25

STANDING COMMITTEE ON

URBAN DEVELOPMENT

(2018-2019)

SIXTEENTH LOK SABHA

MINISTRY OF HOUSING AND URBAN AFFAIRS

SOLID WASTE MANAGEMENT INCLUDING HAZARDOUS WASTE, MEDICAL WASTE AND

E-WASTE

TWENTY FIFTH REPORT

LOK SABHA SECRETARIAT
NEW DELHI

12 February, 2019, 23 Magha,1940 (Saka)

TWENTY FIFTH REPORT

STANDING COMMITTEE ON URBAN DEVELOPMENT (2018-2019)

(SIXTEENTH LOK SABHA)

MINISTRY OF HOUSING AND URBAN AFFAIRS

SOLID WASTE MANAGEMENT INCLUDING HAZARDOUS WASTE, MEDICAL WASTE AND E-WASTE

Presented to Lok Sabha on 12.02.2019

Laid in Rajya Sabha on... 12.02.2019

LOK SABHA SECRETARIAT
NEW DELHI

12 Febraury, 2019, 23 Magha, 1940 (Saka)

C.U.D. No.: 111

Price : Rs.

Publish under Rule 382 of the Rules of Procedure and Conduct of Business in Lok Sabha (Thirteenth Edition) and Printed by……

Contents

COMPOSITION OF THE STANDING COMMITTEE ON URBAN DEVELOPMENT (2018-19)

Shri Pinaki Misra - Chairperson

MEMBERS

LOK SABHA

2. **Shri Pradhan Baruah**
3. **Shri Ramesh Bidhuri**
4. **Shri Ashok Shankarrao Chavan**
5. **Shri Dilipkumar Mansukhlal Gandhi**
6. **Dr. Dharam Vira Gandhi**
7. **Shri Maheish Girri**
8. **Shri R.Gopalakrishnan**
9. **Shri Choudhury Mohan Jatua**
10. **Smt. Meenakashi Lekhi**
11. **Shri P.C. Mohan**
12. **Shri Srinivas Kesineni Nani**
13. **Shri K. Parasuraman**
14. **Shri Kapil Moreshwar Patil**
15. **Shri Charanjeet Singh Rori**
16. **Shri Alok Sanjar**
17. **Shri Rahul Ramesh Shewale**
18. **Shri Anil (alias Padmakar) Gulabrao Shirole**
19. **Shri Brijbhushan Sharan Singh**
20. **Shri Parvesh Sahib Singh**
21. **Prof. Kuruppassery Varkey Thomas**

RAJYA SABHA

22. **Dr. Anil Agrawal**
23. **Shri R.S. Bharathi**
24. **Shri Sambhaji Chhatrapati**
25. **Smt Thota Seetharama Lakshmi***
26. **Shri Husain Dalwai**
27. **Dr. Tazeen Fatma**
28. **Shri Ahamed Hassan**
29. **Dr. Anil Jain**
30. **Dr. Prabhakar Kore**
31. **Shri K.C. Ramamurthy**

***Nominated to the Committee w.e.f 03.12.2018 in place of Shri. Y.S. Chowdhary.**

SECRETARIAT

1.	**Shri P.C. Koul**	**-**	**Joint Secretary**
2.	**Shri A.K. Shah**	**-**	**Director**
3.	**Shri Mukesh Kumar**	**-**	**Executive Assistant**

COMPOSITION OF THE STANDING COMMITTEE ON

URBAN DEVELOPMENT (2017-2018)

Shri Pinaki Misra - Chairperson

MEMBERS

LOK SABHA

2. **Shri Pradan Baruah**
3. **Shri Ramesh Bidhuri**
4. **Shri Ashok Shankarrao Chavan**
5. **Shri Dilipkumar Mansukhlal Gandhi**
6. **Dr. Dharam Vira Gandhi**
7. **Shri Maheish Girri**
8. **Shri R.Gopalakrishnan**
9. **Shri Choudhury Mohan Jatua**
10. **Smt. Meenakshi Lekhi**
11. **Shri P.C. Mohan**
12. **Shri Srinivas Kesineni Nani**
13. **Shri K. Parasuraman**
14. **Shri Kapil Moreshwar Patil**
15. **Shri Charanjeet Singh Rori**
16. **Shri Alok Sanjar**
17. **Shri Rahul Ramesh Shewale**
18. **Shri Anil Shirole**
19. **Shri Brijbhushan Sharan Singh**
20. **Shri Parvesh Sahib Singh Verma**
21. **Prof. K. V. Thomas**

RAJYA SABHA

22. **Shri R.S. Bharathi**
23. **Shri Husain Dalwai**
24. **Dr. Tazeen Fatma**
25. **Shri K.C. Ramamurthy**
26. **$Shri Y.S. Chowdary@**
27. **$Shri Ahamed Hassan#**
28. **$Dr. Anil Agrawal@**
29. **$Dr. Anil Jain***
30. **Vacant@**
31. **Vacant@**

$ Shri Y.S. Chowdary, Shri Ahamed Hassan, Dr. Anil Agrawal and Dr. Anil Jain have been nominated as the Member of Standing Committee on Urban Development w.e.f. 02/06/2018.

**** Shri Mukul Roy resigned from Rajya Sabha Membership w.e.f. 11/10/2017.***

 # Shri Parvez Hashmi retired from Rajya Sabha Membership w.e.f. 27/01/2018.
@ Shri Anil Desai, Shri Rangasayee Ramakrishna, Shri Ajay Sancheti and Shri Devender Goud T. retired from Rajya Sabha Membership w.e.f. 02.04.2018.

(v)

COMPOSITION OF THE STANDING COMMITTEE ON URBAN DEVELOPMENT (2016-2017)

Shri Pinaki Misra - Chairperson

MEMBERS

LOK SABHA

2. **Shri Ramesh Bidhuri**
3. **Shri Ram Charan Bohra**
4. **Shri Charanjeet Singh Rori**
5. **Shri Ashok Shankarrao Chavan**
6. **Dr. Dharam Vira Gandhi**
7. **Shri Dilip Mansukhlal Gandhi**
8. **Shri Maheish Girri**
9. **Shri R.Gopalakrishnan**
10. **Shri Choudhury Mohan Jatua**
11. **Shri Srinivas Kesineni Nani**
12. **Smt. Meenakshi Lekhi**
13. **Shri P.C. Mohan**
14. **Shri K. Parasuraman**
15. **Shri Kapil Moreshwar Patil**
16. **Shri Alok Sanjar**
17. **Shri Rahul Ramesh Shewale**
18. **Shri Brijbhushan Sharan Singh**
19. **Prof. K. V. Thomas**
20. **Shri Parvesh Sahib Singh Verma**
21. **Shri Pradan Baruah**

RAJYA SABHA

22. **Shri R.S. Bharathi**
23. **Dr. Subhash Chandra**
24. **Shri Husain Dalwai**
25. **Shri Anil Desai**
26. **Shri Parvez Hashmi**
27. **Shri K. G. Kenye**
28. **Shri Mahesh Poddar**
29. **Shri K.C. Ramamurthy**
30. **Shri Ajay Sancheti**
31. **Shri Dharamapuri Srinivas**

COMPOSITION OF THE STANDING COMMITTEE ON URBAN DEVELOPMENT (2015-2016)

Shri Pinaki Misra - Chairperson

MEMBERS
LOK SABHA

2. **Shri Rajendra Agrawal**
3. **Shri Ramesh Bidhuri**
4. **Shri Ram Charan Bohra**
5. **Shri Dushyant Chautala**
6. **Shri Ashok Shankrarao Chavan**
7. **Dr. Dharam Vira Gandhi**
8. **Shri Dilip Mansukhlal Gandhi**
9. **Shri Maheish Girri**
10. **Shri R.Gopalakrishnan**
11. **Shri Choudhury Mohan Jatua**
12. **Shri Srinivas Kesineni Nani**
13. **Smt. Meenakshi Lekhi**
14. **Smt. Poonam Mahajan**
15. **Shri P.C. Mohan**
16. **Shri K. Parasuraman**
17. **Shri Kapil Moreshwar Patil**
18. **Shri Alok Sanjar**
19. **Shri Rahul Ramesh Shewale**
20. **Prof. K. V. Thomas**
21. **Shri Parvesh Sahib Singh Verma**

RAJYA SABHA

22. **Smt. Vandana Chavan**
23. **Shri Husain Dalwai**
24. **Shri Anil Desai**
25. **Shri Parvez Hashmi**
26. **Shri Rangasayee Ramakrishna**
27. **Shri Mukul Roy**
28 **Shri C.P. Thakur**
29. **Shri K.G. Kenye***
30. **Shri R.S. Bharathi****
31. **Vacant #**

*** Shri K.G. Kenye had been nominated w.e.f., 20 May, 2016, Vice Shri Khekiho Zhimomi, expired on 26 November, 2015.**

**** Shri R.S. Bharathi has been nominated w.e.f., 3 August, 2016, Vice Shri S. Thangavelu, retired from Rajya Sabha on 29 June, 2016.**

 # Vice Shri Satish Sharma retired from Rajya Sabha on 4 July, 2016.

INTRODUCTION

I, the Chairperson of the Standing Committee on Urban Development (2018-19) (Sixteenth Lok Sabha) having been authorized by the Committee to submit the Report on their behalf, present this Twenty Fifth Report on the subject, "Solid Waste Management including Hazardous Waste, Medical Waste and E-Waste" of the Ministry of Housing and Urban Affairs.

2. The Committee were briefed by the representatives of the then Ministry of Urban Development on 13th July, 2015 and also took evidence of the non-officials of Centre for Policy Research, Centre for Science & Environment, Swachh, Pune and representatives of Central Pollution Control Board on 4th August, 2015. The Committee also heard the representatives of ASSOCHAM on 30th August, 2017. The Committee took oral evidence of the representatives of Ministry of Housing and Urban Affairs on 22nd January, 2018.

3. The Committee wish to express their gratitude to the representatives of the Ministry of Housing and Urban Affairs and non-officials witnesses for appearing before the Committee and placing the requisite material/information from time to time in connection with examination of the subject.

4. The Committee also place on record the valuable contributions made by the previous committees (2015-16, 2016-17 and 2017-18) on the subject.

5. The Committee considered and adopted the draft Report at their Sitting held on 11th February, 2019.

New Delhi;
11 February, 2019
22 Magha (Saka 1940)

Pinaki Misra,
Chairperson
Standing Committee
on Urban Development

DRAFT REPORT

CHAPTER – I

Introductory

A. Overall Scenario

Generation of waste is a part of human existence. The higher we soar above the basic level of existence, the greater and more diverse would be the nature of waste generated. This is also visibly evident in Indian context. The significant increase in waste generation in Indian cities is also attributed to over-population, industrialization and many other factors that strive for economic growth. In this connection, Ministry of Environment & Forest & Climate change has stated that with the ever increasing population and urbanization, the waste management has emerged as a huge challenge in the country. Not only the waste has increased in quantity but the characteristics of the waste have also changed tremendously over a period with the introduction of so many new gadgets and equipments. It is estimated that about 65 million tonnes of waste is generated annually in the country out of which about 62 million tonnes is Municipal Solid Waste (MSW) which include organic waste, recyclables like paper, plastic, wood, glass etc. About 45-50% of this MSW is biodegradable/wet/organic waste, 20-25 % is recyclable waste & about 30-35% is inert/debris.

1.2 Only about 75-80% of the municipal waste gets collected and out of this only 22-28% is processed and treated and remaining is deposited indiscriminately at dump yards. It is projected that by the year 2031, the MSW generation shall increase to 165 million tonnes and to 436 million tonnes by 2050. Eliminating, dumping and minimizing releases of hazardous chemicals by paying special attention to air quality and municipal and other waste management and reducing waste generation through prevention,

reduction, recycling and reuse globally have been one of the Sustainable Development Goals (SDGs) that have been adopted by UN General Assembly in September, 2015.

1.3 It has been estimated that the Urban Local Bodies (ULBs) spend about 60-70% of total expenditure on street sweeping, 20-30% on transportation and less than 5% on municipal disposal of waste, which shows that hardly any attention is given to scientific disposal of waste. The waste collection efficiency in India ranges between 70% and 90% in major Metro cities, whereas in several smaller cities it is below 50%. However, if the current 62 million tones annual generation of MSW continues to be dumped without treatment; it will need 3.40 lakh cubic meter of landfill space every day. Considering the projected waste generation of 165 million tonnes by 2031, the requirement of land for setting up landfill for 20 years (considering 10 meter high waste pile) could be as high as 66 thousand hectares (1240 hectare per year) of precious land, which our country cannot afford to waste. Currently, of the estimated 62 million tonnes of MSW generated annually by 377 million people in urban areas, more than 80% is disposed of indiscriminately at dump yards in an unhygienic manner by the municipal authorities leading to problems of health and environmental degradation.

1.4 As per NITI Aayog, presently, out of the total MSW generated, only 29.51% is subjected to treatment which, however, is poised to improve with the Swachh Bharat Mission (Urban) scheme of Government of India being in full swing. Some of the major achievements of the mission are as under:

i) 77% of the total wards (about 65,000 wards) now have door-to-door collection facilities, with 38% (32,000) wards having 100% segregation of waste.
ii) 15 Lacs million tonne per annum of compost production per year against the assessed potential of 54 lacs Million tonne per year.
iii) 90 MW electricity generation against the assessed capacity of 511 MW.

B. Kinds of Solid Wastes

1.5 The major solid waste contributors in India are as under:

(i) Municipal Solid Waste
(ii) Solid Waste generated from sewage
(iii) Industrial Waste
(iv) Bio-Medical Waste
(v) e-Waste
(vi) Nuclear Waste
(vii) Agriculture Waste

1.6 The NITI Aayog informed that Solid Waste is the unwanted or useless solid materials generated from human activities in residential, industrial or commercial areas. It may be categorized in three ways. viz:

(i) Origin (domestic, industrial, commercial, construction or institutional)
(ii) Contents (organic material, glass, metal, plastic paper, etc.)
(iii) Hazard potential (toxic, non-toxic, flammable, radioactive, infectious, etc.).

1.7 The Ministry of Housing and Urban Affairs has outlined the following kinds of Solid Wastes:

(a) Wet Waste

(b) Dry Waste which include Sanitary napkins and diapers, Material Recovery Facility (MRF), Refused Desired Fuel (RDF)

(c) Inert Wastes

1.8 As per National Housing Federation, the Solid Waste includes plastics, food waste, bottles, paper and other wastes such as industrial waste, construction and demolition waste, bio-medical waste, electronic waste and nuclear/radioactive waste.

(i) Plastic Waste: Plastic waste roughly comprises 10% of total garbage. In India 5.6 million tonnes of plastic waste is produced each year, of which only

20% is recycled. Plastic Waste in Delhi is estimated at 690 mt, Mumbai 408 mt. and Bengaluru 314 mt./day.

(ii) Industrial Waste is produced by the factories, mills and mines. The industrial waste can be non-hazardous, non-toxic, such as waste fibre produced by agriculture, or it could be toxic, chemical and hazardous. It pollutes the water, air and land.

(iii) Construction and Demolition Waste (C&D Waste): The progressive pace of construction and demolition in city works have enhanced the debris to a large extent. It could be as high as one-third of urban waste in areas having extensive construction activity, while 15 per cent in a normal situation. It needs to be treated separately, and can be recycled to a large extent.

(iv) Electronic Waste includes all secondary computers, entertainment devices, mobile phones and other items, such as television sets and refrigerators. **The Ministry of Electronics and Information Technology (MEITY)** has informed that electronic waste creates a global crisis due to environmental degradation. The major concern of electronic waste (e-waste) management in India is recycling of e-waste in non-formal units by unscientific, unhealthy and non-environmental non-friendly methods. Like other parts of the world, India is also facing serious challenges due to growing generation of e-waste, lack of environmental awareness among the public, consumers, producers and social and economic aspects associated with it. As per the **Department of Chemicals and Petro-Chemicals,** E-waste typically contains complex combinations of plastics and metals & other components down to microscopic levels.

(v) Bio Medical Waste

As per information furnished by **Ministry of Health and Family Welfare**. Bio-Medical Waste constitutes merely 15-25% of total waste generated in a hospital but has the propensity to cause transmission of pathogens namely Human Immunodeficiency Virus (HIV), Hepatitis B and Hepatitis C Viruses, etc. making it essential that due care is exercised while handling and disposing it. Currently, in India there are around 2000 Common Bio-Medical Waste Treatment Facilities (CBMWTF) in operation which is inadequate for Health facilities in 750 districts. All such waste which adversely harm the environment or health of a person is considered as infectious and such waste has to be managed as per BMWM Rules, 2018. Traditionally, metals, glass and ceramics were used for medical implant devices and supports. However, polymers are better suited to many of applications as they offer lighter weight, better biocompatibility and lower cost.

(vi) Hazardous waste

As per **Department of Chemicals and Petrochemicals,** Hazardous Waste means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, poisons, liberation of toxic gases in contact with air and water, causes danger or is likely to cause danger to health or environment. Hazardous Waste is generated during Petrochemical processes, pyrolytic operations, petroleum refinery, during metallurgical operations in the production of metals, metal surface treatment operation, production of fertilizers, production of plastic, cement production, leather tanneries etc. Ministry of Environment, Forest and Climate Change has notified Hazardous and other Waste (Management and Transboundary Movement) Rule, 2015. According to which, they are the Nodal Ministry for import and export matters of hazardous and other waste. MOEF&CC/CPCB are

responsible to issue guidelines or standard operating processors for environmentally sound management of hazardous and other waste from time to time. CPCB issue guidelines for safe handling, storage and transport.

1.9 In this connection outlining the solid waste processing the MOH&UA has informed the centre that at processing stage, various methods / types of solid waste treatment adopted are as follows:

For Wet Waste

i. Decentralised/Centralised Composting

Composting can be done in decentralized or centralised manner including onsite composting of waste by Bulk Generators.

Decentralized composting can be for a specific ward or area where composting of biodegradable waste is done up to 5 TPD capacity at a place. The different technologies that can be taken up under decentralized technology are pit composting, pot composting, bag composting, OWC, windrows etc.

Centralized composting includes composting of waste in a centralized manner, where biodegradable waste from all wards is brought into a centralized facility and composted through either windrow composting or other such large scale composting methods more than 5 TPD capacity".

- Decentralised options can be tailored to the local waste stream and the climatic, social, and economic conditions;

Decentralised systems reduce the cost of collection, transportation, and disposal of waste by the ULBs.

ii. Bio methanation

Biomethanation is the conversion of biodegradable waste into biogas under anaerobic conditions. In this process the biodegradable components including the food waste etc are broken down into methane under anaerobic conditions. The methane gas thus generated can be used as a fuel. Biomethanation plants can be decentralized or centralized.

For Dry Waste

i. Sanitary napkins and Diapers

Sanitary napkin treatment includes incineration facilities where the sanitary napkins collected can be incinerated. Alternatively, the wastes

can be taken after disinfection to waste to energy plants also for incineration.

ii. Material Recovery Facility (MRF)

Material recovery facility are those facilities where dry waste is further segregated into valuable components including plastics, paper, metal, glass etc. Material recovery facilities can be manual or automated based on the size of the plant. For small capacity plants, segregation table and manual segregation are the equipments used. For large scale plants, magnetic belts, separators and other segregation equipments are used.

iii. Refused Derived Fuel (RDF)

The waste material which is left behind after segregation can be used as combustibles. The waste materials/ combustibles are shredded to a desired size to be used as fuel material known as Refuse Derived Fuel (RDF). RDF can be used by cement kilns or boilers as replacement of other fuels including coal and diesel.

iv. Waste to Energy plants including ones on cluster basis

Waste to energy (WtE) refers to the process of generating energy in the form of heat or electricity from MSW. Energy from MSW can be achieved through thermal processes like incineration or combustion of refuse derived fuel (RDF); and biological processes like biomethanation and further conversion into electrical power or automotive fuel (compressed biogas).Only RDF will go to waste to energy plants.

Inert Waste

i. Filling in Scientific landfill (SLF)

Scientific landfill are landfills developed as per specifications provided under SWM Rules, 2016, and are used for disposing inert waste after scientific processing of waste.

Challenges of SWM

1.10 The NITI Aayog while outlining the following challenges in the Solid Waste Management in the country informed the Committee that the crux of the Solid Waste Management including Municipal Solid Waste lies in efficient collection and segregation at source, which despite the efforts made by the Government of India through its policies highlighted above, remains a major challenge with the prime onus on the Municipal bodies. The Urban Rejuvenation Mission, although, has driven the Urban sector in a designed manner for the first time, however, the strengthening of the

Municipal bodies is yet to be completed. Being a major stakeholder, the State Governments also have to come forward in this regard and contribute their might to solve this huge problem of Solid Waste Management.

Some of the cities have done exemplary work in the Solid Waste Management like Ambikapur and Pune and are models to be emulated by other cities. These cities have evolved their own models by bringing rag-pickers into the fold. For example, Ambikapur in Chhattisgarh, owing to intensive training, general awareness and citizens" participation, became the first municipal corporation in India to digitize garbage management, make the city dustbin free and convert 'garbage into gold' by employing poor women from Self Help Groups (SHGs) to collect the waste.

What is more heartening is the emergence of several start-ups in this sector that is likely to give impetus to this sector once the momentum is gained. It is envisaged that the scenario of Solid Waste Management Sector would improve in the country provided the State Governments also come forward in strengthening the Municipal bodies.

To sum up, while the Solid Waste Management has many challenges, it offers huge opportunities in terms of business and employment generation. A more concerted effort from all the stakeholders would, however, be required in addressing the same.

(c) Constitutional Position

1.11 The MOH&UA in its submission before the Committee stated that the Constitution of India identifies water supply and sanitation as a State subject. The 74th Amendment to the Constitution which was enacted in 1993 identified water supply and sanitation the functions that need to be transferred by the State Government to the Urban Local Bodies (ULBs). However, the transfer of functions is in transition. Historically, in addition to the ULBs, the water supply and sanitation functions have also been discharged Parastatals/State agencies which may cater to the demands of the entire State or of a particular city. Thus, the responsibility for planning, design,

implementation, operation and maintenance of water supply and sanitation systems rests with the concerned ULBs, Parastatal agencies and State Governments.

At the central level, the Ministry of Housing and Urban Affairs is the nodal Ministry for formulation of policies, strategies and guidelines and assists the States by providing financial assistance for development of water supply and sanitation infrastructure in the cities and towns.

1.12 In this context, the Ministry of Environment & Forest & Climate Change also informed the Committee that the State Governments have the prime responsibility for enforcing and implementing various provisions of the Rules to achieve the stated objectives of the Rules as above and a communication was sent to all the States/UTs for effective implementation of these Rules.

*****

CHAPTER II

IMPLEMENTATION OF WASTE MANAGEMENT RULES

A. Rules Regulating Solid and other Wastes Management

2.1 The MOHUA has stated that these different types of wastes are regulated under following Rules notified by the Ministry of Environment, Forest & Climate Change (MoEF&CC) which also is the monitoring authority:-

(1) Solid Waste Management (SWM) Rules 2016
(2) Plastic Waste Management (PWM) Rules 2016
(3) e-Waste Management (EWM) Rules 2016
(4) Bio-Medical Waste Management Rules 2016
(5) Hazardous Waste Management Rules 2016

B. Role of Various Ministries

2.2 The role of various Ministries as outlined in Solid Waste Management Rules, 2016 is as under:-

Sl. No.	Ministry	Role
(i)	Ministry of Environment Forests and Climate Change	Over all implementation through a Central Monitoring Committee consisting offices from other Ministries.
(ii)	Ministry of Housing and Urban Affairs	(a) To take periodic review of measures taken by States and local bodies for improving solid waste management projects funded by the Ministry and execution of projects funded by the Ministry at least once in a year. (b) To formulate National Policy and strategy on solid waste management including policy on waste to energy in consultation with stakeholders within six months from the date of notification of Rules. (c) To facilitate States/UTs in formulation of State Policy and strategy on solid waste management. (d) To promote research and development in solid waste management. (e) To undertake training and capacity building of local bodies and other stakeholders. (f) To provide technical assistance and finances to States/UTs and ULBs on solid waste management

(iii)	Department of Fertilizers, Ministry of Chemical and Fertilizers	(a) To provide market development assistance on city compost. (b) Promotion of co-marketing of compost with chemical fertilizers
(iv)	Ministry of Agriculture & Farmers Welfare	(a) To provide flexibility in Fertilizers control order for manufacture and sale of compost (b) To propogate utilization of compost on farm land. (c) To set up labs to test quality of compost produced by local authorities.
(v)	Power	(a) To decide tariff or charges for power generated from waste to energy plants based on solid waste . (b) Compulsory power purchase from such waste to energy plants by distribution companies.
(vi)	New and Renewable Energy Sources	(a) To facilitate infrastructure creation for waste to energy plants and (b) To provide appropriate subsidy or incentive for such waste to energy plants

2.3 Besides these, wastes like Battery Waste, chemical waste and radioactive waste etc. are regulated under various Rules notified by MoEF&CC from time to time.

2.4 The **Ministry of Environment and Forests and Climate Change (MOEFCC)** outlining their role about Solid Waste Management inter alia informed the Committee that they have notified Hazardous and other Waste (Management and Transboundary Movement) Rules, 2015. According to which, they are the nodal Ministry for import and export matters of hazardous and other waste. MOEF&CC/CPCB are responsible to issue guidelines or standard operating procedures for environmentally sound management of hazardous and other waste from time to time. CPCB issue guidelines for safe handling, storage and transport.

In the administrative structure of the Central Government, the primary concern of the Ministry of Environment, Forest and Climate Change (MoEFCC) is for the planning, promotion, coordination and overseeing the implementation of our country's environmental and forestry policies and programs. The objectives of the Ministry are well supported by a set of legislative and regulatory measures, aimed at the

preservation, conservation and protection of the environment. The prescribed authorities for the enforcement of the said legislative and regulatory measures in States/Union Territories are local agencies such as State Environment Departments, State Pollution Control Boards, Pollution Control Committees in respect of Union Territories, State Urban Development Departments, Urban Local Bodies etc.

2.5 The Ministry of EF&CC further submitted that it had notified the Solid Waste Management (SWM) Rules, 2016 in supersession of the Municipal Solid Waste (Management and Handling) Rules, 29008 vide GSR No.1357(E) on dated 8th April, 2016.

Under the Solid Waste Management Rules, 2016, the Ministry of Environment, Forest and Climate Change is responsible for overall monitoring the implementation of these rules in the country. The Ministry is mandated to constitute a Central Monitoring Committee (CMC) under the chairmanship of Secretary, Ministry of Environment, Forest and Climate Change comprising of the officials of various Ministries. This Committee is mandated to meet at least once a year to monitor and review the implementation of the rules.

2.6 Asked whether there is somewhere or the other there a lack of coordination among above Ministries responsible for making solid waste management a success at ground level, the MOH&UA averred that there is no lack of coordination between the ministries. In Inter- ministerial committees on various issues, representatives of all concerned ministries are nominated to elicit the views of concerned ministries/departments. However, each ministry has been given separate mandate and jurisdiction as per Allocation of Business Rules.

2.7 Asked whether in view of prevailing challenges in solid waste management in urban areas, the role of nodal Ministry of Urban Development is a policy formulator and coordinator with State Government is very crucial, the MoH&UA replied in affirmative.

2.8 The Committee further wanted to know whether a lot more was required to be done in the area of solid waste management in the country in response the MoH&UA

stated that the Ministry is putting all efforts to improve solid waste management situation in the country. But since the task is closely related with behaviour change of citizens, lot more is to be done on it, including achieving anti littering, segregation of waste at source, it's appropriate processing which includes on site processing of waste by bulk waste generators, use of plastics, management of Construction and Demolition Waste.

2.9 Outlining the system of collection and segregation of waste, the Ministry of Housing and Urban Affairs in a written note stated that collection of segregated municipal waste from source is an essential step in SWM. Waste should be segregated by waste generators into three fractions: wet (green container), dry (Blue container), and domestic hazardous waste. This is referred to as the three-bin system. Apart from these wastes horticulture waste, construction and demolition and sanitary waste should be stored and collected separately. The wet fraction should preferably be used for composting; and the dry waste should be sent for recycling, also to be ensured that sanitary waste should be wrapped securely, collected and handed over separately to the waste collectors. Also domestic hazardous waste should be collected separately and deposited at the designated collection centers.

Waste collection service is divided into primary and secondary collection. Primary collection refers to the process of collecting waste from households, markets, institutions, and other commercial establishments and taking the waste to a storage depot or transfer station or directly to the disposal site, depending on the size of the city and the prevalent management system. Secondary collection includes picking up waste from community bins waste storage depots, or transfer stations and transporting it to waste processing sites or to the final disposal site. Primary collection must be introduced bother in small and large towns and cities. Secondary collection systems are necessary in all cities and towns for collection of waste in the community bins or at the

secondary waste storage depots or at decentralized sorting centers by sanitation workers for onward transportation of waste to processing and disposal facilities."

2.10 with regards to salient features of Solid Waste Management Rules, 2016, the following information was furnished to the Committee:

Salient Features of Solid Waste Management Rules, 2016:-

(a) The ambit of the rules has been expanded beyond Municipal area to cover, outgrowths in urban agglomerations, census towns, notified industrial townships, areas under the control of Indian Railways, airports, airbase, Port and harbour, defense establishments, special economic zones, State and Central government organizations, places of pilgrims, religious & historical importance

(b) The SWM rules, 2016 emphasizes on source segregation of waste, a basic need for channelizing the waste to wealth by recovery, reuse and recycle.

(c) Responsibilities of Generators have been introduced to segregate the waste at source namely in to three streams, Wet (Biodegradable), Dry (Plastic, Paper, metal, wood, etc) and domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc.).

(d) Generator would have to pay 'User Fee' to waste collector and for 'Spot Fine' for Littering and Non-segregation as specified by the local bodies .

(e) The issues related to collection and disposal of sanitary waste like diapers, sanitary pads and other disposal items have been addressed.

(f) The roles of local authorities have been mentioned more explicitly. The timelines have been given to local authorities for putting in place namely the (i) door to door collection system by involving Self Help Groups/ Ragpickers (ii) infrastructure for waste management- decentralized processing of wet waste, Material Recovery Facilities/ collection centers for dry waste, (iii) transportation and secondary storage of segregated waste and (iv) waste processing facilities.

(g) Bulk and Institutional Generators, Market Associations, event organizers and Hotels and restaurants have been made responsible for Segregation and Sorting and to have partnership with Local Bodies for management of waste generated in their premises.

(h) New townships, Group Housing Societies (exceeding certain area) have been made responsible to develop in-house waste handling, and processing arrangements for biodegradable waste.

(i) The developers of Special Economic Zone, Industrial Estate, Industrial park to earmark at least 5% of the total area of the plot or minimum 5 plots/ sheds for recovery and recycling facility.

(j) treet Vendor to ensure segregation at source and deposit waste at designated places.

(k) To promote sale of Compost along with Chemical Fertilizers, responsibilities for Ministry of Chemicals & Fertilisers and Ministry of Agriculture and Farmers Welfare have been introduced.

(l) To promote waste to energy, responsibilities for Ministry of New and Renewable Energy and Ministry of Power have been introduced.

(m) To promote utilisation of RDF, industrial units using fuel and located within 100 km from an solid waste based RDF plant to replace at least 5 % of their fuel requirement by RDF

(n) Compost Standards prescribed in line with Fertiliser Control Order (FCO).

(i) **Role of State Government/District Authorities**

2.11 During the course of examination, it came out before the Committee that under the Solid Waste Management Rule, 2016, the District Authority is to facilitate, identify and allocate suitable land for solid waste management and to review performance of ULBs.

2.12 Asked whether District Authorities are doing their jobs well in major cities and whether MOH&UA is reviewing the role of ULBs as stipulated, and whether ULBs are facing problems like public resistance for giving land for such waste disposal purposes, the MoH&UA submitted to the Committee that under rule 12 of Solid Waste Management Rules, 2016 'Duties of District Magistrate or District Collector or Deputy Commissioner' the rule mandates the District Magistrate or District Collector or as the case may be, the Deputy Commissioner to do the following activities:

(a) Facilitate identification and allocation of suitable land as per clause (f) of rules 11 for setting up solid waste processing and disposal facilities to local authorities in his district in close coordination with the Secretary-in-charge of State Urban Development Department within one year from the date of notification of these rules;

(b) Review the performance of local bodies, at least once in a quarter on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development.

The primary concern of MoEF&CC is the planning, promotion, co-ordination and overseeing the implementation of the country's environmental and forestry policies and programs. The objectives of the Ministry are well supported by a set of legislative and regulatory measures, aimed at the preservation, conservation and protection of the environment.

The prescribed authorities for the enforcement of these legislative and regulatory measures in States/Union Territories are local agencies such as State Environment Departments, State Pollution Control Boards, Pollution Control Committees in respect of Union Territories, State Urban Development Departments, Urban Local Bodies, etc".

2.13 About Implementing Agencies the Ministry of MOHUA quoting MOEFCC has stated that prescribed authority for implementation of the provision of these rules is the State Pollution Control Boards/Pollution Control Committee in States/UTs. In case of Health Care Establishment of Armed Forces, prescribed authority for implementation is Director General, Armed Forces Medical Services. Every State Government or Union Territory Administration has to constitute an Advisory Committee for the respective State or Union Territory under the Chairmanship of respective health Secretary including members from Department of Environment, Urban Development, Animal Husbandry and Veterinary Science to oversee the implementation of the rules in the respective State and to Advice for any improvement. The Ministry of Environment, Forest and Climate Change has constituted Central Monitoring Committee under the Chairmanship of Additional Secretary including members from Ministry of Health & Family Welfare (MoH&FW), State Health Secretaries, SPCBs, CPCB to review the implementation of the Bio-medical Waste Management (BMWM) Rules, 2016 in the country.

2.14 In this connection, a representative of Pepsico from ASSOCHAM submitted before the Committee:

> "Sir, we all know that urban solid waste management poses a great risk to the environment, society as well as offers an excellent opportunity for resource conservation that the society can really capitalize on. So, urban solid waste management needs a key stakeholders. The key stakeholders here are: urban local bodies, which is our Municipal Corporations, the regulators-CPCB and Ministry of Environment, businesses house corporate like us and community and consumer. All wastes begin its journey as a part of products that businesses produce for consumers to consume. So, the that is the genesis of waste".

2.15 About implementation, witness also stated:

> "Sir, rules are important and strict regulatory concerns should be attached. Now, there are plastics and few very strict regulations have come. Without strict regulations, things will not work in India at all. You may keep doing it for 10, 30, 50 years, but it is not going to work. Strict rules should be there. Be it public or a normal person like me, who is using it, strict rules are important and they have

to come from the Government side. We cannot do much about it. Basically, rules and regulations are there but nobody is really implementing them. If you go and see those litters, you would not find this, you may not find others. It is all those polybags.....Sir, Solid Waste Rule, 2016 has all the rules in the book, but nothing is being followed right from the souce of generation till processing and till usage. The Pollution Control Board is not following it; the generator is not following it; the urban local body is not following; the cement plants are following".

2.16 Asked about the action taken by Central Pollution Control Board, the MOH&UA stated that according to CPCB, 24 States/UTs are reporting their progress on various components of SWM Rules. The States/UTs not mentioned are ANI, Dadra & Nagar Haveli, Daman & Diu, Himachal Pradesh, Kerala, Lakshadweep, Manipur, Nagaland, Rajasthan, Mizoram, West Bengal and Sikkim.

(ii) <u>Role of Central Pollution Control Board</u>

2.17 Under the above Rules, the following works have been assigned to Central Pollution Control Board:

(a) To coordinate with State Control Board for implementation of above Rules and adherence to prescribed standards by local authorities.
(b) To formulate standard for ground water, ambience air, noise pollution, leachates in respect of all solid waste management
(c) To review environmental standard for solid waste processing to facilitate treatment technologies and their updation.
(d) To review proposals of State Pollution Control Board at least once in a year on use of new technologies in processing, recycling and treatment of solid waste.
(e) To prepare annual report on implementation of these Rules based on reports reserved from State Pollution Control Board and submit the same to Ministry of Environment and Forests and the report shall be put on public domain.
(f) To publish guidelines for maintaining buffer zone restricting any residential, commercial or any other construction activity from the outer boundary of waste processing and disposal facilities for different sizes at facilities handling more than five tons per day of solid waste.

<u>Applicability of Solid Waste Management Rules, 2016</u>

2.18 Section 2 of the above Solid Waste Management Rule, 2016 stipulates as under:-

"These Rules shall apply to every urban local body, outgrowths in urban agglomerations, census towns as declared by the Registrar General and Census Commissioner of India, notified areas, notified industrial townships, areas under

the control of Indian Railways, airports, airbases, Ports and harbours, defence establishments, special economic zones, State and Central government organisations, places of pilgrims, religious and historical importance as may be

notified by respective State government from time to time and to every domestic, institutional, commercial and any other non-residential solid waste generator situated in the areas except industrial waste, hazardous waste, hazardous chemicals, bio-medical wastes, e-waste, lead acid batteries and radio-active waste, that are covered under separate rules frames under the Environment (Protection) Act, 1986". Ipt is commonly seen that above wastes particularly hazardous bio-medical waste e-waste etc. are not properly stored and disposed off in most of the major cities making them as eye sore and causing health hazard also".

2.19 Asked about whether MOH&UA has mapped out identified such areas for proper is disposal of such wastes, the MOH&UA stated that (i) The Municipal Waste streams are mapped at ULB level and the mechanism (Equipment and financial) for collection, transportation, processing and disposal are worked out locally. (ii) The other waste streams are not authorized to be mixed into MSW Streams and has to be collected and channelized as per procedures mapped under aegis of the Ministry of Health and Family Welfare (MoH&FW) and Ministry of Environment, Forests & Climate Change (MoEF&CC) under applicable rules.

Role of Urban Local Bodies*:*

2.20 The Solid Waste Management Rules, 2016 define the role of Local Bodies as given below:-

(a) To prepare a Solid Waste Management Plan within the six months from date of notification of State policy.

(b)To arrange for door to door collection of segregated Solid Waste from all households including slums and informal settlements, commercial institutions and non-residential premises.

(c)To establish a system to recognize organizations of waste pickers for facilitating their participation in Solid Waste Management.

(d)To direct waste generators not to litter i.e. throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink canes, tetra packs, fruit peel, wrappers, etc., or burn or burry waste on streets, open public spaces, drains, waste bodies and to segregate the waste at source as prescribed under these rules and hand over the aggregated waste to authorized waste pickers.

(e)To set up material recovery facilitates or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorized waste pickers and waste collectors to separate recyclables from the waste and provide easy access to waste pickers

and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, textile from the source of generation or from material recovery facilities; Bins for storage of bio-degradable wastes shall be painted green those for storage of recyclable wastes shall be printed white and those for storage of other wastes shall be printed black.

(f)To establish waste deposition centers for domestic hazardous waste and give direction for waste generators to deposit domestic hazardous wastes at these centers with a gap of twenty km. between two centers.

(g)To provide training on solid waste management to waste-pickers.

(h)To collect waste from vegetable, fruit, flower, meat, poultry and fish market on day to day basis and promote setting up of decentralized compost plant or bio-methanation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions.

(i)To transport segregated bio-degradable waste to the processing facilities like compost plant, non -biodegradable waste to respective processing facility and construction and demolition waste as per rules.

(j)To facilitate construction, operation and maintenance of solid waste facilities and associated infrastructure with their own or private participation by adopting suitable technologies giving preference to decentralized processing to minimize transportation cost and environmental impact such as;

(a) Bio-Methanation
(b) Waste to energy processes

(k)To make adequate provision of funds for capital investments as well as operation and maintenance of solid waste management services in the annual budget.

(l) Creating public awareness for minimizing waste generators, reuse of waste, practice segregation of different wastes, practice home composting, vermi composting, etc.

2.21 In this context, during the course of examination the Committee enquired whether all the Local Bodies have prepared Solid Waste Management as on 01.01.18, the MOH&UA stated that all States have prepared Swachh City Plans (SCPs) for all their ULBs as per guidelines of Swachh Bharat Mission (SBM) and DPRs have been prepared by the States for MSWM as per the needs of each ULB in the State.

2.22 The Committee also pointed out that there is almost no control of local bodies on Waste generators on segregation and disposal of waste materials in big cities. Asked whether the local bodies at States/UTs level directing the waste generations not to throw dispose of any waste material shown above or impress upon segregating waste at source in major cities for the purpose of Solid Waste Management, the MoH&UA in a written reply stated that all major cities have existing bye-laws which lay down penalties to be imposed for littering. Major IEC Campaigns have also been initiated at city, state and national levels to motivate citizens to refrain from throwing/ disposing the waste haphazardly and to segregate waste at source. These are supported by eminent personalities and thought leaders. SWM Rules-2016 have laid down the relevant regulatory framework. These measures are sufficiently effective and are further picking pace from the fact that 51,735 wards (63%) wards have effective door to door collection and of which 18,946 wards are reporting segregation at source. The states/ULBs are implementing Anti-littering measures as per SWM Rules 2016 and Municipal Acts. It is reported that so far Rs. 3.62 crores has been collected as charges after the reporting started under SBM.

*****

Chapter-III

SOLID WASTE MANAGEMENT UNDER SWACHH BHARAT MISSION (URBAN)

A. Scheme for Solid Waste Management

3.1 Solid Waste Management is one of the two components of Swachh Bharat Mission (Urban) i.e. SBM(U) with the objective of 100% scientific processing of solid waste in all 4041 Urban Local Bodies (ULBs). The Scheme has following four areas:

(i) Collection

(ii) Transportation

(iii) Processing

B. Solid Waste Management Over-all Scenario

3.2 The Ministry of Housing and Urban Affairs has given the following details about Physical Performance under Solid Waste Management component under Swachh Bharat Mission (Mission) on Door-to-Door Collection, Source segregation, waste generated, waste processing:

State Name	**Total Nos of wards**	Wards with 100% **Door to Door Collection** as on Sep 2018	%	**Source Segregation** as on June, 2018	%	**Total Waste Generated** (TPD)	**Waste Processing** As on June, 2018 %
Andhra Pradesh	3409	3409	100%	3000	88%	6384	29%
Andaman& Nicobar Islands	24	24	100%	6	25%	115	50%
Arunachal Pradesh	75	72	96%	0	0%	181	0%
Assam	934	403	43%	54	6%	1134	35%
Bihar	3377	2698	80%	437	13%	2271	27%
Chandigarh UT	26	26	100%	21	81%	462	79%
Chhattisgarh	3217	3217	100%	3217	100%	1649	84%
Daman & Diu	28	28	100%	2	13%	32	53%
Dadra & Nagar Haveli	15	0	0%	0	0%	35	0%
NCT of Delhi	294	254	86%	128	60%	10500	55%
Goa	214	214	100%	370	24%	260	62%
Gujarat	1528	1415	93%	254	17%	10145	23%

Haryana	1475	1171	79%	21	4%	4514	17%
Himachal Pradesh	497	341	69%	48	4%	342	32%
Jammu & Kashmir	1100	543	49%	721	83%	1374	8%
Jharkhand	866	866	100%	1424	22%	2327	22%
Karnataka	6476	4927	76%	3536	100%	10000	26%
Kerala	3536	2618	74%	3734	53%	624	47%
Madhya Pradesh	6999	6999	100%	2945	40%	6424	58%
Maharashtra	7322	5990	82%	0	0%	22570	44%
Manipur	306	130	42%	18	16%	176	50%
Meghalaya	114	27	24%	83	25%	268	58%
Mizoram	328	264	80%	19	8%	201	4%
Nagaland	234	104	44%	22	7%	342	15%
Odisha	2002	1605	80%	27	1%	2720	11%
Puduchery UT	122	105	86%	122	100%	350	10%
Punjab	3043	2650	87%	750	25%	4100	33%
Rajasthan	5399	5338	99%	3507	65%	6500	50%
Sikkim	53	53	100%	20	38%	89	66%
Tamil Nadu	12814	11532	90%	10251	80%	15347	49%
Telangana	2112	1865	88%	300	14%	7371	65%
Tripura	310	65	21%	0	0%	420	45%
Uttar Pradesh	12007	7413	62%	4886	41%	16800	27%
Uttarakhand	913	806	88%	145	16%	1406	20%
West Bengal	2900	1896	65%	141	5%	7700	5%
Total	**84,069**	**69068**	**82**%	**40,209**	**48**%	**1,45,133**	**37.23**%

3.3 During the course of examination in January 2018, the Committee pointed out that Municipal Solid Waste Management in number of wards with 100% Door to Door Collection, Source Segregation and overall Waste Processing has been as low as 68.4%, 32.5% and 23.7% respectvely. Asked as to how the Ministry of Housing and Urban Affairs are going to achieve 100% Solid Waste Management with above slow pace of implementation of Municipal Solid Waste Management in near future, the Ministry of Housing and Urban Affairs stated that Ministry is pursuing the proven methods of solid waste management adopted in various States like Chhattisgarh, Maharashtra, Jharkhand, Kerala etc., for replication in other States. Already door to door collection of waste is reaching to 78%and source segregation is also 43% and growing, in short

span of time i.e. slightly over one year. The waste processing at present is 33.15%, with many plants are under construction and in other cases projects are under implementation for which Ministry is pursuing hard towards improving solid waste management. However, the approach being pursued by GoI with States is expected to bring result in shortest possible time and at the same time sustainable solution.

3.4 Asked about steps taken by the Central Government, the Ministry of Housing and Urban Affairs in a written note stated that the components are covered under Municipal solid waste and are guided by Municipal Solid Wastes (Management and Handling) Rules, 2000. Ministry is supporting States/UTs in segregaton of waste at household level in wet and dry waste category. Wet waste is for biological decomposition to produce compost/combustible gas. Dry waste follows the route of reuse/recycling. The Ministry supports States/UTs in acheiving safe eco-friendly disposal of waste under SBM and also through Manual/Advisories/sharing of best practices etc.

(a) Progress on Door to Door Collection

3.5 The Committee also wanted to know whether the good work done by five States/UTs can't be replicated in big States like Assam, Uttar Pradesh and West Bengal where the Door to Door Collection is as low as 24%, 47.3% and 48% respectively so that they can also fall in line with good performing States, the Ministry of Housing and Urban Affairs stated that door to door collection of waste has already reached 78% and growing. The door to door collection in big States like Assam, Uttar Pardesh and West Bengal has now improved to 38%, 58% and 65% respectively and growing fast. Ministry is expecting to achieve 100% door to door collection within Mission period. Ministry is closely monitoring and hand holding States like Assam, Uttar Pradesh, West Bengal, Bihar and Odisha etc. Further, Ministry is closely monitoring through video conferences and reviews with all the States and UTs to achieve higher rate of door to door collection. Also Ministry is monitoring the best practices across India which can be replicated in the laggard States. By introducing competitive spirit through the Swachh

Survekshan and the Garbage Free Star Rating System to the Cities there will be End-to-End management of garbage system for obtaining higher ranking.

3.6 In this connection, MOH&UA has also stated that with door to door collection and source segregation, the processing of wet waste adopting decentralised/ centralised composting and bio-methanisation for wet waste with high moisture content and separate processing for waste of streams like garden waste, animal dung, vegetable waste and bulk waste etc., the waste processing targets can be achieved.

Similarly, in case of dry waste component, the approach of setting up MRF facility and involving informal sector and getting recyclers connected, processing plastic waste and also using in road construction, setting up RDF plants and co-processing of RDF in cement plants, as well as, waste to energy plants in larger cities/in cluster basis in smaller cities and finally very minimal inert going to landfill is the approach to achieve the targets.

As a part of capacity building for States/UTs, Ministry is working in almost all connected areas to improve solid waste management through a number of books on technology and best practices etc. Swachh Survekshan, Garbage Free Star Rating, Hand holding in DPR preparation and also with the help of planning tools, the support is being provided to States/Cities to achieve the target. Apart from that robust monitoring with State and Cities and also supporting with funding under SBM is strengthening ULBs in processing of waste.

3.7 Outlining the measures taken to achieve 100% Solid Waste Management, the Ministry of Housing and Urban Affairs in written note has *inter alia* stated that already door to door collection of waste is reaching to 82% and source segregation is

also 48% and growing, in short span of time i.e. slightly over one year. The waste processing at present is 37.23%, with many plants are under construction and in other cases projects are under implementation for which Ministry is pursuing hard towards improving solid waste management. Ministry is also working on other initiatives on imparting training to ULB personnel, video clips of best practices helping in uploading various products related to SBM on GeM portal and also supporting States with collection and transportation app which has been tested in many cities and shortly going to be launched. The IEC activities like Swachhta selfie and promoting innovations is also going to be helpful in achieving targets in time bound manner. The tools like Swachhta App, e-learning platform and citizen's grievance redressal through toll free no.1969 and various books as below which are also very helpful to achieve targets.

1. Manual on Municipal Solid Waste Management
2. Swachh Neighbourhood
3. ODF Protocol
4. Standard Operating Procedures for:

    i. Swachh Offices
    ii. Swachh Parks
    iii. Swachh Hospitals
    iv. Swachh RWAs
    v. Swachh Clubs
    vi. Swachh Railway Stations
    vii. Swachh Roads
    viii. Swachh Volunteering
    ix. Swachh School

5. Integration of the Informal Recycling sector
6. Empowering marginalized groups – Guidelines on SBM and DAY-NULM convergence
7. Star Rating protocol for Garbage Free Cities
8. Transforming Urban Landscapes of India (Success Stories in SWM)
9. Swachh Bharat IEC Book
10. Swachh Bharat Idea Book
11. Decentralized Composting Techniques
12. Design & Costing of Different Technologies
13. Bulk Solid Waste Generators Compliance Guideline
14. Conservation & Lifestyle: Indian Heritage
15. Guidelines on Usage of Refuse derived Fuel in Various Industries

16. Utilisation of recycled produce of Construction & Demolotion Waste – A Ready Reckoner.

(b) Progress on Source Segregation

3.8 The Committee also pointed out that a few States/UTs of Puducherry (100%), Chhattisgarh (91%) and Tamil Nadu (76%), could do some good work in Source Segregation so far, the Ministry of Housing and Urban Affairs replied that the improvement in source segregation is happening fast. In addition to Puducherry , now Kerala and Chhattisgarh have also achieved 100% source segregation and many other States like Andhra Pradesh, Chandigarh, Jharkhand and Tamil Nadu have also achieved more than 80% source segregation and progressing fast to achieve 100% target.

3.9 The Committee further examined about the difficulty with rest of the States/UTs in not moving well in this regard, the Ministry of Housing and Urban Affairs stated that in spite of robust monitoring by Ministry and hand holding to States/UTs/ULBs, the matter is taking time as it is closely related with behaviour change of the people apart from making additional arrangements for source segregation and also putting in extra efforts.

3.10 The Committee pointed out that Source Segregation, the situation is even worst with only UT of Puducherry with 100% Source Segregation followed by Chhattisgarh (100%) and Kerala (100%) and remaining States are lagging far behind.

3.11 Asked about the reasons that the overall Source Segregation has not moved beyond 32.5% in the Country, the Ministry of Housing and Urban Affairs stated that source segregation has already reached 43% in over a year's time and is progressing fast. The measures mentioned for door to door collection is also being followed in case

of source segregation. However, some of the factors responsible for low rate of Source segregation is due to the existing behaviour pattern and the failure of the authorities in imposing it. The basic units such as households need to implement two bin + one bin system such as for wet, dry and domestic hazardous fraction of the waste. Also, the citizens have literally put more than the three times the effort in disposing the waste within their premises.

3.12 During the course of examination, the Committee wanted to know the non-compliance of Solid Waste Management Rules, 2016 by the ULBs as reported by the stakeholders, mentioned above puts a big question mark on the overall functioning of the nodal Ministry i.e. Ministry of Housing and Urban Affairs, the MoH&UA in a written reply stated that the following progress has been made under Solid Waste Management as on 1st January 2018:

Target	Progress as on 1st January 2018 (Unit)
100% door to door collection	51,734 (63% of wards)
Waste Processing	23.7%
100% Source Segregation	18,946 (23% of wards)
Identification of all bulk generators (BG) and processing of waste either onsite or by authorized agency	51,601 bulk generators details received and continuing

Given that Solid Waste Management is a State subject and MoHUA push the States through various strategies and success achieved till date shows that we are working on right path for achieving the mandate of 100% scientific waste management by 2nd October, 2019.

(c) Progress on Waste Processing

3.13 The Committee pointed out that on Waste processing only few States of the Telangana (67%), Sikkim (66%), Goa (62%) , Chhattisgarh (60%), Meghalaya (58%),

Tripura (57%) and NCT Delhi (53%) could do some progress on Waste processing and other States/UTs are lagging far behind.

3.14 Asked about the practical difficulties in not achieving 100% waste processing in aforementioned States, the Ministry of Housing and Urban Affairs stated that Ministry is supporting States/UTs/ULBs to set up decentralised systems which is faster and sustainable in long term. Further, the laxity in the implementing of the erstwhile MSWM Rules 2000 and 2016, in the past, has primarily led to the present situation of existing large gap in processing of waste. Also the issues like difficulty in acquiring land for waste processing plants, NIMBY (Not in My Backyard) syndrome and past approach of ULBs adopted for capital intensive centralised composting/ waste to energy plants also delayed in setting up the waste processing plants.

Implementation Constraints

3.15 During the course of examination, the Ministry of Housing and Urban Affairs have elaborated the following implementation constraints on Solid Waste Management in the country:

(i) Behaviour – The perception that we should clean our places and our garbage should be dumped on public places which is the responsibility of ULBs. For this intensive IEC activities have to be taken up to educate the public to maintain cleanliness at all places and times. The waste generators have to be educated and enforced upon to segregate the waste with responsibility.

(ii) Segregation at source: The general public is not in the habit of segregating the garbage at source resulting the usefulness of the resource is lost. The public has to be educated and awareness programmes are to be launched for source segregation. ULBs are also required to enforce source segregation strictly.

(iii) On- site processing: Wet waste is to be processed at source level for converting into compost including household level. People are to be educated about the benefits of composting at source level. Simple, inexpensive, innovative techniques are to be popularised among garbage generators. Compliance of bulk generators rules are to be enforced.

(iv) Land use planning – the development plans, layout plans, housing plans etc need to necessarily have provision for managing the waste at the local level such as

spaces for decentralised treatment plants, spaces for material recovery facilities & recycling centres etc.

(v) Applying the polluter pays principle – Fees for Solid waste management to meet the expenditure for door to door collection, transportation, processing and disposal have to be implemented vigorously by the state Govts.

(vi) Clusterisation – For achieving economies of scale, the cluster models for Solid waste management are preferable. As this is beyond the capacity of local bodies, state Govts. Have to take the lead. This is especially true for setting up processing plants and scientific landfills for disposing the rejects from processing.

3.16 In this Connection, the Ministry of Housing and Urban Affairs also added that the biggest challenge is the availability of land for setting up SWM facilities as well as the suitability thereof. This problem has arisen due to explosion of waste accumulation, waste generation and the laxity in the past by which suitable pieces of land could not be acquired.

*****

Chapter-IV

Issues related with Waste Collection, Segregation and Recycling

(a) Need for setting up robust infrastructure and upgrading set up for Scrap Dealers

4.1 During the course of examination, the Committee had heard the representatives of prominent persons from Institutions engaged in Solid Waste Management like Centre for Science & Environment, Swachh Pune, Centre for Policy Research alongwith representatives of ASSOCHAM represented by Pepsico, IL&FS, Reliance etc. Explaining the views of Pepsico, a representative of Pepsico submitted:-

> "Sir, we all know that urban solid waste management poses a great risk to the environment, society as well as offers an excellent opportunity for resource conservation that the society can really capitalize on. So, urban solid waste management needs a well thought , collective, cohesive and equitable approach among key stakeholders. The key stakeholders here are: urban local bodies, which is our Municipal Corporations, the regulators – CPCB and Ministry of Environment, businesses house corporate like us and community and consumer. All wastes begin its journey as a part of products that businesses produce for consumers to consume. So, that is the genesis of waste."

4.2 The witness added:

> "The municipal corporations or the urban local bodies in India lack critically in infrastructure and capability. This is our observations. There are infrastructures but they are not functioning to its capacity as well. It is necessary to take challenge of effective management and enforcement of these urban solid wastes."

4.3 In this connection Suggestion of ASSOCHAM and Comments of Ministry of Housing and Urban Affairs are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA
Municipal Corporations lack the capacity to tender out commercially viable and sustainable projects in MSW Treatment. Hence we see many sermi-functional, dilapidated or shut plants across various cities in lndia. The ULBs are often marred with issues such as inability to	Not Agreed. Sanitation is a State subject.

acquire land, neighbourhood resistance, local political unrest, etc. thereby delaying plant installation and commissioning. lt is desirable that MSW treatment in cities and towns in India is taken up by an apex body of the Central Government on lines of National Highways Authority of lndia. This body could have the responsibility of tendering and awarding PPP concessions and also regularly monitoring the same.	

4.4 In this connection, ASSOCHAM in its written submission before the Committee inter alia stated that the waste of any kind in any form is not a waste but has to be treated as raw material to produce something else. For eg: the waste of steel can be melted and converted into steel of a different kind, the plastic waste is also converted to make plastic. Similar way the other solid municipal waste from municipalities can be used to produce power and if segregated properly then many other things can be made. The end of life vehicles can bring out many useful things; the tyres can be converted into useful floor tiles. Even the liquid municipal waste can create methane to produce power. The list is endless. There are options available for everything called waste to be used as raw material for something else but there is a dire need of having right policies, motivation and fiscal benefits to attract investment in this segment of business where the municipalities do not create mounds of waste next to the urban population but attract businesses to set up their plant to convert such waste into useful things.

Few examples are given below:

(1) European countries as well as North America where no hillocks of waste are seen but everything gets converted to a product

(2) A two decade back Canadian government took lead in disposal of automotive tyres by imposing disposal fee of CAD 4 for each tyre replaced. This fee was paid to the tyre collector who would collect tyre from retail outlets and convert them into useful products. It helped the administration remove botheration of waste management of tyres and the tyres went into production of useful things thus creating employment.

(3) This model was followed by USA and other European countries and it started a new business segment of treating tyre waste into a new product.
(4) In Europe, the contract for Municipal waste collection is given to private sectors who not only collect the solid waste but take it to the plants where it is processed and converted into gases to run turbines and the final waste becomes manure for the fields.
(5) In western European countries even the tree leaves are collected and baled to use them in making of fertilisers, medicinal values or even burning to get heat. It keeps the cities clean.
(6) In Europe & USA, there are businessmen who are motivated by local and federal governments to invest in this business giving them tax incentives, free land use for the processing along with legislative powers to be in the business of waste processing."

4.5 ASSOCHAM has also stated that a crucial partner in effective Urban Solid Waste (USW) and EPR management is ULB, who is foundational for a successful EPR and USW management. **ULBs in India lack critically in infrastructure and capability** necessary to take on challenge of effective management of USW. Most successful EPR and USW management systems globally have focused on infrastructure and capability development at local levels, **funded publically or through public-private partnerships**. The infrastructure focused on efforts for source segregation, collection, secondary segregation, transporting, and recycling. The businesses usually take responsibilities to fund the financial gap between operational expenses and recycle revenue for ULBs. Another challenge to successful USW and EPR management is **loss of ULB's revenue through informal sector** that removes higher recycle revenue generating material from ULB's collection system. And the last but not the least of the challenge is to change the consumers and households attitude on source segregation.

4.6 In this context, the MOH&UA has opined that as per SWM Rules 2016, the waste has to be stored, collected, transport, treated/disposed off separately in segregated manner. In addition to this domestic hazardous waste has to be collected transport and treated separately.

4.7 Suggestions of ASSOCHAM and comments of MoH&UA and MoEF&CC are as under:

Suggestion of ACCOCHAM	Comments of MoH&UA	Comments of MoEF&CC
Privatise complete collection of solid waste from municipalities to only those entrepreneurs who would convert them into useful products and will not dump them	Not agreed. All models of collections including Self Help Group, Private contractor and Collection by ULBs can be followed. Private parties will be selected as per tender conditions.	The 6 waste management rules notified by the Ministry in 2016 lay down a comprehensive framework of management of different waste streams in the country. Roles and responsibilities of different stakeholders have been identified in the Rules. The principle of waste hierarchy is the over-arching approach for management of waste in the country, wherein, emphasis is given to emphasis to prevention, reduction, reuse, recycling, recovery and disposal, with prevention being the most preferred option and the disposal at the landfill being the least.
The present cost of waste removal should be shared with such entrepreneurs on a phasing out tenure of say 3 to 5 years	State Government may follow various financial models including cost sharing.	Rule 22 of the SWM Rules, 2016 provide for time lines to be adhered by local bodies and other concerned agencies for creation of necessary infrastructure for implementation of the Rules, including for identification of suitable sites for setting up solid waste processing facilities and identification of sites for setting up stand-alone or common regional sanitary landfill facilities. Urban Development Departments of States/ UTs are mandated to design a State policy and strategy on solid waste management which ensures minimization of waste going into landfills. Identification

		and allocation of suitable land to local bodies for setting up processing and disposal facilities and incorporating suitable provisions in the master plans of every city is mandated to State Urban Development Departments and District Magistrate/ District Collector/Deputy Commissioner as per Rule 11 and Rule 12 of SWM Rules, 2016, respectively. Under Rule 15, local authorities and villages panchayats of census towns and urban agglomerations are mandated to undertake construction, operation and maintenance of sanitary landfill and associated infrastructure.
Land should be provided free of cost to such entrepreneurs for setting up of processing plants	Agreed.	
There should be NO taxes on waste processing business of any kind; either a direct tax or an indirect tax	Partially Agreed. GST at lower rate should be applied on activities of waste management to enable venders to claim input credit. Ministry of Finance to comment on Direct tax.	
The entrepreneurs should be encouraged to bring in the best of the technologies from within lndia or from anywhere in the world	Agreed	

4.8 During the course of evidence when a representative of Swachh Pune also underlined the need for handing over collection and segregation work to Cooperatives stated:

> "The third question that you raised is perhaps that all municipalities are confronted with corruption and want to give out contracts to large private companies for various reasons. Our suggestion is that this sector of waste-handling, primary collection, ideally should be kept completely out of the purview

of the private companies and it should entirely be given to cooperatives. It should be like the Kutumbshree model where the same effort was made. So, we should keep private companies only at the secondary collection onwards level, depending upon the model the city has taken. It should be ensured that primary collection sector of work is reserved for the informal sector and offers various steps for that sector to formalise."

4.9 In this connection, a representative of Swachh Pune while outlining the performance in making the city of Pune clean during their evidence before the Committee has stated:

"In Pune, the trade union of waste pickers was formed in the year 1993 with the expressed aim of publicly documenting and establishing the environmental, social and economic contribution of waste pickers. We have done a number of research studies which actually quantify the economic as well as the environmental value due to the total net recycling done by the waste pickers. We have used these arguments, we have done these studies with the International Labour Organisation, with the JIZ and used the argument to the municipalities to advocate that waste pickers in Pune not only get an identity card which establishes and gives them a right to engage in this work but they also entitle to insurance benefits which the municipality covers the cost for. They are also covered under various welfare benefit programmes. They are recognised as an important sector in waste management. Everyone including administration, citizens as well as elected representatives in Pune is fairly aware of the significant role being played by waste pickers. Against this backdrop, in the year 2007, we propose that instead of outsourcing the work of doorstep collection in Pune to a private entity why not a cooperative of waste pickers do the work?"

4.10 During the course of evidence of Swach Pune, the Committee wanted to know whether the NGO is doing away with whole concept of inter-mediately collection, the witness clarified:

"Sir, let me clarify. We have done away with containers which have mixed waste in the city. What we are arguing for is that although citizens might give wet and dry waste segregated, dry waste itself comprises 35 different kinds of materials – four kinds of plastics, five kinds of metals and eight types of tapers – which have to be further segregated in order to get them recycled.....Typically, it happens outside the shop of the scrap dealer. All the waste-pickers are selling their material to the scrap dealers who are selling it to the wholesalers who are selling it to the recycling industry.

Many of the scrap dealers are running in slums or informal shanties in not very hygienic conditions. Our point is that those set-ups need to be upgraded. We need to offer them places. In PMC what we are saying is that in the

Development Plan, you keep such spaces available and outsource it to the scrap dealers. Let the scrap dealers bid for it, pay a rent and take over the running of these places. And, let waste-pickers have access to go and sell their material there. So, there will be a need for decentralized spaces, but it is not for mixed waste. We are talking of recycle-able waste which does not have too much odor and is not physically as ungainly as organic waste is. In that, if we have good quality segregated paper, tin, metal and plastic which is getting further segregated in these decentralized places, it is not really such an eye-sore."

b **Need for joint efforts by Corporates, Recyclers etc with State Governments/ULBs**

4.11 In this context, the ASSOCHAM has stated that many Corporate, Recyclers, Waste Management Companies, and association are supporting this effort discretely. This needs a joint effort along with Government and Local bodies to succeed. We need to work on infrastructure for collection, segregation, aggregation and recycling to ensure waste is treated. It can be most efficiently be conducted by Waste Segregation at the household level, enforced by the Urban local bodies. Processing of segregated waste can be made into a viable option for the private sector to take up, especially as the cost of waste transportation and landfills keep increasing. With PWM (Plastics waste Management) Rules 2016, there is extended produce responsibility to ensure the waste generated is disposed in responsible ways.

4.12 In this context the suggestion of ASSOCHAM and Comments of MoH&UA and MoEF&CC are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
ln the SLW Mqt systems, planning needs to be done with communities in an integrated manner, including aspects of conservation, treatment, Recycling. These have to be done on revenue maps. The collection of solid waste needs to be defined and agreed; and also the liquid waste the drainage systems needs to be integrated	Solid waste and Liquid waste are handled in separate system and the same is planned at the Town Planning stage itself.	Solid Waste Management Rules, 2016 define "waste picker" as a person or groups of persons informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood. Under the rules, waste pickers have been identified as a key stakeholder in the waste value chain. Rule 11 mandate that the State's/ UT's solid waste management strategy and policy should acknowledge the primary role played by the informal sector of waste pickers, waste collectors and recycling industry in reducing waste and provide broad guidelines regarding integration of waste picker or informal waste collectors in the waste management system. State/UT urban development department is also mandated to start a scheme for registration of waste pickers and waste dealers. Local authorities and village panchayats of census towns and urban agglomerations have been mandated to establish a system to recognise organisations of waste pickers or informal waste collectors and promote and establish a system for integration of these authorised waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste. They are also mandated to provide training on solid waste management to waste-pickers and waste collectors. For environmentally sound

		management of construction and demolition waste the Ministry has notified Construction and Demolition Waste Management Rules 2016. The rules notified for the 1st time, detail roles and responsibilities of various stakeholders involved in

4.13 In this context, Swach Pune has stated that there is a necessity of an integrated planned approach to Solid Waste Management. In this connection the following suggestions have been suggested before the Committee:

(a). The overall framework of Solid Waste Management should be long-termand sustainable,keeping in mind the growth of the city and solutions th at are equitable and just.
(b).Solid Waste Management should be comprehensive in scope and should look at all streams of waste and the entire process.
(c).'Polluter pays' principle should be followed.
(d).Full acceptance of 3 R principle, i.e. maximization of Reduction, Re-utilization and Recycling.
(e).Decentralized Recovery and processing options are emphasized to the extent possible even if there is a slightly higher economic cost to doing so. (f).Inclusion of economically vulnerable segments that are dependent on Solid Waste for theirl ivelihood should be a policy objective, while ensuring that safe, decent and hygie nic workconditions are mandatorily provided for all manual work performed in su pport of SWM.
(g).When implementing any plans or projects it should be in accordance with the policy to ensure consistency.

4.14 On the aspect of recycling of solid waste like plastic, a representative of CHINTAN during the course of evidence stated:

"We would say that first of all we should take care of our 50-60 per cent of our organic waste. If we can do composting for that, since that is one of our major problems, we take care of that by doing composting. I am not getting into decentralize or centralize the system. Decentralised Waste Management System is obviously a solution. But if we do 50-60 per cent composting, the rest 20-25 per cent is actually plastic paper, glass and all of these things. These things do not have to be incinerated. Why would we want to incinerate them? We have a very good recycling market which is here a huge industry.

So far I have not come under the GST. The GST is having a huge impact on recyclable scraps. So let me not get into that now. That is another story from the same side. But we can take care of 50-60 per cent of the waste, we are sending 20-25 per cent of the waste for recycling, then all we have is about 10-15 per cent which is all the multilayer packaging and all these things for which there is no solution so far. So EPR has to come in over here. If our EPR is there in the Solid Waste Management Rule 2016, all we have to do is to implement

it. EPR should be implemented. Recycling should be done for the non-biodegradable waste."

4.15 In this context with regard to Circular Economy the ASSOCHAM has also stated the following:

(a) There is global thinking towards the circular economy. Circular economy is similar to the natural cycles existing in the world like water cycle, food cycle etc.
(b) Plastics are both reusable and recyclable if used responsibly. For plastics which cannot be recycled there are ways to recover energy or use them in making roads to ensure safe disposal at end of life. We need to ensure there is a system to channel used plastics from land, air and water.
(c) We all are aware of Reduce, Reuse and Recycle in term of global resources. Reduce, reuse and Recycle needs innovation at design level to ensure minimum usage of plastics. Reuse means that the products are designed in a way that they can be reused multiple times thus reducing impact on global resources.
(d) Recycling supports the global resources by bringing in more material for consumption through recovery from the waste. If this is not possible, we can still go for energy recovery. Finally, the residuals may go for incineration without energy recovery and sent to landfills. This waste hierarchy process helps Municipal bodies, economy and environment thus supporting triple bottom line for the plastics.
(e) Globally only 14% of the plastics are recycled. In Europe around 30% of plastics are recycled but energy recovery rate is high ensuring most of the plastic is consumed. This ensures no littering and taking waste out of planet. This has been possible due to continuous effort by European Union to improve management of waste.
(f) Japan has high recycling rates due to continuous efforts in last decade. While China imports lot of waste and has the recycling technologies, recycling rate is still very low. **In India high recycling rate of 60% is mainly supported by the informal economy.**
(g) Through various EPR (Extended producer responsibility) legislations, there are global efforts to improve recycling rates.

About recycling in India, the ASSOCHAM has stated:

"In India we will consume around 14.5 Million ton of plastics this year (2017-18).Of this 51% goes into packaging applications both rigid and flexible which get into the waste stream within 6 Months. Considering the CPCB study 2013-14 as base, we can assume that 3.0 Million ton is uncollected plastic today."

4.16 The suggestions of ASSOCHAM and comments of MoH&UA and MoEF&CC are as under:

Suggestions of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
(i) To increase the thickness specified in PWM 2016 from 50 Micron to 100 Micron. This will ensure that the waste get picked up due to its recycling value. This has been successful in case of PET bottle where we have vibrant recycling industry and you will not find any PET bottles littered or at landfill sites.	The Ministry of Environment Forest and Climate Change has notified the Plastic Waste Management Rules 2016 and Plastic Waste Management (Amendment) Rules 2018.	The earlier Plastic Waste (Management and Handling) Rules, 2011 prescribed a thickness of 40 micron, however, the thickness was increased from 40 micron to 50 micron vide Plastic Waste Management Rules, 2016 with a motive that the waste get picked up due to its recycling value. The rate of recycling primarily depends upon the segregation of the waste at source and further the transportation of segregated waste to the processing/recycling facility. To achieve greater recyclability the Solid Waste Management Rules, 2016 mandate the Local Authorities to setup material recovery facilities or secondary storage facilities with sufficient space to enable authorized waste pickers and waste collectors to separate recyclables such as paper, plastic, metal, glass, textile from the waste. The Rules prescribes to take every effort to recycle or reuse the rejects to achieve the desired objective of zero waste going to landfill. The Ministry had notified the Recycled Plastic Manufacture and Usage Rules, 1999 for regulating manufacture and sale of plastic carry bags. It was superseded by Plastic Waste (Management and Handling) Rules, 2011 on 4th February, 2011. Further the Ministry Notified Plastic Waste Management Rules, 2016 vide Notification dated 18th March, 2016 superseding Plastic Waste (Management and Handling) Rules, 2011 and its amendments. As per the Rules, the generators of waste have been mandated to take steps to minimize generation of plastic waste, not to litter the plastic waste, ensure segregated storage of waste at source and handover segregated waste to local bodies or agencies authorised by the local bodies. The rules also mandate the responsibilities of local bodies, gram panchayats, waste generators, retailers and street vendors
(ii) Proper infrastructure/ capacity for segregation, recycling and incineration of the plastic waste in each of large consumption areas. on of PRO in India with Industry participation (iv) Following the set Policy & Standards on the Plastic waste management and consolidation of all legal cases related to plastics in one court to have common judgment. (v) No ban on plastic without scientific basis and alternate solution which is more eco friendly.	MoEF&CC to provide comments on Solid Waste Management Plastics in Urban – India.	

		to manage plastic waste.

(c) Need for promoting segregation at Source

4.17 Outlining the need for promoting segregation at source, the NIYI Aayog has stated that Solid Waste Management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved in effectively managing waste for a municipality. These include monitoring, collection, transport, processing, recycling and disposal. The quantum of waste generated varies mainly due to different lifestyles, which is directly proportional to socio-economic status of the urban population. While each of the contributors pose a challenge in containing its generation as well as its management, the Municipal Solid Waste (MSW) happens to be the most visible one, as it is mostly generated by the citizens directly. MSW generation has a positive co-relation with economic development in terms of kg/per capita per day of solid waste generation in general. On an average, the urban India today generates about 0.45 kg per capita per day of MSW which is likely to grow with the increase of affluence which is about to happen as the country is traversing a steep growth trajectory. As per a study by Columbia University, New York, a higher standard of living results in more waste and also a greater ability to invest in waste management system (Matsunaga and Themelis, 2002). There are several such studies which establishes this co-relation. As such, the MSW generation in India, which is presently about 1,45,000 tonnes per day is likely to increase substantially in years ahead, thereby, posing a gigantic challenge for

the Government to manage the generation as well as the disposal of the solid waste. However, it also creates opportunities for better SWM in view of the capacity of the citizens to pay for SWM on account of increase in standard of living.

4.18 During the course of evidence of prominent NGO, Centre for Science & Environment, the need for promoting segregation at source was underlined. Explaining the issue a representative of Centre for Science & Environment stated:

> "The second very important issue is going to be the segregation at source. This is an issue which I was quite surprised when we looked at all the city data. Many cities have tried to segregate but they have not succeeded. The only city I have seen succeeding is Panjim and in Kerala, I am seeing it succeed only because they have no alternative. Both in Trivandrum as well as in Alleppy, the advantage they have is the fact that the villagers have said that you cannot bring waste there. So the municipalities have no place to take waste. So in both those places, the waste collection has stopped."

4.19 In this connection, the issue of segregation at source was raised before Ministry of Housing and Urban Affairs, the Ministry stated that the Ministry of Housing and Urban Affairs has taken various steps for segregation of Waste at source and a massive drive has already been launched on 5th June 2017 on the occasion of World Environment Day.

4.20 In this context, suggestions of ASSOCHAM and comments of MoH&UA and MoEF&CC are as under:

Suggestions of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
There should be a proper method of segregation at source of non - biodegradable/recyclable waste at primary or secondary collection points	As per SWM Rules 2016 the waste has to be stored, collected, transport, treated /disposed off separately in segregated manner .In addition to this domestic hazardous waste has to be collected transport and treated separately.	Under Solid Waste Management Rules, 2016 waste generators are mandated to ensure segregation at source waste generated by them in three separate streams namely bio-degradable, non-bio-degradable and domestic

Separate municipality bins should be provided for dry and wet waste.	Agreed, As per SWM Rules,2016 .	hazardous wastes in suitable bins. Further, source segregation at primary and secondary levels has been mandated for resident welfare associations and market associations, gated communities and institutions with more than 5000 sqm. Area, all hotels and restaurants and organizers of event/ gathering of more than 100 persons. Further, rules also mandate that Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be printed blue and those for storage of other wastes shall be printed black. In addition, the waste processing facilities are mandated to include composting as one of the technologies for processing of bio-degradable waste. In this regard, Standards for composting have been prescribed under Schedule II of the SWM Rules, 2016. For management of industrial hazardous waste, the Ministry has notified Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016 wherein scientific disposal of hazardous waste through collection, storage, packaging, transportation and treatment, in an environmentally sound manner has been mandated. Under the rules, the hazardous waste can be disposed at captive treatment facility
Scientific methods such as compositing for managing biodegradable waste must be encouraged	Agreed	
There should be a color coding the collection vessels/ collection vehicles of the municipal corporations as under - *Green Color :* *White Color :* *Black Color :* *Biodegradable waste such as household waste ,Plastic Waste , Miscellaneous Toxic, Hazardous Waste*	Agreed. Color coding is already being practiced inSWM Rules 2016 as under Green –For Wet Waste Blue- For Dry Waste Black-Domestic Hazardous Waste.	
Implementation of efficient collection and segregation techniques will help to bring back its value and best out of waste can be ensured.	Agreed	
Another challenge to successful USW and EPR management is loss of ULB's revenue through informal sector that removes higher recycle revenue generating material from ULB's collection system. And the last but not the least of the challenge is to change the consumers and households attitude on source segregation.	MoEF&CC to provide comments	

		installed by the individual waste generators or at Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs).

(i) Need for essential registration of rag pickers by every Municipalities and ensuring their safety

4.21 In this connection, during the course of evidence a representative of Swach, Pune outlining the need for essential registration of rag pickers by every Municipalities, stated:

> "We have considered a priority group under the National Urban Livelihood Mission in various schemes for poverty alleviation. If the waste-picker is registered with the Municipality and if every Urban Local Body registers their waste-pickers, they should be the first priority group which is integrated in all kinds of waste – processing, collection, treatment contracts so that their work conditions can be enhanced and improved. They are already creating a large number of livelihoods"

4.22 Outlining the role of informal sector the witness stated:

> "I speak here on behalf of the informal sector waste pickers because we are aware of their presence in all the cities particularly in the urban areas. They have been playing a very significant role with respect to recycling, retrieving recyclable waste and ensuring that the municipal waste that is being handled by the municipalities is reduced to a large extent. Therefore, they are directly reducing municipal solid waste handling costs and also contributing significantly to the environment by diverting a large quantity of recyclables away from the landfill prior to collection. In fact, many of them are engaged at the bins where the waste is put either at the roadside or are engaged in doorstep collection of waste.
>
> A large number of waste pickers are also collecting waste from landfill, working in pretty sad condition and ensuring that a large amount of plastic, paper, metal, glass that finds its way to the landfill is also recycled. There is an alliance of Indian waste pickers, a group of waste pickers in India representing 35 cities KKPKP, which is the trade union of waste pickers in Pune is an active member of the network. In Pune we have been working very closely with the informal sector and we would like to share some of the experiences, learnings and put forth some suggestions with respect to the integration of waste pickers in this work."

4.23 In this context, the witness from Centre for Science and Environment also stated:

> "Then the second biggest thing that I am seeing both in Panjim as well as in Kerala is that you use the informal re-cycling industry, the kabadiwala to essentially take value out of the product. The Kerala Government has done something which I think is very wise. On their website, they have created a dossier of every kabadiwala and the cost that they charge for paper, for metal and for aluminium and the phone number of the kabadiwala. So, they have said that you compost yourself and the rest of the waste you sell to a kabadiwala. You make use of the informal sector and you do not re-create it. So, you essentially make use of the two best things you could do which is to segregate and compost and then re-cycle.
>
> Now the challenge is that how do you take it to a city at the scale of Delhi or Mumbai and how do you take it to a scale which is much bigger and therefore, the quantity of waste is much higher and your ability to therefore manage it at a decentralised level does not happen. My answer to it is two-fold. One, I think you have a lot of small towns. You talked about Hisar. In Hisar, this can start immediately. You do not have to first become Delhi and then have to deal with waste. So the first thing you would do in Hisar is to stop land filling. You will insist on segregation at source. You would build composting systems at the decentralised level or at the municipal level and you would make sure that you would use your kabadiwala system most efficiently to deal with the re-cyclable waste. You could do that for 80 per cent of the cities that exist in India."

4.24 On the issue of ensuring their safety, the Swach Pune in their written submission before the Committee stated that the World Bank **"The need to tackle special waste streams such as**
sanitarywaste. Sanitary waste means waste arising from used and discarded domesti c hygiene related products contaminated with blood, body fluids, faeces etc. including b aby diapers, sanitary napkins, tampons, incontinence pads, condoms, menstrual cups et c. An estimated 7000 tons of sanitary waste is generated across India every day. This f ast growing stream of waste requires special considerationof the committee given the f ollowing pertinent issues surrounding it:

> **a.**Improper segregation and disposal brings waste- collectors, waste- picker s and informal recycling workers into direct contact with Sanitary Waste lea ving them vulnerable to Hepatitis B and C, E coli, salmonella, staphylococc us and even Ebola.
>
> **b.**Absorbent hygiene products contain a substantial component of chlorine bleach- washed plastic and chlorinated wood pulp the incineration / burnin g of which has been shown to lead to emission of dioxins, some of the mos t poisonous and carcinogenic substances known to man as per WHO report s.
>
> **c**.Cities have to spend an atrocious amount of money to provide for the col lection, transportation, processing/ treatment and disposal of such type of

waste in addition to the environmental and social cost of handling of sanitary waste.

4.25 On the issue of Sanitary Napkins MoEF&CC has stated that as far as the issue regarding sanitary napkin is concerned following are the provisions in the Solid Waste Management Rules, 2016:

> (1) All manufacturers of disposable products such as tin, glass, plastics packaging, etc., or brand owners who introduce such products in the market shall provide necessary financial assistance to local authorities for establishment of waste management system.
>
> (2) All such brand owners who sale or market their products in such packaging material which are non-biodegradable shall put in place a system to collect back the packaging waste generated due to their production.
>
> (3) Manufacturers or brand owners or marketing companies of sanitary napkins and diapers shall explore the possibility of using all recyclable materials in their products or they shall provide a pouch or wrapper for disposal of each napkin or diapers along with the packet of their sanitary products.
>
> (4) All such manufacturers, brand owners or marketing companies shall educate the masses for wrapping and disposal of their products.

4.26 In this connection the Suggestion of ASSOCHAM and Comments of MoH&UA and MoEF&CC are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
ln the present solid waste management scenario, i.e. waste pickers are limitedly main streamed and recognized at the ULB levels. However, they remain the main resources of collection and segregation of municipal solid waste. They are the poorest, most marginalized,'neglected, vulnerable sections in the society. Live in poor conditions - by the roadsides near waste dumps. They should be recognized at the ULBs and provided social	Agreed.	Solid Waste Management Rules, 2016 define "waste picker" as a person or groups of persons informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood. Under the rules, waste pickers have been identified as a key

security and livelihoods opportunities		stakeholder in the waste value chain. Rule 11 mandate that the State's/ UT's solid waste management strategy and policy should acknowledge the primary role played by the informal sector of waste pickers, waste collectors and recycling industry in reducing waste and provide broad guidelines regarding integration of waste picker or informal waste collectors in the waste management system. State/UT urban development department is also mandated to start a scheme for registration of waste pickers and waste dealers. Local authorities and village panchayats of census towns and urban agglomerations have been mandated to establish a system to recognize organizations of waste pickers or informal waste collectors and promote and establish a system for integration of these authorised waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste. They are also mandated to provide training on solid waste management to waste-pickers and waste collectors.

(ii) Need for promoting Door to Door collection by subsidizing Waste Collection by Urban Local Bodies

4.27 In this context, ASSOCHAM has stated about uuniversal doorstep collection, with charging service fees. This ensures that the waste flow can be managed. But this service should not be free, everyone must pay. Slums and the urban poor may not be able to pay adequate amounts, and nor will very small commercial establishments. They may pay a lesser rate can be subsidized.

4.28 During the course of examination the NGO 'Swachh Pune' in its note submitted before the Committee has stated:

> "Two thousand three hundred members of Swach recover user fees and service about 4 lakh households (including 28000 slum households) for daily door to door waste collection in Pune. The worker retains the right to the earnings from the sale of recyclable materials. Each Swach member contributes 5 per cent of the earnings to the cooperative. The Pune Municipal Corporation and Swach, had a Memorandum of Understanding between 2008 and 2013 according to which PMC was to provide office space; uniforms, raincoats, footwear and safety gear; collection equipment (push carts and buckets); recycling sheds for waste categorisation; subsidy for collection from slums; welfare benefits and operational costs of supervision, training and citizen outreach to Swach. According to the MOU, over a period of five years, the PMC was to spend Rs.206 per thousand by way of operational costs to Swach against which it actually spent only Rs.98 per households. The MOU is currently in the renewal process with revision of some of the terms and conditions, based upon the experience of the first five years. The total annual savings to PMC on account of Swach is more than Rs.38 crores."

4.29 On being asked whether the slum dwellers can pay the user charges a representative of Swach, Pune during evidence stated:

> "Our experience is that slum-dwellers are willing to pay. For a good service, the slum-dwellers are willing to pay. Typically, it is a local politician in the slum who is stopping these slum-dwellers from paying, but a slum-dweller is willing to pay up to Rs. 30 also for this. However, the problem is that the paying capacity of the slum-dwellers is still lower and the recycle-able waste in slums is still lower. So, the waste-picker, who is working in a non-slum area gets a much bigger income compared to a waste-picker working in a slum pocket. So, waste collection in slum has to be subsidized by the municipality. There is a ratio in which it can be subsidized and it is still fairly do-able."
>
> We can have a lot of things in which these people can be strengthened for example doortstep collection. It has to have a payment attached to it. You cannot have free doorstep collection. A lot of doorstep collection which is now

being done very informally by waste pickers actually does not have payment attached. I think that is a very big one and may be slums and communities which are poorer, they can be subsidized."

4.30 In this context the Suggestions of ASSOCHAM and Comments of MoH&UA are as under:

Suggestions of ASSOCHAM	Comments of MoH&UA
Universal doorstep collection, with charging service fees. This flow ensures that the waste can be managed.	As per Solid Waste Management (SWM) Rules 2016

(iii) Need for providing portable sheds of waste collection and segregation purposes within the premises of Group Housing Societies

4.31 During the course of evidence of the representatives of Swach Pune outlining the need for providing portable sorting sheds for waste collection and segregation within the premises of Group Housing Societies, a representative of Swach Pune stated:-

"Many of our citizens, who live in very up-market areas, are travelling abroad and are willing to segregate 20 kinds of waste abroad and also keeping the containers within the society. So, we are saying that we need to start promoting these practices. Actually, in Pune, a lot of cooperative societies have actually built sorting sheds, which the municipality has not provided. The households have provided that within their premises. Our point is that decentralised spaces across the city should be there. Of course, not all the households, but a number of societies have provided it. We still do not have it to the extent we need, but there is definitely a trend. In fact, that is the kind support which, we feel, might be useful to get the corporates to give. If a corporate is willing to support a sorting shed within a housing society, maybe it should be encouraged for some time till the trend picks up and citizens know that they have to do it themselves. They are also providing *in situ* space for composting their own waste or for running biogas plants in large complexes. So, one of the things we have suggested in the draft bye-laws for Pune is that above a certain number of households, if it is a complex with more than 50 or 100 households, the municipality should not collect the organic waste; it should be processed *in situ*. This is a moving trend that is working to some extent."

4.32 In this connection, the witness added:

"The challenge is also to create new designs. Many citizens do not want these sorting sheds very close to their houses. We are saying why do we not look at

portable sorting sheds; we are looking at mobile sorting sheds using old skeletons of buses which can be created as sorting sheds temporarily, and each area has to decide that this sorting shed will be moved every six months to a different locality. We need citizens to also step up and say, "Okay, I will keep in front of my house for six months, and six months later it will move to another pocket." There should be some such arrangement, and citizen participation is critical. One advantage in *swach* model is that it is possible to actually interact with citizens on a regular level and get them involved in these processes."

(d) Need for scientific collection and transportation of Solid Waste along with its time-bound target and monitoring

4.33 In this context, a representative of ASSOCHAM during evidence also stated:

"Scientific collection and transportation of solid waste, there has to be time bound target and monitoring for achieving at least 90 per cent segregation at source, that is biodegradable separate and non-biodegradable separate, which is not happening at all. This is creating big nuisance and big wastage of energy and money. Then there has to be enforcement of separate transportation for different waste streams."

4.34 ASSOCHAM in their written submission before the Committee has also stated that there is lack of clear guidelines related to collection, storage, segregation, treatment and stringent actions against offenders in cases of non-compliance.

4.35 In this context the views of ASSOCHAM and Comments of MoH&UA and MoEF&CC are as under:

Views of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
Scientific methods such as compositing for managing biodegradable waste must be encouraged. *Implementation of efficient collection and segregation techniques will help to bring back its value and best out of waste can be ensured.*	Agreed	"Solid Waste is managed in a decentralized approach wherein local bodies, village panchayats and state urban development departments are assigned with tasks related to management of landfill sites. Ministry of Environment, Forest and Climate Change, under SWM Rules, 2016 has laid detailed provisions on development of (sanitary) landfill sites and has prescribed roles and responsibility of various actors involved.

(e) Extended Producer Responsibility

4.36 ASSOCHAM has also clarified that EPR-Extended Producer Responsibility or making the manufacturer responsible. Some wastes, such as CFLs and batteries, are highly toxic. They

cannot be handled by municipalities. Per the global norms, such products are now the responsibility of the companies who manufacture them, so that the environment and public health is safeguarded. It is essential that they pay for collection of these at collection centres, create financial incentives for disposers to deliver them and then ensure their safe recycling.

4.37 During the course of evidence of the representative of ASSOCHAM, a witness stated:

> "Globally, there is a drive to extend business responsibility. I am here basically focusing on the post-consumer waste. There is an EPR (Extended Producers Responsibility). So, business belong to recognized as well unrecognized sectors. There are formal sectors and there are informal sectors, whereas the recent Government initiative has improved these business transitions to the recognized sectors. But still the large fraction of these businesses still belong to the unrecognized informal sectors. While the Government EPR policies focused on recognized sectors, the unrecognized sectors really get a free ride. So, we are not capturing unrecognized informal sectors into our Extended Producers Responsibility. This free riders problems put rather greater burden on the recognized sectors. The higher the unrecognized sector, the greater the burden is. Therefore, it is imperative to eliminate and really have a solid enforcement on unrecognized sectors as well."

4.38 The witness added:

> "Here, the crucial partner in effective urban solid waste and EPR management is the Municipal Corporations/ Urban Local Bodies, which is fundamental for successful EPR and urban solid waste management.
>
> The municipal corporations or the urban local bodies in India lack critically in infrastructure and capability. This is our observations. There are infrastructures but they are not functioning to its capacity as well. It is necessary to take challenge of effective management and enforcement of
>
> these urban solid wastes. In many parts of the world there is an effective EPR in place. It is well-laid. It is simply to be replicated in the country. We can pick up those best practices and bring and replicate that. One of the examples which I would like to share over here is having a sort of waste bank or a centralised waste bank where under EPR all the businesses, especially, the post-consumer waste can be deposited into that waste bank. According to the size and the volume of waste, all the producers can share and contribute as a part of their EPR.
>
> Waste to wealth is another example and all the companies, who are present over here and who are there into recycling, there is a by-product out of this waste. How are we really going to optimise and also see that it really reduces the burden of EPR? So, there is an effective mechanism. There are several such technologies and we have been working with several partners and NGOs.

Recently I saw and there was a presentation made by one of the companies about its technology."

4.39 The witness further added:

"The biggest challenge today which the country is facing is of source collection and segregation. Segregation is the biggest issue. I was really happy to see that you need not to segregate the entire solid waste and it can be recycled and the end product is really like jet fuel, diesel, etc., of a very high quality. So, there are several such technologies which can be used and leveraged to manage our solid waste.

Therefore, my submission as an industrialist or as a corporate is that we are fully committed as an industry for EPR. We want to contribute but there should be simple, easy to implement and sustainable models. We would be very happy to really participate and adhere to those guidelines. Otherwise, guidelines would be there but if it is not implemented, then it is not sustainable at all."

4.40 In this connection ASSOCHAM has suggested that the following key actions are required:

(i) To increase the thickness specified in PWM 2016 from 50 Micron to 100 Micron. This will ensure that the waste get picked up due to its recycling value. This has been successful in case of PET bottle where we have vibrant recycling industry and you will not find any PET bottles littered or at landfill sites.
(ii) Proper infrastructure/capacity for segregation, recycling and incineration of the plastic waste in each of large consumption areas.
(iii) Creation of PRO in India with Industry participation
(iv) Following the set Policy & Standards on the Plastic waste management and consolidation of all legal cases related to plastics in one court to have common judgment.
(v) No ban on plastic without scientific basis and alternate solution which is more eco friendly.

4.41 The suggestions of ASSOCHAM and comments of MoH&UA and MoEF&CC are as under:

Suggestions of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
Solid Waste Management Plastics in Urban –India.	The Ministry of Environment, Forest and Climate Change has notified the Plastic Waste Management Rules 2016 and Plastic Waste Management (Amendment) Rules 2018. MoEF& CC to provide comments on Solid Waste Management Plastics in Urban –India.	The Ministry had notified the Recycled Plastic Manufacture and Usage Rules, 1999 for regulating manufacture and sale of plastic carry bags. It was superseded by Plastic Waste (Management and Handling) Rules, 2011 on 4th February, 2011. Further the Ministry Notified Plastic Waste Management Rules, 2016 vide Notification dated 18th March, 2016 superseding Plastic Waste
Businesses belong to	MoEF&CC to provide	

recognized as well as unrecognized sectors. Whereas recent government initiatives have improved businesses' transition to the recognized sector, a large fraction of lndian businesses still belong to unrecognized sector. While the government EPR policies focus on the recognized sector, the 0nrecognized sector gets free-ride. 'This free-rider problem puts greater burden on the recognized sector; the higher the unrecognized sector, the greater the burden. Therefore, it is imperative to eliminate the unrecognized sector.	comments	(Management and Handling) Rules, 2011 and its amendments. The earlier Plastic Waste (Management and Handling) Rules, 2011 prescribed a thickness of 40 micron, however, the thickness was increased from 40 micron to 50 micron vide Plastic Waste Management Rules, 2016 with a motive that the waste get picked up due to its recycling value. As per the Rules, the generators of waste have been mandated to take steps to minimize generation of plastic waste, not to litter the plastic waste, ensure segregated storage of waste at source and handover segregated waste to local bodies or agencies authorised by the local bodies. The rules also mandate the responsibilities of local bodies, gram panchayats, waste generators, retailers and street vendors to manage plastic waste. Further, the Ministry has worked out 3 draft models for the EPR. The same has been circulated to various stakeholders during the Regional Workshop conducted by the Ministry and CII on 12th and 13th November, 2018 for the comments. Once the consultation process is over, the final EPR mechanism will be implemented. The Ministry of

		Environment, Forest and Climate Change, has introduced the Plastic Waste Management Rules, 2016, the policy principle of Extended Producer Responsibility. Under EPR, a producers, brand owners and importers are mandated to collect back and process the waste generated by the material it has introduced in the market. According to the Plastic Waste Management Rules, 2016 responsibilities have been assigned to producers, importers and brand owners to work out modalities for waste collection system based on EPR involving State Urban Development Departments, either individually or collectively through their own distribution channel or through local bodies. The Ministry is currently deliberating modalities for implementing EPR in plastic waste in the country. In this regard, stakeholder consultations have been conducted in Bangalore and Ranchi. Further two more consultations have also been planned. ULBs are involved in the stakeholder consultation and necessary provisions for the capacity building of ULBs are incorporated in the draft models.

*****

CHAPTER V

Different Models of Decentralised Solid Waste Management

5.1 During the course of evidence of the representatives of Ministry of Housing and Urban Affairs it came out before the Committee that a workable system of waste collection at source is already in operation in places like Ambikapur, Bengaluru, Chandigarh, etc. A brief resume of these models of decentralized Solid Waste Management is as under:

(a) Ambikapur Model of Decentralised SWM

5.2 During the course of evidence of the representatives of MoH&UA, Additional Resident Commissioner, Government of Chhattisgarh in her Power Point Presentation before the Committee focused on the issue of solving the problem of solid waste, in Ambikapur town of Chhattisgarh showcasing a self-sustainable model of segregation of wet waste to compost and solid waste to some extent as raw material to an industry. In the material submitted before the Committee captioned 'Transforming Garbage Into Resource' shows details of converting waste generation to treatment in Ambikapur town by involving commercial, residential bulk generators SHGs, Residents Welfare Associations, hotels etc. from Door to Door Collection through GIS based Route Plan and Primary Segregation at source, Secondary Segregation Centres, Segregation of inorganic waste and decomposing through decomposter of organic waste and producing methane gas by decomposing food waste. Asked as to how this completely decentralized model of waste management can be replicated in the country, the witness explained:

> "Sir, it is segregated to that extent that the raw material for that particular industry. So, we do not give it to the cement factories. There are a few

industries, which take it as raw material. We collect it in that quantum and sell it."

5.3 Asked as to whether there is no incineration, the witness clarified:

"Yes, Sir. Ours is 100 per cent recycling and reuse. Nothing is going waste."

The Committee also asked whether it is actually possible, the witness stated:

"Yes, Sir, it is possible. That is why we are segregating."

5.4 Asked about the system of making the model viable by taking user charges the witness explained:

"It is charged household-wise. Around 90 per cent are paying and it is increasing. We are charging Rs. 50 per month."

5.5 Asked about the collection of user charges, the witness stated:

"The woman SHGs are collecting it. Initially, we had worked out that it would be a cooperative society. When we were doing this kind of a work, they were not that empowered and aware. Gradually, we built their capacity. Initially, they were going, but people were not listening to them. Then, we had a meeting with the Municipal Corporation's Revenue Team and it was decided that initially it would be done. It was linked with the service. Gradually, people started. Then, we started getting acknowledgements for our project. Now, citizens do not want to drop it."

5.6 The Committee also wanted to know whether the money is going to the Corporation or the SHGs, the witness stated:

"It is going into a separate account in the Corporation maintained for the solid waste management. The honorarium is being paid to these women from this money."

5.7 The Committee also enquired whether there is no gap funding required now at all from the State, the witness stated:

"Yes, it is over… It was one-time….. All these are coming into one account. One thing, which I felt is that if I disturb the existing system of whatever is going on, then they will not allow this project to succeed. So, first we allowed everything to succeed and then once it was established, then gradually deal with the stakeholders like scrap dealers who were behind the fire and theft issues. So, we got to know that we need to involve them. We actually involved and made room

for everybody. We did not get into the existing system at all like the transporter kept on taking

the contract. Gradually, when they started getting less volume, then they stopped, but had we stopped them initially, then they would not have allowed this project to succeed."

5.8 Asked whether it was achieved through persuasion, the witness clarified:

"Yes, Sir. There are two things – persuasion and technology. We have used a participatory kind of thing – app and complaints. Initially people were saying that since they were not reaching to them, they were not paying. Now, we have made sure that they reach to them. The citizens were part of this model, from designing to execution."

5.9 The witness also stated:

"The Centre has put in it one-time for tools, equipment, uniform, etc. They are O&M issues and that is it and nothing else. Since the city's drains and roads were clean, the consumables and chemicals expenditure, which was around Rs. 50 lakh per year, became zero."

5.10 Asked as to how this model can be replicated in the country, the witness clarified:

"We have around 4,000 ULBs all over India out of which around 3,000 are of less than one lakh population. The norm is that one household generates around 400 to 500 gm waste per day. If we calculate it, then for these small ULBs, these kinds of mechanical plants are simply inoperable. Secondly, the resources, the technical expertise to operate these kinds of plants is not available. For example, in Ambikapur, I have to travel 350 kilometres to all the sites to catch even a train. In those kinds of areas, with mechanic kinds of incinerators, plants, solutions are not workable. This is my submission. In my previous District, I had seven ULBs and some of them were in the mining areas. There, an incineration plant was put but it was shut down because it is not operable there. We do not get even engineers."

5.11 Asked whether the above model implemented in Ambikapur town and whether it is still working well, the MOH&UA informed that the Ambikapur model is successfully working since 14th April, 2015 and is being replicated across the State of Chhattisgarh. Any other big city or towns either Chhattisgarh or in adjoining States of Madhya Pradesh, Odisha, Jharkhand etc. have been able to use Ambikapur model.

5.12 Asked about the viewpoints of respective States in this regard, the MOH&UA stated that Chhattisgarh is replicating the Ambikapur model across the entire State with good results in cities like Durg, Rajnandgaon etc. Various cities and states representatives have visited Ambikapur and replicated the same. Ministry has also disseminated the model across the country.

5.13 The Committee also enquired whether the Ministry of Housing and Urban Affairs has been able to work out a roadmap of bringing 2704 ULBs out of 4000 ULBs in the country under Ambikapur model in the first phase. Asked about the States/UTs wise break up of ULBs that can be tentatively targeted for this huge task, the MOH&UA informed that the State wise number of ULBs having population less than 3 lakhs which are more suitable for adopting the Ambikapur model are given below:

List of ULBs with <= 3 lakh population out of 4041 statutory towns	
State / UT	*No.of Cities < 3 lakh*
A&N	1
Andhra Pradesh	114
Arunachal Pradesh	26
Assam	87
Bihar	135
Chhattisgarh	164
D & D	2
D & H	1
Delhi	2
Goa	14
Gujarat	188
Haryana	76
Himachal Pradesh	56
Jammu & Kashmir	84
Jharkhand	37
Karnataka	209
Kerala	54
Madhya Pradesh	359
Maharashtra	230

Manipur	28
Meghalaya	10
Mizoram	23
Nagaland	19
Odisha	104
Puducherry	5
Punjab	139
Rajasthan	177
Sikkim	8
Tamil Nadu	712
Tripura	15
Uttar Pradesh	629
Uttarakhand	73
West Bengal	115
Grand Total	3896

5.14 In this connection, NITI Aayog also stated that some of the cities have done examplary work in the Solid Waste Management like Ambikapur and Pune and are models to be emulated by other cities. These cities have evolved their own models by brining rag-pickers into the fold. For example, Ambikapur in Chhattisgarh, owing to intensive training, general awareness and citizens' participation, became the first municipal corporation in India to digitize garbage management, make the city dustbin free and convert 'garbage into gold' by employing poor women from Self Help Group (SHGs) to collect the waste.

(b) Pune Model of Decentralised Waste Management

5.15 During the course of evidence a representative of Swach Pune spelling out the details about Pune Model of Decentralised Waste Management stated as under:

> "So, the SWACH model is essentially a model where waste pickers have been integrated into a formal cooperative. They are registered as a service cooperative. It is this cooperative of waste pickers which is covering 50 per cent of the city in doorstep collection work. The significance of this model is that the municipal costs for waste handling are extremely low. They are the lowest in India for primary collection. The municipality, as per the formal MoU with SWACH, was expected to pay approximately Rs. 200 for a five year period per household which in itself is a very low cost. They finally ended up paying only

around Rs. 98 for five years which works out to per household per month Rs. 1.50. It has been unmatched in that sense in India. The strength of this model is that the citizen who is getting the service to whose the waste pickers going and collecting the waste is actually paying the user fee directly. They are paying between Rs. 20 or Rs. 50 a month. So the net cost to the citizen is much higher but the municipal cost is much lower."

5.16 The witness also elaborated:

"Swachh is a wholly owned autonomous cooperative of self-employed waste pickers and other urban poor that came into existence in 2007, with the support of the Kagad Kach Patra Kashtakari Panchayat (KKPKP) and the Pune Municipal Corporation, KKPKP is a membership based registered trade union of waste pickers and itinerant waste buyers in Pune and Pimpri-Chinchwad in Maharashtra formed to organise waste-pickers and establish their status as workers and assert their contribution to the environment, and their crucial role in the Solid Waste Management of the cities. Established in 1993, it currently has about 9000 members, 80 per cent of whom are Dalit women from socially excluded and marginalised castes."

5.17 The witness also stated:

"The advantages are also that the model is far more accountable. So, if the waste picker does not turn up on a particular day, the citizen has the freedom to not pay and say that you have not done a very good service. So, it is an effort to formalize the informal sector in a gradual manner. It is also giving the time to the informal sector to upgrade itself, its skills and provide an efficient service. The argument is also premised on the fact that no one perhaps understands the value of segregation more than the waste picker because she is a direct beneficiary of segregated waste. If she gets access to segregated waste, she gets better quality waste and she gets a better return on it. She is also able to sell it at a higher price. Scrap dealers are willing to buy it at a premium from her. So, the best worker who could possibly perform the work of doorstep collection is a waste picker if we want to promote segregation. So, that is the second premise of the argument that it should be accountable and it should be the waste picker providing the service."

5.18 The witness added:

"Our third effort, of course, is that the effort of segregation of waste is only useful if we can maintain the integrity of the segregated streams. In Pune around 40 per cent citizens are maintaining, at least, two bins. The two bins may not have perfectly segregated waste but, at least, the make an effort to keep wet and dry waste in a segregated manner. We also have to recognize that there are a lot of wastes today which are really a challenge. I mean, where is one supposed to throw a ball pen which has combination of organic as well as recyclable material; where are you supposed to throw tea bags or ear buds? There are lot of composite materials which do not fit very directly wet or dry waste."

5.19 Asked how Swachh is managing without the administrative cost, the witness clarified:

> "The waste picker pays five per cent of her earnings from user fees towards the running the SWACH. So, currently, the cooperative is entirely managed with the earnings."

5.20 The witness also elaborated:

> "Citizens are expected to maintain *in situ* compost pits, and the waste-picker is running the compost pits and ensuring that the organic waste is getting composted. The Municipality is not only saving on the direct cost of collection but it is in fact not collecting the organic waste at all. So, the PMC pays a small rebate, five per cent rebate in property tax to citizens who are actually composting their waste *in situ*. Obviously, from the Municipality point of view, the five per cent rebate is a very small cost to pay in order to ensure that they have to collect that much less waste. So, that model is also working. The benefit to the waste-picker is that apart from getting the user fee for collection of waste, she also gets a user fee for composting the waste. So, she makes a net higher earning. We have around 9,000 waste-pickers in Pune and around 2,300 of them are a part of SWaCH model. All of them are working much fewer hours and are earning relatively higher per hour with better access to waste and certainly with much better conditions. Based on these learning, some of the other cities in India have also come and studied the Pune model. The waste-picker groups as well as the Municipal officials have drawn a Memorandum of requirements, which they feel that the Urban Local Bodies can endorse. This ensures that these kinds of models can get replicated in other cities."

(c) Bengaluru, Varanasi and Amritsar Models of Decentralised Waste Management

5.21 During the course of evidence of the representative of MOH&UA on the issue of collection and segregation of waste in Bengaluru city, the Commissioner, BBMB stated:

> " Sir, I would first like to give you a brief background of my city. I would like to bring to your kind notice that Bengaluru has a population of approximately of about 1.25 crore with an area of 800 square kilometres and the city of Bengaluru generates about 4500 tonnes of solid waste everyday. The basic process is that in all the households the solid waste is collected house to house in a segregated form and probably Bengaluru is one of the top ten cities, maybe in the world, to collect 50 per cent of its wastes segregated. These segregated wastes goes to our plants and then we make compost sort of thing and then the Agriculture Department of Karnataka and also Swachh Bharat Mission is also giving us subsidy. 25 per cent of the waste is from the bulk generators.
>
> Anybody who generates more than 10 kgs of wastes has been categorised as bulk generators and this is collected by our authorised contractors who are scrutinised by a group of expert Committees and officers and then they are

empanelled in the website and only those empanelled vendors are allowed to collect waste from the bulk generators. By bulk generators I mean apartment complexes and then shops and other establishments."

5.22 On the issue of Waste to Compost the Committee inquired whether are there any buyers for Waste to Compost, the witness stated:

" In the BBMP Budget also, we had said that anybody who is willing to give compost, BBMP is willing to buy that through the DWCC. Even State Government and the Central Government are willing to give subsidy and we can directly pass on this subsidy."

5.23 Asked whether, If the Welfare Association is making compost, and BBMP has not bought it for so many years, the witness stated:

" There was some issue about the compost. Last time, the Agriculture Minister of Karnataka himself visited and saw the quality of compost. He immediately offered, what Swachh Bharat is offering, additional subsidy of Rs. 800 to the farmers. So, not even one kg. of compost remains in my plant. All the compost has been cleared."

5.24 On the issue of treatment of C&D Wastes the problem of lakhs of tonnes of Waste spread over Mandur area came up before the Committee. Asked about the factual position, the witness stated:

" Sir, it is a matter of 83 acres of land in Mandur, as you are aware. We have called for tenders for bio mining there. A couple of people had shown interest but they did not come up later. For four times, we have called tenders. We are waiting now for any company which is coming forward. We will give them 4G exemption, if they are willing to do it. In the meanwhile, hon. Chief Minister wants to take up construction activity there for building up of houses. Automatically, we are in the process of removing the waste quickly as a large amount of RDF is available which is in great demand."

5.25 The witness further elaborated:

"Regarding construction debris, we have called for tenders from one company called Raw Crystals. Bengaluru generates 2000 tonnes of construction debris every day. We were using it previously for the quarry refilling. But now as per the 2016 SWM, we cannot do it any more. We need to process it and then do it. So, we have called for tenders from a company called Raw Crystals. We are handing it over to them."

5.26 Asked what would they do out of it, the witness clarified:

" They will basically crush the whole material. They will take out valuable things like steel, stone and everything. Bricks also have got some value. They segregate it into four or five streams, and whatever the rejected remains is left, it goes to the landfill."

5.27 The witness stated:

"Sir, we have one of the best models in the country. We have one of the best SHG groups in the country. We have sold four lakh tonnes of compost. We have the SHGs working very strong. Ambikapur is a small town while challenges in Bengaluru city are different.

5.28 Asked about the total expenditure that you are incurring for this waste management, the witness stated:

"Our expenditure is Rs. 800 crore per annum. The major amount of it goes towards the labour wages."

5.29 The Committee also wanted to know in what way can we imitate the Ambikapur model that she has presented, the witness explained:

"For example, we are introducing mechanical sweepers. Previously, they were charging Rs. 17 lakh per month to sweep 20 kms. of road. Now the same mechanical sweepers sweep 50 kms. of road for Rs. 5.5 lakh including the cost of the machine."

5.30 About collection of waste in Varanasi, a representative of the Ministry of Housing and Urban Affairs stated:

" Now, Varanasi has everything there. There are seven, of which, three functioning bio-magnesium plants; there are 6-7 composting plants; and we have the dumping yard. So, we have everything working there plus the legacy issue. Now, I would suggest that up to now our strategy was that we would be following with the *Swachh Survekshan* in this. I was seeing our cities population-wise. There are 88 cities with 5 lakh population; 329 cities with 1-5 lakh population; 468 cities with 50,000 to one lakh population; and 2,704 cities with less than 50,000 population. In this, Ambikapur may very well apply in 2,704 immediately."

5.31 The Committee asked whether it can be immediately pushed for, a representative of Ministry of Housing and Urban Affairs stated now, they have identified

2 or 3 models in each of these categories, and they will try to implement so that by next meeting we will be able to show some progress.

5.32 The Committee drew the attention of the Ministry to the observation made by the Commissioner SDMC that if Swachh Bharat Mission fails, it is due to financially poor Corporations, a witness of the Ministry of Housing and Urban Affairs clarified:

> "Sir, the strategy was that they were sort of saying that we will have a 'loose fit light touch model' and we will try to induce cities to do it through the *Swachh Survekshan*. Now, the star-rating was inaugurated yesterday by the hon. Minister. Now, our experience has been that I have been looking after Varanasi for 4 ½ months acting like a Super Commissioner. Firstly, it has to be a customised model. Secondly, I do not agree with him as money is not a problem. Varanasi has no money. It is actually a governance issue and a matter of structuring it. Varanasi has 90 Wards; there are four organisations doing it, that is, the Nagar Nigam, Ecopal, KIANA and ILFS that is doing it. We found an event where we could not trace the workers. There are *Kooda Ghar*, which is a big building. So, the first person who goes there puts it in the front and after that everything comes on. Any pilgrim who comes there keeps on throwing there. So, *Kooda Ghar* is an old concept. If we can bring about this structural change and discipline our people, then it works."

5.33 The witness further stated:

> "In Varanasi, what did we do in IT, and it is magnificent. No longer do we take attendance. It is photograph taken; photo matching; and attendance automatically taken. So, we have record of everybody. After that, there is street sweeping, which is very important and which you have missed. Every day, street sweeping photographs are taken 2-3 times 'before' and 'after' the street is swept. Every bin is photographed 'before' and 'after', and once they pick up the garbage from the house, we send an SMS like an OTP. So, if the guy has not picked up, the household complains that he did not come. So, the results have been tremendous. Of course, there has been a lot of resentment from the employees literally bordering on strike, but we went ahead as we had to do it to show UP that if we can do it in one city, then we can do it everywhere."

5.34 About collection of waste in Amritsar, a representative of MOH&UA stated:

> "The other thing is that I went to Amritsar. Mr. Sidhu had called me, and we had a six-hour long meeting. The discussion was that just one mile from the Golden Temple there is a dumping yard, which is still being used. So, we allowed them to use Smart City Mission money so that we can clean it."

5.35 Asked how it will be cleared the witness stated:

"Sir, it is like this. Already, whatever had to become compost has become compost. Now, you have the recyclables, plastics, metals and 5-10 per cent inerts. So, we will remove the compost and we need to pay them for it. So, we will pay somebody to come and do it. We will remove it and then we will make a park and in between a small place for zero-inventory sort of operation because we cannot put a waste to energy plant right next to the Golden Temple. It is just not possible. So, that is a model that they are doing now. So, as you have rightly said that it cannot be 'one size fits all' and it has to be customized. It has to be done as it is a crisis / emergency, and we have to do it quickly. They will do it. We have been talking about it since morning and by next time they will be following the strategy that before the ending of this they will also give some strategic intervention to each city to do it that way."

(d) Tamil Nadu and Goa Models of Decentralised Waste Management

(i) Decentralised SWM in Tamil Nadu

5.36 With regard to progress made in decentralized waste processing in Tamil Nadu during the recent Study Tour of the Committee in the course of informal discussion with the representatives of Government of Tamil Nadu at Ooty it was outlined before the Committee by State officials that in future a number Decentralized Waste Processing Units (DWPUs) will be set up with a view to reduce the number of Centralized Waste Processing Units in Tamil Nadu. Asked whether the Ministry of Housing and Urban Affairs going to set up Decentralized Waste Processing Units (DPUs) in different States/UTs on the lines of Goa and Tamil Nadu, if so, whether MOH&UA has prepared any road map in this regard, the MOH&UA stating in the affirmative also informed that Ministry is spreading the information about decentralised processing units implemented by ULBs and disseminating the information widely as detailed in 6(a). Recently, during the Swachh Bharat Awards ceremony of the results of the Swachh Survekshan 2017 at Indore on 23.6.2018, the Hon'ble Prime Minister has released the Ministry's Advisory on "Onsite and Decentralized Composting of Municipal Organic Waste" which puts together several such units existing in the country. The Advisory has been disseminated to all the States and ULBs as a reference tool.

(ii) Goa Model of Decentralised SWM

5.37 With regard to 100 TPD MSC/W Waste Treatment plant at North Goa during the evidence of the representative of M/o Housing and Urban Affairs, Municipal Commissioner, East MCD also enlightened the Committee that he is well aware about Goa facility since he was Environment Secretary in Goa. Asked about the views of MOH&UA on the above waste treatment plant, the MOH&UA stated that Ministry officials have seen the said plant in Goa. It is a direct intervention by the State Government of Goa and highly cost prohibitive (at Rs. 158 crore for processing 100 TPD waste), which is not affordable by most ULBs in view of their precarious financial position. However, with mandatory segregation and decentralised processing, it is certain that the costs of processing for the ULBs will come down and also reduce the expenditure in collection and transportation.

5.38 The Committee further enquired whether more and more such waste management plants need be set up in Solid Waste affected areas, more particularly in Delhi, the MOH&UA stated that the key to waste management lies in segregation and its processing at decentralised level. More waste to energy plants are already coming up, however, the other ULBs which are not having waste processing facility so far are being encouraged to adopt decentralised/centralised waste processing facilities particularly the composting and biomethanation. Considering the typical composition of wastes and the climatic conditions, composting is highly relevant in India and is the best method to be considered in all municipal solid waste management (MSWM) concepts In Delhi following are the Waste to Energy plants:

1. Waste to Energy plant in Okhla (2000 MTPD)
2. Waste to Energy plant in Ghazipur (1300 MTPD)
3. Waste to Energy plant in Narela Bawana (2000 MTPD)

4. Waste to Energy plant in Tehkhand, Okhla (2000 MTPD - is under construction).

5.39 In reply about need for replicating the decentralized models of waste management in Pune, Kerala and Goa to other parts of the country the Ministry of Housing and Urban Affairs stated as Under:

> "(i) Facilitation of participation by the waste-pickers is one of the prime objectives of the Swachh Bharat Mission as stated in the Guidelines. SWM Rules 2016 also emphasize on streamlining Waste Pickers in waste management system and all states and ULBs have also been sensitized to this aspect. To enable the ULBs SBM has brought a step-by-step guide for the integration of Waste Pickers into the Municipal Solid Waste Management chain.
>
> (ii) Under the ongoing Swachh Survekshan-2018, which is the first ever survey where all ULBs will be participating and thus sharing their progress for review by an independent third party, one of the specific parameters being judged is the Percentage of Informal Waste Pickers formally integrated into Solid Waste Management (SWM) in the city (as per SWM 2016 rules)."

(e) Best practices of Decentralised SWM

5.40 During the course of examination, best practices in decentralized solid waste management in Vengurla town in Sindhugarh District of Maharashtra and Alleppy district in Kerala also came up before the Committee.

5.41 With regard to Vengurla town the following were the different stages of pre-implementation stages and after implementation, features of Solid Waste Management

Situation primarily prior to implementation	Implementation measures undertaken	Situation after implementation
Plastic waste choking up the creek and beecha	Public outreach programme for waste segregation at some stated and supervising mechanism set up	Vengurla Municipal Council has become first Municipal Council in Maharashtra, plastic bag free city, zero garbage city.
Waste was pitting up in the city	Waste bye Laws passed	
Poor Solid Waste Management	Plastic carry bag banned	
Insufficient logistics	Generating clean energy reducing carbon Deploying sufficient vehicles for waste collection treating staff Members. Setting	

	up Grievance Reducing System.	

5.42 Similarly, outlining the good work done in decentralized work managed in Alappuzha, the MOH&UA has given the following facts before the Committee:

(i) "Alappuzha, which has a population of 0.174 million and produces 58 tonnes of solid waste a day, has been implementing a project called *Nirmala Bhavanam Nirmala Nagaram* (Clean Homes- Clean City) since November 2012.

(ii) The city has adopted decentralised waste management and is pushing for 100 per cent segregation in all the 23 wards of the city. More than 80 per cent households now have biogas plants and decentralized composting system. The project was taken up under the 'Nirmala Bhavanam, Nirmala Gagaram (Clean Home, Clean City)' programme that envisaged the municipality setting up biogas plants, pipe compost units in households and aerobic composting units in public places.

(iii) Biogas plants, both portable and fixed, were installed in households, with 50 percent subsidy from government agencies. Hotels, vegetable markets, wedding halls were asked to have their own plants or make arrangements to entrust their waste to recognised private service providers. Within a month, the scheme was rolled out in 12 more wards. The urban body has so far established 5,000 kitchen bins, 3,000 biogas plants, 2,800 pipe composting units and 218 aerobic composting units to manage 58-60 tonnes of waste the town generates daily.

(iv) The biogas produced from the plants at the houses is being used for the purpose of cooking. Currently, it provides enough fuel for two hours of cooking. The waste-filled in the compost units at home is converted into vermi-compost that can be either used for the kitchen garden or sold.

(v) The waste deposited at the aerobic compost plants in public places is converted into organic fertilizers and distributed to the public free of cost. Each unit, comprising two bins, processes 2,000 kilograms of waste and converted it into fertilizer within 90 days.

(vi) Plastic and other non-degradable wastes are segregated at the source and delivered to the respective units. While the kitchen waste can be deposited in public aerobic bins, the plastic waste is separately collected once a month by the municipality officials from the units or households and handed over to private parties for recycling. Plastic waste can also be given to the state government's Clean Kerala Company which sells it to factories in other states.

(vii) The decentralised waste management system has helped Alapuzha municipality to save substantial funds every year. Money saved on diesel used for operating 40-50 trucks to transport the waste to the dumping yard alone comes to about Rs 50

lakhs. The cost of the biogas produced through the plants works out to Rs 60 lakhs. The fertiliser can fetch up to Rs 30 lakhs."

(f) Need for Decentralized Solid Waste Management where ever possible.

5.43 During the course of Central Pollution Control Board (CPCB), the Committee enquired about a balanced view on the issue of Decentralised/Centralised Solid Waste Management, the Member Secretary, CPCB clarified:

"Here, the debate is that of decentralised and centralised system. So, there is no conflict of interest between these two issues. Decentralisation, wherever possible, is the most welcome thing. We are also trying it. Many of our informal sectors are doing a good job. But this does not end here. City-wise plan has to come here where the regulators like the Central Pollution Control Board and the Urban Development Ministry have to come in."

5.44 In this connection, sharing his experience, the witness stated:

" I would start with my observations as a regulator. The MSW rule came into being in the year 2000. Just two years back, I got an opportunity to act as a member-Secretary. I was working in different capacities. I have realised that these rules were formulated in 2000 and why I should not start practising the Act on the campus. In fact, on 5th June of 2014, the entire waste of the campus was collected. It is having two roots composting: one is vermi-compost and the another one is open organic waste converter. Then, we have the segregation at each floor office where we are operating, where we have the laboratories. Then, the estimates were that 50 to 60 kgs of waste were generated every day which we have brought down to 8 to 10 kgs. I thought that in the campus if I have to act as a Commissioner, then how it will be that of a city."

5.45 The Committee enquired how it was brought down, the witness explained:

"I will tell you. Out of the 50 kg which was coming, some portion was coming from the canteen; another portion through the papers. There are also different wastes. We have the sweeping horticulture wastes and all those wastes. The horticulture waste goes to the vermi bags where vermin-culture is there. We have started producing manure. We are using it in our own campus.

Second, in the canteen, we have put the organic waste converter. That is also being used. In fact, we are giving it to our staff also. They can take home that for use in their pots. But still there is a residue which is there because chemicals are coming from the laboratories. So, we are storing and sending it to the CTP.

Another model which we have seen is in New Moti Bagh in Delhi where we have the composite facility working. They have the horticulture waste converter. Then, they have the organic waste converter. Plastic coming out is converted into liquid fuel. The gas coming out is used for cooking purpose. These two models are to be scaled up at the national level. These are the small stories converting into big events."

*****

CHAPTER VI

Issue related with Waste Generation

Need for data base for waste generation and working out a Perspective Plan quantifying Waste Generation and compost analysis.

6.1 During the course of evidence of the representatives of Central Pollution Control Board (CPCB), a representative of CPCB underlining the need for data base for waste generation stated:

> "The biggest handicap in this country is that we do not have the waste generation data. Today, we will see the different figures floating around. Some will say that it is 1,20,000 MT; some other will say that it is 1,40,000 MT. Actually, we have carried out a survey in 2004-05 where actually 59 cities were sampled. How do we arrive at these figures? Most of the concept for estimating waste generation is population multiplied by per capita is equivalent to the waste. That is not correct. What we have to do is that each city has to weigh how much waste is generated and the next step is its composition."

6.2 The witness further added:

> "What waste we were generating 50 years back, if you see the position now, it has altogether changed. Now we have almost 9 per cent plastics coming into our waste. We have other components getting into it. So, the waste which was simply a biodegradable waste is gradually getting converted into heterogeneous waste and its chemical composition is changing. Now this basic composition will determine the type of technology to be employed. Ms. Sunita Narain said that she has no opposition for incineration. I will take that. We need a higher consuming waste technology in the country. There is no conflict. She says very rightly that we need hybrid technologies. We need a combination of technologies. We might need RDF, we need incineration and perhaps the higher version of fourth plasma archs. Maybe, you cannot have land fills, you cannot have the composting because of the climatic conditions. You may require a much higher version of the technology. So, when the country is progressing, why do we deprive when these options should be stopped? The only mistake which we make is the locating of such a plant is very crucial. If in Sukhdev Vihar which is already a residential area, the wrong locating has resulted in a big challenge in the operation of the plant."

6.3 The witness further added:

> "Now, the second thing is that we segregate the waste, we determine the composition, we label with the calorific value and utilise the technology and obviously stricter standards and online continuous monitoring devices are essential. This will also help us. Still in many parts of the world, incineration and

thermal route are preferred. About 60 to 70 per cent of the waste is still going through the thermal route. The only thing is, they have better operation, skill and they have a better design. Therefore, according to the understanding of our waste and designing technology is the foremost thing and this will help. Decentralisation will compliment the efforts because it will reduce the unnecessary burden on the land fill. We have to go for disincentivising land fill because all cities will not get land always and cases will end up in litigation."

6.4 The witness further elaborated:

"Our suggestion is that every local body must do quantification, compost analysis and a total plan which should come into the public domain. Every citizen has a right to see that his city what plan it will have. It may have a 2 year or a 3 year or a 5 year plant, but at least we will come to know in the next 5 years the waste which is generated from the city is going to this and accordingly every local body can work out plans and can seek the partnership of voluntary and non-voluntary organisations and work out plans. So, it will ease out. Therefore, it is the combination of the efforts which will drive the entire solid waste management plan in our country."

***

CHAPTER-VII

Issue Related with Waste Composting

7.1 On the issue of Waste to Compost the Ministry of Housing and Urban affairs have stated as under:

"For Wet Waste

i. Decentralised/Centralised Composting

Composting can be done in decentralized or centralised manner including onsite composting of waste by Bulk Generators.

Decentralized composting can be for a specific ward or area where composting of biodegradable waste is done up to 5 TPD capacity at a place. The different technologies that can be taken up under decentralized technology are pit composting, pot composting, bag composting, OWC, windrows etc.

Centralized composting includes composting of waste in a centralized manner, where biodegradable waste from all wards is brought into a centralized facility and composted through either windrow composting or other such large scale composting methods more than 5 TPD capacity.

Decentralised options can be tailored to the local waste stream and the climatic, social, and economic conditions; Decentralised systems reduce the cost of collection, transportation, and disposal of waste by the ULBs

ii. Bio methanation

Biomethanation is the conversion of biodegradable waste into biogas under anaerobic conditions. In this process the biodegradable components including the food waste etc are broken down into methane under anaerobic conditions. The methane gas thus generated can be used as a fuel. Biomethanation plants can be decentralized or centralized."

7.2 About Waste to Energy Programme the Ministry of New and Renewal Energy in a written note stated that Ministry of New & Renewable Energy has been promoting the use of technologies for energy recovery from municipal, industrial and commercial wastes for meeting certain niche energy demands of urban, industrial and commercial sectors in the country. Ministry is focusing on Energy generation from Urban, Industrial and Agricultural Waste / Residues such as municipal solid wastes, vegetable and other

market wastes, slaughterhouse waste, agricultural residues and industrial wastes & effluents.

7.3 The Ministry of New & Renewal Energy has given the following lists of Urban and Other waste for generation of Bio Gas and Power :

1. Urban waste:	2. Agricultural Waste	3. Industrial wastes/Effluents
• Kitchen waste	• Paddy straw	• Agro processing industry Effluents
• Garden waste	• Agro processing industries residues/ effluents	• Paper & Pulp Industry Effluents
• House-hold garbage,	• Green grass	• Milk processing Effluents
• Cattle dung		• Spent wash from distilleries
• Vegetable & fruits market waste		• Waste from sago/starch
• Slaughter house waste		• Pharmaceuticals Effluents
• Poultry waste		• Oil extraction plants Effluents
• Commercial/institutional garbage		• Slaughter house/ tanneries Effluents
• Municipal Solid Waste (MSW)		• Press mud etc.

7.4 Explaining methods of processing, the Waste to Energy, the MOH&UA stated that there are no separate suitable methods for metropolitan cities and other smaller cities. All processing methods are suitable for certain quality of waste with suitable quantity. However, segregation of waste in different streams is key for efficient and economical waste processing. Even smaller towns in cluster can install all waste processing facilities including waste to energy that is often considered suitable for large cities. The Ministry of Housing and Urban Affairs has given the following suggestions:

> "(a) Considering the typical composition of wastes and the climatic conditions, composting is highly relevant in India and is the best method for wet waste processing.
>
> (b) However, in certain categories of bulk waste generators like hotel, restaurants, vegetable market places and places with animal dung etc., bio-methanisation process proves to be better and economical option.
>
> (c) Segregation and Recycling of various streams best method for dry waste processing depending on its type, quality and quantity.
>
> (d) MRF, RDF, waste to energy in large cities or on cluster basis involving many smaller cities are various methods of processing for dry wastes like plastic waste etc."

7.5 During the course of examination the Committee have heard the representatives of Ministry of Housing and Urban Affairs, ASSOCHAM, prominent NGOs like Swachh Pune, Centre for Science & Environment, Central Pollution Control Board and have obtained views of various Ministries like Ministry of New and Renewable Sources of Energy, NITTI Aayog, Department of Fertilizer, Ministry of Agriculture and Farmers Welfare etc. The following issues have emerged on the issue of Waste to Compost:

(a) Need for tapping the opportunities.

(b) Need for waste to compost at house hold level.

(c) Policy issues

(i) Need for Enforcement of mandatory offtake of city compost by fertilizer companies

(ii) Pan India License for Waste to Compost.

(iii) Need for Ware Housing facilities for organic manure.

(iv) Need for nutrient based subsidy for organic fertilizer.

(v) Inclusion of city compost under Nil category under GST.

(vi) Capacity creation.

(d) Promotion of Waste to Compost.

(a) Need for tapping the opportunities.

7.6 On the issue of need for tapping the opportunities in the area of Waste to Compost in the light of growth of industry with new technologies and innovative financial intervention, the NITI Aayog has stated that the current valuation of MSW management market in the country is around US $ 8.5 billion. The estimated growth of this industry is 7% per annum. By 2030, the estimated business potential would be around US$20 billion per annum as per the concept note prepared by Ministry of External Affairs (for Pravasi Bharatiya Divas Conference on the "Role of Indian Diaspora in Capacity Building for Affordable Waste Management" held in July 2018). This open up huge opportunities for public and private participation, foreign

participation/collaboration with new technologies and innovative financial interventions. The avenues of waste recycling through Waste to energy, Waste to construction material and Waste to Compost offers a lucrative business opportunities which need to be tapped in a big way.

(b) Need for waste to compost at house hold level.

7.7 On the issue of need for Waste to Compost at House Hold Level, the Committee have heard the views of the representatives of Ministry of Housing and Urban Affairs, ASSOCHAM, prominent NGOs like Swachh Pune, Centre for Science & Environment, Central Pollution Control Board and have obtained views of various Ministries like Ministry of New and Renewable Sources of Energy, NITTI Aayog, Department of Fertilizer, Ministry of Agriculture and Farmers Welfare etc. In this connection a representative of prominent NGO, Chintan, during the course of evidence submitted before the Committee:

> "We would say that first of all we should take care of our 50-60 per cent of our organic waste. If we can do composting for that, since that is one of our major problems, we take care of that by doing composting. I am not getting into decentralize or centralize the system. Decentralised Waste Management System is obviously a solution. But if we do 50-60 per cent composting, the rest 20-25 per cent is actually plastic paper, glass and all of these things. These things do not have to be incinerated. Why would we want to incinerate them? We have a very good recycling market which is here a huge industry."

7.8 In this connection a representative of ASSOCHAM also stated:

> "First, I will respond to the question of spaces. In fact, we have been arguing that the Uruli-Fursungi kind of situation, where all the waste is being transported to that landfill or dump site, is problematic. What we are suggesting is that every housing society or cooperative society should provide space *in situ*, within its own complex, as it happens abroad. Many of our citizens, who live in very up-market areas, are travelling abroad and are willing to segregate 20 kinds of waste abroad and also keeping the containers within the society."

7.9 In this connection the suggestion of ASSOCHAM and comments of MoH&UA and MoEF&CC are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
All wet waste, ie,50% of the waste generated, to be composted at the colony and ward level.	Agreed	Under Solid Waste Management Rules, 2016 waste generators are mandated to ensure segregation at source waste generated by them in three separate streams namely bio-degradable, non-bio-degradable and domestic hazardous wastes in suitable bins. Further, source segregation at primary and secondary levels has been mandated for resident welfare associations and market associations, gated communities and institutions with more than 5000 sqm. Area, all hotels and restaurants and organizers of event/ gathering of more than 100 persons. Further, rules also mandate that Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be printed blue and those for storage of other wastes shall be printed black. In addition, the waste processing facilities are mandated to include composting as one of the technologies for processing of bio-degradable waste. In this regard, Standards for composting have been prescribed under Schedule II of the SWM Rules, 2016.
Involve the informal sector, comprising wastepickers and kabaris, who recycle upto 20% of the total waste. Delhi has 40,000 wastepickers and a total of '150,000 waste traders, kabaris and workers. They experience extreme harassment, have to often bribe the police in order to work, face significant health concerns and are treated like the waste they pick	SWM Rules 2016 mandates registration of waste pickers and waste dealers and they are to be provided training on solid waste management.	
The zonal and master plans should have provision of space for local level waste handling, such as composting and for the informal sector to store and sell waste.	To be followed as per Solid Waste Management (SWM) Rules 2016.	

7.10 In this connection a representative of prominent NGO, Centre for Science & Environment during evidence stated:

> "Now I have seen composting work brilliantly at places. It is a question of the cost and it is also a question of the scale. I agree with you totally. I love bio-methanisation. I went to Pune because only I heard about it and I wanted to see it work. I think that is clearly a technology which India needs celebrate. Bio-gas is something we talked about, KVIC model and others. We let it go. We need to do it. But the principle is the following. One you will have segregate; you will have to do it as locally as possible. If you can compost well and good and if you cannot compost, do bio-methanisation, do anything else, but do it in a way that you make the best out of segregated waste. I can show you a picture of bio-gas plant. I went to a poor woman's house in Kerala. In Kerala nobody is really poor but what they would consider poor. ABÉE UÉä]É ºÉÉ ÉËºÉ]äBÉDºÉ BÉEÉ]éBÉE cè, =ºÉBÉEä >ó{É® BÉEè{É cè, =ºÉBÉEä +ÉÆn® ºÉä SÉèxÉãÉ ÉÊxÉBÉEãÉiÉÉ cè* In fact, I have a picture on my phone and she takes the household waste and puts it in the bio-gas plant. Now, I have put my colleagues to find out. I was fascinated. You are getting these technology providers, individual level bio-gas plants. +ÉÉ{É +É{ÉxÉä PÉ® àÉå ãÉMÉÉ® BÉE®, VÉcÉÆ ºÉä AãÉ{ÉÉÒVÉÉÒ BÉEÉ BÉExÉäBÉD¶ÉxÉ ÉÊnªÉÉ cè, =ºÉBÉEä {ÉÉºÉ +ÉÉ{ÉxÉä BÉE® ÉÊnªÉÉ cè* She is a poor woman. She was not a very strong woman. I asked if she had any problem and she said there was no problem at all. I have been spending a little time now looking at waste and I am very excited. What I am seeing is a huge possibility of seeing huge numbers of technologies emerging, huge numbers of entrepreneurs coming into it. As long as we can come up with clear principles and this is a change because till now the entire way the MSW roles have been done, the entire funding for waste has been built on sanitary land fills. The minute you change that game and say no sanitary land fills, treat waste as a resource, you will see the game change in India."

7.11 In this context, a representative of Centre for Science & Environment, during the course of evidence stated:

> "... The best thing that has happened in Alleppy is that the MLA of Alleppy town is also an MLA of the Alleppy village where the waste was going. His name is Thomas Issac. Now he has to find a solution which is good for his village and for his town constituency as well. In Trivandrum as well as Alleppy, this system of turning out to be individual level composting at the household level. I am seeing it happen very efficiently. We are looking at the technologies as they are emerging to do household level. Then at the colony level composting which is also what I saw in Panjim town. Then you have dedicated composting which you collect from hotels and other places which you take to municipal level composting places. In Pune the best thing that I saw was actually the bio-

methanation that is happening which is taking the compostable waste directly from hotels and making biogas out of it. But again it has to be segregated at source. For the remaining cities I believe what you need is a hybrid system. You need a system in which you disincentives land fill. So Delhi cannot ask today that I want Bhatti mines or I want five more land fills or I want to go to Haryana or I want to go somewhere else because I do not have place in Delhi any more for waste. It cannot be done. Delhi has to manage its own waste. It cannot be based on land fills. Secondly, Delhi will have to make sure that you can do much more efficient composting which is within high-density area".

7.12 The witness added:

"The effort of segregation of waste is only useful if we can maintain the integrity of the segregated streams. In Pune around 40 per cent citizens are maintaining, at least, two bins. The two bins may not have perfectly segregated waste but, at least, the make an effort to keep wet and dry waste in a segregated manner. We also have to recognize that there are a lot of wastes today which are really a challenge. I mean, where is one supposed to throw a ball pen which has combination of organic as well as recyclable material; where are you supposed to throw tea bags or ear buds? There are lot of composite materials which do not fit very directly wet or dry waste. So, when we get into higher level of segregation, we need to address these issues as well. Now, the argument in Pune is that if you want to maintain the integrity of the streams, it works best if one can have some kind of sink for the organic waste. So a number of waste pickers in Pune are also performing the work of servicing compost pits. Citizens are expected to maintain *in situ* compost pits, and the waste-picker is running the compost pits and ensuring that the organic waste is getting composted."

(c) Policy issues

(i) Need for enforcement of mandatory offtake of city compost by fertilizer companies

7.13 During the course of evidence of the representatives of ASSOCHAM, the issue of unsold compost came up before the Committee. In this context, a representative of ASSCOCHAM stated:

"Today about 200 thousand tonnes of compost is lying spread all over India in the various plants which is lying unsold because the companies which were tagged with fertilizers, they did not honour the agreements. Today, no bank, no financial institution is giving you loans because they know that the project is unviable, the compost is not getting sold. How do we put additional projects? We just cannot put. There has to be some separate budget for that. There has to be dedicated escrow account for payment of dues. We supply compost to the urban local bodies. They do not give you the payment, what to talk of months, for years together. We have to go from pillar to post to get our payments".

7.14 The Committee also pointed out that whether thousands of tonnes of compost is lying unsold in various plants as the fertilizer companies which are supposed to take them do not honour the agreements in this regard, the MOH&UA in a written note clarified:

> "In many cities the compost after its production is not being purchased in time by fertilizer companies, therefore, making running of compost plants difficult, as far as, flow of funds and O&M of compost plant is concerned. This problem is encountered by majority of compost plants currently functioning in the country".

7.15 The witness from ASSOCHAM further stated:

> "The country produces about 70 billion tonnes of waste. Theoretically, 1.5 million tones of compost is available for our country to use. Ironically, as on date, there are 78 functional composting plants and half of them are lying closed because there are no off-takers. The Department of Fertiliser has not been able to enforce the directions of the Supreme Court. Last year, Ministry of Urban Development pro-actively came up with Swachch Bharat Mission and they came up with a scheme of providing subsidy of Rs. 1500 per tonne even to fertilizer marketing companies. Even after that, off-take by the fertilizer companies has gone down compared to what it was earlier. This is a serious matter. Composting is an integral part because half of the material, which is coming, is wet waste and that is required to be converted into compost not only because it is a safer and faster disposal of the waste but it is also giving you compost which is to be used by agriculture soil. This is a serious matter. If one-half is taken care of, which partly is being addressed by MoUD, Ministry of Agriculture and Ministry of Fertilizer, then you are left only with the combustible part".

7.16 The Committee also wanted to know whether Fertilizers Companies are resisting it, the witness stated:

> "Yes, there is a problem".

7.17 The witness added:

> "The compost which is going to be produced at a small scale level, wherever we are going to do it, it may not qualify on the standards set under FCO. FCO standards are very strict and FCO is under ESMA. There may be issued a non-bailable warrant if you fail on the quality specifications. So, we really do not know, if you do it on a small scale at a decentralized model for making compost, whether it is going to fit on to the specifications laid down under FCO. There are strict quality control norms which are to be met. Therefore, if you go through the recommendations of the Inter-Ministerial Task Force of 2008 and the order of the Supreme Court, the things are absolutely clear.

Implementation and enforcement has been a serious problem with the fertilizer companies".

7.18 In this context, during the course of evidence of ASSOCHAM, a witness stated as under:

"Sir, I want to say something to the august Committee. In 2006, an Inter-Ministerial Task Force was set up under the aegis of the hon. Supreme Court of India to go into the details of why composting is required in the country. The Indian soil is deplete of organic carbon. Finally, the studies recommended the use of compost made out of city waste in combination with urea. Our country has been using urea and DAP rampantly because of certain other compulsions. Hon. Supreme Court gave a direction to the Government of India to enforce and ensure that this compost is sold in a certain ratio along with urea by fertilizer marketing companies who have a network and also the selling licence. Compost in our country is a licensed product. It falls under Fertilizer Control Order. There are regulations and it is a State subject".

7.19 In this context, on the issue of quality of waste to Compost, the witness stated:

"Sir, If many RWAs are putting up decentralized composting machine, there could be a problem of surplus compost generation and how to use it. In cities, there are some bulk consumers of compost. For example, CPWD maintains parks; horticulture department also maintains parks; NHAI also maintain greenery on both sides of the roads. In a way, they procure a very big amount of compost every year or maybe every six months. There can be a system to make Compost Bank, you may say, where these RWAs can sell their compost directly to these organisations. Maybe, these organisations may have to extend their Department or so, but this can be done".

7.20 In this context, suggestion of ASSOCHAM and Comments of MoH&UA and MoEF&CC are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
"Ministry of Urban Development roll out the policy of Subsidy on City Compost, it is not going as originally envisioned. The start was good in 2016 when the fertilizer companies complied with the mandate of procuring city compost from MSW Treatment Plants. However, the momentum has fizzled out. In the meanwhile, the MOUD and MOCF	Not agreed. Market Development Assistance (MDA) should be given for sale of compost in bag as well as bulk sale.	Regarding establishment of composting units the Rules has mandated the following: **Duties of Department of Fertilisers, Ministry of Chemicals and Fertilisers.-** (1) The Department of Fertilisers through appropriate mechanisms shall,- (a) provide market development assistance on

introduced the concept of MSW Treatment plants to themselves avail subsidy through direct sale of Compost. It has been pointed out to both ministries that MSW Treatment companies lack both the market reach and financial wherewithal to avail direct subsidy from the government. It is our strong recommendation to the government that the route of sale through the fertilizer companies is continued and the fertilizer companies are mandated to continue to procure and sell more quantities of City Compost from the MSW Treatment Plants in order to make the goal of Swachh Bharat achievable. In the financial year 2016-17, only about 100,000 MT of City Compost was sold by the fertilizer companies as against their ability to procure and sell at least 2 Million MT of the same".		city compost; and (b) ensure promotion of co-marketing of compost with chemical fertilisers in the ratio of 3 to 4 bags: 6 to 7 bags by the fertiliser companies to the extent compost is made availablefor marketing to the companies. **Duties of Ministry of Agriculture, Government of India.-**The Ministry of Agriculture through appropriate mechanisms shall,- (a) provide flexibility in Fertiliser Control Order for manufacturing and sale of compost; (b) propagate utlisation of compost on farm land; (c) set up laboratories to test quality of compost produced by local authorities or their authorised agencies; and (d) issue suitable guidelines for maintaining the quality of compost and ratio of use of compost visa-a-vis chemical fertilizers while applying compost to farmland.

7.21 The Committee also pointed out that the Committee had heard the representatives of Industry and various NGOs. Various issues that came up during the course of discussions inter alia include, problem of unsold compost at the level of plant owners, non-payment of compost for years together by ULBs leading to closure of as high as 50% of the Plants. Asked about the views of MOH&UA on the above

suggestions given before the Committee, the MOH&UA in a written note clarified, plus comments of MoEF&CC are also shown alongside:

	Views of ASSOCHAM	Comments of MoEF&CC
Problem of unsold compost at the level of plant owners	To promote production and Sale of compost and for other suggestions given above, government has taken steps. (i) The SWM Rules 2016 issued on 8.4.2016 clearly mandates the local bodies to scientifically manage the solid waste using different technologies. As these Rules, notified under EPA 1986 are mandatory in nature, there is no need for separate Policy and only the implementation of the Rules is required. (ii) MoHUA has already issued National Urban Sanitation Policy 2008 which inter-alia provides for scientific solid waste management. Modern and scientific municipal solid waste management is one of the objectives of SBM(U). It is targeted to cover all the Statutory Cities and Towns with SWM services, which comprise segregation at source and storage, primary collection, secondary storage, transportation, secondary segregation, resource recovery, processing, treatment and final disposal of solid waste as per SWM Rules notified from time to time. (iii) SBM being a comprehensive solid waste management programme, there is no need for a separate National Policy for SWM. The SBM Guidelines also promote projects of Waste to Energy, for which the Central Government grant/VGF under SBM may also be used, either upfront or as generation based incentive for power generated for a given period of time. (iv) The following policy and strategic interventions were made under SBM in convergence with sister ministries:	Regarding establishment of composting units the Rules has mandated the following: **Duties of Department of Fertilisers, Ministry of Chemicals and Fertilisers.-** (1) The Department of Fertilisers through appropriate mechanisms shall,- (a) provide market development assistance on city compost; and (b) ensure promotion of co-marketing of compost with chemical fertilisers in the ratio of 3 to 4 bags: 6 to 7 bags by the fertiliser companies to the extent compost is made availablefor marketing to the companies. **Duties of Ministry of Agriculture, Government of India.-**The Ministry of Agriculture through appropriate mechanisms shall,- (d) provide flexibility in Fertiliser Control Order for manufacturing and sale of compost; (e) propagate utlisation of compost on farm land; (f) set up laboratories to test quality of compost produced by local authorities or their authorised agencies; and (g) issue suitable guidelines for maintaining the quality of compost and ratio of use of compost visa-a-vis chemical

	(a) Providing Market Development Assistance (MDA) to fertiliser marketing companies for marketing city compost processed out of MSW. MDA of Rs.1500/- per MT is available on effecting sales of city compost. This scheme is co-ordinated by Ministry of Chemical and Fertilisers. MDA is now available for bulk (unpacked) and bagged sale of city compost also as per amendment issued by Department of Fertilizers (DoF).	fertilizers while applying compost to farmland.
Non-payment of compost for years together by ULBs leading to closure of as high as 50% of the plants	All stranded plants are being monitored by the states and efforts are being made to resolve the disputes.	

(ii) Need for Pan India Licence for Waste to Compost.

7.22 During the course of examination ASSOCHAM in the written submission before the Committee has underlined the need for Pan India Licence for Waste to Compost. During the course of evidence a representative of ASSOCHAM in this connection stated as under:

> "Coming to solid waste to organic composting, there has be a pan market India licence. Now the licence is State-wise. Every State has different rules and regulations. It takes time. Everybody has certain demands. So, there has to be a pan India marketing licence for compost so that that licence is applicable across pan India basis."

(iii) Need for Ware Housing facilities for organic manure

7.23 In this context, a representatives of ASSOCHAM , during the course of evidence stated:

> "Facility of warehousing for the organic fertilizer should be introduced by the Government of India and enforcement of mandatory offtake of the city compost by fertilizer companies. Agreements were entered into; they did not honour. Today, neither the Ministry of Agriculture nor the Fertilizer Ministry, nor the Ministry of Urban Development are able to tell them that why don't you lift the compost. If I am spending crores of rupees and if there is no sale, who will put

up the compost plants? That is becoming a big issue in the country today. The plants are dying. More than 50 per cent of the plants have shut down and more are there to follow."

(iv) Need for nutrient based subsidy for organic fertilizer.

7.24 In this connection the ASSOCHAM in its written submission before the Committee has underlined the need for nutrient based subsidy for organic fertilizer. During the course of evidence a representative of ASSOCHAM in this connection stated:

"Then we have to also include something called Phosphate Rich Organic Manure (PROM) in the nutrient based subsidy scheme which is not included as of now."

(v) Inclusion of city compost under Nil category under GST.

7.25 In this connection the ASSOCHAM in its written submission before the committee has underlined the need for Inclusion of city compost under Nil category under GST. During the course of evidence a representative of ASSOCHAM in this connection stated as under:

" So far I have not come under the GST. The GST is having a huge impact on recyclable scraps. So let me not get into that now. That is another story from the same side. But we can take care of 50-60 per cent of the waste, we are sending 20-25 per cent of the waste for recycling, then all we have is about 10-15 per cent which is all the multilayer packaging and all these things for which there is no solution so far. So EPR has to come in over here. If our EPR is there in the Solid Waste Management Rule 2016, all we have to do is to implement it. EPR should be implemented. Recycling should be done for the non-biodegradable waste."

In this context, the suggestion of ASSOCHAM and comments of the Ministry of Housing and Urban Affairs are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA
inclusion of city compost under nil category under GST regime	GST at lower rate should be applied on activities of waste management to enable venders to claim input credit. Ministry of Finance to comment on Direct tax.
Construction & Demolition Waste Management- ln order to encourage usage of recycled products made	Proposal for recommendation of uniform GST Rate of 5% on all C&D Recycled Products is under

from C&D waste be kept under NIL GST category	consideration in MoHUA, with a single HSN code for all C&D Recycled products.

(vi) Capacity creation.

7.26 It came out during the course of examination that the following waste to compost and waste to Energy plants are currently being implemented and planned as on Jan, 2018:

Waste to Compost **Functional Plants** **Under Con/Tendering plants**

#	State	No. of Cities	Plant Capacity (MTPA)	Compost production (MTPA)	No. of plants	Capacity (MTPA)
1	A.P.	14	98,400	28,324	27	1,66,200
2	Arunachal Pradesh	1	18,000	1350	2	NA
3	Assam	1	18,000	1800	2	NA
4	Bihar	-	-	-	1	NA
5	Chhattisgarh	4	18,720	3780	5	32,724
6	Delhi	3	34,200	5130	-	-
7	Goa	-	-	-	1	NA
8	Gujarat	12	3,64,500	67,536	20	2,37,000
9	Haryana	-	-	-	1	30,000
10	H.P.	1	4,320	144	-	-
11	Jammu & Kashmir	1	720	72	1	12,000
12	Jharkhand	1	18,000	3780	1	3,000
13	Karnataka	19	8,97,120	1,93,320	3	2,37,600
14	Kerala	5	1,57,320	15,930	-	-
15	Madhya Pradesh	9	2,25,540	46,620	2	NA
16	Maharashtra	19	10,04,940	2,08,746	14	8,71,722
17	Manipur	1	36,000	1440	-	-
18	Meghalaya	-	-	-	2	NA
19	Mizoram	-	-	-	3	3,690
20	Nagaland	1	18,000	0	1	NA
21	Odisha	1	36,000	4320	1	1,80,000
22	Punjab	3	8,10,000	55,800	2	1,41,000
23	Rajasthan	1	90,000	14,400	16	3,85,500
24	Sikkim	-	-	-	1	15,000
25	Tamil Nadu	13	5,39,802	70,869	19	63,000
26	Telangana	9	2,01,960	1,242	1	900
27	Tripura	1	72,000	7,200	-	-
28	Uttar Pradesh	14	14,75,280	5,66,262	1	1,05,000
29	Uttarakhand	5	11,340	1,701	4	1,53,000
30	West Bengal	5	82,260	11,259	1	58,000
	Total	**145**	**62,32,422**	**13,11,026**	**150**	**33,48,336**

7.27 During the course of examination on the issue of gap between installed capacity vis-à-vis actual production at different compost plants across the States/UTs, the Committee pointed out that as against the total plant capacity of 62.32 lakh tonnes, the

actual production was as low as 13.11 lakh tonnes and the situation was worse in big States of Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Odisha. The Committee also wanted to know whether that managing with roughly 300 Waste to Compost (WTC) Plants completed/under construction in different States/UTs is quite less and needs to be enhanced manifolds for comprehensive solution to Solid Waste Management problem in years to come, the MOH&UA in a written note informed that Yes, more number of Plants are needed to process the waste effectively. However, the Ministry is encouraging to segregate waste at source and also to have decentralized processing of wet waste at the Household, bulk generator and community level. Further, as per the policy on promotion of City compost, Ministry of Chemicals and Fertilizers is providing Market Development Assistance of Rs.1500/- per ton to scale up compost production and consumption. Compost Manufacturing companies have also been tagged with Fertilizer distribution companies in All States. Amendments to FCO Norms have also been issued by Department of Agriculture allowing for Bulk Sale of Compost by manufacturers to the farmers. These initiatives are bound to enhance the production of compost and the setting up of more WTC plants.

7.28 The Committee also pointed out that as against 145 Waste to Compost (WTC) Plants with capacity of 13.41 LTPA have been completed and 153 Waste to Compost (WTC) Plants with capacity of 31.03 LTPA are under construction. The Committee also pointed out that from the State-wise details, it appeared that Waste to Compost (WTC) Plants are set up or in the process of being set up in Andhra Pradesh, Telangana, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttrakhand, Kerala, Uttar Pradesh, West Bengal, Chhattisgarh, Punjab and Delhi. Asked whether such WTC plants should come up in other States/UTs also for their pan India presence for tackling the problem of Solid Waste Management comprehensively, the MOH&UA in a written

note informed that Ministry of Housing and Urban Affairs has taken intensive drive for segregation of waste at the source in all 4041 cities/towns in the urban area to produce good quality compost to enhance its usage. Accordingly, many other States like Assam, Goa, Himachal Pradesh, Jharkhand, Odisha, Arunachal Pradesh etc. have plants that are set up or in process of being set up. Segregated wet waste may be used for production of compost, due to which it is expected that the production of compost may increase.

(d) Promotion of Waste to Compost.

7.29 On the issue of promotion of city compost Department of Fertilizers has inter-alia stated that the policy on promotion of city compost has been approved by the Cabinet which has been notified by the Department of Fertilizers on 10.2.2016 wherein Market development assistance in the form of fixed amount of Rs. 1500 per tonne city compost has been provided for scaling up production and consumption of the city compost. Initially, marketing and promotion of city compost was being done by the existing fertilizer companies. In due course, manufactures and other marketing entities recognized by the concerned State Government have been included for marketing of city compost in bulk and bagged form with the approval of Department of Fertilizers. A Committee of Joint Secretaries of Department of Fertilizers, Ministry of Urban Development and Department of Agriculture, Cooperation & Farmers Welfare has been set up to resolve issues that are currently an impediment of operationalizing the policy on promotion of city compost. For better coordination and promotion of city compost, States have been asked to constitute State level Steering Committee. 11 States have constituted State Level Steering Committee so far.

The marketing development activities are being carried out by the Department of Agriculture, Cooperation and Farmers Welfare. The Agricultural Extension Machineries

including KVKs of ICAR and Agricultural Universities have been advised by DAC to make special efforts in this regard. Ministry of Urban Development has been asked to take steps to increase setting up of compost plants across all States.

The sale of city compost has gone up substantially over the last two years and showing increasing trends in the current year as well, as reflected in the following table:

(in MT)

Year	Sale by marketing companies	Bulk Sale by manufacturing companies	Total sale	% increase in total sale from previous year
2016-17	96584.00	-	6584.00	-
2017-18	123569.87	75492.04	199061.91	106.1
2018-19 (April-October)	102567.91	45524.29	148092.20	

Further, Direct Benefit Transfer (DBT) has been rolled out in Fertilizer Sector w.e.f. 1st April, 2018 and fertilizer companies marketing city compost are also covered under the scheme.

7.30 The Committee also wanted to know specific steps have been taken by the Government for promotion /marketing of compost and whether Fertilizer companies /Horticulture Department, etc. have been given any directions in this regard, the MOH&UA in a written note quoting the reply is as per the information provided by Ministry of Chemicals & Fertilizers Department of Fertilizers stated that since implementation of the policy, the following actions have been taken by the Department for promotion of city compost:

(i) Concerned Ministries/Departments/Authorities have been requested to take appropriate action on actionable points contained in the notification.

(ii) For co-marketing of City Compost, the tagging of Cities with fertilizer marketing companies for the purpose of proper utilization of City Compost produced in the cities has been completed as per the list provided by M/o Urban Development.

(iii) A separate budget head has been created for release of Market Development Assistance (MDA) on sale of City Compost. For the period 2018-19, a provision of Rs.10 crores has been made.

(iv) Operational guidelines for release of MDA on sale of City Compost have been issued on 03.06.2016. Revised operational guidelines have been issued to all concerned on 10.10.2016. Amendment in the guidelines dated 10.10.2016 has been made allowing manufacturing companies for bagged sale of city compost vide O.M. dated 7.9.2017

(v) Manufacturing companies vide O.M. dated 28.09.2016 issued by the Department of Fertilizers have been allowed for direct sale of city compost to farmers. Guidelines for release of MDA on direct sale of city compost by compost manufacturers to farmers under the policy on promotion of city compost have been issued by the Department of Fertilizers on 09.01.2017. Amendment in the guidelines dated 9.1.2017 has been made allowing marketing companies for bulk sale of city compost vide O.M. dated 7.9.2017.

(vi) The required software for routing of MDA through FMS and mFMS (now iFMS) is operational.

(vii) The fertilizer Companies have adopted 384 (210 in 2016-17 and 174 in 2017-18) villages for promoting the use of City Compost.

(viii) State level steering Committee has been constituted in 11 States for promotion of City Compost.

(ix) Government Departments and Public Sector undertakings will also use City Compost to the extent possible for their horticulture and relate use.

7.31 Similarly, Ministry of Agriculture and Farmers Welfare, Department of Agriculture & Cooperation & Farmers Welfare has also stated that the DAC&FW is administering the Fertiliser (Control) Order,1985. Under the Order City compost is declared as Organic fertiliser and its specification are prescribed in Schedule IV of FCO. The Government of India, in order to promote the City Compost has so far taken the following steps:

(a) <u>Provide flexibility in the Fertiliser (Control) Order,1985 for manufacturing and sale of City Compost</u>:

(i) Under Clause 14 -15 of the Fertiliser (Control) Order,1985 it was earlier required for the manufacturer of the organic fertiliser including City Compost manufacturer to obtain the Certificate of Manufacture for manufacturing of Organic fertiliser from the Registering Authority of the State Government. In order to facilitate entrepreneurs to enter in the business of manufacturing of city compost, this Ministry has dispensed with the requirement of obtaining Certificate of Manufacture for manufacturing of organic fertiliser/ City compost.

(ii) In the specification of city compost specified in Schedule IV, the value of moisture content is amended from the existing value of 15-25% to 25% maximum in order to take into account the tropical weather conditions in the quality parameters.

(iii) In clause 2 (f) of the FCO i.e. definition of dealer, the Marketer concept is incorporated and the same is also defined under the new clause (ma). This would facilitates the manufacturer to sell the city compost through an identified marketers in the area where he has no dealer net work. This would also lead to increase in the consumption of city compost.

(iv) In order to encourage the sale of City Compost at a comparative low price, the GOI under clause 22 © of FCO notified around 90 units for bulk sale of City Compost directly to farmers.

(v) Municipalities have been permitted to sell the City Compost in bulk.

(b) Propogate utilization of compost on farm land:

This Ministry is regularly pursuing the State Government to encourage the use of City Compost.

(i) Advisories has been issued to the State Governments to encourage the manufacture, sale and distribution of the use of City Compost.

(ii) The state Governments were requested to educate farmers through their Extension machinery to educate the farmers on use of various organic fertiliser including city compost.

(iii) An advertisement on promotion of use of City Compost in the daily local news papers was published.

(iv) The IEC campaign material is being provided for publicity through audio spot in Kisan Vani on FM Radio net Work of AIR, publicity through video spot in Krishi Darshan & DD Kisan and print advertisement in news papers.

(v) The discussion on use of City compost on DD Kisan was done.

(vi) All the States in the Zonal Conferences (Kharif 2018 and Rabi 2018-19) were pursued to encourage the use of City Compost.

(c) Set up laboratories to test quality of compost produced by local authorities or their authorized agencies:

There are 6 Central organic fertiliser testing laboratories namely, the National Centre of Organic farming, Ghaziabad, Regional Centres of Organic farming at Bengaluru, Bhubaneshwar, Imphal, Jabalpur, and Nagpur. These laboratories have the annual analyzing capacity of 10,000 samples. .Some of the state namely, Maharashtra, Tamil Nadu, Telangana, Andhra Pradesh, Karnataka, have established their laboratory for testing of Organic Fertiliser/City compost.. States may acquire new laboratories/ strengthen the existing laboratories under the National Mission on Sustainable Agriculture (NMSA) and Rashtriya Krishi Vikas Yojana (RKVY).

(d) Quality of compost:

(i) Under schedule IV of the Fertiliser (Control) Order, 1985, the DAC &FW has specified the specification of Organic Fertiliser namely, City Compost, Vermi Compost, Bio Enriched Organic manure and general specification of organic manure.

Clause 19 of the FCO strictly prohibits the sale of organic fertiliser which are not of prescribed standards. The method of analysis has also been prescribed in the Schedule IV D for determination of various content of Organic/ City compost.

(ii) Advisory was issued to the State Governments to take quality control measures under FCO, 1985 to ensure the supply of good quality city compost to the farmers.

(iii) Efforts are being made to disseminate the use of city compost through audio spot in Kisan Vani on FM Radio net Work of AIR, publicity through video spot in Krishi Darshan & DD Kisan and print advertisement in news papers.

(iv) This Ministry has advised the State Governments during Rabi 2018-19 Zonal Conference advised to assess per annum requirement of organic fertiliser of about 3 tonne/ hectare /per annum as per ICAR recommendation and States were also requested to evaluate all sources all sources of organic fertiliser and bio-fertilisers available with them and to meet the balance requirement through City compost. Further, Soil Health Cards are being distributed to farmers which carry deficiency of soil nutrients and general fertiliser recommendations.

(e) Development of Waste Decomposer by National Centre of Organic Farming, Ghaziabad a subordinate office of DAC&FW):

Waste Decomposer is a consortium of few beneficial microorganisms which is isolated from desi cow dung. Waste decomposer works as biofertiliser, biocontrol and as well as soil health reviver. It can also be used in various ways such as quick composting of bio wastes, drip irrigation, foliar spray as biopesticides against most plant diseases for all types of agriculture and horticulture crops, in-situ composting of crop residue and seed treatment. It has longer self life (3 years), works as a great component for clean India Movement (Swachh Bharat Mission) by converting bio waste into organic manure, low cost and more than 1 lakh metric tonne organic manure can be produced from 1 bottle per year by farmers.

*****

CHAPTER VIII

Issues related with Waste to Energy

8.1 On the issue of Waste to Energy, the MOH&UA has furnished the following details:

For Dry Waste

(i) Sanitary napkins and Diapers
Sanitary napkin treatment includes incineration facilities where the sanitary napkins collected can be incinerated in biomedical waste incinerators. Alternatively, the wastes can be taken after disinfection to waste to energy plants also for incineration.

(ii) Material Recovery Facility (MRF)
Material recovery facility are those facilities where dry waste is further segregated into valuable components including plastics, paper, metal, glass etc. Material recovery facilities can be manual or automated based on the size of the plant. For small capacity plants, segregation table and manual segregation are the equipments used. For large scale plants, magnetic belts, separators and other segregation equipments are used.

(iii) Refuse Derived Fuel (RDF)
The waste material which is left behind after segregation can be used as combustibles. The waste materials/ combustibles are shredded to a desired size to be used as fuel material known as Refuse Derived Fuel (RDF). RDF can be used by cement kilns or boilers as replacement of other fuels including coal and diesel.

(iv) Waste to Energy plants including ones on cluster basis
Waste to energy (WtE) refers to the process of generating energy in the form of heat or electricity from MSW. Energy from MSW can be achieved through thermal processes like incineration or combustion of refuse derived fuel (RDF); and biological processes like biomethanation and further conversion into electrical power or automotive fuel (compressed biogas). Only RDF will go to waste to energy plants.

Inert Waste

(i) Filling in Scientific landfill (SLF)
Scientific landfill are landfills developed as per specifications provided under SWM Rules, 2016, and are used for disposing inert waste after scientific processing of waste."

Waste to Energy Scenario

8.2 According to NITI Aayog, the European Union has 445 waste to energy Plants, China has around 150 Plants, USA has 86 Plants whereas India has only 8 such Plants. In this connection NITI Aayog has also stated that Solid Waste Management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved in effectively managing waste for a municipality. These include monitoring, collection, transport, processing, recycling and disposal. The quantum of waste generated varies mainly due to different lifestyles, which is directly proportional to socio-economic status of the urban population. While each of the contributors pose a challenge in containing its generation as well as its management, the Municipal Solid Waste (MSW) happens to be the most visible one, as it is mostly generated by the citizens directly. MSW generation has a positive co-relation with economic development in terms of kg/per capita per day of solid waste generation in general. On an average, the urban India today generates about 0.45 kg per capita per day of MSW which is likely to grow with the increase of affluence which is about to happen as the country is traversing a steep growth trajectory. As per a study by Columbia University, New York, a higher standard of living results in more waste and also a greater ability to invest in waste management system (Matsunaga and Themelis, 2002). There are several such studies which establishes this co-relation. As such, the MSW generation in India, which is presently about 1,45,000 tonnes per day is likely to increase substantially in years ahead, thereby, posing a gigantic challenge for the Government to manage the generation as well as the disposal of the solid waste. However, it also creates opportunities for better SWM in view of the capacity of the citizens to pay for SWM on account of increase in standard of living.

Pointing out the present status the NITI Aayog has stated that till the recent past, the MSW management was mostly based on transporting the unsegregated waste

to landfill sites for dumping, which was not only leading to losing of 1,240 hectares of additional precious land every year to accommodate processed/un-processed Municipal Solid Waste but has been posing several environmental threats like ground water pollution due to leachate generation, air pollution, etc., due to self and uncontrolled gasification besides other problems like landslide and aesthetic issues. The NITI Aayog has also stated that as against the assessed capacity of 511 MW, the actual electricity generation is 90 MW.

Available Technologies for processing Waste to Energy

8.3 The NITI Aayog has also outlined that Some of the popular technologies for converting Waste to Energy and other products of economic value which can be introduced in the cities based on the suitability and requirement as per the local conditions and which can be managed on business model include the following:

(i) Hydrothermal Carbonisation (Conversion of wet waste to green coal).
(ii) Catalytic Thermo-chemical process (Shell Technology) that converts Biomass and Biodegradable MSW to liquid fuel.
(iii) Plasma Gasification (EAWC technology) which can gassify all kinds of waste to energy at 3000 degree Centigrade
(iv) Thermal De-polymerisation which can generate methane and oil from unsegregated MSW etc.

8.4 Explaining methods of processing, the Waste to Energy, the MOH&UA has stated that there are no separate suitable methods for metropolitan cities and other smaller cities. All processing methods are suitable for certain quality of waste with suitable quantity. However, segregation of waste in different streams is key for efficient and economical waste processing. Even smaller towns in cluster can install all waste processing facilities including waste to energy that is often considered suitable for large cities. Considering the typical composition of wastes and the climatic conditions, composting is highly relevant in India and is the best method for wet waste processing. MoH&UA has also stated the following details:

(a) However, in certain categories of bulk waste generators like hotel, restaurants, vegetable market places and places with animal dung etc., bio-methanisation process proves to be better and economical option.
(b) Segregation and Recycling of various streams best method for dry waste processing depending on its type, quality and quantity.
(c) MRF, RDF, waste to energy in large cities or on cluster basis involving many smaller cities are various methods of processing for dry wastes like plastic waste etc.

8.5 The following points pertaining to Waste to Energy have emerged during the Committee examination:

(a) Issues related with land fills.
    (i) Need for dis-incentivising land fills.
    (ii) Need for Scientific land fills and converting these into parks.
(b) Capacity creation and related issues
    (i) Capacity Creation
    (ii) Augmenting Capacity Building
    (iii) Promoting R&D in Solid Waste Management
(c) Issues related with Plastic Waste
    (i) Use of plastic for Road construction
(d) Issues related with C&D Waste

(a) Issues related with land fills.

(i) Need for dis-incentivising land fills

8.6 In this context, NITI Aayog has stated that till the recent past, the MSW management was mostly based on transporting the unsegregated waste to landfill sites for dumping, which was not only leading to losing of 1,240 hectares of additional precious land every year to accommodate processed/un-processed Municipal Solid Waste but has been posing several environmental threats like ground water pollution

due to leach generation, air pollution, etc., due to self and uncontrolled gasification besides other problems like landslide and aesthetic issues.

8.7 On the issue of landfills, ASSOCHAM has stated that finding and developing new landfill sites for treatment of domestic waste and industrial waste is one of the biggest constraints, because of the "not in my backyard" (NIMBY) approach. The domestic and industrial solid waste collection system in our nation is very poor. Collection efficiency is around 50-60% only. Only 10 percent of the collected waste receives treatment and virtually nothing is scientifically disposed in engineered landfills. Apart from that, household waste, e-waste, toxic waste, hazardous waste, industrial waste and bio-medical waste - all kind of wet and dry waste are mixed and disposed indiscriminately at dump yards in an unhygienic manner by municipal authorities and results into air pollution and health hazards. In addition, there is no formal mechanism of periodically collecting data on waste generation. Local people of villages and Environment Activists, NGO's, etc. deter the developers from developing new sites. In many cases, the developers of already operational sites have to spend money after them to continue their work. ASSOCHAM has also stated that European countries and North America do not have landfills and whatever waste available gets converted into product.

8.8 In this connection the views of ASSOCHAM and Comments of Ministry of Housing and Urban Affairs and MoEF&CC are as under:

Views of ASSOCHAM	Comments of MoH&UA	Comments of MoEF&CC
Government/Ministry of Environment, Forests &Climate Change/ State pollution Control Boards must be	The sanitary landfill sites should be selected by ULBs/District Administration keeping in view the sitting conditions of landfill as per	Solid Waste is managed in a decentralized approach wherein local bodies, village panchayats and state urban development departments are assigned with tasks related to

authorized to identify land for site development. *These selected sites should preferably be barren land with suitable transportation access*	specifications prescribed in SWM Rules 2016.	management of landfill sites. Ministry of Environment, Forest and Climate Change, under SWM Rules, 2016 has laid detailed provisions on development of (sanitary) landfill sites and has prescribed roles and responsibility of various actors involved.

8.9 Clarifying the issue, the Secretary, MOH&UA during the evidence stated:

"ºÉ´ÉÇ|ÉlÉàÉ àÉé Aà{ÉEäºÉÉ<VÉ BÉE®xÉÉ SÉÉcÚÆMÉÉ ÉÊBÉE ´Éäº]]Ú <xÉVÉÉÔ {ãÉÉx] ªÉÉ ´Éäº]]Ú BÉEà{ÉÉäº] {ãÉÉx] àÉå <xÉVÉÉÔ ªÉÉ {ÉÉ´É® ªÉÉ BÉEà{ÉÉäº] +ÉÉì¤VÉèÉÎBÉD]´É xÉcÉÓ cè, º´ÉSUiÉÉ +ÉÉì¤VÉèÉÎBÉD]´É cè ÉÊBÉE ´Éäº] BÉEÉ ÉÊbº{ÉÉäVÉãÉ cÉä* =nÉc®hÉ BÉEä iÉÉè® {É® ÉÊcxnÖºiÉÉxÉ BÉEÉ ºÉÉ®É ´Éäº] +ÉMÉ® {ÉÉ´É® ¤ÉxÉÉxÉä àÉå ãÉMÉ VÉÉA iÉÉä ABÉE +ÉÉÆBÉE½É cè ÉÊBÉE]Éä]ãÉ FÉàÉiÉÉ 700 àÉäMÉÉ´ÉÉ] cè, BÉEÉä<Ç ¤ÉcÖiÉ VªÉÉnÉ {ÉÉ´É® xÉcÉÓ ¤ÉxÉäMÉÉÒ iÉÉä AÆb |ÉÉäbBÉD] VÉÉä {ÉÉ´É® cè, ´Éc =qä¶ªÉ xÉcÉÓ cè, ºÉ{ÉEÉ<Ç cÉäxÉÉ =qä¶ªÉ cè*'

8.10 In this connection, Director, Centre for Science & Environment stated:

"We need a disincentive for landfills. If you look at all over the world, they have a very high tipping fee for landfills. So, they will insist on anybody who wants to have a landfill will have to pay a very high cost for bringing the waste there. We have the reverse. Today, one of our biggest challenges in Delhi is that we have a waste collection system in which we incentivise more waste to go to landfill because we pay by weighing the waste of the landfill and we say ÉÊVÉiÉxÉÉ £ÉÉÒ <ºÉBÉEÉ ãÉébÉÊ{ÉEãÉ ãÉÉAÆMÉä, =iÉxÉÉ VªÉÉnÉ +ÉÉ{ÉBÉEÉä {ÉèºÉÉ ÉÊàÉãÉäMÉÉ* So there is no incentive to segregate. There is, in fact, an incentive to put inert weight, construction waste and all into the same box which goes to the land fill. So one policy that we need is to make sure that the land fill is disincentivise. From our survey from all over the world, the clear way to do that is to have a very prohibitively high tipping fee. Any municipality which wants to allow a land fill has to pay a very high cost for bringing it to the land."

8.11 Questioning the need of use of land for landfills purpose, Director, Centre for Science & Environment in her deposition before the Committee stated:

"I think in India we need a rule saying that land is too valuable for us to leave for waste. +ÉÉ{ÉBÉEä {ÉÉºÉ +ÉÉVÉ ºÉ¤ÉºÉä ¤É½É ºÉ´ÉÉãÉ ãÉéb AÉÎBÉD´ÉÉÊVÉ¶ÉxÉ BÉEÉ cè* One question that we should be having is, we

cannot afford to waste the land any more. We need land for water. We need land for every other best purpose but we cannot have land for landfill sites. That is also what is coming out of NIMBI. Villagers will not allow you. +ÉÉ{É ABÉE VÉäxÉ®ä¶ÉxÉ +ÉÉè® BÉE® ãÉÉÒÉÊVÉA, àÉé A¶ªÉÉä® BÉE®iÉÉÒ cÚÆ ÉÊBÉE +ÉMÉãÉÉÒ VÉäxÉ®ä¶ÉxÉ iÉBÉE +ÉÉ{ÉBÉEÉä BÉEÉä<Ç MÉÉÆ´É ´ÉÉãÉÉ +É{ÉxÉä MÉÉÆ´É àÉå ´Éäº] xÉcÉÓ ãÉä VÉÉxÉä näMÉÉ*"

8.12 In this connection, Director, Centre for Science & Environment also stated:

" Where there is no facility, no land, how will you do it? I think those cities also will not have landfill. Delhi is a classic case. It is a very congested city, a very large city where a very huge amount of waste is generated. We are now one of the highest generators of waste today in terms of cities. Where will our waste go? The question you have asked is something in my mind as well. I want to take Delhi as an example to actually give this challenge to both my colleagues and myself. I want to come up with a plan in which we say using the same principle, it should treat, minimise the landfill. The sanitary landfill must be only for the completely non-usable ones. "

8.13 On the issue of land for landfills purpose, the then Secretary, Ministry of Urban Development during the evidence also stated:

"+É¤É ºÉÉìÉÊãÉb ´Éäº] BÉEä >ó{É® ¤ÉÉiÉ BÉE® ãÉäiÉä cé* ºÉÉìÉÊãÉb ´Éäº] BÉEä >ó{É® ãÉMÉ£ÉMÉ càÉBÉEÉä 500 ABÉE½ +ÉÉè® ãÉéb BÉEÉÒ VÉ°ô®iÉ cè* I will cover one or two more points simultaneously. ABÉDSÉÖ+ÉãÉÉÒ ºÉÉìÉÊãÉb ´Éäº] àÉå +ÉBÉDºÉ® nÖÉÊxÉªÉÉ àÉå ªÉc {ÉÉªÉÉ MÉªÉÉ cè, càÉxÉä |ÉEÉÆºÉ BÉEÉ £ÉÉÒ näJÉÉ cè, we have been a part of this delegation which the Ministry of Urban Development sent to the French cities to see how they are processing the garbage. ¶ÉÖ°ô-¶ÉÖ°ô àÉå º£ÉÉÒ ¶Éc®Éå àÉå ªÉc ãÉMÉiÉÉ lÉÉ ÉÊBÉE VÉèºÉä ÉÊnããÉÉÒ cè iÉÉä ÉÊnããÉÉÒ BÉEä ¤ÉÉc® VÉÉBÉE® BÉEcÉÓ MÉÉÄ´É àÉå AxÉºÉÉÒ+ÉÉ® àÉå bÉãÉ ÉÊnªÉÉ VÉÉA* {ÉäÉÊ®ºÉ àÉå ãÉÉäMÉÉå BÉEÉä ãÉMÉ ®cÉ lÉÉ ÉÊBÉE {ÉäÉÊ®ºÉ àÉå xÉcÉÓ ªÉc MÉÉÄ´É àÉå bÉãÉ ÉÊnªÉÉ VÉÉA* VÉèºÉä-VÉèºÉä ãÉÉäMÉ VªÉÉnÉ +É´ÉäªÉ® cÉäxÉä ãÉMÉä, ªÉÚ®Éä{É BÉEä MÉÉÄ´É àÉå iÉÉä +ÉÉè® VªÉÉnÉ +É´ÉäªÉ®xÉäºÉ cè, ãÉäÉÊBÉExÉ <ÉÎxbªÉÉ BÉEä MÉÉÄ´É àÉå £ÉÉÒ +ÉÉn®hÉÉÒªÉ àÉäà¤É® ºÉÉc¤É VÉÉxÉiÉä cé, <ºÉ ºÉàÉªÉ +É´ÉäªÉ®xÉäºÉ ãÉä´ÉãÉ ABÉEnàÉ ºÉä ¤ÉfÃ SÉÖBÉEÉ cè* BÉEÉä<Ç £ÉÉÒ ªÉc xÉcÉÓ SÉÉciÉÉ cè ÉÊBÉE +ÉÉ{É càÉÉ®ä ªÉcÉÄ +ÉÉBÉE® MÉÉ®¤ÉäVÉ BÉEÉä bÉãÉ nÉÒÉÊVÉA* The witness added: " ÉÊnããÉÉÒ àÉå £ÉÉÒ VÉÉä càÉÉ®ÉÒ xÉ<Ç]äBÉDxÉÉäãÉÉìVÉÉÒ cè, =xÉBÉEÉä àÉqäxÉVÉ® ®JÉBÉE® 500 ABÉE½ BÉEÉÒ ãÉéb +ÉÉ<bäÉÎx]{ÉEÉ<Ç cÖ<Ç ÉÊBÉE +ÉÉVÉ BÉEÉÒ iÉÉ®ÉÒJÉ àÉå, VÉèºÉä +ÉÉVÉ càÉ VÉÖãÉÉ<Ç 2015 àÉå cé, 500 ABÉE½ ãÉéb +ÉÉè® SÉÉÉÊcA ºÉÉìÉÊãÉb ´Éäº] àÉèxÉäVÉàÉå] BÉEä {ãÉÉÆ]ÂºÉ BÉEÉä ãÉMÉÉxÉä BÉEä ÉÊãÉA, BÉDªÉÉåÉÊBÉE ÉÊ´ÉVÉÉË]MÉ ãÉébÉÊ{ÉEãÉ ºÉÉ<]ÂºÉ VÉÉä cé, ´Éä SÉÉäBÉE cÉä SÉÖBÉEÉÒ cé* {ãÉÉÆ] BÉÖEU ¤ÉxÉ ®cä cé, +ÉÉäJÉãÉÉ {ãÉÉÆ] BÉEÉÒ BÉÖEU BÉEÉÊ~xÉÉ<ÇªÉÉÄ cé, VÉÉä]äÉÎBÉDxÉBÉEãÉ {´ÉÉ<Æ]ÂºÉ ÉÊbºBÉEºÉ cÉä ®cä cé* ªÉc 500 ABÉE½ ãÉéb +ÉÉ<bäÉÎx]{ÉEÉ<Ç BÉE®xÉä BÉEä ÉÊãÉA ABÉE iÉÉä bÉÒbÉÒA BÉEÉä ÉÊ®BÉD´Éäº] BÉEÉÒ MÉ<Ç cè +ÉÉè® ABÉE VÉÉä OÉÉàÉ ºÉ£ÉÉ BÉEÉÒ ãÉéb BÉÖEU ÉÊnããÉÉÒ àÉå cè, ÉÊVÉºÉä ãÉäÉÎ{ÉD]xÉå] MÉ´ÉxÉÇ® BÉEä

+É|ÉÚ´ÉãÉ ºÉä càÉÉ®É ®ä´ÉäxªÉÚ ÉÊb{ÉÉ]ÇàÉå] cÉÒ +ÉãÉÉì] BÉE® ºÉBÉEiÉÉ cè, ´Éc ãÉéb £ÉÉÒ +ÉÉ<bäÉÎx]{ÉEÉ<Ç cÖ<Ç* +É£ÉÉÒ àÉÉÒÉË]MÉ BÉEÉÒ iÉèªÉÉ®ÉÒ BÉE® ®cä lÉä iÉÉä {ÉiÉÉ SÉãÉÉ ÉÊBÉE VÉÉä ÉÊbÉÊ´ÉVÉxÉãÉ BÉEÉÊàÉ¶xÉ® xÉä ãÉéb +ÉÉ<bäÉÎx]{ÉEÉ<Ç BÉEÉÒ cè, MÉÉÄ´É BÉEä ãÉÉäMÉ =ºÉBÉEÉ +É{ÉÉäVÉ BÉE® ®cä cé ÉÊBÉE xÉcÉÓ-xÉcÉÓ, càÉÉ®ä MÉÉÄ´É àÉå ªÉc xÉcÉÓ cÉäMÉÉ* <ºÉÉÊãÉA ªÉc VÉÉä ºÉÉìÉÊãÉb ´Éäº] BÉEÉ ABÉE <¶ªÉÚ cè, ¶Éc® BÉEä +Éxn® BÉEÉ{ÉEÉÒ BÉEÉà{ãÉäBÉDºÉ cé* VÉcÉÄ £ÉÉÒ càÉ ABÉE VÉMÉc ºÉä ãÉäBÉE® nÚºÉ®ÉÒ VÉMÉc VÉÉAÆMÉä iÉÉä ´ÉcÉÄ BÉEä VÉÉä ABÉEnàÉ +ÉÉºÉ{ÉÉºÉ BÉEä ãÉÉäMÉ cé, ´Éä =ºÉBÉEÉä +É{ÉÉäVÉ BÉE®åMÉä* ºÉ®BÉEÉ® BÉEÉä +ÉÉè® +ÉÉ{ÉBÉEÉÒ àÉnn ºÉä £ÉÉÒ VÉ¤É ABÉE ¶Éc® BÉEä ÉÊãÉA {ÉÉìÉÊãÉºÉÉÒ ¤ÉxÉÉxÉÉÒ cè iÉÉä ºÉ¤É SÉÉÒVÉÉå BÉEÉä näJÉBÉE® ´Éc {ÉÉìÉÊãÉºÉÉÒ ¤ÉxÉÉxÉÉÒ {É½äMÉÉÒ*"

8.14 In reply to a query, the Ministry of Housing and Urban Affairs stated that Municipal solid waste management is State subject and State Govts. have to identify the land free from all encumbrance for sanitary landfill. In case, the land for landfill is not available for smaller towns, landfill on regional basis approach may be adopted by ULBs. The States like Haryana, Punjab, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh etc. are planning for preparation of solid waste management project on regional/cluster based approach for disposal of waste for smaller ULBs where land is not available for individual landfill.

8.15 In this context MoEF&CC has stated that Solid Waste is managed in a decentralized approach wherein local bodies, village panchayats and state urban development departments are assigned with tasks related to management of landfill sites. Ministry of Environment, Forest and Climate Change, under SWM Rules, 2016 has laid detailed provisions on development of (sanitary) landfill sites and has prescribed roles and responsibility of various actors involved. Rule 22 of the SWM Rules, 2016 provide for time lines to be adhered by local bodies and other concerned agencies for creation of necessary infrastructure for implementation of the Rules, including for identification of suitable sites for setting up solid waste processing facilities and

identification of sites for setting up stand-alone or common regional sanitary landfill facilities.

(ii) **Need for Scientific landfills and converting these into parks**

8.16 During the course of evidence, a representative of an NGO Centre for Policy Research, underlining the need for scientific landfills stated:

"Towards waste management, the examples of Pune and Surat as well as Goa, have had an history of its development. Pune, 15 years back, was also the leading city innovating in waste management and so was Goa. Surat, after the plague was where it went from the worst, most unclean city to becoming in five years to the awarded city. The whole bunch of restructuring at municipal level happened to enable that. There is a particular relationship between waste and society in India, the rag picking and the recycling that happens is surely something very special. Our consumption levels are still much lower than most regions in the world. There is a huge opportunity there. There are two elements. One is that there is no silver bullet. So, I agree with Dr. Sunita Narain on that. There is no one size fits all thing. So, the strategies have to emerge from the cities themselves. Having said that, there is no environmentally safe waste management system in the world without a scientific landfill. Every time we talk about a land fill in India, we are actually talking of an open dump. I am not a great proponent of that. But if there is no environment situation where you can close the cycle 100 per cent and there will be residues which are damaging to the environment. So, would you want to see another 20 years of compromised environmental outcomes or would you want it now is an issue, I think, we need to deal with."

8.17 In this context, a representative of ASSOCHAM also stated:

> "For sanitary landfill management, it is high time that the sanitary landfills in all the major cities, we have to do some management of these landfills. Landfills sites are exempted from public hearing if identified under city master plan. They should be exempted. Then land acquisition for solid waste processing and SLF should be made simple. To make budgetary provision for tipping fees to be paid for operation and maintenance of landfill and landfill should be scientifically should be designed rather than just a dumpyard. What ULB does, they will select an area of about 10 acres, they will say go on throwing the dump here. Go on throwing the garbage here. People bring their tipper, they just put it there and that is how the hearing is happening. Is this the way to manage a landfill? It is not Sir. It should be scientifically managed and then, we should think of remediation of all the landfills which are already there and IL&FS will come forward very gladly and we can do remediation of all this. We have done one in Bombay which is an example in the whole world how remediation has been done. It is all green and with fountains and everything. They have the gas holes where the gases can come out and all that. It is becoming a park for the people to sit in the evening."

8.18 In this connection the MoEF&CC has stated that Urban Development Departments of States/ UTs are mandated to design a State policy and strategy on solid waste management which ensures minimization of waste going into landfills. Identification and allocation of suitable land to local bodies for setting up processing and disposal facilities and incorporating suitable provisions in the master plans of every city is mandated to State Urban Development Departments and District Magistrate/ District Collector/Deputy Commissioner as per Rule 11 and Rule 12 of SWM Rules, 2016, respectively. Under Rule 15, local authorities and villages panchayats of census towns and urban agglomerations are mandated to undertake construction, operation and maintenance of sanitary landfill and associated infrastructure.

(b) Capacity Creation and related issues

(i) Capacity creation

8.19 About Waste to Energy, the Ministry of New and Renewal Energy has stated that Ministry of New & Renewable Energy has been promoting the use of technologies for energy recovery from municipal, industrial and commercial wastes for meeting certain

niche energy demands of urban, industrial and commercial sectors in the country. Ministry is focusing on Energy generation from Urban, Industrial and Agricultural Waste / Residues such as municipal solid wastes, vegetable and other market wastes, slaughterhouse waste, agricultural residues and industrial wastes & effluents.

8.20 The Ministry of New & Renewal Energy has also stated that it will be responsible for facilitating appropriate mechanism in following two areas:

(a) Facilitate infrastructure creation for waste to energy plants.

(b) Provide appropriate subsidy or incentives for such waste to energy plants.

8.21 The Ministry of New & Renewal Energy has given the following State-wise details of waste-to-energy plants set up with installed capacity and number of plants, as on 30.09.2018

Sl. No.	**Name of State/Union Territories**	**MSW based Power Plants**	**Agricultural, Urban & Industrial Effluent/Waste Based Waste to Energy plants**				**Total (Grid & Offgrid)**
		Power (Grid)	**Power (Grid)**	**Power (Off-grid)**	**Biogas (Off-grid)**	**BioCNG (Off-grid)**	
		MW (No. of plants)	**MW (No. of plants)**	**MW (No. of plants)**	**M/day (No. of plants**	**Kg/day (No. of plants)**	**MWeq**
1.	Andhra Pradesh	-	23.16(4)	17.66(11)	60,240(5)	-	46.44(20)
2.	Bihar	-	-	-	12,000(1)	-	1.00(1)
3.	Chhattisgarh	-	-	0.33(1)	-	-	0.33(1)
4.	Delhi	52.00(3)	-	-	-	-	52.00(3)
5.	Gujarat	-	-	11.275(10)	24,840(4)	12,538(2)	15.66(16)
6.	Haryana	-	-	4.0(2)	-	2,050(2)	4.46(4)
7.	Himachal Pradesh	-	-	-	12,000(1)	-	1.00(1)
8.	Karnataka	-	1.00(1)	4.8(3)	58,080(3)	1800(1)	11.05(8)
9.	Kerala	-	-	-	2,760(1)	-	0.23(1)
10.	Madhya Pradesh	11.5(1)	3.9(2)	-	5,640(3)	1,200(1)	16.12(7)
11.	Maharashtra	3.00(1)	9.59(3)	14.63(10)	73,080(8)	19,533(3)	37.17(25)
12.	Punjab	-	9.256(2)	4.17(3)	33,720(5)	1,847(1)	16.65(11)
13.	Rajasthan	-	-	3.0(1)	-	4,000(2)	3.91(3)
14.	Tamil Nadu	-	6.4(3)	4.05(3)	1,57,320(28)	-	22.96(34)
15.	Telangana	-	18.5(3)	1.0(1)	30,000(4)	-	22.00(8)

16.	Uttar Pradesh	-	-	44.625(22)	57,200(5)	2,000(1)	49.81(28)
17.	Uttrakhand	-	-	1.89(2)	67,200(5)	5,460(1)	8.49(8)
18.	West Bengal	-	-	-	14,040(2)	-	1.17(2)
	Total	**66.5(5)**	**71.8(18)**	**111.43(69)**	**6,08,180(75)**	**50,428(14)**	**310.45(181)**
		249.73MW			**50.67MWeq**	**10.05MWeq**	
		GRID-138.,30MW(23)		**OFF GRID-172.15MWeq(158)**			

8.22 Asked about the share of power generated from MSW in the total power generated in the country along with the target set in this regard, the MOH&UA stated that the total installed capacity (as on 31.05.2018) in India as per Central Electricity Authority (CEA) is 3,43,899 MW. The total capacity of Waste to Electricity (MW) from MSW is 88.4 MW which stands nowhere compared to total power generated in the country. The present overall potential of Waste to Energy Capacity in India is estimated at 511 MW. The total capacity of constructed and operational plants is 88.4 MW. Another 415 MW are in the stages of under-construction.

8.23 The Committee also wanted to know the sort of Central assistance is being provided for setting up of waste to energy plants. Asked about provisions under SBM for the same, the MOH&UA stated that some of the States have already have prepared their comprehensive Sanitation policy and action plan for 100% scientific waste processing and others are in the process.

8.24 The Committee also wanted to know about steps are underway to put up more and more Waste to Energy (WTE) Plants across the States/UTs, the MOH&UA in a written note stated the following:

> (i) A Committee has been constituted by the Ministry of Housing and Urban Affairs for developing Standards for Refused Derived Fuel (RDF), which may enhance setting up of more WTE Plants due to good quality of input material and lower operational and maintenance cost.

(ii) Ministry of Power amended the Tariff Policy, 2006 under Electricity Act, 2003, to include the provision that the distribution licensee(s) shall compulsorily procure 100% power produced from all the Waste to Energy plants in the State, in the ratio of their procurement of power from all sources including their own, at the tariff determined by the Appropriate Commission under Section 62 of the Act.

(iii) Central Electricity Regulatory Commission (CERC) has amended the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) (Fourth Amendment) Regulations, 2015 to specify norms for determination of generic tariff for Municipal Solid Waste and Refuse Derived fuel for Waste to Energy projects and indicative tariff for 2015-16. Determination of Generic Tariff will boost the financial viability of Waste-to- Energy plants in the country. The determined generic tariff for Municipal Waste to Energy (WTE) plants is Rs. 7.04 per unit and for energy plan using Refused Derived Fuel (RDF) is Rs. 7.90 per unit.

8.25 The Committee also wanted to know the sort of Central assistance is being provided for setting up of waste to energy plants and details of the provisions under SBM for the same, the MOH&UA stated as under:

(i) The Union Cabinet has approved the proposal of the Ministry of Power for amendments in the Tariff Policy. The provision in the Electricity Tariff Policy 2006 is to "Mandatorily Purchase All Power Generated from Municipal Solid Waste at the Rate Determined by Appropriate Authority" by State Electricity DISCOMs.

(ii) CERC Tariff of 7.04 Rs/KWh for MSW projects and 7.90Rs/Kwh for RDF based MSW projects. Based on this guidance of CERC, the appropriate State Electricity Regulatory Commission (SERC) can determine the tariff for the particular Waste to Energy plant setup under the area of its jurisdiction OR SERC can have its own analysis.

(iii) Land Allocation by ULBs and Assured supply of Waste (agreed costs)

(iv) Upto 35% of the total project cost to be funded under Swachh Bharat Mission (Urban) as VGF/Grant to the ULBs- Provision under Swachh Bharat Mission.

8.26 In this connection, outlining the policy interventions taken in this regard the NITI Aayog has stated that some major policy interventions have been initiated for encouragement of SWM by the Central Government like 35% provisions as Viability Gap Funding/Grant by Government of India for all Solid Waste Management projects,

making it mandotory for State DISCOMS to purchase power from Waste to Energy plants at Rs. 7.04 per unit and for RDF (Refuse Derived Fuel) at Rs. 7.90 per unit, Market Development Assistance of Rs. 1,500 per tonne to fertiliser companies/ULBs/Compost manufacturers, etc., to promote the manufacturing of energy from waste and compost in the country so as to being the Solid Waste Management a component of circular economy. However, it may be observed that while the Swachh Bharat Mission has led to initiatives that have begun to address the management challenges of Solid waste to a good extent and in structured manner, yet a lot needs to be done and the onus mainly lies on the States/UTs to carry forward the initiatives further to capitalise the potential that the sector offers, not only to address the challenges but also to generate revenue.

8.27 The MoH&UA has outlined the following are the merits and demerits of WTE plants:

Merits

1. Resource recovery and savings greatly expanded

2. Generates power in the form of electricity or steam which can be used for several purposes
3. Reduces landfill usage and landfill expansions
4. Trucking of waste for longer distances for dumping of waste can be greatly reduces
5. The economy of the community can be greatly enhanced
6. Easiest technology with shorter time to reduce the menace of waste

Demerits

1. Smoke and ash emitted by the chimneys of incinerators include acid gases, nitrogen oxide, heavy metals, particulates, and dioxin, which is a carcinogen. While incineration pollution control technology is evolving to reduce these pollutants, it has been found that even with controls in place, some remaining dioxin still enters the atmosphere.
2. These facilities require skilled and highly trained staffs to run and maintain them.
3. Highly cost intensive.

8.28 The Ministry of New and Renewal Energy has also inter alia highlighted eefficient collection, segregation, transportation and storage of requisite quality and quantity of feed stock one of the major challenges.

8.29 Besides the MOH&UA has outlined the following constraints in WTE Plants:-

(i) Availability of Land
(ii) Single window clearances for the project
(iii) Financial feasibility of the projects and financial closure
(iv) Standardization of contracts, preparation of RFPs and Concessionaire Agreements
(v) Quality of the input materials/ waste
(vi) Assured quantity of the raw material/waste

The Ministry of Housing and Urban Affairs during the course of examination also furnished the following States-wise Plans taken up for setting up of waste to energy plants in different States:-

(i) **Andhra Pradesh**

Plans to set up 13 waste to electricity plant in urban and rural areas. Andhra Pradesh has planned to set up 12 waste to energy plants with capacity of 64 MW. Out of 12 plants, work has been awarded for 10. The plants are likely to be commissioned before May 2019.

(ii) **Delhi**

Plans to commission 2 Wastes to energy and IC&D plants in current Financial year. The WTE plants at Ghazipur (12 MW) and Narela Bhavana (24 MW) have been commissioned between Dec-Mar 2016. Commercial operations of both these plants have been achieved in 2017-18. A C&D plant of 500 TPD capacity has also been commissioned in 2016 in Shastri Park. A new Waste to Energy plant of average 20 MWe – 2000 TPD is planned by South Delhi Municipal Corporation (SDMC) at Tehkhand. It is likely to be completed in the next 18-24 months depending on all clearances.

(iii) **Karnataka**

80% municipalities with installed compost plants. In Karnataka there are 220 ULBs of which 96 ULBs (44%) have developed processing facilities with a

designed capacity of 3,772 TPD and operational capacity of 2,239 TPD. Efforts are being taken to achieve 100% in waste processing by the end of the mission period.

(iv) **Kerala**

Preparing a micro-plan for 100% decentralized plan across sanitation supply chain (Collection to disposal). Owing to scarcity of public land, decentralized waste management is being promoted in the State. It has been promoted for last five years. All households, institutions, flats, gated community are motivated to do at source composting/bio-methanation. 100% coverage is anticipated over the next few years.

Kerala's waste management policy includes:

a) Every producer of bio-degradable waste shall process and dispose it in their premises or in the composting facility provided by the local bodies (at source level decentralized composting facilities).
b) 100% regular Door-to-door collection of non-bio-degradable waste would be looked after by all local bodies ensuring appropriable business models. It will be channelized to recyclers through Material Recovery Facility which shall be set up by all local bodies.
c) Appropriate IEC and Capacity Building programmes for creating enabling environment for accomplishment of sustainable SWM models.

As per Government order No. 2420/2017 dated 15.07.2017 detailed guidelines for sanitation waste management campaign under Haritha Keralam Mission have been issued. Accordingly, Haritha Karma Sena (Green Task Force) have been formed in 532 local bodies including 46 urban local bodies. Material collection facilities have been set in 171 local bodies including 39 ULBs and Resource Recovery facilities in 61 urban local bodies.

(v) **Maharashtra**

MOUs with Holland to set up waste to energy plants. MoU was between City of Amsterdam and Maharashtra. The objective of the MoU was cooperation through the exchange of knowledge, technical expertise and best practices in the area of Urban Planning, Waste & Water Management.

(vi) **Odisha**

Plants achieve 100% Waste Management target in Puri in current financial year. Puri municipality generates 80 MT of waste per day of which 50 MT per day (62%) is processed.

(vii)**Punjab & Haryana**

Cluster approach to partnership formation for solid waste management projects.

(i) Haryana:

a) Haryana has adopted a cluster based approach for SWM projects. 14 clusters have been formed in the state

b) 4 Plants are in the pre-tendering Stage in clusters Ambala-Karnal (WtE), Panchkula (WtC), Bhiwani (WtC), Rewari (WtC) and Fatehabad (WtC).

c) Gurgaon cluster plant is under construction. Concessionaire has commenced door to door collection in Faridabad and Gurgaon

(ii) Punjab:

a) Punjab has also adopted cluster based approach for Ludhiana and Amritsar SWM Projects.

(viii)**Rajasthan**

State notification on collection of user changes for door to door collection. Rajasthan has released notification on collection of user charges for door to door collection.

(ix) **Uttar Pradesh**

Incentivising waste to energy projects by providing generations/output based subsidy throughout plant life through State Budget. There is no such provision currently in Uttar Pradesh for incentivising waste to energy projects by providing Generations/ Output based subsidy throughout plant life through State Budget.

8.30 The Committee also enquired about the reasons that whatever action taken on solid waste management is limited only to nine States, the MOH&UA stated :

"All States are:

The Action on MSWM is being taken by all States and UTs , some states are fast movers that others. "

8.31 The Committee also wanted to know the above work done across the States is quite less and is in formative stages and is the latest update in this regard, the MOH&UA stated that in several states, the implementation has progressed to complete the tendering process of MSW processing & treatment plant which is the weakest link in the entire MSWM chain as collection and transportation mechanisms are well established as more than 80-85% waste is being collected and transported.

(ii) Augmenting Capacity Building

8.32 The Committee also wanted to know the details of work done by Ministry of Housing and Urban Affairs in the area of augmentation of capacity building for solid waste management for training and stakeholders give financial assistance to State/UTs, ULBs during the last two years, the MOH&UA furnished the following information:

(a) For effective implementation of SWM Rules 2016 (including 5 other Waste Rules - C&D, Plastic, E-Waste, Bio-medical and Hazardous), Ministry in partnership with MoEF&CC- CPCB is conducting training workshops in 68 metropolitan & major ULBs for all SWM staff coordinated through the National Productivity Council (NPC). So far, these trainings have been conducted in 8 metro cities and one for Master Trainers at NPC, Delhi.
(b) For the training of SWM functionaries of the ULBs, National Institute of Urban Affairs (NIUA), which is part of this ministry, has conducted 24 training and exposure visits for 660 ULB officials and functionaries involved in the sector.
(c) Capacity building of ULBs on Best SWM Practices was also enabled through Peer to Peer learning and exposure visits to different ULBs across the country. Till now, 19 Best Practice Exposure visits/ trainings have been conducted in which 380 ULBs participated (many ULBs participated in multiple visits).
(d) Further, 88 E-learning courses on best SWM practices have also been prepared and hosted on the SBM portal. ULB functionaries can take these courses at their own convenience and get certified on successful completion of the course. Till now about 4,12,154 staff of ULBs have been registered on the E-Learning portal and 3,63,307 certifications have been generated, in which multiple learnings-cum-certification are also included.

(iii) Promoting R&D in Solid Waste Management

8.33 In this context the suggestion of ASSOCHAM and Comments of Ministry of Housing and Urban Affairs thereon are as under:

Suggestion of ASSOCHAM	Comments of MoH&UA
Many innovative technologies and services are being introduced for the treatment of MSW. One such innovative method is Composting on Wheels. It is important that the Ministry of Urban Development and all ULBs recognize the need to	Agreed. MoHUA support innovative technologies. However, ancillary infrastructure space has to be provided by ULBs/ State Governments.

motivate and incentivize such innovative services and offer required ancillary infrastructure such as de-centralized spaces within the city for curing of compost ,etc.	

8.34 In this context the Ministry of Housing and Urban Affairs has also stated that for encouraging R&D in solid waste management sector and to disseminate information on viable SWM technologies, the Ministry has set up the Technical Evaluation Committee (TEC) for examining new technologies and processes under the Chairmanship of Dr. R.A. Mashelkar, which examines the replicability, scalability and sustainability of the new technologies & processes and recommends the same for possible implementation. This work is ongoing. Ministry has compiled the information on the solid waste management sector and has prepared the list of vendors for composting, biomethanation, RDF and integrated solid waste management. The compendium with the list of vendors has been published and posted on the Swachh Bharat portal for the information of States and Urban Local Bodies. The list of pre-qualified Transaction Advisors for solid waste management projects has also been prepared and posted on the website.

(c) Issues related with Plastic Wastes

(i) Use of Plastic for road construction

8.35 During the course of evidence of the representative of MOH&UA, the issue of plastic for road construction came up before the Committee and the Committee pointed out that the matter is still on paper. At this Commissioner, BBMP replied:

"Sir, Bengaluru city is doing it. BBMB is doing it."

8.36 At this Committee also pointed out that NHAI has already opposed it even after signing of an MOU long back for using Ghazipur dump site and no progress has been at inter ministerial convergence. Replying to it, the Commissioner, SDMC stated:

> "With great difficulty, we were able to pull off an MoU with NHAI. The MoUD is also a part of that MoU. But NHAI is extremely reluctant. The MoU stipulates that they will be reclaiming the entire Gazipur dump site. Then, that will be used by us for setting up an integrated facility with engineered landfill site etc. That is the dream with which the MoU was signed, but it has not reached anywhere so far. Earlier, they did a tender which failed. Then, they thought that this is too costly for them and therefore, they would rather do a pilot. They have done the pilot for two years. Even the pilot is not working."

8.37 At this, the Committee also pointed out that in 2012, the then integrated Municipal Corporation had given an affidavit in Hon'ble Supreme Court that Ghazipur dump site has reached a saturated point and no dump can be put there. However, fifteen years, thereafter dumping is continuing. The Committee wanted to know whether use of waste can be done for road construction purposes, a representative of BBMB clarified:

> "We are using five percent of plastic."

8.38 The witness further added:

> "What Bengaluru has been doing is that they are using plastic in bitumen. What NHAI has been asked to do is to use earth for this. These are totally two different things. Plastic has a component of bitumen. It is well established. But, what the NHAI has been asked to do is to use soil for embankment. They are totally different. There is a resistance there."

8.39 At this, the Committee pointed out that NHAI is also not opposing plastic and their resistance is for non-plastic feeling that required technology is not identified. At this, Commissioner, SDMC clarified:

> "As far as our MoU with NHAI is concerned, the use of plastic for laying the road is not relevant there. That is not a part of the MoU. It is only about segregating the existing legacy waste at Gazipur dump site and then using the inert part of it for filling."

8.40 At this, a representative of MOH&UA assured:

> "I will request the Minister. We will take it up."

(d) <u>Issues related with C&D Wastes</u>

8.41 During the course of evidence of the representative of ASSOCHAM, various issues related with C&D wastes came up before the Committee. These inter alia include need for Minimum Support Price (MSP) for RDF, need for transport subsidy for C&D Waste, need for exempting import duty for importing equipments like turbines for Waste to Energy Plants Cement Plants, giving banking facility for DISCOM and purchase of electricity from Waste to Energy Plants. On the issue of provisioning MSP for RDF a representative of ASSOCHAM stated:

> "There are two streams, as we discussed. One is biodegradable; other is non-biodegradable. So, non-biodegradable is Refuse Derived Fuel (RDF) which comprises of plastics, clothes, textiles and so on which can be burnt and it has a very good heat value. The cement plants were asked to lift at least 5 per cent of their requirement of fuel *vide* Solid Waste Management Rules, 2016. They did not even lift 0.1 per cent. So the other stream which is loitering on the roads and going in the drains, going to the dump sites is not being utilised anywhere in the country today. Today, you have three or four dump sites in Delhi alone like Ghazipur, Bhalwaswa. All have gone to a height of 50 to 60 metres. It is just like mountains. So, the minimum support price for RDF has to be fixed where waste to energy plants are feasible because in waste to energy plant, for every MW, you have to make capital investment of about Rs. 15 to Rs. 20 crore. You do not get the purchase price for that. So, people are not coming forward to put up waste to energy plant."

8.42 On the need for transport subsidy to Cement Plants, the witness added:

> "Cement plants are there where you have limestone, which are far away from the urban cities. The rule says, within 100 kms. you have to supply them whereas the plants are generally 200 to 300 kms. even up to 350 kms. So, you have to increase distance from 100 kms. to at least 400 kms. for supply with a subsidy in transportation. Then we have to mandate power plants and cement plants to use RDF at least for five per cent of their requirement which should gradually increase to about 15-20 per cent over the next three to five years. It has not even taken off. They do not want to take and if they want to take they say, give us free of cost which is not possible. We have processing cost. We are processing it; we are segregating it; we are shredding it and then we are sending it to them. So, you have to give some financial incentive to the cement plants also to modify their fuel technology so that they can accept RDF. Otherwise, they will not be using it."

8.43 The witness added:

> "Then, Sir, another thing is construction and demolition that is C&D waste. The buildings are broken. The new buildings are made. You will see heaps of the C&D waste lying on the roadside itself – the Yamuna sand, the concrete, the

bricks, the chattas and all those kinds of things lying which nowhere in the world you will find like that. I was in the UK. Right in the evening, the person who is constructing his house or demolishing his house, it is mandatory for him to take it to a pre-selected site where it will be processed otherwise he will be fined very heavily and there they also have a gateway for the dumpsite. If you bring in some kachra in the dumpsite, you will be charge 70 pounds a tonne. For C&D, you should have a budgetary provision for payment of transportation processing charges. They do not want to pay anything which is economically viable. In order to encourage usage of recycled product made from C&D waste, this should be kept under GST category and so also, the organic compost should be under GST category. From C&D, I am processing about 2500 tonnes of C&D everyday and I am making tiles and I am making slabs, I am making paver blocks. But then, the taxation on this is 18 per cent. It becomes unviable to sell."

8.44 On the issue of need to exempt import duty from imported turbine used for WTE purposes, the witness stated:

"The other thing is waste to energy, solid waste. The same thing can also be used for waste to energy. For example, we have a 12 MW plant in Ghazipur which is consuming 1200 tonnes of waste every of the East Delhi Corporation. But, practically there are no buyers at an economically viable price for electricity. So, we have to mandate local discoms to offtake power from waste to energy plant at the pre set tariffs. Wheeling transmission charges, cross subsidy, import duty and other charges for waste to energy projects should be exempted because we have to import certain equipments like turbines and so on and so forth which are not practically manufactured here for waste to energy technology. So, those should be exempted from the import duty."

8.45 On the issue of giving banking facility for DISCOM and purpose of electricity from WTE Plants, the witness stated:

"The provision of banking facility for the discoms and purchase of electricity from waste to energy plants, it should be considered under CSR. In my Ghazipur plant, I have spent Rs. 250 crore. How do I recover this money? It should be covered under CSR. At least some part of it I will be able to recover."

8.46 On all these issues, the comments of MOH&UA are as under:

Recommendation of ASSOCHAM	**Comments of Ministry of Housing and Urban Affairs**
Mandate local DISCOMs to off-take power from WtE plants at pre-set tariffs	The provision in the Electricity Tariff Policy 2016 is to "Mandatorily Purchase All Power Generated from Municipal Solid Waste at the Rate Determined by Appropriate Authority" by State Electricity DISCOMs.
Purchase of electricity from WtE plants to be considered under CSR	Not Agreed.

Provision of banking facility with DISCOM	Need to be explained.
Exemption from Wheeling, Transmission charges and Cross-Subsidy, Import Duty and other charges for WtE projects	Ministry of Power to provide comments
Construction & Demolition Waste Management- In order to encourage usage of recycled products made from C&D waste be kept under NIL GST category	Proposal for recommendation of uniform GST Rate of 5% on all C&D Recycled Products is under consideration in MoHUA, with a single HSN code for all C&D Recycled products.

8.47 On the issue of status of GST on rejected product, a representative of MOH&UA during their evidence clarified:

> "It has not been examined too much in detail. But, apparently, on one page that I have gone through, there is no specific reduction in the river. However, the issue has been whether we should allow the waste pickers to pay GST or not. Most of the waste pickers have more than Rs.20 lakh, they are not being charged GST. But, there is no difference between a product manufactured from the recycled product or from the new products."

8.48 A representative of MOH&UA further added:

> "In GST, I had seen notifications of a few Governments in which all the 18 functions entrusted to ULBs were exempt. What we will do is that we will get this examined and we will come back by the next meeting."

*****

CHAPTER IX

Allocation vis-a-vis utilisation and related issues

9.1 The Ministry of Housing and Urban Affairs has given the following details about funds vis-a-vis the utilization on Solid Waste Management component of SBM(U) as on 30.09.2018:

(a) Lower Utilisation of funds

(Figures in Crores)

SBM (U) - Solid Waste Management Funds Released and Utilisation						
S. No.	State/UT	Mission Allocation	Funds Released	UCs Due	UCs Received	UCs Received
1	A&N Islands	2.50	0.06	0.06	0.06	0.06
2	Andhra Pradesh	308.54	308.54	206.99	170.02	122.57
3	Arunachal Pradesh	7.25	6.84	6.84	6.84	6.84
4	Assam	76.76	38.38	0.00	0.00	0.00
5	Bihar	259.96	107.97	96.63	24.66	24.66
6	Chandigarh	22.24	2.47	2.47	2.33	2.33
7	Chhattisgarh	131.53	97.99	8.79	49.95	8.79
8	Dadra & Nagar Haveli	2.27	0.00	0.00	0.00	0.00
9	Daman & Diu	1.57	0.00	0.00	0.00	0.00
10	Delhi	263.68	63.11	63.11	22.30	57.15
11	Goa	9.29	5.93	3.78	1.70	3.78
12	Gujarat	536.22	268.11	187.90	0.00	80.21
13	Haryana	181.80	57.66	57.66	57.66	57.66
14	Himachal Pradesh	15.22	9.10	9.10	9.10	9.10
15	Jammu & Kashmir	67.99	39.45	10.90	10.90	10.90
16	Jharkhand	122.68	92.38	46.69	9.33	9.33
17	Karnataka	512.52	99.18	57.26	0.00	57.26
18	Kerala	121.35	29.99	0.00	0.00	0.00
19	Madhya Pradesh	434.01	301.75	52.93	52.93	52.93
20	Maharashtra	1081.84	290.34	42.43	1.85	42.43
21	Manipur	14.72	9.61	9.61	9.61	9.61
22	Meghalaya	8.69	3.53	2.98	2.98	2.98
23	Mizoram	13.22	8.21	8.21	0.00	0.00
24	Nagaland	11.69	6.68	6.68	6.68	6.68
25	Odisha	138.05	18.98	18.98	18.98	18.198
26	Puducherry	17.30	2.12	2.12	1.00	1.00

27	Punjab	220.97	120.38	23.00	23.00	23.00
28	Rajasthan	363.46	344.26	215.60	33.65	162.31
29	Sikkim	3.42	2.52	2.52	2.52	2.52
30	Tamil Nadu	689.87	205.01	205.01	218.14	205.01
31	Telangana	223.43	111.72	65.30	15.22	61.64
32	Tripura	15.51	0.00	0.00	0.00	0.00
33	Uttar Pradesh	940.91	427.73	37.56	37.56	37.56
34	Uttarakhand	57.57	5.00	5.00	5.00	5.00
35	West Bengal	487.79	199.80	34.54	87.98	34.54
STATE/UT		7365.82	3284.79	1490.65	881.94	1116.83

9.2 The Committee pointed out that major beneficiaries States of Solid Waste Management funds are Maharashtra, Uttar Pradesh, Tamil Nadu, Gujarat, Karnataka, West Bengal and Delhi. However, huge amounts have are yet to be released to these States/UT's, Asked about the reasons that huge amount have been shown as balance in respect of these States, the Ministry of Housing and Urban Affairs stated that for releasing funds to States/UTs from the Government of India, some certain conditions have to be fulfilled by the States/UTs which are as under:

(i) ULBs are to prepare DPR for Solid waste management of their city in consultation with state governments. Smaller cities can form clusters to become viable entities to attract private investment. 100% Cost reimbursement for preparing the DPR shall be done by GoI as per unit cost and norms set up by NARC.

(ii) State governments may handhold ULB's in quickly preparing DPR's for SWM by empanelling /shortlisting /identifying private or government agencies for the same.

(iii) The DPRs should be bankable, having a viable financial model. These will be prepared emanating from the needs identified in the City Sanitation Plan. DPRs should be aligned with Govt. of India's goals outlined in the NUSP 2008, SWM 2016 rules, advisories, CPHEEO manuals (including cost-recovery mechanisms), O&M practices and Service-level Benchmark advisories released by M/o UD from time to time. Street Sweeping, litter control interventions, and dumpsite remediations will be part of DPR which is essential for a clean city.

(iv)In order to promote projects of waste to energy, it is clarified that the central government Grant / VGF may also be used for such projects, either upfront or as generation based incentive for power generated for a given period of time.

(v) The State High Powered Committee (HPC) will authorize institutes of national repute for appraisal of DPRs for the technical and economic

appraisal of DPRs for projects recommended by ULBs. No appraisal will be done by MoHUA. The cost of DPR appraisal by these institutes shall be an admissible component under administrative costs, subject to norms as approved by MoHUA.

(vi) The performance and quality of appraisal by these identified and authorized institutes will be evaluated and monitored by HPEC as well as NARC and corrective actions taken wherever necessary.

(vii) The State Level high power committee will approve the DPR as well as the financial model of solid waste management.

(viii) The implementation of SWM projects will be as per directions of State Level High Power Committee.

(ix) Central government incentive for the SWM projects will be in the form of a maximum of 35% Grant / VGF for each project.

(x) While considering projects under MSWM it will be ensured that there is no duplication in terms of funding under any other scheme or programme.

(xi) Detailed technical and financial appraisal of the DPRs will be carried out. O&M arrangements for the project shall necessarily be an integral part of the project in the DPR.

(xii) SWM projects will be sanctioned by the State level HPC which shall include a representative of the MoHUA. In the entire project approval and procurement process, all provisions and procedures as prescribed by respective State Governments must be followed in their entirety. The entire approval procedure for MSW projects except for release of Central funds will end at the State Level.

(xiii) The States shall be free to choose the technology for SWM projects, toilets and street sweeping.

(xiv) States will contribute a minimum of 40% share of funds for SWM projects (comprising 23.3% of project costs) to match 60% Central Share (10% in the case of North East States and special category States).

9.3 Asked about the difficulty in releasing these amounts, the Ministry of Housing and Urban Affairs stated that States/UTs are required to submit their demands for seeking funds from Central Government under Solid Waste Management (SWM) component alongwith minutes of State High Power Committee meeting headed by Chief Secretary of the concerned state, thereafter Government of India considers for releasing 35% of the project cost as VGF/Grant. And for releasing 2nd instalment of the grant under SWM component, Central Government requires Utilization Certificate (UC) as well as physical and financial progress of the fund released under 1st installment of the same project. In the lack of UCs and physical progress of the same project, GoI is not in a position to consider releasing 2nd instalment VGF/Grant for same projects, hence balance is shown against States allocations.

9.4 During the course of evidence of the representative of MOH&UA, in reply to a query about dismal performance in utilization of funds under Solid Waste component under Swachh Bharat Mission (Urban), the Commissioner, SDMC stated:

> "Sir, not all municipal corporations or municipal bodies are equally financially sound. Those which have - for example, EDMC - a very poor financial position, are not able to make use of funds under Swachh Bharat Mission because it stipulates that two-third of the funding has to come from the local body and only one-third of the funding is from the Central Government. If we do not have funds to put in the matching share, we are not able to share the money which even comes from the Central Government. We are in that kind of a situation. So, we need to find some solution to this."

9.5 The witness further added:

> "If the Swachh Bharat Mission fails in the financially-poor Corporations, then it is not going to succeed in the country."

In this connection, the ASSOCHAM has also shared their experiences. Their views and comments of MOH&UA thereon are as under:

Recommendation of ASSOCHAM	**Comments of Ministry of Housing and Urban Affairs**
Funding for large plants continues to remain a huge subject of concern for private companies and infrastructure players in Municipal Solid Waste Management, especially for treatment plants. Each of the above points will help financial institutions build trust in this activity. It is also important that the activity of MSW Treatment is given an "Essential Infrastructure' status in order to avail debt funding at subsidized rates form national and international financial institutions	MoHUA support status of priority lending to MSW projects.

9.6 In this context, a representative of MOH&UA during the course of evidence stated:

"Regarding the financial resources, the ULBs, except for the large Corporations, are totally dependent upon the State Governments even for their salary pay off. The lack of technical capacity of ULBs in preparation of RFPs and tenders is poor as there are

very few skilled personnel in the area of SWM. With the rolling of SBM which is having a repository of methods and technologies for waste processing, several advisories for capacity building have been brought out. "

(b) Issue of Inadequate Funds

9.7 During the course of evidence, the issue of gross underutilization of funds for Solid Waste Management component under Swachh Bharat Mission in different States came up before the Committee in a big way. In this connection the Commissioner East Delhi Municipal Corporation expressed helplessness before the Committee that due to poor financial position of Urban Local bodies they are unable to managed their share of SWM funds under SBM Mission. The Ministry of Housing and Urban Affairs on their part have shown certain requirements like preparation of DPRs and their clearances from designated agencies to be fulfilled forgetting Central SWM funds. The Ministry have even informed the Committee that due to lack of Utilization Certificates the Ministry is unable to release the requisite funds. Asked whether Ministry of Housing and Urban Affairs have received any request from EMCD for revising the available funding pattern, the Ministry of Housing and Urban Affairs stated in the negative.

9.8 The Committee further enquired whether Ministry of Housing and Urban Affairs evolved some way out at the level of Ministry of Housing and Urban Affairs level for helping various ULBs like SDMC, the Ministry of Housing and Urban Affairs stated that Ministry of Housing and Urban Affairs under Urban Development Fund, has sanctioned Rs. 300 crore for 3 Municipal Corporations of Delhi i.e. North Delhi Corporation, East Delhi Corporation and South Delhi Corporation at the rate of Rs. 100 crore each. However, UDF Operation & Management Guidelines, 2016, mandates a minimum of

20% of the cost of the project should be arranged by the implementing agency from sources other than UDF and accordingly, 80% of the cost project, i.e., Rs.80 crores each was approved by the Project Sanctioning Committee (PSC) to each MCD including South Delhi Corporation. However, on the request of Chief Secretary, GNCTD to exempt North DMC and East DMC from contributing their share of 20%, i.e., Rs.20 crores each, Ministry has accepted the same.

9.9 The Committee also wanted to know the details of the average budget spent by ULBs on SWM, particularly, the treatment and disposal of waste is an under-invested area as compared to funds spent on collection and transportation, the Ministry of Housing and Urban Affairs stated that as per a past estimate, the Urban Local Bodies (ULBs) spend about 60-70% of total expenditure on street sweeping, 20-30% on transportation, and less than 5% on final disposal of waste. The major part of expenditure is on manpower engaged in street sweeping and transportation, which shows that hardly any attention is given to door to door collection, segregation and scientific processing and disposal of waste in the past. However, with the launch of Swachh Bharat Mission, the situation is fast improving not only in terms of investment towards solid waste processing, but also towards upward revision in the user-fee by many of the States/UTs/ULBs. As per information collected by the Ministry, now 616 centralised waste to compost plants are completed and are functional as well as 7 waste to energy plants. Another 267 compost plants and 56 waste to electricity plants are under construction/upgradation. This is bound to bridge the gap in waste processing on their completion.

9.10 Asked about the details of allocation vis-a-vis expenditure under different components under SWM(U), the Ministry of Housing and Urban Affairs in a written note

stated that the Government of India has released Rs. 453.78 crore as installment till date to the States for integrated solid waste management under SWM.

9.11 In this context, the Ministry of Housing and Urban Affairs also added stated Regarding the financial resources, the ULBs, except for the large corporations, are totally dependent upon the State Governments even for their salary pay off. The lack of technical capacity of ULBs in preparation of RFPs and tenders is poor as there are very few skilled personnel in the area of SWM. With the rolling of SBM which is having a repository of methods and technologies for waste processing, several advisories for capacity building have been brought out.

9.12 In this context, the Committee also wanted to know in what way the finance of ULBs can be augmented, the Ministry of Housing and Urban Affairs in a written note stated that most of the solid waste management projects in the Country are wither funded completely or partially by Government of India or Governments of the concerned States/UTs or external agencies like JICA, ADB etc. for the creation of infrastructure. However, the operation and maintenance of those projects have to be arranged by the ULBs either through the user fees or by any other legal means. The ULBs can augment their finances for construction and operation & maintaining of solid waste facilities, and associated infrastructure by any of the following means:

(a) Private Sector Participation
(b) Additional Resources from State Government/ULB
(c) Beneficiary Share
(d) User Charges
(e) Land Leveraging
(f) Innovative revenue streams
(g) Swachh Bharat Kosh
(h) Corporate Social Responsibility
(i) Market Borrowing
(j) External Assistance

(c) Need for attracting private participation in SWM

9.13 The Committee also enquired as to how ULBs can be strengthened to streamline the entire process of solid waste management, the Ministry of Housing and Urban Affairs stated that the financial & technical capacities of ULBs is being enhanced by way of recovering O&M through, levying of user charges and encouraging ULBs in compensating gap between income and expenses through sale of compost/ Recyclables and compliance of bulk waste generator rules. Private participation in SWM by leveraging VGF will also boost capacity of ULBs to manage solid waste efficiently. Their technical capacity is also being enhanced by way of exposure visit to the cities having improved SWM system and also through workshops and advisories. The competitiveness developed among ULBs because of Swachh Survekshan and Garbage Free Star Rating is already touching all aspects of solid waste management and strengthening ULBs.

(d) Generation of Resources for SWM through Municipal Bonds

9.14 During the course of evidence of Ministry of Housing and Urban Affairs, the Committee wanted to know whether the financial position and ULBs can be augmented through Municipal Banks, the Ministry of Housing and Urban Affairs explained that yes. There are limited revenues sources of municipalities and limited options to borrow from the market. At the same time, the local bodies need substantial funds to finance their core development functions. Therefore, municipal bond market can serve as a significant source of funds to Municipalities.

9.15 In this context, explaining the details about Municipal Bonds, the Ministry of Housing and Urban Affairs added that municipal bond is a bond issued by a city or other local government, or their agencies to bridge their funding gap. The Urban Local Bodies (ULBs) have a debt obligation to repay the principal amount along with the interest to the investors on bond maturity. Municipal bonds generally have long repayment period that approximates the useful life of infrastructure being financed, with payments due

quarterly, semi-annually or annually. A municipal bond issue is broken down into multiple bonds disbursed among different investors.

Merits of Municipal Bonds

- Bonds can be issued for longer tenure.
- Help municipal corporations to directly raise funds.
- Municipal bonds provide avenues to large institutional investors like pension funds and insurance companies, because these are looking for investing in less risky securities.

9.16 When further enquired about financial guarantee/financial backing for issuing Municipal Bonds, the Ministry of Housing and Urban Affairs clarified that the bonds shall be secured by the creation of a charge on specific revenue stream, properties or assets or the receivables of the Urban Local Body, having a value sufficient for the due repayment of the amount of bonds and interest thereon.

9.17 The Committee also wanted to know that whether only financially rich municipal corporations are able to issue and generate funds through Municipal Bonds or the financially poor municipalities also issue bonds to raise funds? If so, whether this can be subscribed by the people, the Ministry of Housing and Urban Affairs clarified that in the negative and stated, financially poor municipalities can also raise funds through municipal bonds. As per recent guidelines of SEBI project specific funds can be raised through municipal bonds which are also known as revenue bonds. SEBI has permitted public offering of revenue bonds.

9.18 The MOH&UA has also stated that pooled financing may be undertaken by the ULBs when their creditworthiness is not found very sound on a standalone basis. Under such a scheme, funds raised from bonds are extended as credit by the issuers to more than one borrower (in this case, more than one ULB). These borrowers are not necessarily related among themselves. It is a process of credit enhancement for smaller ULBs. Pooled municipal bonds require to combine the expertise of both project design

and management. Also, the ULBs are required to meet the pre-conditions of a bond issue, such as accounting, management information systems and procurement reforms, by enhancing their efficiencies. To encourage the issue of municipal bonds, the Ministry of Housing and Urban Affairs has launched an incentive scheme for urban local bodies (ULBs). Under this scheme, the incentive amount is Rs. 13 crore for every 100 crore of bonds issued and up-to a maximum of Rs. 200 crore worth of bonds per ULB will be incentivized under this scheme.

9.19 At this, the Committee also enquired whether making the Municipal Bonds tax free will help the municipalities generate resources, the Ministry of Housing and Urban Affairs stated that making Municipal Bonds tax free will make the bond issue more attractive.

****

Chapter-X

E-Waste Management

10.1 As per Ministry of Electronics and Information Technology electronic waste creates a global crisis due to environmental degradation. Based on a survey carried out by the Central Pollution Control Board (CPCB), it is estimated that 1.46 lakh tonnes of e-waste was generated in the country in the year 2005, which was estimated to increase to 8.00 lakh MT by 2020. Toxic constituents such as Lead, Mercury, Cadmium, Hexavalent Chromium, etc. are used in the manufacturing of electronic devices. Disposal of e-waste from such electronic devices, without processing it in an environmentally sound manner, may affect the human health and environment including soil and ground water etc. As per the NITI Aayog India happens to be one of the largest producers generating (discarding) 18.5 lakh tonnes of hazardous waste and importing items yielding e-waste of 13.5 lakh tonnes annually. As per Ministry of Environment Climate and Change, (HSM Division) e-waste means wastes from electrical and electronic equipment, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded. With increasing use of electrical and electronic equipments, the amount of e-waste generated has been increasing rapidly across the world including India. The electronic waste ends up in landfills /incinerators releasing cancer causing toxins.

10.2 India is going through an exciting phase of development and economic transformation at an unprecedented pace. Information Technology has given India formidable brand equity in the global market. Electronics industry in India, however, depends heavily on imports of electronic goods to meet its domestic demand. More than 35% of electronics appliances imports in India are sourced from China. Electronic and appliances industry would reach to US $ 400Bn by 2020. In order to absorb this growth, the country would consume significant volume of electronic goods and would in turn generate enormous electronic waste.

10.3 Ministry of Electronics and Information Technology (MeiTY), being the nodal ministry for Electronics and IT, is engaged in nurturing and evolving several affordable technologies to recycle e-waste in environmental friendly manner. Recycling and

recovery of valuable resources from waste is essential to conserve the natural resources, which are depleting at a faster rate due to over-consumption.

10.4 The recycling of these wastes is difficult owing to its complex nature and would require technology interventions which are yet to happen in a structured manner. Due to this, the impacts are worse as the people engaged in recycling the e-Waste are mostly in the unorganized sector. E-Waste (Management & Handling) Rules, 2011. Explaining the objectives of the e-waste (Management & Handling Rules, 2011) the M/O Environment & Forest and Climate Change has stated that in order to address this escalating issue of environmentally sound management of e-waste, Ministry of Environment, Forest and Climate Change (MoEF&CC) notified the e-waste (Management and Handling) Rules, 2011 which came into effect from 1st May, 2012. These rules were applicable to every producer, consumer or bulk consumer, collection centre, dismantler and recycler of e-waste involved in the manufacture, sale, purchase and processing of electrical and electronic equipment or components specified in schedule-I. Two categories of end of the life electrical and electronic equipment namely (i) IT and Telecommunication Equipment and (ii) Consumer Electricals and Electronics such as TVs, Washing Machines, Refrigerators and Air Conditioners are covered under these Rules. The rule mandate setting up of collection centers which were not mandated under Extended Producer Responsibility (EPR) Authorization.

10.5 In this connection, the MOH&UA has stated that e-Waste (Management) Rules (2016) were notified by Government of India in 2016, with the objective of properly channelizing e-waste for formal treatment and resource recovery. e-waste is also prohibited from entering into the municipal solid waste stream. Domestic e-waste such as the tube light, CFL lamps, computer hardware need to be deposited at the nearest Material Recovery Facility (MRF). It may be seen the society needs to be informed and trained in careful and scientific m engagement of all waste which are generated at the domestic level and the waste from all commercial establishments may necessarily be linked to the commercial service provider to ensure proper treatment.

10.6 Explaining the reasons behind coming with e-waste (Management) Rules, 2016, the MoE&FCC stated that taking cognizance of unsatisfactory compliance of various provisions of e-waste Rules, 2011, specially the implementation of provision on Extended Producer Responsibility (EPR) by Producers, setting up of collection centers and the capacity of recyclers, it was decided in the Ministry to amend the rules to address the issue of poor compliance of the rules. Ministry has now notified E-Waste(Management)Rules, 2016 vide GSR No. 338(E) dated 23rd March, 2016. The provisions of these Rules include elaboration on EPR, setting up of Producers' Responsibility Organizations, and e-waste exchange, assigning specific responsibility to bulk consumers of electronic products for safe disposal, provision of economic instrument for channelization of electronic waste, and other such measures to improve the implementation of the rules.

The concept of Extended Producer Responsibility (EPR) had been enshrined in these Rules as per which the producers shall be responsible for environmentally sound management of e-waste generated from their end of life equipment. Extended Producer's responsibility (EPR) was enshrined as the main feature of the E-waste (Management and Handling) Rules, 2011, wherein the producer of electrical and electronic equipment has the responsibility of managing such equipment after its 'end of life', thus the producer is responsible for their products once the consumer discards them. Under this EPR, Producer is also entrusted with the responsibility to finance and organize a system to meet the costs involved in complying with EPR. The producers are required to obtain authorization from SPCB/PCCs for implementing their EPR. It also had specific provision for Reduction of Hazardous Substances (RoHS) in EEE at the manufacturing stage, which became implementable from May 2014.

State Pollution Control Boards/Committees were the prescribed authority for implementation of e-waste Rules in respective States. As per Rule 14 and Schedule III of e-waste (Management and Handling) Rules, 2011 monitoring of compliance of authorization and registration conditions falls under the purview of implementing Reduction of Hazardous Substances (RoHS) compliance in manufacturing of items listed in Schedule-I.

10.7 Explaining the salient features of law the MoEFCC stated as under;

(i) Stakeholders to be converged under the rules is being expanded to manufacturer, dealer, refurbished, e-retailer and Producer Responsibility Organization (PRO) and e-waste exchange to address leakage of e-waste to informal sector at any stage of the chain;
(ii) Applicability of the Rules is now being extended to components, consumables and spare parts of EEE which makes the product operational:
(iii) Only Micro Enterprises has been exempted whereas the Small and Medium enterprises as defined in MSME Development Act, 2006 has been covered under the purview of these Rules as manufacturer of EEE and their spare parts;
(iv) Bulk consumer is being redefined in terms of turnover and the number of employees and they need to file annual returns now;
(v) The target based approach with introduction of more flexibility for implementation of Extended Producer Responsibility (EPR) and phase wise target has also been fixed for ease of Producers and compliance of The EPR;
(vi) Option has been given for setting up of PRO, e-waste exchange, e-retailer, Deposit Refund, as additional channel for implementation of EPR by Producers to ensure efficient channelization of e-waste;
(vii) Authorization not required for Collection centers which shall now be Producers responsibility with collection mechanism approach
(viii) Compact Fluorescent Lamp (CFL) and other mercury containing lamp brought under the purview of rules.
(ix) EPR Authorization for Producers is being CPCB's responsibility to ensure pan India implementation;
(x) Simplification in registration/authorization for dismantling and recycling through one system i.e. Authorization instead of both registration are authorization;
(xi) Mandatory obligation is being introduced for dismantlers to supply e-waste components to relevant registered recyclers of the product.
(xii) Provision on Reduction of Hazardous Substances (RoHS) and related Schedule II has been revised in line with existing EU regulatory framework which forms the basis of the provision;

(xiii) In case the product not comply with the RoHS provision, provision has been introduced to withdraw or recall the product from market and take corrective measures to bring the product into compliance;
(xiv) The roles of the State Government has been also introduced in the Rules in order to ensure safety, health and skill development of the workers involved in the dismantling and recycling operations including earmarking or allocation of e-waste dismantling/recycling by the respective departments or government agency;
(xv) Liability for damages caused to the environment or third party due to improper management of e-waste including provision for levying financial penalty for violation of provisions of the Rules also been introduced.
(xvi) Urban Local Bodies (Municipal Committee/ Council/ Corporation) has been assign the duty to collect and channelized the orphan products to authorized dismantler or recycler;
(xvii) Provision to file an appeal in case aggrieved by an order of suspension or cancellation or refusal of authorization or its renewal passed by the Central Pollution Control Board or State Pollution Control Board.

10.8 During the course of evidence, the Committee pointed out that as per Press report 'captioned 'India's Toxic Effect Towns' appeared in 'The Hindu' dated 14 January, 2014 quoting United Nations report that out of 44.7 million towns of electronic waste in 2016, equivalent to some 4550 Effel Towers, India's contribution is 2 million tonnes. Despite E-Waste Management Rules placing responsibility on electronic good manufacturing companies and bulk consumers to collect to authorized reprocessing units, as high as 80% of e-waste, old laptops, cell-phones, TVs are continues to be broken at huge health and environmental cost by the informal sector**.**

10.9 Asked about the overall preparedness for door to door collection, segregation and disposal of e-waste at ULB level in different States/UTs, the MoH&UA stated that according to the e-waste (Management) Rules 2016, it is the duty of ULBs to ensure that e-waste pertaining to orphan products is collected and channelized to authorized dismantler or recycler. Further, they have to ensure that e-waste if found to be mixed with Municipal Solid Waste is properly segregated, collected and is channelised to authorized dismantler or recycler. The main responsibility of collection and

channelization of e-waste under extended producer responsibility has been given to producers. Every producer has to make an application for EPR to CPCB for EPR authorization. The authorization includes among others targeted quantity of e-waste, product code wise, to be collected during the year. It should comprise of general scheme for collection of waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier, such as through dealer, collection centers, Producer Responsibility Organization (PRO), through buy-back arrangement, exchange scheme, Deposit Refund System, etc. whether directly or through any authorized agency and channelizing the items so collected to authorized recyclers.

Producers are also responsible for providing contact details such as address, e-mail address, toll-free telephone numbers or helpline numbers to consumers or bulk consumers through their website and product user documentation so as to facilitate return of end-of-life electrical and electronic equipment. Further, they should create awareness through media, publications, advertisements, posters, or by any other means of communication and product user documentation accompanying the equipment. The producer may opt to implement EPR individually or may be set up his own collection centre or implement take back system or both to meet Extended Producer Responsibility.

Disposal of e-waste

10.10 Explaining the methods of disposal of e-waste the MoH&UA has stated as under:

e-waste

The methods for disposal of e-waste includes dismantling of electronic and electrical equipment followed by recycling of individual components such as plastic, metal etc. There are about 178 authorized recyclers and dismantlers in

India. The specific recycling process and methodologies for printed circuit board are as follows:

Physical process

Physical recycling involves a preliminary step where size reduction of the waste is performed followed by a step in which metallic and non-metallic fractions are separated and collected for further management. The PCB is cut into pieces of approximately 1-2 cm2 usually with shredders or granulators giving the starting batch easily manageable for treatments. Further particle size reduction to 5-10 mm is done by means of cutting mills, centrifugal mills or rotating sample dividers equipped with a bottom sieve. Size and shape of particles play crucial roles in mechanical recycling processes because the metal distribution is a function of size range. Al is mainly distributed in the coarse

fractions (> 6.7 mm), but other metals are mainly distributed in the fine fractions (< 5 mm). Magnetic separators, in particular, low intensity drum separators are widely used for the recovery of ferromagnetic metals from non-ferrous metals and other non-magnetic wastes. Electric conductivity-based separation such as Eddy current separation, corona electrostatic separation and triboelectric separation separates materials of different electric conductivity such nonferrous metals from inert materials. Density-base separation of particles such as sink-float separation, jigging, and separation are also used to separate metal from nonmetallic components in PCB wastes.

Chemical process

Chemical recycling refers to decomposition of the waste polymers into their monomers or some useful chemicals by means of chemical reactions. In this view, chemical recycling consists of pyrolysis process, depolymerization process by using supercritical fluids, hydrogenolytic degradation and gasification process. The refining of the products (gases and oils) is included in the chemical recycling process, and can be done with conventional refining methods in chemical plants. Metal fraction can be treated by pyrometallurgical and hydrometallurgical approaches, biotechnological processes being still in their infancy.

10.11 Asked whether proper training should be imparted to workers for that purpose, the MoH&UA stated that MoEF&CC has initiated project in coordination with MoHUA for conducting capacity building programs on implementation of Waste Management Rules, notified in the year 2016 including e-Waste Management Rules, 2016. The program is designed to be implemented in 68 cities of the country in first phase in association with Central Pollution Control Board (CPCB) within the umbrella framework of Swachh Bharat Mission (SBM).

International Best Practices

10.12 The M/o Environment & Forest and Climate Change explaining the international experience in this regard has stated as under:

(i) Extended Producer Responsibility (EPR) is an established technology management of various kind of wastes especially e-waste. Implementation is successfully proved in many developed countries and some of the developing countries. OECD has been working on it and has their guidance document published in 2001. Accordingly, EPR has been strengthened in line with existing international best practices.

(ii) Producer Responsibility Organization (PRO) as mode of implementation EPR is the established successful procedures in developed countries and the same has been adopted. Between 1998 and 2007, it is estimated the more than 260 PROs were established in Europe.

(iii) Deposit Refund Scheme has been introduced as an optional economic market based instrument as channel for implementation of EPR.

(iv) Targets have been introduced for effective product take back requirement as is appicable in many other countries viz. Japan, Netherland, Spain etc.

(v) Information based instruments have been strengthen by strengthening the mechanism on public awareness.

(vi) Provision on Reduction of Hazardous Substances (RoHS) and related Schedule II has been revised in line with existing EU regulatory framework which forms the basis of the provision alongwith provision to withdraw or recall of the product from market and take corrective measures in case of non-compliance of the RoHS provision;

Work done by M/o Electronics and IT

10.13 The Ministry of Electronics and IT has stated that the following R&D projects have been initiated as under:

(i) Pilot scale released and Development to demonstrate e-waste Recycling facilitation using Physical Separate Method

(ii) RLD to demonstrate e-waste Recycling facility using Pyrolysis and smelting Method.

(iii) Establishment of restriction of Hazardous substances (RoHS) Relting Facilities in India.

(iv) Setting up a Pilot Demonstration Plants of e-waste recycling.

The M/oEFCC has also stated that a number of R&D projects have been initiated at national institutions in India. Some such projects are:

Pilot scale Research and Development to demonstrate E-waste Recycling Facility using Physical Separation Method:

A processing technology has been developed for recycling and reuse of electronic waste at National Metallurgical Laboratory (NML), Jamshedpur and a pilot scale operation of nearly 1 Metric Tonne of printed circuit boards (35 MT of e-waste) had been successfully demostrated. The processing technology for recycling of e-waste through physical separation and chemical leaching methods had been developed at NML, Jamshedpur. Attempt is being made to take it to possible commercial application.

Research and Development to Demonstrate E-waste Recycling Facility using Pyrolysis and Smelting Method. In another project, the recovery process of precious metals from Printed Circuit Boards (PCBs) had been successfully developed jointly by Centre for Materials for Electronics Technology (C-MET), Hyderabad-an R&D laboratory under MeitY and E-parisaraa, Bangalore. In this project, a unique component depopulation followed by pyrolysis and solvent extraction route has been established and demonstrated.

Establishment of Restriction of Hazardous Substances (RoHS) Testing facility in India

Development of modern electronic gadgets, such as, cell phone, iPOD, Palm Top/Laptop computers, etc. results in the high use of different hazardous substance. These hazardous substances used in various electronic equipments are very harmful for environment as well as for human body.

In this context, NITI Aayog also has stated that using best available technology will help in environmentally sound recycling and recovery of various metals thereby leading to low GHSs when compared to extraction of these metals from ores (MoEF&CC 2016). Recently the GST council significantly reduced the rates on electronic waste from 28% to 5%. Producer may opt to implement EPR individually or may be set up his own collection centre or implement take back system or both to meet Extended Producer Responsibility.

*****

Chapter-XI

Bio-Medical Waste Management

11.1 The Committee find that as per NITI AAYOG, India also produces 551 Metric Tonnes of Bio Medical Waste daily which is likely to increase to 776 Metric Tonnes per day by the year 2022. As per Ministry of Environment & Forests and Climate Change(HSM Div) quoting annual report of CPCB, there are about 1.87 lakh Health Care Facilities (HC) in the country having 17.01 lakh beds and generating about 519 tonnes per day of bio-medical waste. Besides, there are about 189 Common Bio-Medical Waste Treatment Facilities (CBMWTFs) in operation and 20 new such facilities are under construction out of which only 11,712 HCFs are having captive bio medical waste treatment and disposed facilities which Treat 483 tonnes per day of bio medical waste accounting for 93% of total waste generated. As per Ministry of Health & Family Welfare, (Hospital II Section) BMW constitutes merely 15-22% of total waste generated in a hospital but has the propensity to cause transmission of pathogens namely Human Immunodeficiency Virus, Hepatitis B Virus and Hepatitis C Virus etc making it essential that due care is exercised while handling and disposing it.

Issues and challenges

11.2 (i) Currently, in India, there are around 200 Common Bio-Medical Waste Treatment Facilities (CBWTFs) in operation which is inadequate for health facilities in 750 districts of the Country. There is a great need for rapid development of more CBMWTF to fulfill the need of treatment and disposal of all BMW generated in India.

(ii) Difficulty in setting of Effluent Treatment Plant (ETP) by less than ten bedded facility, as required by Bio-medical Waste Management Rules (2016), in case terminal sewage treatment plant is not available.

11.3 Medical waste was earlier considered a part of municipal waste. It was only when the problems with mixing the two realized that separate policies were framed for their treatment. In India, first time rules were notified on July 20, 1998 and were called Bio-medical Waste (Management & Handling) Rules, 1998". Ministry of E&FCC has

informed that the following Bio-Medical Waste Management Rules, 2016 have been notified.

11.4 The following major salient features:

(a). These rules are applicable to all persons who generate, collect, receive, store, transport, treat, dispose or handle bio medical waste in any form including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, ayush, hospitals, clinical establishments, research or education institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs.
(b) Phase-out the use of chlorinated plastic bags (excluding blood bags) and gloves by 27 March, 2019.
(c) Pre-treatment of the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization on-site in the manner as prescribed by WHO or NACO.
(d) Provide training to all its health care workers and immunize all health workers regularly.
(e) 4 colored containers viz. Red, Blue, Yellow and White are assigned for 4 different categories of waste as per categorization in Schedule-I, to improve the segregation of waste at source;
(f) Procedure to get authorization simplified. Automatic authorization for bedded hospitals. The validity of authorization synchronized with validity with orders for Bedded HCFs. One time Authorization for Non-bedded HCFs.
(g) Operators of common bio-medical waste treatment and disposal facilities shall establish bar coding and global positioning system for handling of bio-medical waste in accordance with guidelines issued by the Central Pollution Control Board by 27 March, 2019.
(h) The new rules prescribe more stringent standards for incinerator to reduce the emission of pollutants in environment.
(j) State Government to provide land for setting up common bio-medical waste treatment and disposal facility.
(k) No hospital or health care facility is allowed to install on-site treatment and disposal facility, if a CBWTF is available within 75KM.
(l) Operation of a CBMWTF to ensure timely collection of bio-medical waste from the HCFs and assist the HCFs in conducting training programs.

Work done

11.5 The Ministry of Health & Family Welfare have informed about the following work done on Bio-medical Wastes:

(i) An Expert Group in Dte. GHS reviewed Biomedical Waste Management Rules 2016 and prepared a review report which was submitted to Ministry of Environment Forest and Climate Change.

(ii) Dte. GHS, MoHFW and CPCB have jointly prepared Guidelines on Management of Health Care Waste as per Bio-medical Waste Management Rules, 2016.

(iii) To build capacity of health care staff in public health facilities MoU has been signed with IGNOU for training of state level master trainers.

(iv) With respect to Central Hospitals namely AIIMS, Lady Hardinge Medical College, Safdarjung Hospital, Dr. RML Hospital which are directly under control of MoHFW, based upon information available with Dte. GHS, it is stated that a Common Biomedical Waste Treatment & Disposal Facility is engaged of all biomedical waste in each institution / hospital. PGI Chandigarh has on onsite incinerator.

11.6 The Ministry of Health & Family Welfare have further stated that on direction of Hon'ble NGT to MoEF&CC vide its order dated 10.01.2017 and 11.01.2017 in the original Application No. 199 of 2014 in the matter Almitra H. Patel vs Union of India and Application No. 281 of 2016 in the matter of Kudrat Sandhu vs Govt. of NCT of Delhi, the Government of India, Ministry of Environment, Forests and Climate Change (MoEF&CC) constituted a Committee (including Dte. GHS) and 4 Sub-committee (including Dte. GHS) on 23.01.2017 to visit four municipalities in NCT of Delhi where the mass generators of wastes (including central government hospitals) are located and submit report. Accordingly MoEF&CC constituted four sub-committee to visit four municipalities of Delhi with following terms of reference:

(I). To visit various Institutions in various locations in Delhi where mass generators of waste are located.

(II). Sub-committee may seek the assistance or participants public authorities etc. to provide due assistance.

(III). Sub committees shall inspect;

(a) Hospitals which are more than 200 beds
(b) Co-operating group housing societies having>300 flats.
(c) Shopping malls having built up areas>50000 Sq. Mtrs.
(d) Colleges hostels having accommodations>500 students.
(e) Other places in NCT Delhi in the first places.

(IV). Committee shall submit report to state quantum of different kinds of generated

(V). Inspection report to state process, treatment, transportation and destination of the waste generated
(VI). Also report on the status of STP/sewerage network owned by above mentioned institutions.
(VII). In relation to hospitals, the committee shall inspect/examine the manner in which bio-medical waste is being handled Committee shall submit reports in respect of hospitals for the following

(a) Generation of bio-medical waste
(b) Generation of municipal solid waste
(c) Generation of hospital hazardous waste
(d) Waste generated from pathological laboratories and sewage system
(e) Causes for hospitals infection and remedies for prevention.

(VIII). Committee shall submit the report i.r.o institution afore indicated for the following:

(a) Generation of municipal solid waste
(b) Sewerage system
(c) Other kind of waste

(IX). Committee shall inspect record for strict compliance to the law in force
(X). If found lacking or non-compliant the committee shall issue show cause to defaulting institutions.
(XI). The Committee shall submit report to tribunal within six weeks from 10.01.2017.

11.7 The Ministry of Health Family Welfare giving details about salient finding of the NGT Committee Report of NDMC gave the following details:

(a) RML Hospital

(i) RML has not been accorded Consent to Operate and as such they are violating the provisions of the Water Act, 1974.
(ii) The hospital is discharging effluent in sewerage system of NDMC without proper treatment except giving hypochlorite treatment which is not adequate. However, RML hospital has awarded the contract to CPWD for installation of STP/ETP which should be completed on time.
(iii) Even though RML has proposed to setup STP but it is felt that the hospital which is connected to city sewerage system for discharge of its sewage should not have individual STP within the hospital complex as it would be a source of infection to the patients. Rather than STP, ETP should be provided for treatment of effluent emanating from path labs and other liquid waste discharged from various wings of the hospital.
(iv) Procurement of red bins and additional autoclaves must be expedited.

(b) Lady Harding Medical College and Hospitals

(i) Lady Harding Medical College and Hospitals (Sucheta Kriplani & Kalawati Saran Hospital) have not been provided with consent to operate by DPCC. LHMC and associated hospitals are required to upgrade their existing ETP Plant or setup a new one so as to treat the effluent emanating from its hospitals and medical college to the desired standards before discharging.

(ii) LHMC is also discharging untreated effluent in sewers and is required to seek consent to operate from DPCC. However, it is felt that Sewage Treatment Plant is not required to be set up by LHMC and its associated hospitals as it may lead to infection to the patients.

(iii) Sewage generated (not mixed with any other effluent generated from the hospitals) may be connected to NDMC sewerage system after seeking consent from DPCC.

(iv) Common storage facility in LHMC was found in dilapidated condition and needs improvement. The height of chimney provided in the kitchen is inadequate and as such should be increased in consultation with DPCC.

(v) Also, Oil and Grease Trap (OGT) is required to be provided for the effluent emanating from the kitchen.

(c) Palika Maternity Hospital

(i) Even though ETP Plant was installed in Palika Maternity Hospital (PMH) of NDMC, it was found non-operational during the visit. BOD and Bio-assay test are not meeting the prescribed standards. More so, it was informed that this treated water is used for flushing of Toilets and for Horticulture purposes which is not desirable as it is not meeting the required norms. As such ETP should be made functional urgently but not later than 3 months so as to meet the prescribed standards.

(ii) All the three chambers made for storing bio-medical wastes in the storage area are required to be well ventilated as per the requirement of Bio-Medical Waste Management Rules, 2016.

(iii) Use of sludge from STP/ETP for horticultural proposes must be stopped as it is hazardous.

(iv) Also use of treated effluent for flushing of toilets should be stopped as it may cause infection to the patients.

(d) Charak Palika Hospital

(i) ETP of NDMC's another Hospital namely Charak Palika Hospital (CPH) was also not found operational and the untreated effluent was being discharged directly into the sewerage system. This ETP must also be made functional urgently within 3 months.

(ii) There is no committee yet formed for checking and controlling of HAI. The same should be formed urgently and periodic meeting be held. Safai-karmcharis (including contractual staff) should also be vaccinated.

(iii) BMW should not be stored in common passage used by patients and should be transferred to common storage area as required by Bio-Medical Waste Management Rules, 2016.

(e) Primus Hospital

In Primus Hospital, the storage rooms provided for storing of red, yellow, blue and black bags are not properly ventilated and as such require improvement as per Bio-Medical Waste Management Rules, 2016.

(f) Northern Railway Central Hospital

NRCH must expedite installation of ETP. Also, Hepatitis B vaccination should be given to the concerned staff.

(g) Lab Path Labs

(i) Lab Path Labs should either provide individual ETPs or provide collection system for effluent generated in these labs and bring the same to NRL, where excess capacity of treatment exists to the extent of 30KL/Day.
(ii) Efficiency of this STP/ETP provided in NRL must be improved to meet BOD and Bio-assay standards as at present it is not meeting the prescribed standards.
(iii) Other Path Labs generating effluent should also install ETPs before discharging in the sewage system. Alternatively, DPCC may initiate setting up of a Common Effluent Treatment Plant (CETP) for treatment of effluent generated by these Path Labs.

(h) Need for Toxic Substance Disposal Facility (TSDF)

As there is no TSDF in Delhi for disposal of hazardous waste, it is high time to either facilitate construction of TSDF in Delhi itself or make immediate arrangements with neighboring states for transportation, treatment and disposal of hazardous waste being stored presently in Delhi by various industrial units and Bio-Medical Waste Management facilities in their premises.

11.8 The MoH&UA has also stated that Bio-medical waste should be segregated, treatment and deposed in accordance with schedule-I and in compliance with the standards provided in schedule-II by the health care facilities and common bio-medical waste treatment facility. Prescribed authority for implementation of the provision of these rules is the State Pollution Control Boards/Pollution Control Committee in States/UTs. In case of Health Care Establishment of Armed Forces, prescribed authority for implementation is Director General, Armed Forces Medical Services. Every State Government of Union Territory Administration has to constitute an Advisory Committee for the respective State or Union Territory under the Chairmanship of respective e health Secretary including members from Department of Environment,

Urban Development, Animal Husbandry and Veterinary Science to oversee the implementation of the rules in the respective State and to Advice for any improvement. The Ministry of Environment, Forest and Climate Change has constituted Central Monitoring Committee under the Chairmanship of Additional Secretary including members from Ministry of Health & Family Welfare (MoHFW), State Health Secretariat, SPCBs, CPCB to review the implementation of the Bio-medical Waste Management (BMWM) Rules, 2016 in the country.

*****

Chapter-XII

MANAGEMENT OF HAZARDOUS WASTE

(a) Kinds of Hazardous Wastes and available mechanism for its management

12.1 Explaining about hazardous waste Ministry of Environment Forest and Climate Change (E&FCC) HSM Divison has stated that Hazardous waste means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances. It basically comprises of the waste generated during the manufacturing processes of the commercial products such as industries involved in petroleum refining, production of pharmaceuticals, petroleum, paint, aluminum, electronic products etc. As per, the information furnished by CPCB in the year 2015, the total hazardous waste generation in the country is 7.46 million metric tons per annum from about 44,000 industries

Hazardous waste as Lead Acid Battery scraps, used oil, waste oil, spent catalyst etc. and other waste such as waste tyres, paper waste, metal scrap etc. are used as raw material by the industries involved in recycling of such waste and as supplementary resource for material and energy recovery.

Accordingly, it's always preferable to utilise such waste through recycling or for resource recovery to avoid disposal through landfill or incineration. There are about 1080 registered recyclers; 47 cement plants permitted for co-processing; and about 108 industries permitted for utilization if hazardous waste.

12.2 As per Ministry of Housing and Urban Affairs, a few items of domestic waste such as paints and paint boxes, aerosol cans, spent batteries (pencil cells) etc. are hazardous in nature and they have to be separated and sent to the hazardous waste treatment,

storage and disposal facilities (TSDF). Waste such as broker thermometers, CLFs also need to be carefully managed with hazardous waste collection centers.

(b) Problems of unscientific disposal of Hazardous and other waste

12.3 Outlining the problems of unscientific disposal of hazardous waste, the MoEFCC stated that unscientific disposal of hazardous and other waste through burning or incineration leads to emission of toxic fumes comprising of Dioxins & Furans, Mercury, heavy metals, causing air pollution and associated health related problems.Disposal in water bodies or in municipal dumps leads to toxic releases due to leaching in land and water entailing into degradation of soil and water quality. The workers employed in such unscientific practices suffer from neurological disorders, skin diseases, genetic defects, cancer etc. Hence, there is a need for systematic management of hazardous and other waste in an environmentally sound manner by way of prevention, minimisation, re-use, recycling, recovery, utilisation including co-processing and safe disposal of waste.

(c) Hazardous waste management

12.4 MoEF&CC stated has explained that Scientific Disposal of hazardous waste through collection, storage, packaging, transportation and treatment, in an environmentally sound manner minimises the adverse impact on human health and on the environment. The hazardous waste can be disposed at captive treatment facility installed by the individual waste generators or at Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs). There are 40 Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs) available in 17 States/UTs. 12.5

In this connection, the Ministry of Electronics and Information Technology has also informed that Development of modern electronic gadgets, such as, cell phone, iPOD, Palm Top/LapTop computers, etc. results in the high use of different hazardous

substance. These hazardous substances used in various electronic equipments are very harmful for environment as well as for human body. In order to restrict these materials, including, Cadmium, lead, Hexavalent Chromium, Mercury and poly brominated compounds, European Union (EU) had issued a "Directive for Restrictive use of hazardous substances (RoHS)" and had banned importing these products in EU countries since 2006. In India, in E-Waste (Management and Handling) Rules 2011, the RoHS clause has been mandated from 1st May 2014. RoHS compliance is essential for selling products in India or for exporting. In view of this , MeitY had created world class, first government testing laboratory for hazardous substances present in electronics and electrical equipments at C-MET, Hyderabad and to issue internationally valid certificate, as per ISO 17025. To restrict the use of hazardous substances properly, it is also necessary to establish more RoHS Testing facility in other part of country. Central Pollution Control Board (CPCB) has endorsed this lab as reference lab in the country, since February, 13, 2017.

(d) **Status of Hazardous Waste Management in country**

12.6 In this context, the MoEF&CC has stated that in order to address the issue of ensure environmentally sound management of hazardous waste for safety of health and environment during handling of such waste, Hazardous Wastes (Management, Handling & Trans boundary Movement) Rules, 2008 were notified under Environment (Protection) Act, 1986. The Rules lay down procedure towards this process by providing provisions for authorization of hazardous waste generating and units using hazardous waste. It also provides for establishment of Treatment Storage and Disposal Facility (TSDF) for disposal of hazardous wastes. The rules have an important provision on regulation of import /export of hazardous waste in pursuance to our obligation under the Basel convention on Control of Trans boundary Movement of Hazardous waste and

it's Disposal. India is party to the Convention. On the basis of experience garnered during the course of implementation of the Rules, the need has been felt for review of the Rules.

12.7 The major salient features of Hazardous and Other Wastes (Management & Trans boundary Movement) Rules, 2016 include the following:-

(i) The ambit of the Rules has been expanded by including 'Other Waste'.
(ii) Authorization and Registration requirement is replaced with one permission i.e. authorization under the rules for all stakeholders handling the hazardous and other waste.
(iii) The basic necessity of infrastructure to safeguard the health and environment from waste processing industry has been prescribed as Standard Operating Procedure (SOPs) specific to waste type which has to be complied by the stakeholders and ensured by SPCB/PCC while granting such authorisation.
(iv) Waste Management hierarchy in the sequence of priority as prevention, minimization, reuse, recycling, recovery, co-processing; and safe disposal being incorporated.
(v) The provision on co-processing as preferential mechanism over disposal for use of waste as supplementary resource or for recovery of energy is being enumerated with simplification of process for approval of such activity
(vi) Responsibilities of State Government for environmentally sound management of hazardous and other wastes has been introduced as follows:
- to set up/ allot industrial space or sheds for recycling, pre-processing and other utilisation of hazardous or other waste
- to register the workers involved in recycling, pre-processing and other utilisation activities;
- to form groups of workers to facilitate setting up such facilities;
- to undertake industrial skill development activities and ensure safety and health of workers.

(vii) Schedule I giving "List of processes generating hazardous wastes" has been reviewed taking into account technological evolution in the industries.
(viii) Schedule II giving 'List of Waste Constituents with Concentration Limits' has been revised as per United Nation Environment Protection Act (USEPA), Canadian Standards and drinking water standard.
(ix) The process of import/export of waste under the rules has been streamlined by simplifying the procedure and by revising the list of waste regulated for import/export under Schedule III.
(x) Separate Schedule has been introduced which comprises of waste such as metal scrap, Paper waste and various categories of electrical and electronic equipments for re-use purpose exempted from the need of obtaining Ministry's permission. Document based approach for such import/export shall ensured by the Custom Authority.

(xi) The list of waste prohibited for import has been revised by inclusion of following items

a. Waste edible fats and oil of animals or vegetable origin.
b. Household waste
c. Critical Care Medical equipment.
d. Tyres for direct re-use purpose
e. Solid Plastic wastes
f. Waste electrical and electronic assemblies scrap.
g. Other chemical wastes especially in solvent form

12.8 On the issue of storage of waste hazardous material during the course of evidence of the representatives of MoH&UA pointed out that whether sufficient secondary storage facilities with sufficient space available in different States/UTs particularly in major cities for sorting of recyclable materials, the MoH&UA informed that depending on their approach for management of Solid waste, some of the big cities such as Bengaluru has made available sufficient storage/ sorting facilities.

12.9 The Committee also wanted to know whether Green, White and Black Bins are being used for keeping bio-degradable, recyclable and for other wastes in major cities by ULBs, the MoH&UA claimed that Municipal Authorities are increasingly promoting use of their municipal waste into two principal streams, i.e. Green for biodegradable and blue for the other streams. In addition to above, citizens are encouraged to store separately domestic hazardous waste, to be collected separately in compliance with SWM Rules 2016.

12.10 The Committee also wanted to know that Whether basic things which are essentially required for proper Solid Waste Management, the MoH&UA informed that Yes, it is agreed and Ministry is encouraging States to adopt this approach to achieve the target in time bound manner.

****

Part-II

Recommendations/Observations

Government asked to review the issue of Solid Waste Management in the country in a holistic manner

Waste generation is intrinsic to human existence. In the Indian context, it is largely due to reasons like over population, rapid industrialization, introduction of new gadgets and equipments, changing consumption patterns, etc. in urban areas. The Committee are perturbed to note that as per Ministry of Environment & Forests and Climate Change, annually 65 million tonnes of waste is generated in India out of which as high as 62 million tonnes is Municipal Solid Waste (MSW) that includes organic waste, recyclables like paper, plastic etc, 45-50% of which is biodegradable, 20-25% is recyclable and 30-35% as inert/debris.

The Committee are also deeply concerned to note that only 75-80% of the MSW is collected and as high as 22-28% remains untreated/unprocessed and is deposited indiscriminately in dumping yards and landfill sites. The Committee apprehend that the problem may increase many fold in years to come, posing a serious health and environmental hazard apart from increasing demand of land for dumping untreated/unprocessed waste which the country can ill-afford. The projections of solid waste generation submitted by the Government to the Committee viz., 165 million tonnes in 2031 and 436 million tonnes in by 2050 bear ample testimony to the Committee's gravest apprehensions.

After carefully examining the prevailing scenario and on the basis of

documents and evidence placed before them, the Committee are constrained to conclude that in spite of its potentially devastating ramifications solid waste generation and its management has not received due attention from the Government. Thus SWM, although it is a part of the Sustainable Development Goals (SDGs) adopted by UN General Assembly in September, 2015 does not appear to be an immediate priority of the Government. It may be pertinent to mention here that SDGs are to be achieved by 2030 i.e. just a decade plus later. The Committee are also concerned to note that due to this apathy at Government level, Urban Local Bodies have not been getting requisite funds for SWM purposes as 60-70% of their expenditure goes for street sweeping and 20-30% goes towards for waste transportation purposes. The Committee are also perturbed to note that waste collection efficiency in India is also very low as it ranges between 70-90% in Metros and below 50% in small cities. It is highly disconcerting to note that Door to Door Collection has reached only upto 82% and source segregation has not moved beyond 48% in the country. With as high as 22-28% of waste remaining untreated/unprocessed in the country and hardly any funds available for SWM with ULBs, the Committee recommend that the entire issue of SWM needs to be looked into immediately in a comprehensive manner at the highest level by a multi-disciplinary mechanism consisting of all stake holders. The Committee further recommend that once a roadmap is laid out by such a multi-disciplinary mechanism, the Government should make provisions for necessary funds and manpower for Solid Waste Management to ULBs in a time bound manner particularly on Waste disposal

with utmost promptitude and keeping in mind the overall threat to the human health and environmental degradation.

[Rec Sl. No.1]

<u>Government asked to open up national initiative for addressing the problem of Solid Waste in association with different stakeholders like Central Ministries/State Governments and ULBs</u>

The Committee's examination has revealed that different kinds of Solid Wastes like Municipal waste, Bio-Medical Waste, e-Waste, etc. are major contributors in India. The Committee also find that as per NITI Aayog, solid waste can be categorized on the basis of origin, contents and hazardous potential, whereas Ministry of Housing and Urban Affairs has broadly categorized Solid Waste in Wet and Dry Wastes. The Committee find that various constituents of solid wastes like plastic waste, C&D Waste, e-Waste, bio-Medical Waste etc, are causing a big challenge as a large part of the same remains untreated/unprocessed. For instance, out of the total garbage of 5.6 million tonnes annually in India, only 25% is recycled and 10% of total garbage is plastic waste alone. In the case of major metropolitan cities, the Committee find that waste generation is as high as 690 mt. in Delhi, 408 mt in Mumbai and 314 mt in Bengaluru on a daily basis. Similarly, for C&D waste due to progressive pace of construction in cities, the C&D waste could be as high as one third of urban waste that needs to be recycled. Likewise, for e-waste that include computers, entertainment devices, mobile phones, etc. the major concern is that recycling is done by non-formal units by unscientific, unhealthy and non-environment friendly methods. About Bio Medical Waste, the Committee are constrained to note that as per Ministry of

Health and Family Welfare, Bio-Medical Waste, that constitutes 15-25% of total waste generated in hospitals, has the propensity to cause transmission of dreaded HIV, Hepatitis B, Hepatitis C viruses requiring due care while handling and their disposal. As per Review Report prepared by the Expert Group the Directorate of Government Health Services submitted before the Ministry of Environment and Forests and Climate Change (MOE&F&CC) on the Direction of National Green Tribunal (NGT) there is a need for more Bio-Medical Waste Treatment Facilities (CMWTF) in the country, as 200 CMWTFs in 750 district hospitals are grossly inadequate.

The Committee's examination has also revealed that as per Ministry of New and Renewable Energy, the wet waste like kitchen waste, vegetable fruit market waste, etc and dry waste like sanitary napkins and diapers, Material Recovery Facility (MRF) waste like plastic, glass etc, Refused Derived Fuel (RDF) are also causing major problems.

In this context, NITI Aayog has admitted before the Committee that ULBs and State Governments being major stakeholders have to come forward for efficient collection and segregation at source for Solid Waste Management including Municipal Solid Waste. It has also opined that there are large opportunities in the area of Solid Waste Management. The Committee find that since 'Water Supply' and 'Sanitation' are 'State' subjects under the Constitution and role of MOH&UA is about formulation of policies and assisting States/UTs by providing financial assistance for creation of necessary infrastructure, the Committee recommend that a country-wide full

fledged inter-Ministerial initiative be opened with ULBs, State Governments etc., to address the problem of Solid Waste in the country in a wider perspective.

[Rec Sl. No.2]

<u>Strict enforcement of available provision for Solid Waste Management recommended</u>

The Committee while reviewing the implementation of different Waste Management Rules find that there are specific Rules for Solid Waste, Plastic waste, e-Waste, Bio-Medical Waste, Hazardous Waste. However, in the light of deposition of representatives of ASSOCHAM and prominent NGOs, the Committee find that their implementation is only on paper. The Committee's examination has also revealed that for Solid Waste Management, Ministry of Environment and Forests and Climate Change (M/o. E&F&CC) is responsible for overall monitoring in the country under Central Monitoring Committee (CMC), headed by Secretary (MOE&F&CC), comprising officials from various Ministries. Similarly, the role of different Ministries have also been defined. The role of Ministry of Housing and Urban Affairs is periodic review of measures taken by States and ULBs, formulating policy etc. for Solid Waste Management; role of Ministry of Chemicals and Fertilizers, Department of Fertilizers is to provide market development assistance for city compost; role of Ministry of Agriculture and Farmers Welfare is to propagate utilization of compost on farm land; role of Ministry of Power is to decide tariff or charges for power generated from Waste to Energy plants and role of Ministry of New and Renewable Energy source is to facilitate infrastructure

creation for Waste to Energy Plants. Besides MOE&F&CC/Central Pollution Control Board issues guidelines for management of regular and other waste management. In this context, the Ministry of Housing and Urban Affairs has contended before the Committee that there is no lack of coordination between Ministries on Solid Waste Management and each Ministry has been given separate mandate and jurisdiction. The Ministry of Housing and Urban Affairs candidly admitted before the Committee that a lot more needs to be done on issues like anti-littering, segregation of waste at source, appropriate waste processing etc. since the task is related with behavior change of citizens. In this connection, the Committee have been informed by Ministry of Housing and Urban Affairs about three bin system for collection of waste i.e. Green Bin for Wet Waste, White for Dry Waste and Black Bin for Hazardous Waste. About disposal of waste, the Committee have been informed that, wet waste is preferably for compost preparation or bio-methanization (depending upon liquid content), dry waste for recycling and hazardous for depositing at designated collection centers. On services part, the Committee have also been informed that collection at primary level i.e. households level to storage depot and at secondary level i.e. picking up from storage to waste processing sites.

About monitoring part, the Committee have perused the Solid Waste Management Rules, 2016 and have noticed that enough provisions are already available for making Solid Waste Management a success. These, inter alia, pertain to responsibility of generator of waste, payment of users

charges to waste collectors, 'Spot Fine' by ULBs for littering and for non-segregation, collection and disposal of sanitary wastes like sanitary pads etc. door to door collection by SHGs/ragpickers, infrastructure for Solid Waste Management, making Bulk and Institutional Generators like households, Market Associations, etc. accountable for segregating and sorting of wastes in association with ULBs, making Group Housing Societies accountable for in house waste handling and composting, promoting Waste to Energy, etc. Similarly, role of Central Pollution Control Board/ULBs have been sufficiently clear. In this context, the Committee have also been informed by MOH&UA that through IEC campaigns like Swachh Office, Swachh Parks, Swachh RWAs, Swachh Schools and also through standard operating procedures, citizens are being motivated to abide by above regulations. The Committee however are constrained to note that even after everything is available in the 'Rule Book' the progress on Solid Waste Management has not moved beyond 82% for door to door collection and 48% in segregation at source indicating that the entire well laid out mechanism is only on paper. The Committee feel that enough time and efforts have been wasted by now and it is time for taking coordinated steps on a war footing to tackle the menace of Solid Waste in the country and for strict enforcement of measures available in 'Rule Book'.

[Rec Sl. No.3]

Strict enforcement of available provision for Solid Waste Management recommended

The Committee find it deplorable that waste source segregation and waste processing is far lower than Door to Door Collection in urban areas of the country leading to health and environmental hazards. For instance, as against the 82% 'Door to Door Collection of Waste', the 'Waste Source Segregation' is as low as 48% and 'Waste Processing' is a dismal 37.23%. As regards, 82% Door to Door Collection, the Committee are alarmed to note that it is still at very low levels in several States. For instance, Andhra Pradesh, Goa, Jharkhand, Madhya Pradesh, Chhattisgarh and Sikkim are the only States alongwith UTs of A&N Islands, Chandigarh, Daman and Diu with 100% Door to Door Collection whereas States with higher level of Door to Door Collection are Rajasthan (99%), Tamil Nadu (90%), Arunachal Pradesh (96%) etc. The Committee are concerned to note that NCT of Delhi is still far behind at 86%. The Committee are also concerned to note that large States viz. Assam, Uttar Pradesh and West Bengal are slow moving with 43%, 62% and 65% Door to Door Collection respectively. In this connection, the Committee recall that in January, 2018, the overall Door to Door Collection was 68.4% which has gone upto 82%. However, looking at prevailing scenario, the Committee feel that a lot more needs to be done in this area especially in big States like Assam, Uttar Pradesh and West Bengal and in other States too by accelerating the coverage with available mechanism like Star Rating protocol for Garbage Free Cities, IEC activities etc.

[Rec Sl. No.4]

Drawing up a phase-wise time table for achieving of source segregation by October, 2019 recommended

The Committee are dismayed to note that scenario of source segregation is also dismal and whatever progress has been done is limited to few States/UTs only. For instance, 48% workdone on source segregation is mainly in three States of Chhattisgarh, Karnataka and UT of Puducherry with 100% source segregation, followed by Andhra Pradesh with 88%, J&K with 83%, UT of Chandigarh with 81% and Tamil Nadu with 80%. Other States are experiencing still lower level of source segregation. The Committee are also constrained to note that in most of the States, it is very low. For instance, in large States of Rajasthan and Uttar Pradesh, it is as low as 65% and 41% respectively and similar is the position of other large States. The Committee are also constrained to learn that in States of Assam, Bihar and many other States/UTs it is in single digit. The Ministry of Housing and Urban Affairs have also expressed their helplessness before the Committee that in spite of robust monitoring by Ministry and hand holding of States/UTs/ULBs, the matter is taking time due to reasons like existing behavioral patterns and failure of the authorities in imposing existing rules and so on. The Committee apprehend that with this pace of work, the Ministry of Housing and Urban Affairs may not be able to achieve the mandate of scientific waste management by 2nd October, 2019. The Committee, therefore, strongly recommend that a time table in a phased manner be drawn up for achieving the aforesaid goal by making concerted all

out efforts for uniform source segregation across the States specially those which are lagging far behind.

[Rec Sl. No.5]

A wide ranging dialogue recommended with stakeholders for enhancing waste processing in the country

The Committee are dismayed to note that scenario of waste processing is quite dismal with overall waste processing being as low as 37.23% with only a few States doing well. These include Chhattisgarh with 84%, Sikkim with 66%, Telangana with 65%, Madhya Pradesh and Meghalaya with 58% each. The remaining States are lagging behind. The Committee find that large States viz. Assam, Bihar and Uttar Pradesh are lagging behind at 35%, 27% and 20% respectively in waste processing. The Committee feel that the lower rate of waste processing speaks volumes about working of various line Ministries i.e. Ministry of Housing and Urban Affairs, Environment and Forests and Climate Change, Department of Fertilizers, Ministry of Agriculture Cooperation and Farmers Welfare etc., for not creating conducive atmosphere for waste composting. Besides New and Renewable Energy is also largely responsible for creation of Waste to Energy Plants. The Committee, therefore, call upon all the concerned Ministries to sit with various stakeholders i.e. State Governments, ULBs and representatives of Industry/NGOs etc. for enhancing Waste processing at desired levels in the country.

[Rec Sl. No.6]

Strict implementation and regular interaction with public for opening up Awareness campaign about garbage collection and source segregation at school level recommended

The Committee's examination has revealed that various implementation constraints are coming in the way of Ministry of Housing and Urban Affairs for achieving complete Door to Door Collection of Wastes, its source segregation and processing due to the common belief that garbage clearing is largely the responsibility of ULBs. Additionally, the general public is not habitual of source segregation of waste and as such usefulness of waste as source is lost. Besides problem of availability of land for setting up SWM facilities, need for waste management in land use planning and need for polluters to pay, cluster approach for Solid Waste Management have also been underlined before the Committee by MOH&UA. The Committee feel that all these implementation constraints can be resolved with stricter implementation and regular interaction with public at large within the wherewithal available with implementing agencies by bringing about awareness in garbage collection and source segregation in school curriculum for greater impact on the public at large. Focussed media campaigns with judicious use of social media platforms can also be utilised fruitfully for awareness generation.

[Rec Sl. No.7]

Lack of critical infrastructure for Solid Waste Management at ULB level criticized and need for robust infrastructure for SWM purposes recommended

The Committee's examination of various shades of opinion like ASSOCHAM, prominent NGOs engaged in the field of Solid Waste Management like Swachh Pune and Center for Science & Environment has revealed that there is a need for critical infrastructure for Solid Waste Management in the country. For instance, it has been opined by ASSOCHAM before the Committee that urban solid waste management not only posed great risk to environment and to society but also gave an opportunity for resource conservation and ULBs do not have necessary wherewithal for that purpose. In this context, it has also been brought out before the Committee that in European and North American countries waste conversion into useful products is working well with proper motivation of business people with local and federal Governments and are encouraging investment in Solid Waste Management business by giving them tax incentive free land for processing etc. It has also been submitted before the Committee by ASSOCHAM to completely privatise the collection of Solid Waste from municipalities. On the contrary, Swachh Pune has opposed the same and have come up with the idea of handing over the primary waste collection to informal sector and to cooperatives that are doing well mainly in Pune and have advocated that private sector, if need be, be given secondary level depending upon the model of the city. In this connection, the Ministry of Urban Development has 'Not Agreed' to the suggestion of ASSOCHAM of completely privatizing collection of Solid Waste from Municipalities and have opined that all models of collections including SHGs, private contractors and collection by ULBs can

be followed and private partners will be selected as per tender conditions. The Committee also find that Ministry of Housing and Urban Affairs has 'Agreed' to the ASSOCHAM suggestions of free of cost land for setting up processing plants and encouraging best technologies for waste processing. The Committee also notice that in regard to ASSOCHAM's suggestion of cost sharing with entrepreneurs, the Ministry of Housing and Urban Affairs has left the issue at the discretion of State Governments. About the idea of tax holiday for waste processing business, the MOH&UA 'Partially Agreed' and have left it to Ministry of Finance to comment upon the same and have opined that GST at lower rate be applied on activities of waste management to enable venders to claim impact credit. In this context, the Ministry of Environment & Forests and Climate Change (MOE&F&CC) quoting Rule 22 and Rule 15 of SWM Rules, 2016 providing for timelines to be adhered to by local bodies and Panchayats and other concerned agencies for creation of infrastructure, identification of sites for SWM purposes, besides Urban Development Department of States/UTs are mandated to design policy for minimizing waste going to landfills.

The Committee have also been informed by Swachh, Pune about ameliorating the condition of Scrap Dealers who are working in very unhygienic conditions so that recycling of waste progresses on desired lines. In view of the above facts and since these issues are of far reaching ramifications, the Committee recommend that Ministry of Housing and Urban Affairs should sit together with concerned Ministries specially MOE&F&CC, Health, Finance, Power etc., State Governments/ULBs, other stakeholders for

setting up/creation of necessary infrastructure and mechanism for Solid Waste Management in the country in shortest possible time.

[Rec Sl. No.8]

<u>Government asked to concretizing integrated mechanism of industry/ informal sector for Solid Waste Management in the country</u>

The Committee are glad to learn that both ASSOCHAM and prominent NGOs have underlined the need for joint efforts by Corporate, Recyclers, etc. with Governments/ULBs for tackling the problem of Solid Waste Management especially recycling of waste. In this context, the MOH&UA has submitted before the Committee that Solid Waste and Liquid Waste are handled separately and the same is planned at the Town Planning stage itself. In this context, the Committee also note submission of the MOE&F&CC that under Rule 15 and Rule 22 of SWM Rules there is a well laid down provision for creation of infrastructure for different implementing agencies like Panchayats and ULBs also and for framing a policy. State UD Departments and implementing agencies have been given timelines for infrastructure creation. The Committee, therefore, recommend that Government should work out an integrated mechanism of SWM with industry and informal sector expeditiously.

[Rec Sl. No.9]

Government asked to accelerate the process of source segregation in the country

The Committee have been informed by NITI Aayog that estimated Municipal Solid Waste generation in the country is 1.45 lakh tonnes per day, which may go still higher, posing a gigantic challenge to the Government. In this connection, NITI Aayog has also opined that different contributors of

Waste pose a problem for its management also. It came out during the course of examination that various suggestions from ASSOCHAM and NGOs like proper method of segregation/recyclable waste at primary or secondary level, scientific compositing, colour coding etc., have come up and these have already been 'agreed to' by MOH&UA. In this context, as per MOE&F&CC these are mandatory within the Solid Waste Management Rules. The Committee also recall that prominent NGOs have also highlighted the need for segregation at source on the pattern of Panjim in Goa and Thiruvananthpuram and Alleppe in Kerala thereby stopping desegregated waste collection completely. The Committee, therefore, recommend that MOH&UA take up source segregation and its disposal also in a big way, in a time bound manner, across the States/UTs specially in those which are lagging behind.

[Rec Sl. No.10]

Compulsory registration of rag-pickers at State/UT level recommended

The Committee note that both ASSOCHAM/ Swachh, Pune have suggested for registration of ragpickers for twin purposes of reduction in municipal solid waste handling costs and diverting large quantity of wastes

away from landfills thereby saving the environment. The Committee also note that it has been done in Pune city and even Kerala Government already has a website on kabariwalas. The Committee have also been informed that an alliance of ragpickers is already working in the country. The Committee also find that MOH&UA has also 'agreed' for such a move and Ministry of

Environment and Forests and Climate Change has confirmed that States/UT, Urban Development Department are also mandated to start a scheme for registration of rag-pickers and waste dealers. In view of the foregoing, the Committee strongly recommend that a system of compulsory registration of rag-pickers be started for desired purposes at States/UTs level by Municipalities expeditiously.

[Rec Sl. No.11]

<u>Need for tackling sanitary waste by adequate allocation of funds for its appropriate handling</u>

The Committee's examination has revealed that as per Swachh, Pune as high as 2000 tonnes of sanitary waste per day is generated in India and is improperly segregated and disposed off by informal recycling workers, making them vulnerable to dreaded diseases like HIV, Hepatitis B, C and even Ebola virus, requiring allocation of huge funds for their appropriate handling and disposal. In this connection, the Committee find that Ministry of Housing and Urban Affairs have 'agreed' before the Committee that waste pickers living in poor conditions by roadside near waste dumps are poorest, most marginalized, neglected, vulnerable sections in society. Further, the Committee have been inter alia informed by Ministry of Environment and

Forests and Climate Change that manufacturers or brand owners or marketing companies of sanitary napkins and diapers shall explore the possibility of using all recyclable materials in their products. The Committee treat the matter as grave and recommend that appropriate measures be

taken for tackling the issue in coordination and consultation with Ministry of Health and Family Welfare and also at the level of Hospital/Dispensaries and even at PHC level by allocating adequate funds for the purpose.

[Rec Sl. No.12]

<u>Promoting Door to Door collection of waste by subsiding Waste Collection by ULBs recommended</u>

An issue has come up before the Committee that whether Door to Door Collection can be done by subsidizing waste collection by ULBs. In this connection, ASSOCHAM as also prominent NGOs like Swachh Pune have been unanimous before the Committee that user charges be taken from households for waste collection. In this context, the Committee have been informed by Swachh Pune that their Members are recovering users charges from 3 lakh household including 28,000 slum households and have suggested before the Committee that waste collection in slums has to be subsidized by municipalities. The Committee have also been informed by MOH&UA that it should be as per SWM Rules. The Committee find that the relevant Rules stipulate that Generator would have to pay user fees for waste collection, the Committee recommend that Door to Door Collection of Waste by charging users for waste collection be started by all ULBs across the States/UTs. As

regards sections like slum dwellers the local bodies may include as appropriate measure of subsidy to take care of the matter.

[Rec Sl. No.13]

Time bound scientific collection and transportation of waste recommended

It came out during the course of evidence of the representatives of ASSOCHAM that there is a need for time bound scientific collection and transportation of waste in the country by way of use of efficient collection and segregation techniques for getting best out of wastes since there is a lack of clear guidelines for collection, storage, etc and for stringent action against offenders in case of non-compliance. In this connection, Committee also find that MOH&UA has also 'agreed' with ASSOCHAM about need for scientific collection and transportation in the country. The Committee feel that there is a need for its implementation through out the country. Further, the representatives of Swachh Pune has also underlined the need for promoting portable sorting sheds for waste collection as people do not want these in front of their houses. In this context, the Committee have also been informed that many such portable sheds are already working in Pune city. The Committee feel that the issue be expeditiously examined by MOH&UA and action taken thereon be conveyed to the Committee for enabling them to arrive a logical conclusion. [Rec Sl. No.14]

Strict implementation of Extended Producers Responsibility (EPR), recommended

The Committee find that some wastes such as CFLs, batteries etc. that are highly toxic and cannot be handled by municipalities are now the responsibility of companies manufacturing these so that the environment and public is safeguarded. In this connection, various issues pertaining to

EPR etc. have come up before the Committee from ASSOCHAM which include need for payment of fee for waste recycled for reducing land fills instead of collection of tipping fee from waste collected, need for bringing unrecognized sector within the EPR fold, increasing the thickness of plastic from 50 micron to 100 micron for making it of recyclable value and need for no ban on plastic without scientific basis, etc. In this context, on the collection of tipping fee issue, the Committee have been informed by MOH&UA that both models of tipping can be adopted. On other issue, the MOE&F&CC has inter alia informed that thickness of plastic from 40 micron to 50 micron has been done for making plastic of recyclable value. Further consultations with stakeholders are underway on three draft models on the subject which have been circulated to various stakeholders during Regional Workshop conducted by the Ministry and CII on 12th and 13th November, 2018 for comments and once the consultation process is over, the final EPR mechanism will be implemented. The Committee would await the latest position on the issue.

[Rec Sl. No.15]

<u>Different Models of Decentralised Solid Waste Management welcomed and decentralized model wherever possible recommended</u>

The Committee are glad to find that models of decentralized Solid Waste Management are being run successfully in various part of the country like Ambikapur in Chhattisgarh, Pune in Maharashtra, Bengaluru in Karnataka and significant work on Solid Waste Management has been done in Amritsar in Punjab and UT of Chandigarh. In respect of Ambikapur, from the document submitted before the Committee, as also oral deposition by witness, the Committee have been enlightened as to how with the help of SHGs, RWAs, commercial residential bulk generators and through GIS based Route Plan work, door to door collection, segregation and recycling has been made possible in as high as 3896 ULBs out of 4000 odd ULBs with population of less than 3 lakh Ambikapur Model of Decentralised SWM is being replicated. Similarly, the Committee have come across Pune Model of Decentralised Solid Waste Management being run as a cooperative of ragpickers with support of Kagad Kach Patra Kashtakari Panchayat (KKPKP) and Pune Municipal Cooperation by charging user charges from households for waste collected and where rag-pickers are running the compost pits and ensuring that organic waste is getting composted and in return they get composting fee also. Similarly about Bengaluru Model of Decentralised Solid Waste Management, the Committee have been informed that with population of 1.25 crore with area of 800 sq. kms. and with the city generating 4800 tonnes of Solid Waste collected everyday from house to house and then segregated and sent to plants for compost, with Agriculture Department of Karnataka and Swachh giving subsidy and under BBMP Budget also. The Committee have also been informed that Bengaluru has also started mechanical sweeps which is cost effective and for more environment friendly

as against manual sweeping. As regards, Varanasi, the Committee have been informed that through use of IT, cleaning and collection of waste is being done.

Similarly, the Committee have also been informed that number of Decentralised Waste Processing Units (DPUs) are working in Tamil Nadu and based on their experience, MOH&UA has issued an Advisory 'Onset and Decentralised Composting of Municipal Organic Waste' for compliance by States/UTs. About Goa, the Committee recall that they had been to Waste Treatment Plant at North Goa and were very impressed with the Goa model of waste management. In this connection, the Committee have been informed that due to higher cost factor, it is not feasible for ULBs. Similarly, the Committee have come across best practices of decentralized Solid Waste Management in Venguala town of Sindhudurg district of Maharashtra and Allapuza town in Kerala also. In this context, the Member-Secretary, Central Pollution Control Board while appreciating the ground work-done by informal sector has opined before the Committee that wherever possible decentralized Solid Waste Management is most welcome. In view of the foregoing, the Committee recommend that decentralized Solid Waste Management wherever possible be resorted to in a big way across all States in a time bound manner.

[Rec Sl. No.16]

Absence of accurate data of waste generation about criticized and Government asked to make available tentative five years data of waste generation vis-à-vis compost creation in the country

The Committee are constrained to note that as per Member-Secretary, Central Pollution Control Board who appeared before the Committee, there is no reliable data of waste generated in the country. As per Central Pollution Control Board, it is 1.20 lakh tonnes to 1.40 lakh tonnes per day. The Committee note that Central Pollution Control Board has expressed its helplessness before the Committee that non-availability of accurate data is biggest handicap. The Committee have also been informed by CPCB that over the last 50 years, the composition of waste had changed a lot and currently 9 percent of total waste is of plastic waste alone, alongwith other components. The Committee have been informed that after understanding the composition of waste the technology for waste processing be accordingly designed. In this context, the Committee have also been informed that with a view to get clear picture about waste generated vis-à-vis waste composition every ULB should workout for a perspective plan of 5 years seeking partnership with non-voluntary organizations and the same may be uploaded on public domain for the benefit of common man and for the use of policy makers. The Committee, therefore, recommend MOH&UA to proceed on the above lines in consultation with and in coordination with all State Governments and ULBs for getting a clear perspective on the issue.

[Rec Sl. No.17]

<u>Government asked to make use of opportunities in greater Solid Waste Management in the country</u>

The Committee's examination of waste processing reveals various aspects related with Waste to Compost and Waste to Energy. As regards waste to compost aspects like need for tapping opportunities in this sector,

waste to compost aspect at household level and policy issues like enforcement of mandatory offtake of a city compost by fertilizer companies, need for early payment of compost by ULBs to WTC plants, need for PAN India Licence for Waste to Compost, need for ware housing facilties for organic manure, need for nutrient based subsidy for organic fertilizer, inclusion of city compost under NIL category under GST, capacity creation and promotion of waste to compost etc., have come up before the Committee. Similarly on waste to energy involving need for dis-incentivising landfills, creating scientific landfills and their conversion into Parks, capacity creation, augmenting capacity building, use of plastic for road construction, and also issues related with C&D waste have also come up before the Committee.

On the issue of tapping opportunities in the area of waste to compost, the Committee have been apprised by NITI Aayog that current valuation of MSW Management in the country is around US$8.5 billion which may go upto US$ 20 billion by 2030 as per concept note prepared by Ministry of External Affairs (for Parvasi Bhartiya Diwas Conference on the Role of Indian Diaspora) in capacity building for Affordable Waste Management held in July, 2018 that would open up huge opportunities for public and private sector participation alongwith foreign collaboration with new technologies etc in the area of waste management. The Committee feel that both industry and

informal sector should work together for utilizing the above opportunities in the area of waste management which will not only give employment opportunities but will also help in eradication of problem of solid waste in the country.

[Rec Sl. No.18]

<u>Comprehensive household composting recommended by utilizing 50-60% of organic waste</u>

The second issue concerning waste to composting that came up before the Committee on which both ASSOCHAM and prominent NGOs were unanimous was need for taking up household composting in a big way in the country by way of utilizing as high as 50-60% of available organic waste in the country. In this connection, the Committee have also been informed by a prominent NGO viz Chintan that another 20-25% of plastic waste can be recycled in available huge recycling market for serving twin purposes of reducing huge cost of collection and segregation on the part of municipalities on the one hand and diverting waste from going to dump sites on the other. In this context, the Committee have been informed by MOE&F&CC that waste processing facilities are mandated to include composting as one of the technologies for processing of Bio-degradable waste and standards of composting have been prescribed under Schedule II of the SWM Rules, 2016. In view of the foregoing, the Committee feel that household composting be promoted by MOH&UA in a big way in every nook and corner of the country in association with all stakeholder by utilizing the prominent models of

Decentralised Waste disposal that have come up before the Committee and reflected in earlier Chapters of the Report.

[Rec Sl. No.19]

<u>Enforcement of mandatory offtake of city compost by fertilizer companies recommended</u>

On the aspect of waste to compost, need for enforcement of mandatory offtake of city compost by fertilizers companies, the Committee are constrained to find from the evidence of representatives of ASSOCHAM that over 200 tonnes of city compost is lying unsold, spread all over India, in various waste to compost plants because companies that were tagged to pick up the fertilizers did not honour their agreements. The Committee have also been informed that nearly half of the Waste to Compost plants are lying closed because there is no offtake of city compost, even after Ministry of Chemicals and Fertilizers, Department of Fertilizers is giving subsidy of Rs.1500 per tonne as Market Development Assistance to fertilizers market companies. In this connection, ASSOCHAM while expressing its helplessness before the Committee have informed that even the Department of Fertilizers has not been able to enforce the direction of Hon'ble Supreme Court. In this regard the Committee have been informed by ASSOCHAM that both MOH&UA and Ministry of Chemicals and Fertilizers lack both market reach and financial wherewithal to avail direct subsidy from Government. ASSOCHAM have pleaded before the Committee that route of sale through fertilizer companies be continued and they be permitted to continue to procure city compost from MSW treatment plants. The Committee find that suggestions

has 'not been agreed to' by MOH&UA saying that MOH&UA should be given the task of sale of compost in bulk. In this context, the Department of Fertilizers has claimed before the Committee that sale of city compost by marketing companies has

risen during 2016-17 to 2017-18 from the level of Rs.6,584.00 MT to as high as 1.48 lakh MT. The Committee however do not subscribe to the views of Department of Fertilizers and recommend that strict monitoring of offtake of city compost be enforced for making waste to compost industry viable.

[Rec Sl. No.20]

<u>Early payment of supply of city compost by ULB to suppliers recommended and Government asked to examine the idea of opening compost Bank in the country</u>

The Committee's examination has also revealed that non-payment of supply of city compost for years together by ULBs have led to closure of various Waste to Compost Plants. In this connection, the Committee have been informed by MOH&UA that all closed Plants are being monitored by the States and efforts are being made to resolve the disputes. In this connection, it also came out before the Committee that since large number of RWAs are putting up decentralized composting machines, there could be a problem of surplus city compost production and for that purpose a compost Bank can be opened from where the regular bulk compost consumers like CPWD, State Horticulture Departments can take city compost as per their needs from time to time. The Committee feel that the idea be favourably examined in the

interest of viability of city compost manufacturing plants. The Committee would await as update in this regard.

[Rec Sl. No.21]

<u>Need for PAN India Licence, Ware Housing fertilizers nutrient based subsidy for city compost and inclusion of city compost under NIL category under GST recommended</u>

Various other aspects related with Waste to Compost that came up before the Committee through ASSOCHAM include need for pan India licence for city compost in place of time consuming State specific licence currently prevailing, need for warehousing facilities for storing city compost as thousands of bags of city compost is lying unsold in various WTC plants, introduction of nutrient based subsidy for city compost in the name of Phosphate Rich Organic Manure (PROM), which is not available currently, and need for inclusion of city compost under Nil category under GST. In this context, on the inclusion of city compost under NIL category under GST, the Committee find that the Ministry of Housing and Urban Affairs have left the issue to Ministry of Finance to comment upon. The Committee recommend that MOH&UA should take up the aforesaid issues with appropriate Ministries for making the procedure for WTC simple, conducive and workable for WTC composting facilities in the country to flourish which would be in the interest of environment. On the GST issue, the Committee would like the Ministry of Finance to take a positive view in the matter.

[Rec Sl. No.22]

<u>Project, Planning and implementation of Waste to Energy (WTC) plant criticized and Government asked to open WTC Plants in all States in the country in a big way</u>

The Committee are constrained to note that there are only few functional Waste to Compost (WTC) Plants in the country and these too are running much below their annual installed capacity. For instance, out of a total of 145 WTC Plants in the country with per annum installed capacity of 62.32 lakh tonnes, the per annum compost production is as low as 13.11 lakh tonnes. From the State-wise details, the Committee are also constrained to note that WTC plants are largely concentrated in a few States viz. Karnataka and Maharashtra with 19 plants each, Andhra Pradesh, Uttar Pradesh, Tamil Nadu with 14 plants each, besides Gujarat with 12 such plants. The Committee are glad to note that twin States of Karnataka and Kerala are moving towards cent percent decentralized composting. The Committee however find that in the remaining States, the number is in single digits. In this Connection, the MOH&UA have candidly admitted before the Committee that more number of plants are needed to process the waste effectively. As regards projects under construction, the Committee find that 150 WTC Plants with capacity of 33.48 MTPA are under construction and / or tendering, and majority of these WTC already have been planned in States where such Plants are already working namely 29 Plants in Andhra Pradesh, 20 Plants in Gujarat, 19 Plants in Tamil Nadu, 14 Plants in Maharashtra and 16 Plants in Rajasthan.

On the issue of making Waste to Compost Plants a pan India presence, the Committee have been informed by MOH&UA that a drive for segregation of waste has already been on in all 4041 cities/towns to produce good quality of compost and many States like Assam, Goa, Himachal Pradesh,

Jharkhand, Odisha, Arunachal Pradesh, WTC Plants are already set up or in the process of being set up. The Committee, however, find from the State-wise data placed before the Committee that number of WTC Plants in aforesaid States are quite few. The Committee would like an explanation from MOH&UA in this regard. In this connection, the Committee have been informed by NITI Aayog that vast opportunities might emerge for expansion of Solid Waste Management in the country. Member-Secretary, Central Pollution Control Board has also outlined the need for preparing a roadmap of total waste generated vis-à-vis city compost likely to be generated in coming five years from now in the country and the Committee feel that in all the States project, planning and implementation of WTC Plants be uniformly chalked out in the country expeditiously.

[Rec Sl. No.23]

<u>Low level of infrastructure for promotion of city compost criticized, Government asked to take up the promotion of city compost in a big way across the country</u>

Another issue that came up during the course of discussion on the aspect of WTC was need for promotion of composting in the country. In this connection, the Ministry of Agriculture & Farmers Welfare (Department of Agriculture and Cooperation and Farmers' Welfare) has laboured to convince the Committee by outlining various steps taken like dispensing with the requirement of obtaining certificate for manufacture of city compost under Fertilizers (Control) Order, 1985, permitting municipalities to sell city compost in bulk, introducing marketeer concept for facilitating city compost

to identified markets in the area where there are no dealers' network, operationalising e-FMS for routing MDA, adoption of 384 villages by fertilizer companies for use of city compost, constitution of State level Steering Committee in 11 States for promoting city compost etc. Similarly, the Committee have been informed by Ministry of Agriculture and Famers welfare about measures taken for propagating utilization of compost on farm land through advertisements through Krishi Darshan and other promotional advertisements in Doordarshan and other TV programmes, setting up labs for testing quality of city compost, developing waste decomposer by National Center of Organised Farming Ghaziabad (a Subordinate Office of the Ministry) that can be used for various purposes including quick composting of bio-waste with shelf life upto three months, *in situ* composting of crop residence by converting bio waste to organic manure etc. The Committee are, however, constrained to find that awareness regarding city compost is almost nil among common public. Besides infrastructure for quality testing lab is quite less as only 6 labs belonging to the Central Organic Public Testing Lab are available for catering to the city compost requirement of the entire country. The Committee, therefore, feel that both infrastructure for testing of city compost and awareness for city compost be created in a big way in the country.

[Rec Sl. No.24]

<u>Government asked to utilize available technological options for SWM with desired level of investment from affluent section of society in a comprehensive manner</u>

The Committee's examination of Waste to Energy (WTE) aspect linked with Solid Waste Management has revealed various issues. These inter alia include use of appropriate Waste to Energy technologies for proper waste processing, need for dis-incentivising landfills, promoting scientific landfills and their conversion into parks, need for capacity creation of Waste to Energy Plants, augmenting R&D and capacity building in Solid Waste Management, use of plastics for road construction and various 'C' and 'D' Waste related issues. On the issue of appropriate technologies for WTE the Committee find that NITI Aayog has outlined four technologies for WTE processing of (i) Hydrothermal (conversion of wet to green coal), (ii) Catalytic Thermo Chemical process (shell technology), converting Bio-mass and Bio-degradable MSW to liquid fuel (iii) Plasma Gasification (WC Technology) which gasify all kinds of waste to energy at 3000 degree centigrade and (iv) The Thermal De-polymerisation which can generate methane and oil from unsegregated MSW etc. In this context, MOH&UA has observed before the Committee that there are no separate suitable methods for metropolitan cities and smaller cities and all processing methods are suitable for entire quality of waste with suitable quantity however segregation of waste in different streams is key for efficient and economical processing. The MOH&UA has also submitted before the Committee that considering typical composition of waste, composting is highly relevant in India, however, in certain categories of bulk generators like hotels and restaurants etc. bio-methanisation process proves to be better and an economic option. Further, segregation and recycling of various streams is

best method for dry waste in large cities or cluster basis involving many smaller cities are better suited for methods of processing dry waste like

plastic waste. In this context, NITI Aayog has observed that there is a positive co-relation of Municipal Solid Waste (MSW) generation with economic development and accompanying affluence. In this context, NITI Aayog has quoted that as per study by Columbia University, New York, a higher standard of living results in more waste and also a greater ability to invest in waste management system. The Committee thus finds that technologies options are already available and there is an apparent need for higher investment in such technologies from affluent section of society. The Committee, therefore, recommend the MOH&UA to go for use of available technologies for SWM, with equivalent investment from affluent sections of society in the area of SWM, in the country in a comprehensive manner. The Committee also recommended that all out efforts should be made to make use of bio gas from organic waste.

[Rec Sl. No.25]

<u>Disincentivising landfills and their conversion into Parks recommended</u>

The Committee are dismayed to note that as per NITI Aayog the country is going to lose as large as 1240 hectares of additional land every year for accommodating processed/unprocessed MSW seriously threatening the environment through ground water and air pollution. In this connection, Center for Science & Environment has informed the Committee that land as a resource is too valuable to be wasted for landfills and have advocated for dis-incentivising it by charging high amount of tipping fee for bringing waste to

landfills as has been done globally. In this context, the Committee have been informed by ASSOCHAM that the collection efficiency is as low as 50-60% in India, and where only 10% of plastic waste gets treated, unlike European and North American countries where no landfills are visible as whatever waste is available gets converted into products for further use.

In this connection, the Committee also find that public resistance for allotment of landfills due to Not In My Backyard (NIMBY) syndrome has been the reason behind delay in identification of land in Delhi for landfills also Finding a way out ASSOCHAM has pleaded for scientific landfills by way of converting the land fills into parks on the pattern of Mumbai. The Committee also find that on ASSOCHAM's suggestion of allotment of barren land for dump site the MOH&UA has observed that landfills site should be selected by ULBs/District Administration keeping in view siting conditions of landfills specified in SWM Rules and MOE&F have also observed on similar lines. In view of above, the Committee feel that landfills should be dis-incentivised by very high rate of tipping fee from waste deposition in landfills and the landfills be scientifically managed by way of converting these into parks on the lines of the one done in Mumbai, by impressing upon ULBs/Panchayats etc to take necessary steps in this regard.

[Rec Sl. No.26]

<u>Setting up WTE Plants with judicious use of WTE technologies recommended</u>

The Committee are constrained to note that as per NITI Aayog against 445 Waste to Energy (WTE) Plants in European Union (EU), 150 WTE Plants

in China and 86 WTE Plants in USA, India is managing with only 8 such Plants on solid waste. The Committee also find that as per data made available by Ministry of New and Renewable Sources of Energy, 3 such Plants are in Delhi, and 1 each in Madhya Pradesh and Maharashtra. The Committee also find that Plants with Agricultural waste and other Wastes are also functioning in different States. In this context, the Committee have been informed by the then Secretary, MOUD that object of setting up of WTE plant is nothing but to make the cities clean.

During the course of examination, various merits of WTE plants have come up before the Committee like resource recovery, power generation, etc. and demerits like technology being highly cost intensive, emission of toxic gas and ash from incinerators in atmosphere etc. Besides implementation constraints like land availability, single window clearance etc. have also been outlined before the Committee by MOH&UA. In addition to this, Ministry of New and Renewable Source of Energy that is responsible for creation of WTE plants have also outlined major constraints as inefficient collection segregation, transportation and storage of requisite quality and quantity of feedstocks. The Committee recommend that all these pros and cons of WTE Plants have to be suitably and judiciously addressed in the light of composition of waste generated currently in urban areas. On the issue of implementation constraints, the Committee feel that enough provisions are already available with SWM 'Rules' at the level of ULBs/Distt. Administration to deal with the situation and way out has to be found out in coordination and consultation with all stakeholders and public at large.

[Rec Sl. No.27]

In the light of public protests against Waste to Energy (WTE) Plants in certain parts of the country and phasing out of such plants already underway across the globe, the Government asked to sparingly go for WTE Plants complying the available norms and using the foolproof technologies

The Committee are also dismayed to note that there is huge gap between overall potential of WTE and actual production. For instance as against the estimated 511 MW of overall potential, the actual WTE production is as low as 88.4 MW. In this connection, various remedial measures have been outlined by MOH&UA and NITI Aayog like 35% funds as Viability Gap Funding (VGF) by Central Government, mandatory power purchase by DISCOMS from WTE Plants, etc. The Committee are constrained to note that only in Andhra Pradesh and NCT of Delhi, WTE Plants are actually coming up where 14 Plants and 2 Plants have been planned. The Committee find that in remaining State of Maharashtra, the matter is at initial stage and States of Punjab and Haryana are following cluster based projects. Similarly Uttar Pradesh is incentivizing WTE through State Budget. In this context, the Committee have also come across Press Reports highlighting large amount of public protests against the WTE Plants especially in Okhla and surrounding areas of Delhi complaining violation of NGT stipulations and pointing out that phasing out of such plants across the globe has already started, the Committee recommend that Government should sparingly go for such plants which comply with the available norms and use the foolproof technologies available.

[Rec Sl. No.28]

Need for capacity building of ULBs and promotion of R&D in SWM sector highlighted

The Committee are concerned to note that a lot more is to be done in the area of capacity building of ULBs and for promoting R&D in Solid Waste Management in the country. In this connection, the Committee are constrained to find that as low as 68 training workshops have been conducted by Central Pollution Control Board that too in 8 metro cities and as low as 24 exposure visits were done by National Institute of Urban Affairs. In this connection, the Committee have also been informed that 88 e-learning courses on best SWM practices, after completion, have been uploaded on SWM portal and 4.12 lakh ULB personnel have been registered therein. Similarly on promotion of R&D in SWM sector, the Committee find that Dr. R.A. Mashelkar Committee is at work for dissemination of information on viable SWM technologies, their replicability, scalability and sustainability for their possible implementation. In this connection, the Committee also find that MOH&UA has candidly 'agreed' before the Committee to the ASSOCHAM's suggestion of introduction of many innovative technologies for treatment of SWM. The Committee feel that in view of the challenging scenario of SWM in the country, the actual workdone shown above on the area of augmenting capacity creation of ULBs and also promoting R&D in SWM is thoroughly inadequate and be scaled up in a big way. [Rec Sl. No.29]

Extensive use of plastic for road construction recommended

The Committee are constrained to note that virtually no headway has been achieved in use of plastic for road construction between country's

prominent road construction agency of NHAI and South Delhi Municipal Corporation (SDMC) even after an MOU was signed between the two and even after an affidavit was filed by the then Municipal Corporation of Delhi way back in 2012 before Hon'ble Supreme Court stating that Ghazipur dump site has reached its saturation point and no dumping can be done there. The Committee are constrained to note that status quo is still prevailing on the issue as a representative of MOH&UA during his deposition before the Committee has promised the Committee to take up the issue with the level of Hon'ble Minister for Housing and Urban Affairs. The Committee feel that in the case of Delhi, there is a need for resolving the deadlock on the issue between NHAI and SDMC so that the eye sore of Ghazipur dump site is cleaned and plastic dumped therein is used for road construction purposes. The Committee also strongly recommend that issue of plastic for road construction purposes be promoted in a big way across States/UTs.

[Rec Sl. No.30]

<u>The Government asked to expeditiously examine and resolve various issues related with C&D Waste for making the Cement Plants viable</u>

The Committee are constrained to note that various issues related with the role of Cement Plants involved in processing of C&D waste particularly REF, need examination and early resolution for making the functional

Cement Plants financially viable. These inter alia pertain to giving Minimum Support Price (MSP) to RDF using Cement Plants with huge investment of Rs.15 to 20 crore for processing non-biodegradable Refuse Derived Fuel (RDF) which comprise of plastics, clothes, textiles, wood pieces, etc. with

good heat value, mandating Cement Plants to lift 5% of their fuel requirement from Solid Waste as is not being done currently, need for higher transport subsidy to Cement Plants located at a distance of 200-400 kms for RDF transportation purpose which is unavailable currently, need for exempting import duty on equipment like turbines for Waste To Energy Cement Plants for making their operations viable etc. The Committee find that since all these issues are related with various Ministries, the Committee recommend that all these issues be discussed with stakeholders and way out on each of these be found out at the earliest.

[Rec Sl. No.31]

<u>Lower utilization of funds under Solid Waste components under Swachh Bharat Mission (Urban) criticized and Government asked to impress upon States/UTs for utilizing the available funds complying with different conditions laid down by Ministry of Housing and Urban Affairs</u>

The Committee are constrained to note that there have been huge gap between Mission Allocations vis-à-vis Releases and Utilization Certificates (UCs) due vis-à-vis UCs received as on 30.09.2018 in Solid Waste component under Swachh Bharat Mission (Urban) period (2014-19) so far. For instance, as against the Mission allocations of Rs.7,365.82 crore, the releases were as low as Rs.3,284.79 crore. Similarly, as against Rs.1490.65 crore of UCs due,

the total UCs received were as low as Rs.1,116.83 crore. The Committee's examination has revealed that in major beneficiary States of Solid Waste Management funds, the scenario of allocation vis-à-vis releases is grim. In Maharashtra, out of allocations Rs.1081.84 crore, the releases were as low as Rs.290.34 crore. Similar was the position in other States of Uttar Pradesh (Rs.940 crore/Rs.427.73 crore), Tamil Nadu (Rs.690.00 crore/Rs.205 crore), Gujarat (Rs.536 crore/Rs.268.11 crore), Karnataka (Rs.512.52 crore/ Rs. 99.18 crore) and West Bengal (Rs.487.79 crore/Rs.199.80 crore). The Committee have also noticed that a few States have faired well as well. These are Andhra Pradesh (Rs.308.54/Rs.308.54), Rajasthan (Rs.363.46 crore/Rs.344.26 crore), Madhya Pradesh (Rs.434.01/Rs.301.75 crore), Chhattisgarh (Rs.131.53 crore/Rs.93.99 crore), Jharkhand (Rs.122.68 crore/Rs.92.38 crore), Goa (Rs.9.29 crore/Rs.5.93 crore), Himachal Pradesh (Rs.15.22 crore/Rs.9.10 crore). The Committee also find that majority of North Eastern States have also faired well. On the issue of gap between Utilisation Certificates (UCs) vis-à-vis UCs received, the Committee are constrained to note the prominent States from where the due UCs have not been received are Andhra Pradesh, Bihar, Gujarat, Jharkhand and Rajasthan. Various reasons like failure on the part of States/UTs in not furnishing timely UCs as well as not furnishing physical and financial progress of funds released under Ist installment have been attributed as reasons for lower releases by Ministry of Housing and Urban Affairs. Besides, various procedural issues like compliance of conditions like preparation of bankable DPRs by ULBs for SWM in consultation with State Governments duly

approved by State High Powered Committees (HPCs) within the norms of MOH&UA etc have also been outlined for lower release of funds by MOH&UA. In view of the foregoing, the Committee feel that lessons may be learnt by the slow moving States including Delhi from good performing States of Andhra Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, Goa and Himachal Pradesh in Solid Waste Management so that actual workdone is visible at ground level. The Committee therefore recommend the MOH&UA that necessary interactive exercise be opened between good performing States and slow moving States expeditiously for getting the desired results. The Committee also recommend that concerned States from whom required UCs are pending be asked to submit the same expeditiously.

[Rec Sl. No.32]

<u>Initiating remedial steps for strengthening the finances of ULBs like reviewing the funding pattern, generating resources through interest free bonds by ULBs recommended</u>

The Committee's examination has revealed that inability of ULBs to arrange their two third share in SWM projects with one third available from Centre by reason of their poor financial position has been shown prominently before the Committee, with barely 5% funds available with ULBs for SWM purposes with as high as 60-70% funds deployed for street cleaning and remaining 20-30% funds deployed on transportation. In this connection, it has been apprehended before the Committee by Municipal Commissioner of South Delhi Municipal Corporation (SDMC) that financially poor Corporations might fail Swachh Bharat Mission (Urban) in the country. At the same time,

the Committee have also been informed by the MOH&UA that SWM projects are either completely or partially funded by Government of India and also by external agencies like JICA, ADB etc., or by private participation, user charges, Swawchh Bharat Kosh and also through tax free Municipal bonds etc. The Ministry has also suggested that funds for SWM can also be generated through pooled financing. The Committee feel that although these avenues/options are still open and available with ULBs, yet the ULBs still lack requisite finances to run SWM projects on their own. The Committee, therefore, recommend that the issue of reviewing the funding pattern be examined with ULBs in the light of options/avenues available for resource generation and also in the light of experience of good performing States enabling them to make SBM(U) a success in the country.

[Rec Sl. No.33]

<u>Inadequate mechanism available for implementation of e-Waste (Management) Rules, 2016 criticised and Government asked to enhance the available mechanism and speed up implementation</u>

The Committee are constrained to note that as per Ministry of Electronics and Information Technology, e-Waste creates global crisis due to environmental degradation and may affect human health, soil and even may contaminate ground water. E-Waste means wastes from electrical and electronic equipment whole or part or rejects in the form of Lead, Mercury, Cadmium, Chromium etc. from their manufacturing process that are intended to be discarded. In this connection, the Committee also notice that as per Central Pollution Control Board (CPCB), the level of e-Waste generation of 1.45 lakh tonnes in 2005 may go as high as 8.00 lakh tonnes by 2020,

whereas as per NITI Aayog, India happens to be one of the largest producer generating 18.5 lakh tonnes of hazardous waste and importing items yielding e-waste of 13.5 lakh tonnes annually which ends up in landfills/incinerators releasing cancer causing toxins. The Committee are dismayed to notice the media report, quoting UN Report, that out of 44.7 million tonnes of electronic waste in 2016 equivalent to some 45 Eifel Towers, India's contribution is as high as 2 million tonnes and despite e-waste (Management) Rules, 2016 as high as 80% of e-Wastes like old lap tops, cell phones, TV etc. continue to be broken at huge health and environmental cost by informal sector. The Committee note that the country is currently undergoing an exciting and unprecedented phase of development and economic transformation with heavy dependence on import of electronic goods to meet its domestic demand.

The Committee also find that since recycling of e-waste is difficult and complex in nature, the e-waste (Management and Handling) Rules, 2011 were notified which inter-alia provide for prohibiting and separating e-waste from entering into the Municipal Solid Waste stream, depositing domestic e-waste such as tube light, CFL lamps, computer hardware at nearest Material Recovery Facility (MRF), providing for Extended Producer Responsibility (EPR) etc. and so on. The Committee also find that unsatisfied with implementation of 2011 Rules the e-waste (Management) Rules, 2016 were notified which inter-alia included elaborate EPR, setting up of Producers Responsibility Organisations and e-waste exchange assigning specific responsibility to bulk consumers of electronic products for safe disposal,

making mandatory for every producer to apply before CPCB for EPR authorization, making the producers responsible for providing contact details to consumers and bulk consumers through their websites, spreading of awareness etc. The Committee also find that Ministry of Housing and Urban Affairs while outlining Physical and Chemical process of recycling of e-waste in details has also outlined that 178 authorised recyclers and dismantlers are currently working in India. In view of the above, the Committee feel that like Solid Waste Management, implementation of e-waste (Management) Rules, 2016 is far from satisfactory and whatever good intentions that are behind these rules, all these are only on paper, as common man as well as, the producer of e-waste and even the CPCB are not honest in implementation of these Rules. The Committee also feel that 178 authorised recyclers and dismantlers for the vast country like India are too less and need to be suitably enhanced to broaden the scope of recycling and dismantling of e-waste properly in the country.

[Rec Sl. No.34]

<u>In the light of good workdone in developed and developing countries especially of Europe, very less workdone on e-waste management and disposal in the country criticized and Government asked to make use of available provisions in e-waste (Management) Rules for desired level of work at ground level.</u>

The Committee are constrained to note that many developed countries like Japan, Netherland, some other countries of Europe and some developing countries also are far ahead in the area of e-waste management in the spheres of Extended Producers Responsibility (EPR) through Producers Responsibility Organisation (PROs), setting up mechanism for public

awareness etc., whereas the workdone in India is almost nil and whatever works on R&D for e-waste recycling that has been taken up by Ministry of Electronics and IT and Ministry of Environment and Forests and Climate Change is at Pilot stage only besides mechanism for public awareness is almost nil. The Committee are also constrained to note that in the name of providing necessary training on e-waste management, the Committee have been informed by the MOE&F&CC that a programme is designed to be implemented in 68 cities of the country in first phase in association with CPCB within the umbrella framework of Swachh Bharat Mission. The Committee feel that all these facts reveal that vitually no work is undertaken by different Ministries in the field of e-waste management which may cause havoc to environment, degrade soil and contaminate ground water also.

The Committee also note that e-waste (Management) Rules contains many good things like convergence of stakeholders including manufacturers, dealers, e-retailers etc. simplification in registration/authorization for dismantling under one system, withdrawing or recall of product from market in case of non-compliance, making State Governments responsible for ensuring safety, health and skill development of workers involved in dismantling and recycling operations, assigning the ULBs the duty to collect and channelize the orphan products to authorized dismantlers or receivers etc. The Committee however feel that their implementation is not visible at ground level and is only on paper. The Committee, therefore, recommend the MOE&F&CC and allied Ministries to pull up their socks and make use

available provisions under e-waste (Management) Rules, 2016 for treatment and disposal of e-waste in an effective and comprehensive manner.

[Rec Sl. No.35]

Inadequate treatment and disposal of bio-medical waste in the country criticized in view of rising level of bio-medical wastes and Government asked to open a mega Bio-Medical Waste treatment programme on the lines of Swachhta Sarvekshan, 2018

The Committee are also constrained to learn that like Solid Waste Management, e-Waste Management , the Management of Bio-Medical Waste is no better and is actually very pathetic in the country. In this context, the Committee find that as per NITI Aayog, India produces 551 tonnes of Bio-Medical Waste per day which may go upto 776 tonnes by 2022. In this context, the Ministry of Health and Family Welfare has also outlined two challenges before the Committee, one inadequacy of Common Bio-Medical Waste Treatment Facilities (CBMWTFs) and second difficulty in setting up of Efficient Treatment Plants (ETPs) by less than ten bedded facility, as required by Bio-Medical Waste Management Rules, 2016 in case the terminal sewage treatment is not available. With regard to Management of Medical Waste, the Committee find that the Bio-Medical Waste Management Rules, 2016 are applicable to all persons who generate, collect, release, store, transport, treat or dispose or handle bio-medial waste in any form including hospitals, nursing homes, clinics, dispensaries, pathology labs , blood Banks, ayush, medical camps, first aid rooms in schools, forensic labs, research labs and so on. These also inter alia provide for pre-treatment

of lab waste, stool sample and stool bags through on site disinfection or sterilization, providing training for health care works etc. With regard to implementation of Bio-Medical Waste Management Rules, 2016, the Committee are dismayed to note the findings of the Committee constituted by MOE&F&CC in January, 2017 as per direction of NGT to examine and inspect the Bio-Medical Waste generated and its treatment that visited prominent hospitals of Delhi viz., RML Hospital, Lady Harding Medical College and Hospitals, Palika Hospital, Charak Palika Hospital, Primus Hospital, Northern Railway Central Hospital and Lal Path Labs. The Committee are constrained to note that as per aforesaid Committee all these prominent Hospitals have been violating the prevailing law of the land. For instance, RML Hospital is discharging effluent in sewerage system of NDMC without proper treatment except giving hypochlorite treatment which is not adequate. Similarly, Lady Harding Medical College has also been discharging contractual effluent in sewerage. Likewise in Palika Maternity Hospital where Effluent Treatment Plants (ETPs) were installed but were found non-operational and in Charak Hospital untreated effluent was being discharged directly to the sewerage system. Similarly, in Primus Hospital storage rooms for storing red, yellow, blue and black bag were not properly ventilated as per Bio-Medical Waste Management Rule, 2016. In the case of Northern Railway Central Hospital and Lal Pathology Labs, there was a need for installation of ETP for providing collection system for effluents generated in these labs. In this connection, the need for setting up Toxic Substance Disposal Facility (TSDF) in Delhi was highlighted before the Committee by

MOE&F&CC. In the light of blatant violation of law of the land by prominent Hospitals of Delhi, the Committee feel that the over-all scenario of treatment and disposal of bio-medical waste may be even worst in small town clinics and pathology labs also with no visible sign of supervision and monitoring. Meanwhile the Committee have been informed by the MOH&UA that MOE&F&CC has constituted a Central Monitoring Committee under Chairmanship of Additional Secretary, Ministry of Health and Family Welfare including Members from Ministry of Health and Family Welfare, Central/State Health Secretarial, State Pollution Control Board to review the implementation of Bio-Medical Waste Management (BMWM) Rule, 2016.

The Committee, therefore, recommend that a full fledged campaign on the lines of Swachhata Sarvekshan, 2018 be drawn up in a time bound manner for Door to Door Collection, segregation, treatment and disposal of Bio-Medical Waste in the country with complete participation of public, hospitals, nursing homes, clinics, dispensaries, pathology labs, blood banks, medical camps, first aid room in schools, forensic labs, research labs in States/UTs for proper implementation of existing laws.

[Rec Sl. No.36]

<u>In view of challenging scenario of Hazardous Waste in the country, States/UTs have been asked to frame a roadmap by 2020 for proper treatment and disposal of hazardous waste in consultation and coordination with registered recyclers, Cement Plants industries etc.</u>

The Committee note that as per Ministry of Environment and Forest and Climate Change, hazardous waste means any waste which by reason of

characteristics such as physical, chemicals, biological, reactive toxic, flammable, explosive or corrosive causes danger or is likely to cause danger to health or environment whether alone or in contact with other wastes or substances. It basically comprises of waste generated during manufacturing process of commercial products such as industries involved in petroleum, refining, production of pharmaceuticals paint, electronic products like Lead, Acid Batteries, Waste tyres, paper wastes, have been categorized as hazardous wastes by MOE&F&CC whereas Ministry of Electronics and Information Technology has informed that with development of modern electronic gadgets such as Cell phone iPOD, Palm Top, Lap Top computers etc. also result in high use of different hazardous substances that are harmful for environment and human body. In this connection, the Committee are constrained to note that MOE&F&CC has also highlighted the issue of unscientific disposal of hazardous waste and have underlined the need for systematic management of hazardous and other waste in an environmentally sound manner by way of prevention, minimization, re-use, recycling, utilisation including co-processing and safe disposal of waste. In this connection, Committee find that as per CPCB the annual hazardous waste generation in 2018 was 7.46 million tonnes from 44,000 industries and for re-cycling and reuse, there are currently 1080 registered recyclers, 47 Cement Plants permitted for co-processing and about 108 industries permitted for utilization of hazardous waste. Besides, there are 40 Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs) available in 17 States/UTs. Besides, the hazardous waste can be disposed off

by setting up captive treatment plants. In this context, while perusing Hazardous and other Waste (Management and Transporting Movement) Rules, the Committee find that States/UTs have been given the responsibility for environmentally sound management of hazardous and other wastes like setting up of industrial space or sheds for recycling, pre-processing of hazardous waste, registering workers involved in recycling, pre-processing, undertaking skill development activities etc. In this connection, it came out during the course of evidence of the representatives of MOH&UA that some big cities such as Bengaluru has made sufficient storage/sorting facilities. The Committee apprehend that hazardous waste management may not be working well in different States/UTs. MOH&UA was also candid in their admission before the Committee that monitoring hazardous waste management is essential and the Ministry is encouraging States/UTs to adopt this approach. The Committee feel that since the State Governments/UTs Administration have been made respsonsible for environmentally sound management of hazardous waste and other wastes like setting up of industrial space or sheds for recycling, registering or workers involved in recycling for their skill development, the Committee recommend that State Governments/UTs Administration should sit together with 1080 registered recyclers, 47 Cement Plants permitted for co-processing and 108 industries permitted for utilization of hazardous waste and after understanding their views chart out a roadmap by 2020 for treatment and disposal of hazardous waste at States/UTs level itself by suitably enhancing the current level of 40 common Hazardous Waste

Treatment, Storage and Disposal Facilities (TSDFs) available in 17 States/UTs or by encouraging captive treatment plants in a big way.

[Rec Sl. No.37]

NEW DELHI;
11th February, 2019
22 Magha (Saka)1940

PINAKI MISRA
Chairperson,
Standing Committee on Urban Develoapment

*****

Annexure - IV

STANDING COMMITTEE ON URBAN DEVELOPMENT (2018-19)

MINUTES OF THE THIRD SITTING OF THE COMMITTEE HELD ON MONDAY, 11TH FEBRUARY, 2019

The Committee sat from 1700 hrs. to 1740 hrs. in Committee Room 'B', Ground Floor, Parliament House Annexe, New Delhi.

PRESENT

Shri Pinaki Misra - *Chairperson*

Members

Lok Sabha

2. Shri Kapil M. Patil
3. Shri Charanjeet Singh Rori
4. Shri Anil Shirole
5. Shri Parvesh Sahib Singh Verma
6. Prof. K.V. Thomas

Rajya Sabha

7. Dr. Anil Agrawal
8. Shri Husain Dalwai
9. Shri Ahmed Hassan
10. Shri K.C. Ramamurthy

Secretariat

1. Shri A.K. Shah - Director
2. Dr. Jagmohan Khatry - Under Secretary

2. At the outset, the Chairperson welcomed the Members to the sitting of the Committee convened for consideration and adoption of draft Report on the subject, 'Solid Waste Management including Hazardous waste, Medical waste and E-waste'. After deliberations, the Committee adopted the Draft Report with slight modifications and authorized the Chairperson to finalize the report taking into consideration the consequential changes arising out of factual verification, if any, by the concerned Ministries and also to present the same to both the Houses of Parliament.

2. The Committee also decided to undertake an on the spot Study to Mumbai and Hyderabad from 28th February to 2nd March, 2019.

The Committee then adjourned.

*****