
Per month										

2.4	Sale of compost	
2.5	Waste to Energy	
2.6	Biogas generation	

CASE STUDY 9: BALLARPUR MUNICIPAL COUNCIL 'B CLASS'

Location Map

Facts & Figures

Ballarpur is a city and a municipal council in Chandrapur district. The city is also one of the large industrial areas of the region. It is the second largest town in the district. Ballarpur has a good connectivity to Nagpur through MH SH 264. The nearest airport is in Nagpur. Western Coalfields Limited (WCL) has many coal-mines around Ballarpur. The surrounding region is rich with bamboo plantations. Ballarpur Industries Limited, the largest manufacturers of writing and printing paper in India, has its flagship unit at Ballarpur.

Area (in sq km)		
Population (2011 Census)		89,452
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		25
	Dry Waste	4
	Wet Waste	21

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic bottles waste

Sorted footwear waste

Sorted glass bottles

Sorted plastic bags and wrappers

Sorted jute bags waste

Sorted plastic cement bags waste

Remaining multilayered plastic waste

Financial details of Solid Waste Department

1	Operating Costs of Waste Management	
1.1	Waste collection	
	a. Driver/s emoluments	
	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	
	a. Vehicles Capital Cost	
	b. Fuel bill	
	c. Maintenance bill	
1.3	Disposal Facilities	
	a. Cost of dump yard	
	b. Capital cost of machinery deployed	
	c. Employee costs in running the machinery	
1.4	Operation & Maintenance	
	a. Running cost of machinery	
1.5	Monitoring the activities	
1.6	Training the Personnel	
1.7	Awareness programs in the community	
2	Revenue Generation	
2.1	User Charges/fees	
	a. Residential	
	b. Commercial	
	c. Hotels	
2.2	Fine	
2.3	Sale of recyclables	

	Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
Rs/kg										
Per month										

2.4	Sale of compost	
2.5	Waste to Energy	
2.6	Biogas generation	

CASE STUDY 10: CHANDRAPUR MUNICIPAL CORPORATION 'D CLASS'

Location Map

Facts & Figures

Chandrapur is a municipality in Chandrapur district. The city is situated at the confluence of the Irai and Zarpat rivers. The area around the city is rich in coal seams. Hence, Chandrapur is known as "black gold city". Chandrapur is a centre for coal mining. Other industries include cement making, paper manufacturing, and ferro alloy manufacturing. The Chandrapur Super Thermal Power Station, a 3,340 MW power station complex which is owned by the Maharashtra State Power Generation Company Limited, occupies an area of 12,212 hectares (122.12 km2) about 6 kilometres (3.7 mi) from the city.

Area (in sq km)		
Population (2011 Census)		3,20,379
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		143.92
	Dry Waste	78.74
	Wet Waste	59.72

Photo Documentation of Sorted Dry Waste Categories

Separate place to dump wet waste

Separate place to dump dry waste

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	d. Residential										
	e. Commercial										
	f. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 11: WARORA MUNICIPAL COUNCIL

Location Map

Facts & Figures

Warora is a dream city and municipal council in Chandrapur district. During the British Raj, the town was part of the Central Provinces and was a coal-mining center.The work place of famous social worker Baba Amte 'ANANDWAN' is situated in warora.

Area (in sq km)		
Population (2011 Census)		46,000
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		13
	Dry Waste	4.7
	Wet Waste	8.3

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic bags waste

board

aste

Financial details of Solid Waste Department

1	Operating Costs of Waste Management	
1.1	Waste collection	
	a. Driver/s emoluments	
	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	
	a. Vehicles Capital Cost	
	b. Fuel bill	
	c. Maintenance bill	
1.3	Disposal Facilities	
	a. Cost of dump yard	
	b. Capital cost of machinery deployed	
	c. Employee costs in running the machinery	
1.4	Operation & Maintenance	
	a. Running cost of machinery	
1.5	Monitoring the activities	
1.6	Training the Personnel	
1.7	Awareness programs in the community	
2	Revenue Generation	
2.1	User Charges/fees	
	a. Residential	
	b. Commercial	
	c. Hotels	
2.2	Fine	
2.3	Sale of recyclables	

	Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
Rs/kg										
Per month										

2.4	Sale of compost	
2.5	Waste to Energy	
2.6	Biogas generation	

CASE STUDY 12: AMRAVATI MUNICIPAL CORPORATION

Location Map

Facts & Figures

Amravati is a city and Municipal Corporation. Amravati is the 2nd most populous metropolitan city of Vidharbh after Nagpur. It is the 6th most populous metropolitan area in the state of Maharashtra. It is the administrative headquarters of the Amravati district.

Area (in sq km)	
Population (2011 Census)	6,47,057
Households (no.)	
Commercials Units (no.)	
Total Solid Waste Generated (t/d)	396
Dry Waste	237
Wet Waste	158

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic waste

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	d. Driver/s emoluments										
	e. Collection personnel emoluments										
	f. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	d. Vehicles Capital Cost										
	e. Fuel bill										
	f. Maintenance bill										
1.3	Disposal Facilities										
	d. Cost of dump yard										
	e. Capital cost of machinery deployed										
	f. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	b. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	d. Residential										
	e. Commercial										
	f. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 13: SHEGAON MUNICIPAL COUNCIL

Location Map

Facts & Figures

Shegaon is a town and a municipal council in Buldana district. Shegaon has gained renown as a pilgrimage center, since Shri Sant Gajanan Maharaj, a saint, lived there. Shegaon has traditionally been a big market for cotton. Shegaon also has engineering industries that manufacture material handling equipment like chain pulley blocks, industrial cranes, and link chain. Shegaon has a mineral water bottling plant, oil mills, paint manufacturing and other industries. Shegaon is located around 300 km west from the city of Nagpur and 550 km east from the city of Mumbai.

Area (in sq km)		
Population (2011 Census)		59,750
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		17.91
	Dry Waste	10.9
	Wet Waste	7

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic bottles waste

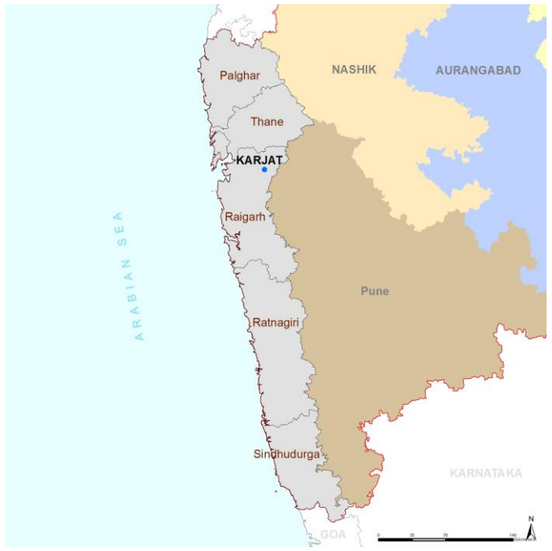
Sorted cloth waste

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential										
	b. Commercial										
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 14: KARJAT MUNICIPAL COUNCIL 'C CLASS'

Location Map



Facts & Figures

Karjat is a town administered under a Municipal Council in Raigad district. Karjat is also a part of a Mumbai Metropolitan City. It is a rapidly developing city of a Raigad district which is well connected to the Panvel, Mumbai, Thane and Pune. Tourism, Adventure Sports, Higher Education, Film Shooting, Retailing, Nurseries & Plantation and Spa Hospitality are the main occupations.

Area (in sq km)	
Population (2011 Census)	29,663
Households (no.)	
Commercials Units (no.)	
Total Solid Waste Generated (t/d)	12
Dry Waste	4
Wet Waste	8

Photo Documentation of Sorted Dry Waste Categories

Sorted plastic waste

Sorted thermocol waste

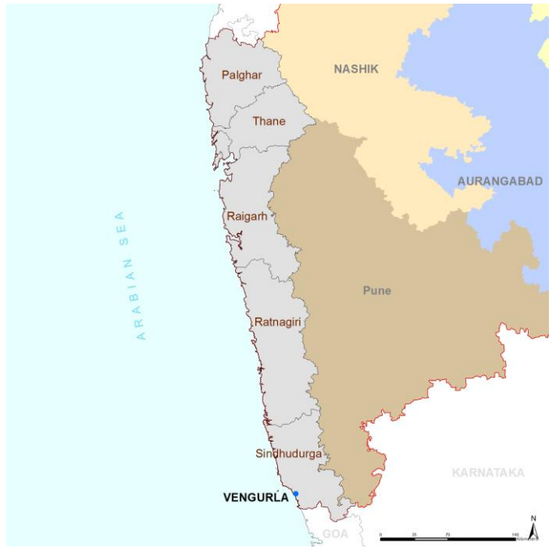
Construction of compartments for waste storage

Financial details of Solid Waste Department

1	Operating Costs of Waste Management										
1.1	Waste collection										
	a. Driver/s emoluments										
	b. Collection personnel emoluments										
	c. Emoluments of Municipal staff involved in SWM										
1.2	Waste transportation										
	a. Vehicles Capital Cost										
	b. Fuel bill										
	c. Maintenance bill										
1.3	Disposal Facilities										
	a. Cost of dump yard										
	b. Capital cost of machinery deployed										
	c. Employee costs in running the machinery										
1.4	Operation & Maintenance										
	a. Running cost of machinery										
1.5	Monitoring the activities										
1.6	Training the Personnel										
1.7	Awareness programs in the community										
2	Revenue Generation										
2.1	User Charges/fees										
	a. Residential										
	b. Commercial										
	c. Hotels										
2.2	Fine										
2.3	Sale of recyclables										
		Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
	Rs/kg										
	Per month										
2.4	Sale of compost										
2.5	Waste to Energy										
2.6	Biogas generation										

CASE STUDY 15: VENGURLA MUNICIPAL COUNCIL 'C CLASS'

Location Map



Facts & Figures

Vengurla is a town in Sindhudurg district of Konkan Division, north of Goa. It is surrounded by a semicircular range of hills in the North, East, and the South while the Arabian Sea is located on its West. Being a natural port, commercial centre was initially established during 1665 by Dutch traders and subsequently by British rulers. Signs of Dutch - British rulers are present in the city even today. The city has good road network & drainage system, market, commercial and office buildings, Municipal Council, Hospitals, parks etc. which was developed by British rulers. The 130-year-old Vengurla Municipal Council is one of the oldest Municipal Council in Maharashtra State.

Area (in sq km)		12.98
Population (2011 Census)		12,932
Households (no.)		
Commercials Units (no.)		
Total Solid Waste Generated (t/d)		7
	Dry Waste	4.5
	Wet Waste	2.5

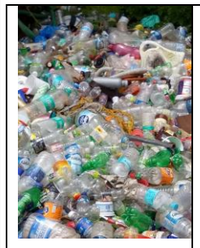
Financial details of Solid Waste Department

1	Operating Costs of Waste Management	
1.1	Waste collection	Rs 60,000-70,000/month
	a. Driver/s emoluments	
	b. Collection personnel emoluments	
	c. Emoluments of Municipal staff involved in SWM	
1.2	Waste transportation	
	a. Vehicles Capital Cost	
	b. Fuel bill	
	c. Maintenance bill	
1.3	Disposal Facilities	
	a. Cost of dump yard	
	b. Capital cost of machinery deployed	Rs 1 crore
	c. Employee costs in running the machinery	
1.4	Operation & Maintenance	
	a. Running cost of machinery	Rs. 35,000/month
1.5	Monitoring the activities	
1.6	Training the Personnel	
1.7	Awareness programs in the community	
2	Revenue Generation	
2.1	User Charges/fees	Rs. 83,333 /month
	a. Residential	
	b. Commercial	
	c. Hotels	
2.2	Fine	Rs. 833/month
2.3	Sale of recyclables	

	Plastic	Plastic bottle	Glass bottle	Broken glass	Metal	Paper	Card-board	Cloth	Leather	Wood
Rs/kg	15									
Per month										

2.4	Sale of compost	Rs. 1.5 lakh/ month
2.5	Waste to Energy	
2.6	Biogas generation	

Photo Documentation of Sorted Dry Waste Categories



Sorted plastic bottles waste

Sorted tube light waste

Sorted cloth waste

Sorted Plastic Waste

Sorted Coconut Waste

Dump Yard

19 ANNEXURE – III: LIST OF PLASTIC RECYCLING INDUSTRIES REGISTERED BY MPCB IN MAHARASHTRA

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
1	New Pack Industries, 4 Janta Industrial Compound, Opp. Phoenix Mill , SB Marg, Lower Parel, Mumbai	0.42	Greater Mumbai M Corp.	108.25	Uran M Council (C)	0.13	Panvel M Corp.	10.81
							Thane M Corp.	17.67
							Navi Mumbai M Corp.	8.65
2	Polygenta Technologies Ltd, Gat No. 265/1, 266, Village Avankhed, Tal : Dindori, Dist. Nashik - 422201	70.0	Dindori NNP	0.05			Nashik M Corp.	14.93
3	Selection Ply-N-Wood, Pune	2.33	Pimpri Chinchwad M Corp.	9.53	Chakan M Council (B)	0.49	Rajguru Nagar NNP	0.08
			Alandi M Council (C)	0.14	Pune M Corp.	29.48		
					Talegaon Dabhade M Council (B)	0.26		
					Palghar M Council (B)	0.27	Vikramgad NNP	0.02
4	M/s. Neil Extrulamipack Pvt. Ltd., Gat No. 304, Survey no. 61, Vill- Dhansar New Satpati Road	58.33	Palghar M Council (B)	0.27				

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
5	M/s. Jill Plast, 29, Jamnadas Ind. Estate, Dr. R.P. Road, Mulund (W), Mumbai M/s. Jill Plast, Gala No. 31, Jamnadas Ind. Estate, Opp. Jawahar Talkies, Mulund (W), Mumbai.	0.19	Thane M Corp.	17.67	Kalyan Dombivali M Corp	13.06	Ambarnath M Council (A)	1.40
					Mira Bhayamndar M Corp	8.81	Badlapur M Council (B)	1.29
					Bhiwandi Nizampur M Corp.	4.66	Greater Mumbai M Corp.	108.25
							Navi Mumbai M Corp.	8.65
							Panvel M Corp.	10.81
							Ulhasnagar M Corp.	3.36
							Vasai Virar M Corp.	13.40
5	M/s. Arun Flexo Printers, B-118, Sussex, Industrial Estate, Dadoji Kondeo Cross Marg, Byculla Mumbai	0.18	Greater Mumbai M Corp.	108.25	Uran M Council (C)	0.13	Thane M Corp.	17.67
							Panvel M Corp.	10.81
							Navi Mumbai M Corp.	8.65
7	M/s. Pradeep polyflex Pvt. Ltd., gat. No. 218, Vill: Mhalunge, Tal: Khed, Dist. Pune.	4.90	Chakan M Council (B)	0.49	Alandi M Council (C)	0.14	Pune M Corp.	29.48
					Pimpri Chinchwad M Corp.	9.53		
					Rajgurunagar NNP	0.08		

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
					Talegaon DabhadeM Council (B)	0.26		
8	Vista Film Packaging-Division of Positive Packaging Ind. Ltd. B-84, Additional MIDC, Ambernath, Dist. Thane.	16.33						
9	M/s. Vibgyor Poly Print, Gala No. 12, Gr. Floor, Ashoka Industrial Estate, LBS Marg, Mulund (W), Mumbai	0.28	Thane M Corp.	17.67	Navi Mumbai M Corp.	8.65	Ambarnath M Council (A)	1.40
					Mira Bhayendar M Corp.	8.81	Greater Mumbai M Corp.	108.25
					Bhiwandi Nizampur M Corp.	4.66	Kalyan Dombivali M Corp.	13.06
							Panvel M Corp.	10.81
							Ulhasnagar M Corp.	3.36
							Vasai Virar M Corp.	13.40
10	M/s Parakh Agro Industries Ltd. Gat. No. 45-1/2/3, Village Bhandgaon, Tal : Daund, Dist. Pune	14.0					Daund M Council (B)	0.22
							Jejuri M Council (C)	0.07
11	M/s Suvidhi Plasto Pack Pvt. Ltd. P. No. 17, Shed No. 9, Dewan & Sons Industrial Estate, Village : Mahim, Tal : Palghar, Dist. Thane	0.58	Palghar M Council (B)	0.27				
12	M/s. Swastik Plasto, A/19, STICE Musal- gaon, Tal:	0.28	Sinnar M Council (C)	0.31			Bhagur M Council (C)	0.05

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
	Sinner, Dist. Nashik.						Niphad NNP	0.05
13	M/s Super Poly Print Gala No. 1, Samrat Silk Mills Compound, LBS Marg, Vikhroli (W), Mumbai 400079	0.12			Navi Mumbai M Corp.	8.65	Bhiwandi Nizampur M Corp.	4.66
					Thane M Corp.	17.67	Greater Mumbai M Corp.	108.25
							Kalyan Dombivali M Corp.	13.06
							Mira Bhayandar M Corp.	8.81
							Panvel M Corp.	10.81
							Uran M Council (C)	0.13
							Ulhasnagar M Corp.	3.36
14	M/s Bansal Plastopack Pvt. Ltd. Gat. No. 201/216/217/218, Mhalunge, Tal : Khed, Dist. Pune	4.90	Chakan M Council (B)	0.49	Pimpri Chinchwad M Corp.	9.53	Pune M Corp.	29.48
					Alandi M Council (C)	0.14		
					Rajgurunagar NNP	0.08		
					Talegaon Dabhade M Council (B)	0.26		
15	M/s Plastomatic Industries, Plot No.S-12, MIDC Hingna	0.58	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
	Road, Nagpur		Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
16	M/s Grip Tight Shrink Films Pvt. Ltd. Plot No. F-9/19/2, MIDC Hingna Road, Nagpur-16	0.23	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
17	M/s Sudarshan Plastics, P. No. K-42, MIDC, Hingna Road, Nagpur – 16	2.33	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
18	M/s Pooja Packwell (India) Pvt. Ltd. Plot No. M-25, Hingna Road, Nagpur.	14.0	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
19	M/s Cargill India Pvt. Ltd. P. No. E-45, MIDC Kurkumbh,	3.69	Daund M Council (B)	0.22			Shrigonda M Council (C)	0.14

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
	Tal : Daund, Dist. Pune						Baramati M Council (B)	0.50
20	M/s Anand Plast W-33, MIDC, Amravati – 444607	0.47	Amravati M Corp.	3.80	Bhatakuli NNP	0.02	Chandur Railway Nagar M Council (C)	0.11
							Nandgaon Khandeshwar NNP	0.06
21	M/s D. K. Industries P. No. B-8, MIDC, Amravati, Tal & Dist.: Amravati.	0.19	Amravati M Corp.	3.80	Bhatakuli NNP	0.02	Chandur Railway Nagar M Council (C)	0.1
							Nandgaon Khandeshwar NNP	0.06
22	M/s. Anand Industries, Plot No. W - 50, MIDC Hingana, Nagpur	0.05	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
23	M/s. Flowell Plastic Industries, S.No. 13, , Kalambeshwar Tq & Dist. Akola	0.14	Akola M Corp.	2.75	Balapur M Council (C)	0.19	Patur M Council (C)	0.09
					Barshi Takli M Council (C)	0.05		
24	M/s. Parekhplast India Limited, Plot No. 51, P.I.D.C. Palghar, Dist. Thane.	2.8			Palghar M Council (B)	0.27		
25	M/s. Sejpal Plastics Pvt.Ltd. Plot No. C - 453, MIDC road, T.T.C. Industrial Area, Turbhe,	0.03	Navi Mumbai M Corp.	8.65	Panvel M Corp.	10.81	Ambarnath M Council (A)	1.40

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
	Navi Mumbai - 400 705				Thane M Corp.	17.67	Badlapur M Council (B)	1.29
							Greater Mumbai M Corp.	108.25
							Uran M Council (C)	0.13
							Matheran M Council (C)	
							Ulhasnagar M Corp.	3.36
							Bhiwandi Nizampur M Corp.	4.66
							Kalyan Dombivali M Corp.	13.06
26	Ms/ Mr. Naaz Plastic, Plot No A/74 MIDC, Anand Nagar Ambernath Thane.	0.86	Ambarnath M Council (A)	1.40	Bhiwandi Nizampur M Corp.	4.66	Matheran M Council (C)	0.02
			Badlapur M Council (B)	1.29			Murbad NNP	0.06
			Kalyan Dombivali M Corp.	13.06			Navi Mumbai M Corp.	8.65
							Panvel M Corp.	10.81
							Thane M Corp.	17.67
27	M/s. Shree Gajanand Plastics Pvt Ltd. T-23, & T-30 MIDC	1.28	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Parsivni NNP	0.02

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
	Area, Hingna Road, Nagpur		Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25	Kamptee M Council (B)	0.38	Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
28	M/s J. J. Plastic 112, K. K. Gupta Industrial Estate, Opp. Jawahar Talkies, Dr. R. P. Road, Mulund (W), Mumbai 400080	0.23	Thane M Corp.	17.67	Kalyan Dombivali M Corp.	13.06	Ambarnath M Council (A)	1.40
					Mira Bhayandar M Corp.	8.81	Badlapur M Council (B)	
					Bhiwandi Nizampur M Corp.	4.66	Greater Mumbai M Corp.	108.25
							Navi Mumbai M Corp.	8.65
							Panvel M Corp.	10.81
							Ulhasnagar M Corp.	3.36
							Vasai Virar M Corp.	13.40
29	M/s Easy Packs Plastics Pvt. Ltd. D/5/6, TTC Industrial Area, Turbhe, Navi Mumbai 400705	0.21	Navi Mumbai M Corp.	8.65	Panvel M Corp.	10.81	Ambarnath M Council (A)	1.40
					Thane M Corp.	17.67	Badlapur M Council (B)	1.29
							Bhiwandi Nizampur M Corp.	4.66

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
							Greater Mumbai M Corp.	108.25
							Kalyan Dombivali M Corp.	13.06
							Matheran M Council (C)	0.02
							Ulhasnagar M Corp.	3.36
							Uran M Council (C)	0.13
30	M/s Pioneer Packaging S No. 27/9/A, Kondwa Bk. Pune – 411048.	0.09	Pune M Corp.	29.48	Saswad M Council (C)	0.15	Alandi M Council (C)	0.14
							Pimpri Chinchwad M Corp.	9.53
31	M/s Mohit Industry, C-24, Add. MIDC Nandgaon Peth, Tq. & Dist : Amravati	0.23			Amravati M Corp	3.80	Chandur Railway Nagar M Council (C)	0.11
							Chandurbazar M Council (C)	0.08
							Bhatakuli NNP	0.02
							Teosa NNP	0.04
32	M/s Manish Plast F-2/1, MIDC Amravati – 444603	0.47	Amravati M Corp.	3.80	Bhatakuli NNP	0.02	Chandur Railway Nagar M Council (C)	0.11
							Nandgaon Khandeshwar NNP	0.06

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
33	M/s Rathi Industries, S. No. 27, Plot No. 8, Bushani Industrial Estate, Near Somji Bus Stop, Kondhwa BK, Pune-48	0.19	Pune M Corp.	29.48	Saswad M Council (C)	0.15	Alandi M Council (C)	0.14
							Pimpiri Chinchwad M Corp.	9.53
34	M/s Poly Films Industries P. No. M-28, MIDC, Hingna Road, Nagpur	0.07	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
35	M/s Dineshchandra Vithaldas & Co. S No. 14, Opp. Petrol Pump, Kondwa Bk. Pune	0.11	Pune M Corp.	29.48	Pimpiri Chinchwad M Corp.	9.53	Alandi M Council (C)	0.14
					Saswad M Council (C)	0.15		
36	M/s Perfect Packaging, S.No. 13, Kalambeshwar, Tq & Dist Akola	0.04	Akola M Corp.	2.75	Balapur M Council (C)	0.19	Patur M Council (C)	0.09
					Barshi Takli NNP	0.05		
37	M/s Laxbro Manufacturing Co., W-53, MIDC, Bhosari, Pune-411026	0.02	Alandi M Council (C)	0.14	Chakan M Council (B)	0.49	Rajguru Nagar NNP	0.08
			Pimpri Chinchwad M Corp.	9.53	Pune M Corp.	29.48		
					Talegaon Dabhade M Council (B)	0.26		

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
38	M/s Balajee Plastics P. No. C-32, MIDC Hingna Road, Nagpur	0.70	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
39	M/s. Khatu Chemicals, W - 2, MIDC Lote Parshuram, Tal: Khed, Dist. Ratnagiri	0.32			Chiplun M Council (B)	0.23		
					Khed M Council (C)	0.08		
40	M/s Yogi Plastics Plot No. H-9, MIDC Kupwad Dist. : Sangli 416436	0.28	Jaysingpur M Council (B)	0.20	Kurundvad M Council (C)	0.09	Ashta M Council (C)	0.15
			Sangli Miraj Kupwad M Corp.	2.84			Ichalkaranji M Council (A)	1.50
							Tasgaon M Council (C)	0.16
							Vadgaon Kasba M Council (C)	0.12
41	M/s. Tejas Industries, E-14, MIDC, Islampur, Tal: Walwa, Dist. Sangli.	0.15	Uran Islampur M Council (B)	0.29	Ashta M Council (C)	0.15	Kadegaon NNP	0.03
					Palus NNP	0.07	Karad M Council (B)	0.34
					Shirala NNP	0.04	Malkapur NP	0.02

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
							Vadgaon Kasba M Council (C)	0.12
42	M/s Jaideep Plastics Sr. No. 9/1+2A/2, Karanje Tarf, Molacha Odha, Satara-415001	--	Satara M Council (A)	0.52	Koregaon NNP	0.05	Rahimatpur M Council (C)	0.08
					Medha NNP		Wai M Council (C)	0.18
43	M/s. Perfect Plastics, E-3/1 Old MIDC, Satara	0.14	Satara M Council (A)	0.52	Koregaon NNP	0.05	Rahimatpur M Council (C)	0.08
							Medha NNP	0.02
44	M/s Sonhira Plastic Industries E-32, MIDC Islampur Tal : Walwa, Dist : Sangli - 415409	1.05	Uran Islampur M Council (B)	0.29	Ashta M Council (C)	0.15	Kadegaon NNP	0.03
					Palus NNP	0.07	Karad M Council (B)	0.34
					Shirala NNP	0.04	Malkapur NP	0.02
							Vadgaon Kasba M Council (C)	0.12
45	M/s Creative Plastics Pvt. Ltd. G-3/8 MIDC Ind. Area, Tarapur, Boisar Dist : Thane - 401506	1.05			Palghar M Council (B)	0.27	Dahanu M Council (B)	0.22
46	M/s. Tirupati Packaging, 86, Vishal Industrial Estate Village Road, Opp. Ceat Tyres, Bhandup (W), Mumbai - 400 078.	0.23	Thane M Corp.	17.67	Navi Mumbai M Corp.	8.65	Ambernath M Council (A)	1.40
					Mira Bhayendar M Corp.	8.81	Ulhasnagar M Corp.	3.36
							Kalyan Dombivali M	13.06

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
							Corp.	
							Vasai Virar M Corp.	13.40
							Bhiwandi Nizampur M Corp.	4.66
							Greater Mumbai M Corp.	108.25
							Panvel M Corp.	10.81
47	M/s. Roto Plast, 23 Creacent Ind. Estate, Kanjur Village road, Kanjur Marg, (E), Mumbai - 400 042.	5.6	Thane M Corp.	17.67	Navi Mumbai M Corp.	8.65	Ambernath M Council (A)	1.40
							Ulhasnagar M Corp.	3.36
							Kalyan Dombivali M Corp.	13.06
							Mira Bhayendar M Corp.	8.81
							Bhiwandi Nizampur M Corp.	4.66
							Greater Mumbai M Corp.	108.25
							Panvel M Corp.	10.81
							Uran M Council (C)	0.13

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
48	M/s. Popular Industries, Plot No. U-93, MIDC Area, Hinhna Road, Nagpur.	0.51	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25	Nagpur M Corp.	13.11	Mohpa M Council (C)	0.03
49	M/s. Polyfab Plastic Industries, 2/14, Lalwani Indl. Estate, G. D. Ambekar Marg, Wadala, Mumbai - 400 031.	0.35	Greater Mumbai M Corp.	108.25	Navi Mumbai M Corp.	8.65	Panvel M Corp.	10.81
					Uran M Council (C)	0.13	Thane M Corp.	17.67
50	M/s. Wondwerseal Packaging W-31, MIDC-III, Akola	0.22	Akola M Corp.	2.75	Barshi Takli NNP	0.02	Patur M Council (C)	0.09
51	M/s. Venkatesh Plastics, S. No. 157, Majri, Tal: Haveli, Dist. Pune.	0.23			Alandi M Council (C)	0.14	Chakan M Council (B)	0.49
					Pune M Corp.	29.48	Pimpri Chinchwad M Corp.	9.53
					Saswad M Council (C)	0.15		
52	M/s. Mahavir Plastics, Plot No. D -22, MIDC Industrial Area, Hingna Road, Nagpur - 440 028.	0.58	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
53	M/s. Trimurti Plastic s, A - 19, MIDC, Walane, Tal: Dapoli, Dist: Ratnagiri.	1.05	Dapoli Camp NP	0.04			Guhagar NP	0.02
							Khed M Council (C)	0.08

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
							Mandangad NNP	0.01
54	M/s. Swastic Plasto, Plot No A-19, STICE Musalgaon, Taluka-Sinnar, Dist.-Nashik	0.28	Sinnar M Council (C)	0.31			Niphad NNP	0.05
							Bhagur M Council (C)	0.05
55	M/s. Hindustan Enterprises, Plot No. M-17, MIDC, Hingna, Dist. Nagpur	0.09	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25	Nagpur M Corp.	13.11	Mohpa M Council (C)	0.03
56	M/s Huhtamaki PPL Ltd. LBS Marg, Majiwade, Thane (W) 400601	19.85	Thane M Corp.	17.67	Ulhasnagar M Corp.	3.36	Vasai Virar M Corp.	13.40
					Kalyan Dombivali M Corp.	13.06	Panvel M Corp.	10.81
					Mira Bhayendar M Corp.	8.81	Navi Mumbai M Corp.	8.65
					Bhiwandi Nizampur M Corp.	4.66	Ambarnath M Council (A)	1.40
							Badlapur M Council (B)	1.29
57	M/s Chamunda Plastic Industries Plot No. B-2/11 MIDC, Nanded	18.90	Nanded Waghela M Corp	3.31	Mudkhed M Council (C)	0.14	Basmath M Council (B)	0.32
					Ardhapur NP	0.07		
58	M/s Jai Sai Plastic Industries Plot No. B-3/6, MIDC Nanded	0.63	Nanded Waghela M	3.31	Mudkhed M Council (C)	0.14	Basmath M Council (B)	0.32

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
			Corp					
					Ardhapur NP	0.07		
59	M/s Ravi Packaging P. No. C-31, MIDC, Amravati - 444 605	0.56	Amravati M Corp.	3.80	Bhatukuli NNP	0.02	Chandur Railway Nagar M Council (C)	0.11
							Nandgaon Khandeshwar NNP	0.06
60	M/s Mudra Polymers Pvt. Ltd At. Nagpura Murri, Dal & Dist. Gondia 441614	0.19	Gondiya Council (A)	0.61	Goregaon NNP	0.22	Tirora M Council (C)	0.11
61	M/s Krishna Plastics C-11 MIDC, Gondia	0.11	Gondiya Council (A)	0.61	Goregaon NNP	0.22	Tirora M Council (C)	0.11
62	M/s Shri Jalaram Industries 257, Small Factory Area, Wardhaman Nagar, Nagpur	0.47	Nagpur M Corp.	13.11	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08
			Kamptee M Council (B)	0.38	Mahadula NP	0.05	Kuhi NNP	0.02
					Kahan Pipri NNP	0.11	Mouda NP	0.04
					Wanadongri NNP	0.10	Parsvini NNP	0.02
					Wadi NNP	0.25		
63	M/s Maniraj Plastic Industries S. No.27, Mauje Kharadi, Pune-14	0.12	Pune M Corp.	29.48	Alandi M Council (C)	0.14	Chakan M Council (B)	0.49
64	M/s Prakash Plastics G. No. 22(A+B), Plot No. 41, Dyane, Tal : Malegaon, Dist. Nasik	0.12	Malegaon M Corp.	3.90				

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
65	M/s Asha Industries 294, Bajpai Chowk, Gondia	0.14	Gondiya Council (A)	0.61	Goregaon NNP	0.22	Tirora M Council (C)	0.11
66	M/s Prithviraj Plastics Pvt. Ltd. E-45/3, MIDC Kurkumbh, Tal : Daund, Dist. Pune – 413802	--	Daund M Council (B)	0.22			Shrigonda M Council (C)	0.14
							Baramati M Council (B)	0.50
67	M/s Shri Radha Sarveshwar Laminates Pvt. Ltd. Plot No. 30,31,32, Sai Industrial Estate, Village : Nildoh, Tal : Hingna, Dist. Nagpur	1.63	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25	Nagpur M Corp.	13.11	Mohpa M Council (C)	0.03
68	M/s Manikchand Packaging Pvt. Ltd. Gat. No. 1524, Saraswadi, Tal : Shirur, Dist. Pune	7					Alandi M Council (C)	0.14
							Chakan M Council (B)	0.49
69	M/s J. B. Industries Gala No. 114, First Floor, Merchant Ind. Co-op. Society Ltd. Village : Waliv, Tal : Vasai (E) Dist. Thane	0.42	Vasai Virar M Corp.	13.40	Mira Bhayandar M Corp.	8.81	Thane M Corp.	17.67
							Bhiwandi Nizampur M Corp.	4.66
70	M/s Red Ray Laboratories Plot No. D-25, MIDC Industrial Estate, Hingna Road, Nagpur	0.82	Hingana NNP	0.02	Kalmeshwar M Council (C)	0.08	Kamptee M Council (B)	0.38
			Wanadongri NNP	0.10	Mahadula NP	0.05	Kahan Pipri NNP	0.11
			Wadi NNP	0.25			Mohpa M Counci (C)	0.03
			Nagpur M Corp.	13.11				
71	M/s Shine Plastic Industries W-7, MIDC Lote,	0.35			Chiplun M Council (B)	0.23		

Sr. No.	Name of the Plastic Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (MT/D)	20 Km	Qty. of waste generated (MT/D)	30 Km	Qty. of waste generated (MT/D)
	Tal : Khed, Dist. Ratnagiri				Khed M Council (C)	0.08		
72	M/s Uma Plastoware Pvt. Ltd. Plot No. B-7/8, H-Block, Morwadi, Pimpri, Pune - 411018	0.05	Pimpri Chinchwad M Corp.	9.53	Alandi M Council (C)	0.14	Rajgurunagar NNP	0.08
					Chakan M Council (B)	0.49		
					Pune M Corp.	29.48		
					Talegaon Dabhade M Council (B)	0.26		
73	M/s Geeta Packing, C-25, Add. MIDC Nandgaon Peth, Tq. & Dist. Amravati	0.47			Amravati M Corp.	3.80	Chandur Railway Nagar M Council (C)	0.11
					Teaosa NNP	0.04	Chandurbazaar M Council (C)	0.08
74	M/s. Pushkraj Plastic, A - 17/18, MIDC Lote, Tal: Khed, Dist. Ratnagiri.	0.32	Chiplun M Council (B)	0.23	Khed M Council (C)	0.08		

20 ANNEXURE – IV: LIST OF PLASTIC RECYCLING INDUSTRIES FORMALLY REGISTERED IN MAHARASHTRA

Sr. No.	Name of Plastic Recycling Industries
1	M/s Pragati Plastic 136, Shivkrupa Industryal Estate, L.B.S. Marg, Vikhroli (W) Mumbai-83
2	M/s Sheetal Tarpulins Gold No. 31, Jamandas Industrial Est, Opp Jawahar tokies, Dr. R.P. Rd, Mulund (W)
3	M/s Four "M" Polymech Industries, E- 8, MIDC Murbad, Dist. Thane
4	M/s Hema Plastics, 205 Ramgoapl Industrial Est Dr. R.P.Rd, Mulund (W) Mumbai-80
5	M/s Arun Enterprise 317, Ramgopal Industrial Est Dr. R.P.Rd, Mulund (W) Mumbai-80
6	M/s Vicky Engineering works, 227, Ramgopal Ind Est. Mulund (W) Mumbai-400 080
7	M/s Shalimar Pack MIDC TTC Indl Area, Tetavali, Rable, Thane Belapur Rd. Dist. – Thane
8	M/s Raj Plastic Unit No. 122, 1st Floor, Gobind Udyog bhavan Mulund- (w) Mumbai-80
9	M/s Tirupati Print 78 Vishal Indl Easte Village Rd Bhandup-W Mumbai- 78
10	M/s San-Ya Industries 39, Ground Floor, New Unique Ind Este Dr. R. P. R D Mulund-(w) Mumbai-80
11	M/s Plastika Industries Plot No. R-33, TTC Ind Area, MIDC. Thane Belapur Rd. Tetavali Rabale, Navi Mumbai-01
12	M/s AMI Pyroflex Pvt. Ltd. F-9, 1/19/1 Hingna MIDC,

Sr. No.	Name of Plastic Recycling Industries
	Nagpur-440 016
13	M/s Suresh Polymers Pvt. Ltd. U- 145, MIDC Hingana Road, Nagpur – 440016
14	M/s Sita Packaging P. Ltd. W- 137, MIDC Hingna Rd, Nagpur-440 016
15	M/s Milar Plastic Industries K-47, MIDC Waluj, Albad Nrar Good Year Tyers Co. Aurangabad
16	M/s Aditi Enterprises. 6 A, Majithia Indl Este WT, Patil Marg, Chembur Mumbai
17	M/s Jay Agro Industries A/757. TTC, Area MIDC Mahape Navi Mumbai 400 705
18	M/s Vibguor Ploy print 12 Ashok Indl Estate Near Living Room L.B.S Marg. Mulund-W. Mumbai- 80
19	M/s Plasto World, 240, Gobind Udyog Bhavan Indl. Est. Opp. Model Town, B. R. Rd, Mulund-W Mumbai-400 080.
20	M/s Kalptaru Blow Plast Shed No. W-44, Phase III MIDC. Shivni Akola- 444 104 (MS).
21	M/s Hiral Prints 8 GR Floor, Anupam Indl Estate Bidg. No.-1 Off L.B.S. Marg, Mulund-W Mumbai - 400 080
22	M/s Manasi Industries Plot No. B- 43/2 MIDC, Ambad Nashik- 422 010
23	M/s Jyoti Chemicals B-43/1, MIDC, Ambad Nashik-422 010
24	M/s Navin Plastics Pvt. Ltd. D – 12 / 9 T.T.C. Indl Area Rekunda Village Turbhe Navi Mumbai – 400 705
25	M/s Flexo World 241, Govind Udyog, Bhavan Opp. Model Town, B. R. Road, Mulund (W)

Sr. No.	Name of Plastic Recycling Industries
	Mumbai-400 080.
26	M/s Easy Pack Plastics Pvt. Ltd D / 5 / 6 T.T.C. Indl Area
27	M/s Elegant Packaging 26 Vardhman Indl Estate S.V. Road Dahisar (E) Mumbai – 68
28	M/s V.K. Printers 348, Kewal Industrial Estate Senapati Bapatb Marg, Lower Parel Mumbai – 400 013
29	M/s Thakker nanji Jadavji Shree Bombay Cotton Mills Estate Block No. 23, Kalachoki Rd. Mumbai – 400 033
30	M/s Millennium Plastic 28, Nav Nandanvan Ind. Estate, LAB RD, Mulund (W), Mumbai - 80
31	M/s Shree Govind Business 2111, Govind Niwas Near MIDC, Kudal, Sindhudurg.
32	M/s Mono Plastics 26, Ashok Industrial Estate 1st Floor, L.B.S. Marg Mulund (W), Mumbai – 400 080
33	M/s Delight Plastics 52, Ramgopal Industrial Estate, PH – II, R.R. Road, Mulund (W) Mumbai-400 080.
34	M/s Kailash Poly Industries Pvt. Ltd. Plot No. A – 7/ 3, MIDC Hingna Nagpur – 440016
35	M/s Sonegaon Wrappers Pvt. Ltd., Plot No. M-11/3, MIDC, Hingna Rd, Nagpur
36	M/s Delta Plastic Unit 112 Bharat Industrial Estate, T.J. Rd, Sewree, Mumbai- 400 015.
37	M/s Polester Plastic Industries 205, Gambhir Ind Estate, Off: Aaray Rd, Goregaon (East), Mumbai - 400 063

Sr. No.	Name of Plastic Recycling Industries
38	M/s Mothara Industries W – 63 MIDC Rabale, Thane- Belapur Rd, Navi Mumbai
39	M/s Jay Plastic Industries 109, Bharat Industrial Estate, Tokorshi Jiviaj Rd, Sewree Mumbai- 400 015
40	M/s Shubham Enterprise, 208 Raja Industrial Estate,P.K. Road, Mulund, Mumbai – 80
41	M/s Ployfeb Plastic Industries 2 /14, Lalwani Industrial Easte, G.D. Ambekar Rd. Wadala Mumbai-400 031
42	M/s Shreeji Ploypack Nagut Sheet No. 47 Plot No-2, Talav Rd Timber Market , Yavatmal Dist –Yavatmal
43	M/s Jai Industries 16, Samrat Silk Mill Compound L.B.S. Marg, Vikhroli –(W), Mumbai-78
44	M/s Saras Industries W-44 (A) MIDC Industrial Area, Ahmednagar- 414 111
45	M/s Varsha WaterProof Products 79- 81, Shree Bombay Cotton Mills Easte, Gala No. 23/A Dattaram Land Marg, Kalachawki Rd, Mumbai- 400 033
46	M/s Sagar Plastic D – 24, MIDC, Nagpur- 440 028
47	M/s Shree Bhavani Engineering Work W- 67 MIDC Rabale Rd, Navi Mumbai – 400 701
48	M/s Soham Industries B-22 Minerva Industrial Easte, Off P.K. Road, Mulund – (w) Mumbai – 400 080
49	M/s S.K.Implex (India) 32, Minrva Indl Easte, L.B.S. Marg, Mulund –(W) Mumbai–4000 080
50	M/s Crystal Packagings 211, New Stguru, Nanik Industrial Easte, Goregaon- (E) Mumbai – 400 101

Sr. No.	Name of Plastic Recycling Industries
51	M/s Raj Plastics Unit No. A / 2 Ground Floor, Minerva Industrial Easte, Off, Ralliwolf, L.B.S. Marg, Mulund-(W) Mumbai – 80
52	M/s Datta Plastics C.S. No. 105 At : Bhore, Post : Ghtaeade Tal : Mushi Dist. Pune
53	M/s Marketing Plastics 3/4 Nahar Parekh Ind. Easte No. 3 Vadkun, Dahanu Road, Dist. Thane
54	M/s Polyfilms Industries Plot No. M – 28, MIDC Hingna Rd. Nagapur
55	M/s JBL Saks Pvt. Ltd. B- 29, MIDC Murbad Rd,Thane Dist-Thane
56	M/s Mum's World Baby Products Gala No. 63-64, H Wing,Atgaon Industrialn Complex, Village Atgaon, Tal – Shahapur, Dist. Thane - 421 601
57	M/s. Jai Jalaram Poly Industries Kh. No. 219, 220, Pl. No. 61 – A Ph No. 6, Village - Nagalwadi, Tal- Hingna, Dist. Nagpur.
58	M/s Mayur Plastics G. No. 1034 Laxminagar Bedag, Tal- Miraj Dist. Sangli
59	M/s Saras Industries W-21(A) MIDC Indl Area, Ahmednagar- 414 111.
60	M/s Major Plastics S. No. 824 / 9 Village Mahim Chintupad, Palghar Dist. Thane-401 404
61	M/s Shaktiman Plastics Unit no. 129, First Floor, Ramgopal Industrial Estate Opp. Jawaharlal Talkies Dr. R.P. Rd., Mumbai-400 080.
62	M/s Mahavir Poly Pack Unit no. 17, GR Floor, Jamnadas Industrial Estate, Dr. R.P. Rd., Mulund (W)Mumbai- 400 080.
63	M/s Sanco Plast A – 25 Basarkhed, Tal -Malkapur Dist – Buldhna

Sr. No.	Name of Plastic Recycling Industries
64	M/s Disha Industries C- 38 MIDC Amravati Dist – Amravati
65	M/s Khemka Plastics M – 8, Laxi Industrial Easte, New Link Rd, Andhri-(W), Mumbai- 53.
66	M/s Dipjim Enterprises Gala No. 12, 1 st Floor Shilay Industrial Estate, Udyog Nagar S.V. Rd, Goregaon- (W) Mumbai – 62
67	M/s Moulders poly Print Gala No. 10, Mehats Industrial Estate, I.B. Patel Rd, Goregaon-(E) Mumbai-63.
68	M/s Parmananddas J Sangani (HUF) 22, Raja Industrial Estate,2 nd Floor, P.K. Rd, Mulund (W) Mumbai – 80
69	M/s D.K. Industries B-8 MIDC Area, Amaravati –444 605
70	M/s Vaibhav Industries MIDC Plot No. D –10, Miraj – 416 410.
71	M/s Devika Plastics, W – 62, MIDC Kupwad, Sangli- 416 036.
72	M/s Prasad Engineers 33, Satyam Easte, 35-A, Erandvana Off Kurve Rd, Pune- 38
73	M/s Nagpur Polyfilms Pvt. Ltd Plot No. M-91/18 Industrial Area, Hingna Rd , Nagpur
74	M/s Shree Plaste-o-Craft B- 88, Shri Laxmi Co- Oprative Ind Estate, Hatkanagale, Dist. Kolhapur
75	M/s Kailash Poly Industries Pvt. Ltd Plot No. A 7/3, MIDC Kalmeshwar, Nagpur.
76	M/s Pankaj Trading Company, Gala No. 118, 1 st Floor, Plot No.- 7 Udyog Nagar Goregaon –W Mumbai- 62.
77	M/s Global Plastics At- Temghar Tal- Mahad Dist- Raigad.
78	M/s Unique Polyplast Pvt. Ltd Plot No. D- 35, MIDC Mahad, Dist. Raigad.
79	M/s Unicon Products 29/j Luxmi Indl Estate, New Link Rd, Andheri-(W) Mumbai- 53
80	M/s Pawan Plast C-14, Co-op Indl Estate Saturha Bhandara Rd, Amravati

Sr. No.	Name of Plastic Recycling Industries
81	M/s Pearl Polyplmers Ltd. B-3/5, MIDC Mahad, Dist. Raigad – 309
82	M/s Multi-Flex Lumi-Print Ltd, Plot No. D- 54/58, MIDC Mahad, Dist. Raigad.
83	M/s Kothari Pastic Industries W – 14 , MIDC Area, Amravati
84	M/s Kothari Packaging Industries W-14, MIDC Area, Amravati
85	M/s Prasad Plastics W- 164, MIDC Phase II, Dombivali-E, Thane- 204
86	M/s Rasal Plastic Plot No. D-69, MIDC Mahad Dist-Raigad.
87	M/s Godavari Polymers Plot No. 34 Estarn Industrial Estate, Chikhali lay out Mini Mata Nagar, Nagpur.
88	M/s Print-N-Pack 202, Ashirwad Ind. Estate, Bldg No.-2 Ram Mandhir Rd, Goregaon-W, Mumbai-104.
89	M/s Shree Balaji Packaging Gala No. 16 Bld. No.- 3, Ground Floor, Ram Mandhir Ind.PRFCo op Soc Ltd.,Goregaon –(E) Mumbai- 63
90	M/s Bharat Plastic Industries 6 - Kohinoor Textile Printing ompound, L.B.S Marg Mumbai- 86.
91	M/s Radhakrishna Industries 236, 2nd Floor, 'A' Wing Shanti Ind. Estate, S.N. Rd,Tambe Nagar, Mulund (W) Mumbai – 80.
92	M/s Amlik Packaging Pvt. Ltd Village- Sarsang, Tal- Khalapur Dist- Raigad
93	M/s Shreeji Poly Plast 11/C, Samarat Silk Mill Compound, L.B.S. Marg, Vikhroli (W), Mumbai- 79.
94	M/s Unique Plastics 29, Unique Industrial Estate, Dr. R.P. Rd, Mulund-W, Mumbai – 80.
95	M/s Hadrik Plast 122, Unique Industrial Estate, Dr. R.P. Rd , Mulund-(W) Mumbai – 80.
96	M/s Shri Jalaram Polymers Pvt. Ltd. Plot No. 54, Chikhali Layout Kalamana Nagpur.

Sr. No.	Name of Plastic Recycling Industries
97	M/s Omega Packging B-3, Gupta Indl. Complex, Sr. No. 84/3, Asangaon (E) shahapur Thane.
98	M/s Hari Pack Extrusions (V) Pvt. Ltd. K-61, MIDC, Hingna Nagpur-440 016.
99	M/s Jalaram Poly Print 13 / 29, First Floor, Malad Ind. Estate, Mulund (W) Mumbai.
100	M/s Shiv Industries, Plot No. 112, Shahapur Ind. W Estate Village Paundhe Tal –Shahapur Dist – Thane.
101	M/s Nandan Impex Pvt. Ltd. D -365 TTC Industrial Area, Navi Mumbai- 705
102	M/s Balaji Plastic, Unit No. 223 2nd Floor Ramgopal I E Dr. R.P. Rd. Mulund-80
103	M/s Viraj Plastic D-18 MIDC Kudal Dist- Sindhudurg
104	M/s Vinay Plastic Industrial A&P Shroda Bagayat, Wada Tal- Vengurla Dist- Sindhudurg
105	M/s Karuna Enterprises, Samarat Silks Mills compounds L.B.S. Marg, Vikhroli – W, Mumbai – 79
106	M/s Raviraj Plastic, Plot No. A-59, MIDC Lohura Tal & Dist – Yavatmal.
107	M/s Aadinath Flexo Printer, New Unique Indl Estate, 2nd Floor opp Jawahar Tokies R.P.Rd Mulund- W Mumbai – 80
108	M/s D.M. Plastic, Unit No. 44, Ramgopal Ind Estate, Dr. R.D. Rd, Mulund-W Mumbai-80
109	M/s Nilkamal Plastic Ltd., Plot No. 971/1A, Stice, sinnar shirdi Rd Musalgaon sinner dist. Nashik
110	M/s Arpita Packaging, 72, Akshg Ind. Estate Navghar Vasai Rd- E Thane
111	M/s Shree Hari paper & Board Industrial, At Nasdse Post Pareli Tal- Sudhagad dist - Raigad
112	M/s Polythene Printery, 127 Milan Industrial Estate Cotton Green Mumbai- 033
113	M/s J.J. Plastic , C- 35 Addl MIDC, Area Jalana-431 203

Sr. No.	Name of Plastic Recycling Industries
114	M/s A.B. Industrial, C-36, Addl MIDC, Area Jalana-431 203
115	M/s Vijay Packaging Industrial Unit No. 27/28 , Jamanadas Ind Estate Dr. R.P. Rd Mulund-W Mumbai-80
116	M/s Hansa Plastic, 15, Bahar Udyog Premises Co-op Soc. Ltd, L.B.S. Marg, Mulund-W, Mumbai- 80
117	M/s Jupiter Plastic Industries G-11 Bharat Industrial Estate Kokersh Jivraj Rd, Sawree Bombay-15
118	M/s Nirav Enterprises 93, Unique Industrial Estate, Dr. R. P. Toad, Mulund-W Mumbai-80
119	M/s Sumo Plast, Unit No. 61 Ground Floor, Unique Industrial Estate, Dr. R.P. Rd, Mulund – W Mumbai-80.
120	M/s Noble Plastic Unit No. 106, First floor, K.K. Gupta Industral Estate, Dr. R.P. Road, Mulund – W Mumbai - 80
121	M/s Arikant Industries Unit No. B/121, Ground floor, Minrva Ind. Estate, Off L.B.S. marg, Mulund – W Mumbai – 80
122	M/s Kanhiya Plastic Industries D - 1511, MIDC, Amravati.
123	M/s National Plastic Industries Plot No. A/6, MIDC, Amrvati.
124	M/s Vijay Roto Prints D – 15/2, MIDC, Amravati, Dist – Amravati.
125	M/s Mono Yarn, 35, Ashok Ind. Estate, 1st floor, L.B.S. marg, Mulund – W Mumbai – 80
126	M/s Aadarsh Industries. Plot No. B – 317, MIDC, Nanded.
127	M/s King plast, Unit No.3 Ground Floor, Omkar Industrial Estate, Opp. Kanjur marg Rly stn Kanjur (W), Mumbai-78.
128	M/s Mono packaging 38 Ashok Ind Estate, 1st floor, L.B.S. marg, Mulund (W), Mumbai-80.
129	M/s Laxmi poly plast industries Navi Mumbai W-149, Pawane MIDC, Thane-Belapur Road, Navi Mumbai-400705.
130	M/s Mono Polymers, 18, Nahar Udyog, Prem co. op. soc. Ltd, L.B.S marg, Mulund - W, Mumbai-80.
131	M/s Unique polymers, 94, Unique Ind Estate, opp. Jawahar Tokies, Dr. R.P. Road, Mulund - W, Mumbai - 80.

Sr. No.	Name of Plastic Recycling Industries
132	M/s Samrat Plastic Industries, 12, Amrapali Industrial Estate, Ram mandir Road, Goregaon – W, Mumbai – 104
133	M/s Pinku industries, Unit No. 20, Gr. Floor, Nahar Udyog Premises Ltd, L.B.S. marg, Mulund – W, Mumbai – 80
134	M/s Promp – Plack Industries, Gala No. D/26, Shreyas Ind.Estate, Goregaon – E, Mumbai – 63
135	M/s Print – House, 102, Bajaj Indstrial Estate, Navghar, Vasai Road – e, Mumbai – 210
136	M/s Shri Krishna Print – N –Pack, Gala No. 5, Gr. Floor, Anjali Udyog Bhavan Premises co. op.Soc. Ltd, Navghar, Vasai -E.
137	M/s Santro Plast, 3, Anupam Ind. Estate No. 1, P. K. Road, Mulund - W Mumbai - 80.
138	M/s Dhwani Pet Industries, Unit No. 212, second floor, Raja Industrial Estate, P.K. Road, Mulund - W, Mumbai – 80
139	M/s Jain Plasto, A – 2, MIDC, Dasakhed Malkapur, Dist – Buldhana.
140	M/s Oswal Industries, Unit No. 12, Unique Ind. Estate, Dr. Rajendraprasad Road, Mulund – W, Mumbai – 80.
141	M/s Reliance Plastic 11/A,Gr. Floor, Unique Ind. Estate, Opp. Jawahar tokies, Dr. R.P. Road, Mulund – W, Mumbai – 80.
142	M/s Jennings Plastics, F – 5, MIDC Amravati, Dist – Amravati.
143	M/s Saibaba Plastic Industries, Sr. No. 15,M.N, 1110, Part – 1, Sukhsagar Nagar, Katraj, Pune.
144	M/s Saikripa Plastic Mfg & Printing Bags, Sr. No. 15, M.N.1110, Part – 2, Sukhsagar Nagar, Katraj, Pune – 46.
145	M/s Gore Plastics & Carbouys, A – 16, MIDC Jejuri, Tal – Parandar Dist. Pune – 303
146	M/s Bharati Plastics, 40 – A/II, Ghanshyam Ind. Estate, Veera Desai Road, Andheri – W, Mumbai – 400053
147	M/s Ashapura Plastics, Plot No.23, Amalgamated Ind. Complex, Gut No.166 / A, H.No., Village-Asangoan, Tal-Shahapur, Dist-Thane.
148	M/s ShreeSiddhay P.V.C. Products, Plot No.62, MIDC, Amaravati, Dist – Amaravati.
149	M/s shri Ambay Enterprises, 237, Chikhali Davsthan, Kalmana Road, Nagpur.

Sr. No.	Name of Plastic Recycling Industries
150	M/s Saral Plastics, Sr.No.121, Sawali Datura,Chandrapur Bazar Road Achalpur,Dist – Amaravati
151	M/s Krown Can Works Ltd,8, Ankos Ind. Estate,Village – Dekhu, Tal -Khalapur, Dist – Raigad – Khopoli – 410203
152	M/s Plasto Craft India,38 Unique Ind. Estate,Dr. R.P. Road, Mulund (W), Mumbai - 80.
153	M/s Trimurti Plastic Industries Shirol, Plot No. 13, Chh. Shahu co.op.Ind. Estate, Shirol, Tal - Shirol, Dist – Kolhapur
154	M/s Hashmi Plastic Products, Plot No. F – 34, MIDC, Latur.
155	M/s Noble Plastic Industries, Sr. No. 32 A/1/ Sub block No.9, Hadapsar Ind. Estate, Pune – 13
156	M/s Shreyash Plastic Industries, Sr.No.1713 – A, Sukhsagar Nagar, Katray, Pune – 46.
157	M/s Suyash Plastic Industries, Sr. No.17/3-A, Sukhsagar Nagar, Katray, Pune – 411046.
158	M/s Krishna Packaging, Sr.No.40/4B/2A/2/12, Khondhwa Bk, Pune – 48.
159	M/s Durga sons, W – 10, Additional MIDC, Jalna, Dist. Jalna
160	M/s Kachurulal Vinaykumar Abad, D – 24, MIDC Jalna – 431203
161	M/s Rainbow Plastics, Samarth Silk Mill, Compound, L.B.S. Marg, Vikroli, Mumbai 78.
162	M/s Hem Plastics, 16, Gr. Floor, Nahur Udyog Premises Soc. Ltd, L.B.S. marg, opp. Rallies India, Mulund(W), Mumbai-80.
163	M/s Sujata Plastics, H-65, MIDC-3, Akola, Dist-Akola.
164	M/s Rahul Packaging, Plot No.43, MIDC-3, Akola, Dist-Akola.
165	M/s Kaushlaya Plastics, Plot No. J – 88, MIDC – 3, Akola Dist – Akola
166	M/s Rathi Udyog, W – 4, MIDC Wardha, Dist – Wardha
167	M/s Vedant Industries, 71213, Mohite Industrial Estate, Mouza, Wanagongri, Dist – Nagpur.

Sr. No.	Name of Plastic Recycling Industries
168	M/s Sanjay Enterprises, Plot No. D – 19, MIDC Post – Nervr, Waghchawadi, Tal – Kudal, Dist – Sindhudurg – 416525.
169	M/s Neo Pack, R – 678, Rabale MIDC, Navi – Mumbai
170	M/s Akhil Poly prints, Sai Industrial Estate, Gala No.9, Section-24, Ulhasnagar-3, Dist-Thane.
171	M/s Saneet Industries, Plot No.20/11, MIDC, Hingana Road, Nagpur.
172	M/s RobinPlasto, 22, Gr. Floor,Shanti IndEstate, S.N. Road Mulund(W), Mumbai – 80.
173	M/s F.K.Poly plast,Plot No.R-242, 6th Cross Road,MIDC, Thane – Belapur Road,Village – Rabale, Navi -Mumbai – 701.
174	M/s Krishna, Plastics, C-11, MIDC Gondia, Tq. & Dist --Gondia.
175	M/s Shakti Plastics,108, Arvind IndEstate, Navghar Road, Vasai(E), Thane
176	M/s Sagar Plastics, T – 11/2, Zaivddin Depot, Subhash Road, Nasik Road, Dist-Nasik.
177	M/s Paturkar PlasticIndustries, Plot No. D-12, MIDC, Amaravati, Dist – Amaravati.
178	M/s Amrutwel Plastic Ind. Plot No.E-9, MIDC Area, Amaravati, Tq& Dist-Amaravati.
179	M/s PrincePlastic Industries,42 – C.N.F.E. Co-op.Soc Ltd, Kampatee Road, Uppalwadi, Nagpur
180	M/s Bendre Plastics, Plot No.W – 9, MIDC Amaravati, Dist – Amaravati.
181	M/s. Anand Plastic Industries, Plot No. C – 26/14, Vinkar Gruha Udyog society, MIDC Akkalkot Road, Solapur, Dist – Solapur.
182	M/s Yashshree Industries, Plot No. D- 57, MIDC Nanded, Dist – Nanded
183	M/s Super Plastic Industries, Plot No. 59, At- Vasole, Post – Wadhe, Tq & Dist– Satara.
184	M/s Siddhant Polymers, Plot No. 36, Industrial Estate No.1, Barasti Dist – Solapur.
185	M/s Devkinandan Industries, Plot No. 02, Vajreshwari Nagar, Akkalkot Road,Solapur, Dist – Solapur

Sr. No.	Name of Plastic Recycling Industries
186	M/s Shreeji Pet & Polymers, Plot No. B- 14, MIDC Amaravati, Dist – Amaravati.
187	M/s Paturkar Industries, Plot No. G- 21, MIDC Amaravati, Dist – Amaravati.
188	M/s Unik Polypack, Plot No. 2, Gut. No. 196, Darna Road,Near VTC, At –Vadivarkhe, Tal – Igatpuri, Dist. Nasik
189	M/s Mahesh Polymers, Plot No. C- 28/16, MIDC Akkalkot Road, Solapur, Dist – Solapur
190	M/s N.P. Polyprints, B – 211, Virwani Industrial Estate, Goregaon (E), Mumbai – 63.
191	M/s Ameya Flexo Printers, 36/2, Dandekar Industrial Estate, Kondhwa (Bk), Pune – 48.
192	M/s National Plastics, House No. 38, Mangrulpir, Tal & Dist – Washim.
193	M/s Maniraj Plastic Industries, 398, Nana Peth, Laxmi Road, Pune – 02
194	M/s Maruti Plastics, Plot No. – 23/3At – Katangikala, Tq & Dist – Gondia.
195	M/s Poona Plast, Plot No. 67/13, D- III Block, M.I.D.C. Chinchwad, Pune – 19.
196	M/s Shakti Plastics, Plot No. C- 50, Addl. MIDC Jalna, Tq. & Dist – Jalna.
197	M/s P.P. Plast Industries, Plot No. 48, Uday Colony, Chakan Talegaon Phata, Vadgaonmaval, Tq. & Dist – Pune.
198	M/s Degradable Polymer , Technologies No.7, Khimsiya wire House, S. No. 32/3B/2 to 5, Pisoli Tal – Haveli Dist – Pune.
199	M/s Sita Enterprise, D- 61, MIDC Kudal, Dist – Sindhudurge.
200	M/s Jai Fil Industries, Plot o. W-3 MIDC Tarapur Inudustrial Area Tal- Palghar Dist – Thane.
201	M/s shri Industries, Plot No. C-58, MIDC Wardha, Dist- waradha.
202	M/s New Shakti Enterprises, 'C' 206 Jzai Bonanaza Indusrial Estate,Ashok chakravarti Rd, Kandivali Estate, (E) Mumbai-101

Sr. No.	Name of Plastic Recycling Industries
203	M /s Kalparaj Packaging Pvt Ltd., 203, Shreyas Aprtment Plot No. C-1, Sec – 2 3 Nerul Navi Mumbai- 400 706
204	M/s Pradeep Polyprint, Gat No. 392/Talegaon Chakan Rd, Village- Mahalvnge Tal- Khed dist – Pune.
205	M/s Pradeep Laminators Pvt. Ltd, Gat No. 392, Talegaon, chakan Highway, vill- Mahulunge Tal- Khed Dist- Pune
206	M/s Mangaonkar Pvt Ltd. , Gat No.-94, Village- Ghatawade Alibag Roha- Ragaid
207	M/s Ampson Engineering Pvt. Ltd, (Unit-II) Plot No. N- 26, MIDC Area, Boisar Dist – Thane – 506
208	M/s Anupam Plastics, W- 5, MIDC, Chandrapur Ghuggas Rd, Chandrapur.
209	M/s Shagoon Packaging Pvt Ltd., S- 22 MIDC, Tarapur Tal- Palghar, Dist – Thane
210	M/s R. P. Industries, Get No 324 A1, AT – Sanghavi, Shirwal.
211	M/s Raj Plastic Industries, Get No. 324, At- Sanghavi, Post – shirwal Dist – Satara.
212	M/s Bharat Polymer Gxtrusions, W / 64 /A, MIDC Area, New CCL, Satpur, Nasik – 007
213	M/s Ajinkya Plastics, G – 25, Old MIDC, Satara
214	M/s Vardhaman Packaging, S. No. 207/3, S. No. P 10, Dhanraj Park, Wakad Pune –27
215	M/s Ashwamegh Industries, B-101 MIDC Area, Tal- Karad, Dist – Satara.
216	M/s Poonam Plastic co, At Post, Malkapur, Tal – Karad Dist- Satara.
217	M/s Nisha Plastics, 102, Gurunanak Udyog Bhavan, Opp Sangrila Biseuits, LBS Marg Bhandup (W), Mumbai- 78
218	M/s Shiv – Raj Plastics Pvt. Ltd, Plot No. R – 528, T.T.C. Indl Area, Rabale MIDC, Navi Mumbai
219	M/s Plast-Well Products, Unti No. 7, Gr. Floor, Anupam Industrial Estate, No.1, Mumbai- (W) Mumbai-80

Sr. No.	Name of Plastic Recycling Industries
220	M/s Kundan Polyplast, Nitin Industrial Estate, Gala No. 220, S P Rd, Dhisar (E) Mumbai- 68
221	M/s. Vijay Plastics. 413/A Gandhinagar Kolhapur
222	M/s Vishal Plastic 413/1A Old Sakal Press Gandhinagar, Kolhapur
223	M/s Pawan Packaging,Old Sakal Press,Gandhinagar Kolhapur
224	M/s Gyatri Packaging 413/1A, old sakal press, Gandhinagar Kolhapur
225	M/s Ashok Plastic Ind. S.no.-1744, Gandhinagar Kolhapur
226	M/s Jai Prakash Ind. B-44,MIDC Shirol Kolhapur
227	M/s Akash Plastics, Plot No. –F-19, MIDC Shiroli
228	M/s Ambika Plastics, Plot No.- E- 70, MIDC Shiroli (P), Tal- Hatkananagale
229	M/s Sai Packaging, R.S. No.-580/1. MIDC Shiroli
230	M/s Raj enterprises F-19, MIDC Shiroli,Tal- Hatkananagale, Dist- Kolhapur
231	M/s Balaji Plastics Plot No. W-10, MIDC Shiroli Dist-Kolhapur
232	M/s SwaroopPlastics, M No-2631, R.S No.132
233	M/s J.K. Packaging, Pl. No. G-70,MIDC, Gokul-shirgaon, Dist- Kolhapur
234	M/s J.K. Rote Printers, Pl. No. G-70,MIDC, Gokul-shirgaon, Dist- Kolhapur
235	M./s Sunil Industries, Near Anant roto Spinning Mills, Kagal
236	M/s Amoodi Plast 3-2-22 lidagh Maidan, Near Water Tank, Degloor- Nanded
237	M/s Adi Plastic Ind. Opp. Anant roto spin Mill kagal

Sr. No.	Name of Plastic Recycling Industries
238	M/s Little Plastics Plot No. –F-52, Parvati Co- op Ind Est. Yadrav, shirol.
239	M/s Lily Plastis Plot No. –F- 51 Parvati Co-op ind Est. Yadrav, shirol.
240	M/s Perfect Plastics Plot No. F-51, Parvati Co-op ind Est. Yadrav, Shirol, Kolhapur.
241	M/s Data Guru Polu Prints Untis No. S/A, Interlink Estate, Caves Rd. Jogeshweri (E) Mumbai- 60.
242	M/s. Jyoti Polycontainers Pvt. Ltd. Plot No. R/554, TTC, Ind. Area, Rabale, MIDC, Navi Mumbai.
243	M/s Shri Pant Poly Gat No.-202, /P – Tardal, Shirol, Kolhapur.
244	M/s Naveen Plastic, W-64, MIDC Gokul shrigaon, Tal- Karveer, Kolhapur.
245	M/s Amrut Bhagini Mandal Gat. No- 924B, Amrutnagar, Warnanangar Tal- Panhala, Kolhapur.
246	M/s Lotus Packaging Industries C- 44/12, MIDC Industrial Area, Warsha, Dist- Wardha
247	Mamta Industries Plot No. C- 44/10, MIDC, Wardha – 442 001
248	M/s Jyoti Polymers Plot No. – 09, Near M.S.EB. Substation MIDC Malegaon
249	M./s Jayesh Plastic, 213, small Factory area, Bagadgans Nagpur
250	M/s Winsome Plastic Industries Nashik
251	M/s Arihant Plastic Industries Stice sinner C-74 Sinner Nashik
252	M/s Agree Plastic Pvt. Ltd. Plot No. 224, Block- J, MIDC Bhosari- Pune
253	M/s Star Plastic A- 26 MIDC wardha Dist- Wardha
254	M/s Crystal Plastic IndustriesW-11 A MIDC Ambad Nashik-10
255	M/s Mangal Polysacs Pvt. Ltd.B- 144: STICE Sinnar Dist- Nashik-10

Sr. No.	Name of Plastic Recycling Industries
256	M/s Pratibha Packaging and PolymersPvt. Ltd. Plot No. B-142, STICE Sinnar, Dist- Nashik.
257	M/s Pushpa Udyog B-120 : MIDC Malegaon, Sinnar Nashik
258	M/s Pearl Plast W/217 MIDC Ambad Nashik-10
259	M/s Pratibha Industries B/15, MIDC Area Malegaon Sinnar Nashik-10
260	M/s Sunita Plastics Industries C-61, S.T.I.C.E: Malegaon Tal- Sinnr dist- Nashik
261	M/s Jai Plastics Plot No. XI- 28 MIDC, Ambad, Nashik-10
262	M./s Smita Plastic, D – 75, MIDC Area, Malegaon Sinnar Dist Nashik
263	M/s Mangal Udyog B- 145: STICE, Malegaon Sinnar
264	M/s Maxworth Plastics Pvt. Ltd H – 127, MIDC C- Ambad Nashik-10.
265	M/s Smita Packaging Industries D- 86 MIDC Area Ambad Nashik-10
266	M/s Flexi Plast Pachaging C-118: STICE Sinnar: Dist: Nashik
267	M/s Sonu Industries Gala No. C- 101, Building No.5 Mittal, Industrial Estate, A.K. Rd, Andheri
268	M/s Dinesh polymers Unit No. C- 91, Building No.5, MittalIndustrial Estate,A.K. Road, Andheri (E), Mumbai – 59
269	M/s Jyoti Industries Gala No. C- 100, Building No.5, Mittal Industrial Estate, A.K. Road, Andheri (E), Mumbai – 59
270	M/s Shreeji Packaging Co. Gala No. 1`10 1st Floor, sasti Industrial Estate Co-op Soc, Plot No. -798, MIDC Mahape Navi Mumbai – 400 701
271	M/s Shashikant Plastic 267 , Small Factory Area, Bagadgani, Nagpur
272	M/s Ujawal Process M.E Pvt. Ltd Plot No.22, Panvel Industrial Co-op Estate Ltd.Panvel Dist – Raigad.
273	M/s Colour Bond Marketing Pvt. Ltd Plot No.- 5- 174, MIDC, Bhosari, Pune

Sr. No.	Name of Plastic Recycling Industries
274	M/s Red Ray Laboratories Plot. No.- D-25 MIDC,Higna Rd. Nagpur
275	M/s Caravan Packaging Ltd. B- 82- 23, MIDC, Malegaon Tal- Sinar dist. – Nashik
276	M/s Prabha Plastic Plot No. – V- 114 MIDC, Jalgaon
277	M/s Lalit Plastics Plot No. B – 13/2, MIDC, Jalgaon
278	M/s Lalit Enterprises Plot No. B – 189, MIDC, Jalgaon.
279	M/s Neha Plastics Plot No. V – 113 , MIDC, Jalgaon
280	M/s Saudhaj Plastics Plot No. J-22, MIDC Area, Ambad, Dist. Nashik – 10
281	M/s Saurabh Manufactures W- 93 (A) MIDC Ambad Nashik.
282	M/s Morya Platics Plot No. 117/2, Ram Nagar, Village Jirewadi, Tal & Dist. Beed.
283	M/s V.M. Polyplast Ploy No. E- 91, MIDC Ambad, Tal- & Dist. Nashik.
284	M/s Shreeraj Plastics Pvt. Ltd. Plot No.-1 Gat No. 196 wadi warbe Tal- Igatpur Dist- Nashik
285	M/s Chandra Plastics A- 33/2 MIDC Wardha dist - Wardha
286	M/s Thakkar Industries A- 3 MIDC Latur Aurangabad
287	M/s Suraj Industires PLOT No. A.33, MIDC Ind Area Wardha Dist- Wardha.
288	M/s Rajani Plastic Industries S. No. 18 D, Ganeshpur, Phandharkawada, Dist – Yavatmal
289	M/s Giriraj Plastics Plot No. U – 40 MIDC, Hingna Rd, Nagpur, Dist – Nagpur
290	M/s Baba Enterprises A- 26, MIDC Dasarkhed, Tal- Malkapur Dist Buldhana
291	M/s Balaji Plastics Plot No. C-32, MIDC, Industrial Estate, Hingna, Dist – Nagpur

Sr. No.	Name of Plastic Recycling Industries
292	M/s Ambika Plastic Plot No. MIDC, Hingna Rd, Nagpur.
293	M/s Shreekrshina PlasticPlot No. 21- A amalgamed Ind, complex At- Asangaon shahpur Dist- thane
294	M/s Polymer Products Plot No. E – 48 MIDC Nagpur- 28
295	M/s Jalaram Flexo Lamination Pvt. Ltd. Plot No. U- 137, MIDC Hingna Rd. Nagpur Dist- Nagpur.
296	M/s V.S. Industry Shed No. W. 250 Phase – II MIDC, dombivali dist – Thane
297	M/s Tejas Polypack Industries U-59 MIDC Hingna Rd. Nagpur-16
298	M/s A.B.C. Products Plot No. 49, Bajapai Word, Gautam Nagar Gondia Bhandara
299	M/s Pappu Plastics 240, Satnami Nagar Nagpur
300	M/s Aditi Plastic 121 Small Factory Area, Bagadgani Nagpur
301	M/s Gurudeo Plastics Plot No. 7 Opp Power House Hiwari Nagpur Wathoda Rd. Nagpur
302	M/s Aadarsh Industries Plot No.B-317 MIDC Nanded
303	M/s Snow Plast Plot No. D- 340 MIDC, Turbhe TTC Indl. Area, Navi Mumbai.
304	M/s Ashiward Industries H. No. 605, Wajegaon Tal- -Dist Nanded.
305	M/s Shri Indusries Plot No. C- 54, Midc Indl. Area,Wardha dist- Wardha
306	M/s Prakash Polymers Gat No. 518 Vill Karanja Tal-Dist- Gondia.
307	M/s Premier Plastic Industry Plot No. C-1 MIDC Krushroe Tal- Naigaon Dist- Nanaded.
308	M/s S.S. Plastics. Gata No. 1, K.K. Gupta Compound, Dr. R.P. Rd, Mulund (W)

Sr. No.	Name of Plastic Recycling Industries
309	M/s Tirupati Plastic, Gala No. 8, Bhunasingh, Yadav Compound, Dr. R.P. Rd, Mulund (W), Mumbai- 400 080.
310	M/s Mahavir Traders., Gala No. -1, Gr. Floor, Damji Shanji Industrial Complex, LBS Marg, Kamani Kurla (W)
311	M/s Neelam Industries., Plot No. W-6, MIDC, Hingna, Dist- Nagpur
312	M/s Anjali Polyplast Pvt. Ltd. Plot No.-6., Universal Ind. State, Sasagaon, Khopoli, Dist- Raigad.
313	M/s Udyg Plastics, Plot No. W-71, MIDC Hingna, Dist- Nagpur
314	M/s Vinayak Plastics., Plot No. -5- 104, MIDC, Bhosari, Pune- 39
315	M/s Sachin Auto Services, Gala No.-1, Khindpade, NAzana Nagar, Link Rd, Bhandup (W) Mumbai- 78
316	M/s Dhanshree Flexographics., C-19, Samaral Silk Mill Compound, LBS Marg, Vikhroli (W) Mumbai-79
317	M/s M.Amit & Company, Gala No. 104, Sun Mill Comp. Lower Parel, Mumbai-13
318	M/s Shri Ganesh Plastic Industries, S.No. 51/1, P.No. 16/17, Tirupati Nagar, Deopur, Dhule
319	M/s Rajendra Plastic Products. Plot No. 3, Satnami Layout , BHandara Rd, Nagpur
320	M/sTrimurti Mahalaxmi Polymers, A-1, Bhinde Comp, Datmandir Rd, Bhandup (W) – 78
321	M/s Pooja Packaging, Plot No. 8 (13), Sr. No. 220, Near Surya Conductors, Village- Khupri, Tal- Wada, Dist- Thane.
322	M/s Yash Packaging, A- 18-19, Ind. Market, Opp Maharashtra Kala, Ghatkopar, Andheri Link Rd, Mumbai-72
323	M/s Navneet Plastic Industries, Ramnagar, 3/8, Khadegovali (E) Vithhal Wadi Kalyan, Dist- Thane.
324	M/s Unique Enterprise D- 296, TTC, MIDC, Turbhe, Navi Mumbai
325	M/s Nova Packaging B-110, Ghatkopar Ind. Estate, Ghatkopar Mumbai- 78

Sr. No.	Name of Plastic Recycling Industries
326	M/s Harish Plastics & Rubber Industries, Plot No. 20, Atgaon Ind. Comp. Village – Atgaon Tal- Sahapur, Dist- Thane.
327	M/s Om Sai Plastic. Gala No. 12, Khindpada, Duck Line Rd, Bhandup (W)
328	M/s Vimal Prints Gala No.-11, Desh Udyog MAndir, Ind. Estate, Caves Rd. Jogeshwari (E), Mumbai- 60.
329	M/s Vora Enterprises, 1,Paisham Ganesh Galli, J.M.M. Marg, Asalpha (W), Mumbai- 084.
330	M/s Sunshine Container (P) Ltd., Plot No. C- 34, MIDC BAramati, Tal- BAramati, Dist- Pune
331	M/s Premier Plastic Plot. 67/13, D- III, MIDC, Chinchwad Pune.
332	M/s D.S.L. Packaging & Sales Pvt. Ltd. J-63/3, Add. MIDC, Kodavali, Murbad, Dist- Thane
333	M/s Gupta Engineering Works Gala No. A-3, Nirabai Ind. Estate, Dattamandir Rd, Bhandup (W) Mumbai-86
334	M/s Anplast Pvt. LTd., 47 Ramgopal Ind.Estate, Dr. R.P. Rd, Mulund – (W), Mumbai
335	M/s Surya Kirti PolyPrint 3, Badawala Comp. Dargah Cross Rd, Bhandup (W) Mumbai-78
336	M/s Sumario Plasto Unit No. 125, 1st Floor, Ramgopal Ind. Estate Opp. Jawahar Talkies, Mulund- (W) Mumbai-80
337	M/s Arihant Industries. Unit No. A/17, Ground Floor, Minerva Ind. Estate, Mahur Village Opp L.B.S. Marg. Mulund (W), Mumbai-80
338	M/s Jayshree Plastics Gala No.1, Gupta Comp.Opp Jawahar Talkies R.P. Rd, Mulund (W), Mumbai – 80
339	M/s. J.B. Industries, Gala No. 114, 1st Floor, Merchant Ind. Co.-Op. Sc., Vill-Waliv, Tal: Vasai, Dist: Thane
340	M/s. Krishna Plastic, Unit No. 84, 1st Floor, New Unique Ind. Estate, Dr. R.P. Rd, Mulund (W), Mumbai-80
341	M/s. Trend Enterprises, Gala No. 1780, a/P-Zombadi, Tal: Guhagar, Dist: Ratnagiri
342	M/s. Perfect Plastic, Plot No. E-3/1, Old MIDC, Satara, Tal & Dist: Satara,
343	M/s. Krishna Polymers, P.N. 809, Bajpai Ward, Dist: Gondia,
344	M/s. Tejaswani Plastic Ind., Plot No. A-127, MIDC, Chincoli, Tal: N-Solapur, Dist: Solapur

Sr. No.	Name of Plastic Recycling Industries
345	M/s. Premdeep Plastics, Plot No. G-7, MIDC, Kudal, Tal: Kudal, Dist: Sindhudurg
346	M/s. Essel Propack Ltd, Plot No. B-1/2, MIDC, Murbad, Dist: Thane
347	M/s. Essel Propack Ltd, Post: Vashimd, Tal: Shahapur, Dist: Thane
348	M/s. Asma Plastics, Plot No. 44, Ind. Estate, Takiya Ward, Tal & Dist: Bhandara
349	M/s. Essel Propack Ltd., Vill: Vadavall, post: Kudus, Tal: Wada, Dist: Thane
350	M/s. Naveen Enterprise, A-5, Makharid Compound, Naikwadi, Near Suvega Ind. Ayyapa Lane, Saki naka, Navi Mumbai.
351	M/s. Shri Tirupati Industries, Plot No. D-1, MIDC-II, Akola, Dist: Akola.
352	M/s. Asha Polymers, Bahapavee Ward, Gautam Nagar, Gondia, Tal & Dist: Gondia.
353	M/s. Mundra Polymers Pvt. Ltd., Nangpura Murri, Gondia, Tal & Dist: Gondia
354	M/s. Shree Plast Industries, L-66, Additional MIDC, Tal & Dist: Satara
355	M/s. Vaidya Industries, S No. 90/4, Ridhora, Tal: Balapur, Dist: Akola.
356	M/s. Krishna Plast, P. No. H-65/1, MIDC, Akola, Dist: Akola
357	M/s. Heramb Polyprint, Gala No. 17, Ground floor, Bhola Bhagvan Ind. Estate, I.B. Patel Rd, Goregaon (E), Mumbai-63.
358	M/s. Prameera Polymers Industries Pvt. Ltd., W-200 (B), MIDC, Phase-II, dombivali, Dist: Thane
359	M/s. Cemech Engineering Industries, Plot No. W-21, MIDC, Hingna, Dist: Nagpur
360	M/s. Rahul Packaging, Gala No. 219, 2nd Floor, Udyog Bhavan, Sharma Ind Estate, Valbhatt Rd, Goregaon (E), Mumbai-63
361	M/s. Prashant Plastics, Unit No. 103, 1st floor, Build No. 2, Tejapai Ind. Estate, Kurla-Andheri rd. Sakinaka, Mumbai-72
362	M/s. Nalilni Enterprises, A-51, Osia Mata Compound, Vill- Kalher, Bhiwandi, Dist: Thane.

Sr. No.	Name of Plastic Recycling Industries
363	M/s. Neo -Plast, Gala No. 36, Ramgopal Ind., Dr. R. P. Rd, Mulund, Mumbai
364	M/s. Jay Plastics, 27/28, Jamnadas Ind. Estat, Dr. R. P. Rd, Mulund, Mumbai-80
365	M/s. Bharat Plastics, G-A, Madani Estate, B. G. Rd, Bhandup(W), Mumbai.
366	M/s. Pandey plastics, 6, Sai Pooja Ind. Estate, Tulsi Pada, Bhandup (W), Mumbai
367	M/s. Maruti Polyplast, Gala No. 12, Kopankar Estate, Bhandup (W), Mumabi
368	M/s. Jinesh Plast-o-Pack, Gala No. C-113, Bonanza Ind. Estate, Kandivali (E), Mumbai-80
369	M/s. Doll Plast, Gala No. 111, Ramgoapal Ind. Dr. R. P. Rd., Mulund (W), Mumbai-80
370	M/s. Pareek Plastics, Gala No. 113, Ramgopal Estate, Dr. R. P. Rd, Mulund (W), Mumbai-80
371	M/s. Aurangabad Poly Containers Pvt. Ltd., Plot No. K-127, Unit No. 2, MIDC Area, Waluj, Aurangabad
372	M/s. Sunrise Technologies, Plot no. K-3, MIDC Indl. Area, Hingna Road, Nagpur.
373	Prime Poly Print, 2/8, Sabun Bhavan, 187, Sheriff Devji Street, Mumbai-400 003.
374	M/s. Sky Polymers, H. No. 1836, Sai Colony, Gargoti, Tal: Bhudargad, Dist: Kolhapur.
375	M/s. N. A. M. Enterprises, Gala No. 3, Madani Estate, Derga Road, Sonapur Lane, Bhandup (W), Mumbai-072
376	M/s. Heena Plastics, Gala No. 6, Singh Chowk, Rajiv Gandhi Nagar, Solapur Lane, Bhandup (W), Mumbai-80.
377	M/s. Shree Krishna Plastics & Packaging Pvt. Ltd., B-5, Gupta Indl. Complex, Jayshree Paints Compound, Asangaon, Tal: Shahapur, Dist: Thane.
378	M/s. Ugraya Printing & Packaging Pvt Ltd, Plot No. 26, Survey No. 1/1/4/41, Dhanani Industrial Estate, Village- Manipur, Ganjad, Tal: Dahanu, Dist: Thane-401602
379	M/s. Bombay Products, 833/A-1, Village Saori, Balaghat Road, Gondia, Dist: Gondia.
380	M/s. Interpack Polymers, 125, Maa Umiya Sahakari Vasahat Maryadit, Mouza- Kapsi, Tal: Kamptee, Dist: Nagpur.

Sr. No.	Name of Plastic Recycling Industries
381	M/s. Nasent Polymers Pvt. Ltd., D65, MIDC Indl. Hingna Road, Nagpur.
382	Ms/. Liberson Industries Pvt. Ltd., Plot No. U-45, MIDC Indl. Area, Hingna Road, Nagpur.
383	M/s. Indian Plastic Industries, Gala No. B-2/5, S. No. 171 & 165/4, Radheshyam Indl. Complex, Asangaon, Tal: Shahapur, Dist: Thane.
384	M/s. Hydropol Plastic (India) Pvt. Ltd., Plot No. 14 to 29, Parvati Co-Op. Ind. Estate, Yadrav, Tal: Shirol, Dist. Kolhapur
385	G D Environmental Pvt. Ltd, Factory:- Kamla Shankar Industrial Complex, Shed No. A-7. Pirangut, Tal.- Mulshi, Pune District, Pune (+91) 20-667-55-660
386	Recyclekaro, Mumbai

21 ANNEXURE – V: LIST OF CEMENT FACTORIES IN MAHARASHTRA

Sr. No.	Name of Cement Clinker Manufacturer Unit	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
1	Geocycle India, Maratha Unit, Ambuja Cement, Chandrapur Address: Upparwahi, Korpana, Chandrapur Dist. Contact : Ms. Nidhi Nayar, Sales Department, nidhi.nair@geocycle.com +91-9663127009	500 T /day	Gadchandur NNP	--	Jiwati NNP	--	Korpana NNP	--
					Rajura M Council	--	Ballarpur M Council (B)	1.5 T/d
							Chandrapur M Corp.	25 T/d
							Gangakhed M Council (B)	--

22 ANNEXURE – VI: LIST OF PAPER & CARDBOARD RECYCLING INDUSTRIES IN MAHARASHTRA

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
1	Padmavati Pulp & Paper Mills No.-55, Anand Nagar, M. I. D. C. Ambernath East, Ambarnath - 421506, Maharashtra, India	50 (All types of paper and cardboard is accepted)	Badlapur Council (B)	0.14	Kalyan Dombivali M Corp.	9.72	Navi Mumbai M Corp.	6.44
			Ambernath M Council (A)	1.04	Bhiwandi Nizampur M Corp.	3.47	Panvel M Corp.	8.04
			Ulhasnagar M Corp.	2.5			Matheran Council (C)	0.96
							Murbad NP	0.05
							Thane M Corp.	13.15
2	Bansi Pulp & Paper Mills Private Limited Address: 655/657, Samdoli Road, Kasbe Digraj, Sangli, Maharashtra 416305 Phone: 077090 10058	200 corrugated carton	Sangli Miraj Kupwad M Corp.	2.12	Jaysingpur M Council (B)	0.15	Kurundvad M Council (C)	0.07
					Ashta Council (C)	0.11	Palus NP	0.05
					Tasgaon Council (C)	0.12	Ichalkaranji M Council (A)	1.12
3	Laxmi Board & Paper Mills Pvt. Ltd Address: Plot #2, Kalyan-Bhiwandi Road, MIDC, Saravali, Kalyan, Maharashtra 421311	181	Kalyan Dombivali M Corp.	9.72	Badlapur Council (B)	0.14	Navi Mumbai M Corp.	6.44
			Bhiwandi Nizampur M Corp.	3.47	Ambernath M Council (A)	1.04	Panvel M Corp.	8.04

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Phone: 022 2655 2952		Ulhasnagar M Corp.	2.5	Thane M Corp.	13.15	Mira Bhayandar Corp.	6.56
	*Manufacturing capacity of Laxmi Board & Paper Mills is 1,20,000 MT per annum. As per Paper Manufacturers Association 65 % paper manufactured is by use of waste paper and recycled paper.							
4	Pudumjee Paper Address: Kalij, Maharashtra 402302 Phone: 020 3061 3333	90.7*			Mahad M Council (C)	0.09	Mandangad NNP	0.01
					Poladpur NNP	0.01	Mangaon NNP	0.04
5	Pudumjee Paper Address: Aditya Birla Hospital Marg, Thergaon, Pimpri-Chinchwad, Maharashtra 411033		Pimpri Chinchwad M Corp.	7.09	Pune M Corp.	21.93	Mahabaleshwar M Council (C)	0.04
					Alandi M Council (C)	0.10	Rajguru Nagar NNP	0.06
					Talegaon Dabhade M Council (B)	0.19		
					Chakan M Council (B)	0.37		
	*Manufacturing capacity of Pudumjee Paper Products is 60,000 MT per annum. As per Paper Manufacturers Association 65 % paper manufactured is by use of waste paper and recycled paper.							
6	Agrawal Paper Co 383, Shaniwar Peth, Opposite Kanyashala Ground, Shaniwar Peth, Pune, Maharashtra 411030		Pune M Corp	21.93	Pimpri Chinchwad M Corp	7.09	Sasvad M Council (C)	0.11
					Alandi M Council (C)	0.10	Talegaon Dabhade M Council (B)	0.19
							Chakan M Council (B)	0.37
7	Alpha Carbonless Paper Mfg.				Panvel M	8.04	Uran M	0.10

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Co. Pvt. Ltd Unit No. 26, Building No. 2, A-3, Sector 1, Millennium Business Park TTC, Industrial Area, Mahape, Navi Mumbai - 400710, Maharashtra, India Telephone: +91-22-27781507 +91-22-2778150				Corp		Council (C)	
					Navi Mumbai M Corp	6.44	Greater Mumbai M Corp	80.54
					Thane M Corp	13.15	Badlapur M Council (B)	0.14
					Ulhasnagar M Corp	2.5	Ambernath M Council (A)	1.04
					Kalyan-Dombivli M Corp	9.72	Bhiwandi Nizampur M Corp.	3.47
							Mira-Bhayandar M Corp	6.56
8	Alpha Papers Unit 2 Factory Turbhe MIDC, MIDC Industrial Area, Navi Mumbai, Maharashtra 400705 Phone: 098205 55747		Navi Mumbai M Corp	6.44	Thane M Corp.	13.15	Bhiwandi Nizampur M Corp	3.47
					Panvel M Corp.	8.04	Kalyan-Dombivli M Corp.	9.72
							Ulhasnagar M Corp.	2.5
							Ambernath M Council (A)	1.04
							Badlapur M Council (B)	0.14
							Matheran M Council (c)	0.96
							Greater Mumbai M Corp.	80.54
							Uran M	0.10

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
							Council (C)	
9	Amol Paper Mills Private Limited Syndicate Bank Building, 26-A Sir P. M. Road, Fort, Mumbai, Maharashtra-400001 Phone: 022 2266 2257		Greater Mumbai M Corp	80.54	Uran M Concil (C)	0.10	Navi Mumbai M Corp	6.44
							Panvel M Corp	8.04
10	Aurangabad Paper Mill Ltd Opposite Municipal School, Bansilal Nagar, Aurangabad, Maharashtra 431001 Phone: 0240 233 3803		Aurangabad M Corp	3.99			Khuldabad M Council (C)	0.05
							Phulambri NNP	0.03
11	Balkrishna Paper Mill Ltd A/7, Trade World, Kamala City, Senapati Bapat Marg, Lower Parel, Mumbai - 400 013 Tel.: +91 22 6120 7900		Greater Mumbai M Corp.	80.54	Uran M Council (C)	0.10	Panvel M Corp.	8.04
							Navi Mumbai M Corp.	6.44
							Thane M Corp.	13.15
12	Brown Multitech Private Limited First Foor, Silver Line, Shriniwas Bagarka Rd, J B Nagar, Andheri East, Mumbai, Maharashtra 400059 Phone: 022 6139 5413				Greater Mumbai M Corp.	80.54	Uran M Council (C)	0.10
					Thane M Corp.	13.15	Panvel M Corp.	8.04
							Navi Mumbai M Corp.	6.44
							Bhiwandi	3.47

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
							Nizampur M Corp.	
13	Century Textiles and Industries Limited Century Bhavan, Dr Annie Besant Road, Worli, Century Bazaar, Prabhadevi, Mumbai, Maharashtra 400030 India +91 22 2495 7000				Thane M Corp.	13.15	Greater Mumbai M Corp.	80.54
					Mira-Bhayandar M Corp.	6.56	Navi Mumbai M Corp.	6.44
							Bhiwandi Nizampur M Corp.	3.47
							Vasai-Virar City M Corp.	9.97
14	Century Textiles and Industries Limited Century Bhavan, Dr Annie Besant Road, Worli, Mumbai 400030, Maharashtra, India. Tel: +91-22-24957000		Greater Mumbai M Corp.	80.54	Uran M Council (C)	0.10	Navi Mumbai M Corp.	6.44
							Thane M Corp.	13.15
15	Ellora Paper Mills Limited Packing Paper Product Compound, M I D C Area, B Cross Road, Andheri East, Andheri East Bhim Nagar, Andheri East Mumbai, Maharashtra 400059 India +91 22 4253 000				Thane M Corp.	13.15	Uran m Council (C)	0.10
					Greater Mumbai M Corp.	80.54	Panvel M Corp	8.04
							Navi Mumbai M Corp.	6.44
							Bhiwandi Nizampur M Corp.	3.47
							Mira-	6.56

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
							Bhayandar M Corp.	
16	Ellora Paper Mills Limited 379, Modi Number 3, Opposite Patwardhan High School, Sitabuldi Nagpur, Maharashtra 440012 India +91 712 255 0496		Nagpur M Corp	9.75	Mahadula NP	0.04	Parsivni NNP	0.02
			Wadi NNP	0.19	Kanhan-Pipri NNP	0.09	Kalameshwar M Council (C)	0.06
					Kamptee, M Council (B)	0.29		
					Wanadongri NNP	0.08		
					Hingana NNP	0.02		
17	Ganga Papers India Limited Gat 241, Village-Bebedohal Taluka- Maval, Pune -410 506 Phone : +91 20 66206581		Talegaon Dabhade M Council (B)	0.19	Pimpri Chinchwad M Corp.	7.09	Pune M Corp	21.93
							Alandi M Council (C)	0.10
							Chakan M Council (B)	0.37
							Lonavala M Council (B)	0.19
18	Goalpanchi Board Mill, Karwa(Recycle Unit)						Chimur NNP	0.08
							Sindewahi NNP	0.02
19	Godavari Pulp & Paper Mills Private Limited		Nashik M Corp	11.11	Bhagur M Council (C)	0.04	Dindori NNP	0.04

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
							Sinnar M Counci (C)	0.23
20	Hardoli Paper Mills Ltd Krishna Kunj, C A Road, Bhavsar Chowk, Gandhibagh Chhota Loharpura, Gandhibagh Nagpur, Maharashtra 440002 India +91 712 277 0168		Nagpur M Corp.	9.75	Mahadula NP	0.04	Kalameshwar M Council (C)	0.06
			Wadi NNP	0.19	Kanhan-Pipri NNP	0.09	Parsivni NNP	0.02
					Kamptee M Council (B)	0.29		
					Wanadongri NNP	0.08		
					Hingana NNP	0.02		
21	Indo Afrique Paper Mill Pune Satara Road Village - Pande, Post- Sarole Pune - 412 205 Maharashtra, India. Telephone +91 22 26552952 / 53				Bhor M Council (C)	0.06	Sasvad M Council (C)	0.11
					Khandala NNP	0.02	Jejuri M Council (C)	0.05
							Lonand NNP	0.03
							Wai M Council (C)	0.13
22	Ishwar Pulp & Paper Mill Gat no. 104/2,, Village - Umala,, Jalgaon, Maharashtra 425003 Phone: 0257 202 0430				Jalgaon M Corp	2.02	Varangaon NNP	0.10
					Jamner M Council (C)	0.17	Bhusawal M Council (A)	0.69
							Yawal M Council (C)	0.13
23	Jk Paper Limited 136-138, Bazar Gate Street, Laxmi Bhawan, Fort, Mumbai, Maharashtra 400001	**Call & Confirm**	Greater Mumbai M Corp	80.54	Uran M Council (C)	0.10	Panvel M Corp.	8.04
							Navi Mumbai M Corp.	6.44

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Phone: 022 2265 2170							
24	Kalpkala Paper Industries 67 Industrial Estate, Near Ashtavinayak Mandir, Narayan Nagar, Latur, Maharashtra 413531 094224 68471		Latur M Corp.	1.69	Renapur NNP	0.03	Shirur Anantpal NNP	0.02
					Ausa M Council (C)	0.12		
25	Kasat Paper Industries 1184/4/A, Gokul Nagar, Fergusson College Road, Shivajinagar, Opposite Idbi Bank, Shivajinagar, Pune, Maharashtra 411005 Phone: 020 25676202		Alandi M Council (C)	0.10	Chakan M Council (B)	0.37	Talegaon Dabhade M Council (B)	0.19
			Pimpri Chinchwad M Corp.	7.09			Rajguru Nagar NNP	0.06
			Pune M Corp.	21.93				
26	Kay Iron Works Pvt Ltd 352/10, 2 Krishna, Boat Club Road, Boat Club, Boat Club, Pune, Maharashtra 411001 Phone: 020 2612 5449		Pune M Corp.	21.93	Alandi M Council (C)	0.10	Sasvad M Council (C)	0.11
					Pimpri Chinchiwad M Corp	7.09	Talegaon Dabhade M Council (B)	0.19
							Chakan M Council (B)	0.37
27	Kay Power and Paper Limited Gat No. 454/457, Village Borgaon,				Koregaon NNP	0.04	Patan NNP	0.02
					Satara M Council (A)	0.38		

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Tal./Dist. Satara-415 519 Maharashtra.				Rahimatpur M Council (C)	0.06		
28	Krishna Board Mill, Daheli(Recycle Unit) Krishna Board Mill Vishal Jogi(Director) Lawari Bamni, Taluka Ballarpur, Chandrapur, Nagpur - 442701, Maharashtra, India Contact : +91-9970349224 +91-9422910258		Ballarpur M Council (B)	0.26	Chandrapur M Corp	1.21	Gadchandur NNP	0.11
			Rajura M Council (C)	0.10			Pombhurna NNP	0.01
29	Krushnakunj Paper & Board Mill 259/2 Yawal-Faizpur Road, Hingona, Tal- Yawal Dist-Jalgaon (M.S), Hingona, Maharashtra 42551 Phone: 076007 49501		Yawal M Council (C)	0.13	Savda M Council (C)	0.07	Raver M Council (C)	0.08
			Faizpur M Council (C)	0.09	Bhusawal M Council (A)	0.69	Varangaon NNP	0.10
							Jalgaon M Corp.	2.02
30	Maharashtra Paper Company Suvpra House, 608 Shaniwar Peth, Chandrashekhar Agashe Path, Pune, Maharashtra 411030 Phone: 020 2445 0771		Pune M Copr	21.93	Alandi M Councic (C)	0.10	Sasvad M Council (C)	0.11
					Pimpri Chinchwad M Corp	7.09	Talegaon Dabhade M Council (B)	0.19
							Chakan M Council (B)	0.37

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
31	Maharashtra Paper Company (New Premises) Chandrashekhar Agashe Path, Shaniwar Peth, Pune, Maharashtra 411030 Phone: +91-20- 24450771 / 24458379 / 24487389		Pune M Corp.	21.93	Pimpri Chinchwad M Corp	7.09	Sasvad m Council (C)	0.11
					Alandi M Council (C)	0.10	Talegaon Dabhade M Council (B)	0.19
							Chakan M Council (B)	0.37
32	Maharashtra Paper Company Factory 592/2/11 Handewadi Road , Bhosale Farm, Devachi Urali, Pune-411028, Maharashtra, India Ph: +91-20 24458379 Mobile: +91- 9423033753				Pune M Corp.	21.93	Pimpri Chinchwad M Corp.	7.09
					Sasvad M Council (C)	0.11	Alandi M Council (C)	0.10
33	Maharashtra Paper Suppliers Shop No. 1442, Bajirao Road, Shukrawar Peth Sathe Colony, Shukrawar Peth Pune, Maharashtra 411002 India +91 20 2443 2863		Pune M Corp.	21.93	Alandi M Council (C)	0.10	Sasvad M Council (C)	0.11
					Pimpri Chinchwad M Corp.	7.09	Chakan M Council (B)	0.37
34	Malu Paper Mill Pvt Ltd Unit I II Village Borujwada,		Khapa M Council (C)	0.04	Parsivni NNP	0.02	Wadi NNP	0.19
			Savner M Council (C)	0.12	Mohpa M Council (C)	0.02	Nagpur M Corp.	9.75

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Taluka-Saoner, 31 K.M. Stone, Nagpur Saoner Road Dist- Nagpur Maharashtra				Mahadula NP	0.04		
					Kalameshwar Council (C)	0.06		
35	Nath Pulp & Paper Mill Ltd Eknath SSK (PO), Paithan Tq., Aurangabad, Maharashtra State- 431148 Phone : 02431 232181		Aurangabad M Corp.	3.99			Phulambri NNP	0.03
							Khuldabad M Council (C)	0.05
					Mira-Bhayandar M Corp.	6.56	Greater Mumbai M Corp.	8054
							Navi Mumbai M Corp.	6.44
							Vasai-Virar City M Corp.	9.97
36	Nath Pulp & Paper Mills Limited Nath House, Nath Road, Aurangabad, Maharashtra 431005 Phone: 0240 237 6314		Aurangabad M Corp.	3.99			Khuldabad M Council (C)	0.05
							Phulambri NNP	0.03
37	Neptune Paper Company No. 56/ 57, Akurli Industrial Estate, Akurli Road, Kandivali East, Mumbai - 400101 Phone: 022 4071 2500				Thane M Corp.	13.15	Greater Mumbai M Corp.	80.54
					Mira-Bhayandar M Corp.	6.56	Navi Mumbai M Corp.	6.44
							Kalyan-Dombivli M Corp.	9.72

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
							Bhiwandi Nizampur M Corp.	3.47
							Vasai-Virar City M Corp.	9.97
38	Nice papers Limited Kalmeshwar goghli, Nagpur Maharasthra, Maharashtra 441501 Phone: 0712 224 9493		Mohpa M Council (C)	0.02	Savner M Council (C)	0.12	Khapa M Council (C)	0.04
			Kalameshwar M Council (C)	0.06	Wadi NNP	0.19	Katol M Council (C)	0.14
					Wanadongri NNP	0.08	Mahadula NP	0.04
							Nagpur M Corp.	9.75
							Hingala NNP	0.02
39	Nirvikara Paper Mills Limited A wing, 7th Floor, Trade Word Building, Kamala Mill Compound, Senapati Bapat Marg, Lower Parel, Mumbai, Maharashtra 400013 Phone: 022 6120 7900		Greater Mumbai M Corp	80.54	Uran M Council (C)	0.10	Thane M Corp.	13.15
							Navi Mumbai M Corp.	6.44
							Panvel M Corp.	8.04
40	Orchids Tissue Paper Company A wing, 7th Floor, Trade Word Building, Kamala Mill Compound, Senapati Bapat Marg, Lower Parel, Mumbai, Maharashtra 400013 Phone: 022 6120 7900				Navi Mumbai M Corp.	6.44	Uran M Council (C)	0.10
					Greater Mumbai M Corp.	80.54	Panvel M Corp.	8.04
							Thane M Corp.	13.15

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
							Mira-Bhayandar M Corp.	6.56
41	Pandurang Paper and Board Mill Plot no. 175-182, Chandramouli Co-operative Industrial Estate, Mohol, Solapur, Maharashtra 413213 Phone: 0217 272 9466		Mahol NNP	0.05			Madha NNP	0.02
42	Rohit Pulp & Paper Mills Ltd Rohit Chamber, Janmabhoomi Marg, Janmabhoomi Marg, Mumbai, Maharashtra 400001 Phone: 022 2287 1422		Greater Mumbai M Corp.	80.54	Uran M Council (C)	0.10	Panvel M Corp.	8.04
							Navi Mumbai M Corp.	6.44
43	Shah Paper Mills Limited 209 , ML Spaces , Dashrathlal Joshi Road, Vile Parle West, Navpada, Kamala Nagar, Vile Parle West, Mumbai, Maharashtra 400056 Phone : 022 2616 1932				Thane M Corp.	13.15	Uran M Council (C)	0.10
					Greater Mumbai M Corp.	80.54	Navi Mumbai M Corp.	6.44
							Mira-Bhayandar M Corp.	6.56

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
44	Shree Krishna Paper Mills & Industries Ltd Unit 104, Nirman Kendra, Dr E Moses Road, Mahalaxmi, Near Famous Studio, Bwing 11, Agripada, Mumbai, Maharashtra - 400011 Phone : 022 2497 0177		Greater Mumbai M Corp	80.54	Uran M Council (C)	0.10	Thane M Corp.	13.15
							Navi Mumbai M Corp.	6.44
							Panvel M Corp.	8.04
45	Shree Krishna Papers Office No 5, Jolly Bhawan 2, Vitthaldas Thackersey Marg,, Near Chruch gate Station, New Marine Lines,, New Marine Lines, Marine Lines, Mumbai, Maharashtra 400020 Phone : 022 2262 5073		Greater Mumbai M Corp	80.54	Uran M Council (C)	0.10	Navi Mumbai M Corp.	6.44
							Panvel M Corp.	8.04
46	Shri Kaygaon Paper Mill Limited Ist Floor, Manisha Apartment, Kotla Colony, Adalat Road, B/H Axis Bank, Adalat Road, Aurangabad, Maharashtra 431001 Phone: 0240 232 1855		Aurangabad M Corp.	3.99			Khuldabad M Council (C)	0.05
							Phulambri NNP	0.03
47	Sinar Mas Pulp & Paper (India) Limited C-16-17 3rd Floor, Shangrilla		Pune M Corp.	21.93	Alandi M Council (C)	0.10	Chakan M Council (B)	0.37

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Gardens, Tara Baug, 285, Bund Garden Road, Koregaon Park, Koregaon Park, Pune, Maharashtra 411001 Phone: 020 2613 5380				Pimpri Chinchwad M Corp.	7.09	Talegaon Dabhade M Council (B)	0.19
							Sasvad M Council (C)	0.11
48	Swastik Pulp & Papers Pvt Ltd Nashik - Pune Rd, Malegaon Industrial Area, Malegaon, Maharashtra 422113 Phone: 02551 230 232		Sinnar M Council (C)	0.23	Bhagur M Council (C)	0.04	Nashik M Corp.	11.11
							Niphad NNP	0.04
49	Tapi Paper Industries P. L. E - 12, M.I.D.C., Jalgaon, Maharashtra 425003 Phone: 0257 221 0035		Jalgaon M Corp.	2.02			Jamner M Council (C)	0.17
							Erandol M Council (C)	0.11
							Bhusawal M Council (A)	0.69
							Yawal M Council (C)	0.13
50	The Standard Pulp Paper Factory 1366/2, Old Pandit Colony, Front Side Of Shinde Highschoo, Old Pandit Colony, Nashik, Maharashtra 422001 Phone: 0253 239 5088		Bhagur M Council (C)	0.04	Sinnar M Council (C)	0.23	Niphad NNP	0.04
					Nashik M Corp	11.11		
51	The West Coast Paper Mill Limited Shreeniwas House, Murzaban Road, Hazarimal Somani Marg, Azad Maidan, Fort,		Greater Mumbai M Corp.	80.54	Uran M Council (C)	0.10	Navi Mumbai M Corp.	6.44

Sr. No.	Name of the Paper and Cardboard Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
	Mumbai, Maharashtra 400001 Phone: 022 2207 0043							
52	The West Coast Paper Mills 47, 1st Floor, The Arcade, World Trade Centre Complex, Cuffe Parade, Mumbai, Maharashtra 400005		Greater Mumbai M Corp	80.54	Uran M Council (C)	0.10	Panvel M Corp.	8.04
							Navi Mumbai M Corp	6.44
53	Umesh Board And Paper Mill Private Limited 7, Samarat Apartment, Seven Hills, Gajanan Maharaj Mandir Road, Aurangabad, Maharashtra 431005 Phone: 0240 245 2340		Aurangabad M Corp	3.99			Khuldabad M Council (C)	0.05
							Phulambri NNP	0.03
54	Yash Paper Corporation Plot No 20, Parvati Industrial Estate, Pune Satara Road, Parvati Industrial Estate, Opposite Vikram Printers, Parvati Industrial Estate, Pune, Maharashtra 411009 Phone: 020 2421 5795		Pune M Corp.	21.93	Alandi M Council (C)	0.10	Chakan M Council (B)	0.37
					Pimpri Chincwad M Corp.	7.09	Talegaon Dabhade M Council (B)	0.19
							Sasvad M Council (C)	0.11

23 ANNEXURE – VII: LIST OF GLASS MANUFACTURING INDUSTRIES IN MAHARASHTRA

Sr. No.	Name of the Glass Recycling Industries	Sr. No.	Name of the Glass Recycling Industries
1	Empire Industries Ltd.- Vitrum Glass Address: Empire House, 2nd Floor, 414 S.B. Marg , Lower Parel , Mumbai - 400013 Phone: 022- 61467676/24937200	5	PRAGATI GLASS WORKS (P) LTD. Address: Off. : 111, Damji Shamji Industrial Complex, 9, LBS, Marg, Kurla (W) Mumbai - 400070 Phone: 022-65030801/2,25164922/24
2	Neutral Glass & Allied Industries Private Limited Address: M. Vasanji Road, J. B. Nagar Andheri (East), Mumbai 400 059 Phone: (022) 2832 7025 to 28		
3	Owens - Corning (india) ltd. Address: Plot No. T-28, MIDC, Phase 2, Taloja, Raigad, Maharashtra - 410 208 Phone: 022- 66681700		
4	Piramal Glass Limited Address: Piramal Tower Annexe, 6th Floor, Peninsula Corporate, Park, Off. Worli Naka, Lower Parel, Mumbai 400 013 Phone: 022-30466969		

24 ANNEXURE – VIII: LIST OF THERMOCOL RECYCLING INDUSTRIES IN MAHARASHTRA

Sr. No.	Name of the Thermal Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
1	G D Environmental Pvt. Ltd Factory:-Kamla Shankar Industrial Complex, Shed No. A-7. Pirangut, Tal.-Mulshi, Pune District, Pune (+91) 20-667-55-660	No Limitation	--	--	Pune M Corp.	1.01	Alandi M Council I	
2	Mane Group of Companies Address: El - 39/6, Electronics Zone, M I D C Bhosari, Pune, Maharashtra 411026 098508 98649	No Limitation	Pune M Corp.	1.01				

ANNEXURE – IX: LIST OF FOOTWEAR RECYCLING INDUSTRIES IN MAHARASHTRA

Sr. No.	Name of the Footwear Recycling Industries	Qty. of waste required (T/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
1	Greensole Greensole, C/O A463, Ram Fashion Exports, MIDC, Mahape Navi Mumbai- 400701, Raigad District +91-8879982045	No Limitation	--	--	Navi Mumbai M Corp.	0.80	Badlapur Council (B)	0.12
			--	--	Panvel M Corp.	1.01	Mira Bhayandar M Corp.	0.82
			--	--	Thane M Corp.	1.64	Matheran Council (C)	0.002
			--	--	Kalyan Dombivali M Corp.	1.21	Uran Council (C)	0.001
			--	--	Ulhasnagar M Corp.	0.31	Greter Mumbai M Corp.	10.07
			--	--	Ambernath M Council (A)	0.13	Bhiwandi Nizampur M Corp.	0.43

25 ANNEXURE – X: LIST OF METAL RECYCLING INDUSTRUES IN MAHARASHTRA

Sr. No.	Name of the Metal Recycling Industries	Qty. of waste required (MT/D)	10 Km	Qty. of waste generated (T/D)	20 Km	Qty. of waste generated (T/D)	30 Km	Qty. of waste generated (T/D)
1	Sudal Industries Ltd A-5, Mumbai - Nashik Expy, Ambad Industrial Area, MIDC Ambad, Nashik, Maharashtra 422010 Phone: 02532382396		Nashik M Corp.	0.37	Bhagur M Council (C)	0.001	Sinnar M Council (C)	0.01
							Triambak M Council (C)	0.001
							Dindori NNP	0.001

26 ANNEXURE – XI: LIST OF METAL SCRAP DEALERS IN MAHARASHTRA: REVENUE DIVISION WISE

Sr. No.	Name	Taluka	District	Division
1	HHK Hira Enterprises	Aurangabad	Aurangabad	Aurangabad
2	Khushi Scrap Centre	Aurangabad	Aurangabad	Aurangabad
3	Ramesh Avhad & Company	Aurangabad	Aurangabad	Aurangabad
4	Star Metal	Parbhani	Parbhani	Aurangabad
5	Agni Industries	Greater Bombay	Mumbai	Konkan
6	Indore Metal Corporation	Greater Bombay	Mumbai	Konkan
7	Kothari Metallurgical Export P.Ltd.	Greater Bombay	Mumbai	Konkan
8	Mardia Tubes Ltd.	Greater Bombay	Mumbai	Konkan
9	Samico International	Greater Bombay	Mumbai	Konkan
10	Scrapwale	Greater Bombay	Mumbai	Konkan
11	Scrap Yard Mumbai	Greater Bombay	Mumbai	Konkan
12	Scrap Wale	Greater Bombay	Mumbai	Konkan
13	Stream Traders	Greater Bombay	Mumbai	Konkan
14	Trans International	Greater Bombay	Mumbai	Konkan
15	Dream Green Petro-Chem Pvt. Ltd.	Nashik	Nashik	Nashik
16	Patil Wooden MaterialsWholesale traders	Nashik	Nashik	Nashik
17	R.K. Steel Traders	Nashik	Nashik	Nashik
18	Shri Saptashringi Ispat Private Limited	Nashik	Nashik	Nashik
19	Sunrise Eco Energy	Nashik	Nashik	Nashik
20	Wadhwa Infracore Steel Private Limited	Nashik	Nashik	Nashik

Sr. No.	Name	Taluka	District	Division
21	Guru Storage Batteries	Rajgurunagar	Pune	Nagpur
22	M/s. Shakti Industries	Rajgurunagar	Pune	Nagpur
23	Chloride Metal	Kagal	Kolhapur	Pune
24	Sterling Lead Pvt. Ltd.	Kagal	Kolhapur	Pune

27 ANNEXURE – XII: LIST OF GLASS SCRAP DEALERS IN MAHARASHTRA: REVENUE DIVISION WISE

Sr. No.	Name	Taluka	District	Division
1	A .P. Traders	Aurangabad	Aurangabad	Aurangabad
2	Khushi Scrap Centre	Aurangabad	Aurangabad	Aurangabad
3	Gulam & Gulam Exim Pvt. Ltd.	Greater Bombay	Mumbai	Konkan
4	Stream Traders	Greater Bombay	Western Suburb	Konkan
5	Transal International	Greater Bombay	Mumbai	Konkan
6	Zircon Enterprises (P) LTD.	Greater Bombay	Thane	Konkan
7	R.K. Steel Traders	Nashik	Nashik	Nashik

28 ANNEXURE – XIII: LIST OF WASTE CLOTH SCRAP DEALERS IN MAHARASHTRA: REVENUE DIVISION WISE

Sr. No.	Name	Taluka	District	Division
1	Rida International	Aurangabad	Aurangabad	Aurangabad
2	B. H. Merchant	Greater Bombay	Western Suburb	Konkan
3	Choudhary Textile Cotton Waste	Greater Bombay	Western Suburb	Konkan
4	Eastern Waste Products	Greater Bombay	Mumbai	Konkan
5	F. M. Enterprises	Greater Bombay	Western Suburb	Konkan
6	M. H. Textile Waste	Greater Bombay	Thane	Konkan
7	MS Traders	Greater Bombay	Western Suburb	Konkan
8	Nishar Trading Company	Greater Bombay	Western Suburb	Konkan
9	Popat Textile Corporation	Greater Bombay	Thane	Konkan
10	Shree Mahal Marketing Solutions	Greater Bombay	Thane	Konkan
11	Balaji Enterprises	Pune	Haveli Velhe	Pune
12	Ujwal Texprints	Pune	Rajgurunagar	Pune

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