30 p 24/4/2015 BIHAR

**BEFORE THE NATIONAL GREEN TRIBUNAL**

**PRINCIPAL BENCH NEW DELHI**

**ORIGINAL APPLICATION NO. 199 OF 2014**

**IN THE MATTER OF:**

Almitra H. Patel and another ... Petitioner

VERSUS

Union of India & Ors. ... Respondents

| S.No. | Particulars | Page No. |
|---|---|---|
| 1. | Affidavit on behalf of State of Bihar in Compliance of order of the Hon'ble Tribunal dated 25.3.2015 | |
| 2. | **ANNEXURE - A** A copy of the Modified Model Action Plan for Municipal solid Waste Management in the State of Bihar . | |
| 3. | **ANNEXURE - B** A true copy of letter no. 2185 dated 20.4.2015 | |
| 4. | **ANNEXURE - C** A true copy of letter no. 2186 dated 20.4.2015 | |

Rudreshwar Singh

(Rudreshwar Singh)
Advocate for the Respondent
C-47, South Extension Part – II, New Delhi-110049
Enrolment No. D/644/92
Mobile No. 9810025553
mail@rudreshwar.com

Filed on: 24.4.2015

**BEFORE THE NATIONAL GREEN TRIBUNAL**

**PRINCIPAL BENCH, NEW DELHI**

**ORIGINAL APPLICATION NO. 199 OF 2014**

**IN THE MATTER OF:**

ALMITRA H. PATEL AND ANOTHER ... APPLICANTS

VERSUS

UNION OF INDIA AND OTHERS ... RESPONDENTS

AFFIDAVIT IN COMPLIANCE OF ORDER DATED 25.3.2015.

I, Dr. Ajay Kumar Pandey, son of Shri Haridwar Pandey, aged about 55 years, resident of Village Baghakol, P.S. Ara Muffasil, District Bhojpur, Bihar at present at New Delhi, do hereby solemnly affirm and state as under:-

1. That I am presently posted as Deputy Secretary, Urban Development and Housing Department, Government of Bihar, Patna, and as such I am well aware of the facts and circumstances of the present matter. I further state that I am authorized and as such competent to swear this Affidavit.

NOTARY Name: R.K.BANSAL Area: New Delhi No. 10578/14 Expiry Date: 27/06/2019 GOVT. OF INDIA

2. That in Compliance of the Hon'ble National Green Tribunal order dated 25.03.2015 whereby Model Action Plan of the State of Haryana was accepted and all the concerned states were directed to include the elements/components of already approved Model Action

Plan of the State of Haryana. Urban Development & Housing Department, Government of Bihar has also prepared and submitted Model Action Plan for Municipal Solid Waste Management on the lines of elements/components included in the previous approved Model Action Plan prepared by Government of Punjab in Appeal No. 70 of 2012, Captain Mall Singh & others Vs Punjab PCB & others to be implemented in all 139 Urban Local Bodies of Bihar on the last date of hearing of the case.

3. It is respectfully submitted that keeping the elements/components of approved Model Action Plan of the state of Haryana vide order dated 25.03.2015 and the elements of Judgment in Original Application No. 40(THc) of 2013 in mind, the Urban Development & Housing Department, Government of Bihar has also modified its action plan for implementation of Municipal Solid Waste Management in the State after incorporating the incineration of un-recyclable material left after composting or RDF production or after waste to energy in order to reduce the waste for disposal as suggested and recommended by the State of Haryana model and accepted by the Hon'ble National Green Tribunal. True Copy of modified Model Action Plan for Municipal Solid Waste Management in the State of Bihar is annexed herewith as **ANNEXURE-' A' .**

4. It is respectfully submitted that that the State of Bihar has also directed all the ULBs to make all efforts for the

NOTARY
Name: R.P. BANSAL
Area: New Delhi
No. 10678/14
Expiry Date: 27/06/2019
GOVT. OF INDIA

use of thermo plastic materials in place of multi layer plastic in their respective jurisdiction as per the order of the Hon'ble National Green Tribunal. A true copy of letter No. 2185 dated 20.4.2015 is annexed herewith and marked as **ANNEXURE -B**

3. That the State of Bihar has already submitted modified Model Action Plan to the concerned State Pollution Control Board in compliance to the Hon'ble National Green Tribunal order. A true copy of letter No. 2186 dated 20.4.2015 is annexed herewith and marked as **ANNEXURE -C**

Ajay Kr. Pandey.
DEPONENT

**VERIFICATION**

NOTARY R.P. BANSAL OF INDIA 23 APR 2015

IDENTIFIED BY

Verified at New Delhi on this the 23rd day of April, 2015 that the averments made in the present affidavit are true and correct to my knowledge on the basis of information derived from the records of the matter and nothing material has been concealed therefrom.

NOTARY Name: R.P. BANSAL Area: New Delhi No. 10678/14 Expiry Date: 27/06/2019 GOVT. OF INDIA

ATTESTED
Notary Public, Delhi
Govt. of India
Regd. No. - 10678/14
23 APR 2015

Ajay Kr. Pandey.
DEPONENT

Annexure-'A'

4

# ACTION PLAN FOR IMPLEMENTATION OF MUNICIPAL SOLID WASTE MANAGEMENT IN THE STATE OF BIHAR

## 1. Background:

The Govt. of India had formulated the **Municipal Solid Waste (Management & Handling) Rules, 2000** and issued notification on dated 25th September, 2000. This policy provides an overall framework for all towns and cities to effectively manage the municipal solid waste generated by the households, shops, commercial establishments, nursing homes & hospitals, institutions, hotels & restaurants and marriage halls etc. situated in the city.

Solid waste management is one of the prime and critical municipal services. Municipalities are grappling with the need to provide quality services in the face of inadequate staff and machinery and the lack of knowledge and skills to manage the wastes collected.

Lack of technical knowledge, lack of public awareness and lack of operating manpower in urban local bodies (ULBs), the provisions of MSW Rules, 2000 could not be implemented by the ULBs in the state. Therefore, involvement of the private sector in service provision has long been considered an option. Various means of private sector participation and private public participation have been attempted with varying impacts. In the face of the service delivery constraints that municipalities are facing, systematic involvement of the private sector definitely needs to be implemented.

The National Green Tribunal (NGT) in its decision in the appeal No. 70 of 2012 Capt. Mall Singh & Ors. Vs. Punjab PCB & Ors. has approved the model action plan prepared by the Government of Punjab and directed to prepare Model Action Plan on similar lines. The National Green Tribunal (NGT) in its decision in the appeal No. 199 of 2014 Almitra H. Patel & Anr. Vs. Union of India & Ors. has also approved the model action plan prepared by the State of Haryana which is not much different than the model action plan of State of Punjab except that in the state of Haryana the un-recyclable material left after composting or RDF production or after waste to energy are proposed to be incinerated to reduce the waste for disposal. The Urban Development & housing Department, Government of Bihar has also prepared an Action Plan for Municipal Solid Waste Management on the similar lines of State of Punjab which has been further modified to be implemented in all 139 Urban Local Bodies of Bihar. The National Action Plan prepared by CPCB and uploaded on their website has also been considered while preparing the State Action Plan. The State Action Plan is described in detail as hereunder:

## 2. Status:

There are 139 Statutory Towns in Bihar, which generate 3703 tons of MSW every day. The Urban Development & Housing Department has divided these 139 statutory towns into 23 clusters comprising of 3 to 10 towns in each cluster and have identified 23 Regional Landfill sites for disposal of Municipal Waste after its segregation & processing. The distance of any of the town in the cluster is not more than 50 Km from the center of the identified Regional Landfill site except 4 towns which are within 60 Km from center of identified Regional Landfill sites.

It is stated that there is not even a single town in the state of Bihar where the MSW is collected in its entirety, segregated and disposed of in accordance with MSW Rules, 2000. It is also stated that in any town of the state, the MSW is not being converted to an environment friendly beneficial end product, i.e. whether it is totally converted into the useable material/component or composted or recycled. Segregation at source i.e. at individual household level is not practiced in any town of the state.

The status of Municipal Solid Waste Management System in each cluster of towns is as described herein:

**Cluster – 1 towns:** There are 7 towns (Ara, Naubatpur, Bihiya, Koilwar, Maner, Bihita & Bikram) included in the cluster. Ara is the major town having population of 2,61,430 as per census 2011 which generates about 90-100 MT per day municipal waste. The waste generation from other 6 towns is only about 40% of the waste generated from Ara Municipal Corporation. The DPR for Integrated Solid Waste Management was approved by Govt. of India under UIDSSMT in the year 2009 and the funds were released by the Govt. of India. The equipment were purchased and handed over to the outsourced agency M/s Ramky Enviro Engineers Ltd. for door to door collection of waste and transportation of waste to the designated dumping site. The services have been stopped by the agency since last one year and the collection & transportation of waste is being done by the Municipal workers. Other 6 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

The Municipal Corporation, Ara had tried to hire services of agency for processing and disposal of waste by inviting bids through State Government agency BUIDCo but could not be successful due to non-receipt of technically qualified bids. The available land 30 Ha. Owned by Ara Municipal Corporation will be adequate for disposal of rejects for more than 30 years.

**Cluster – 2 towns:** There are 10 towns (Sasaram, Aurangabad, Dehri, Bhabhua, Bikramganj, Nokha, Nasriganj, Piro, Daudnagar & Nabinagar) included in the cluster. Sasaram is the largest town having population of 1,47,408 as per census 2011 which generates about 40-50 MT per day municipal waste. There are two other class-1 towns i.e. Dehri & Aurangabad which jointly generate 70-75 MT per day Municipal Waste. The total waste generation from all 10 towns is about 180-190 MT per day. Some equipmenta have been purchased by Saasram, Dehri and Aurangabad Nagar Parishads for door to door collection of waste and transportation of waste to the designated dumping sites. Aurangabad has outsourced service of door to door collection and transportation of waste from few wards. Other 9 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

Except Dehri Nagar Parishad which has 2.82 Hectare land in their possession, no other ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 200 hectare barren near Rajpur Village in Rohtas District for installation of common treatment & disposal facility for 10 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 3 towns:** There are 7 towns (Gaya, Sherghati, Bodhgaya, Rafiganj, Hisua, Rajaouli & Nawada) included in the cluster. Gaya is the major town having population of 4,74,093 as per census 2011 which generates about 160-175 MT per day municipal waste. Nawada is

another class-I town which generates about 30 MT per day municipal waste. The waste generation from other 5 towns is only about 40-50 MT per day. The Gaya Municipal Corporation awarded work of collection & transportation of municipal waste from 17 wards to an agency M/s Ramky Enviro Engineers Ltd. in 2010. The agency provided services to the Gaya Municipal Corporation for 3 years but discontinued the services due to paucity of funds with GMC. Presently, Gaya Municipal Corporation is doing work of collection and transportation of waste through existing municipal workers. The waste is being dumped at dumping site near village Neyali which under passion of Gaya Municipal Corporation. Bodhgaya has also outsourced the services of door to door collection & transportation of waste to a local agency who is also collecting user charges from the waste generators. The waste of Bodhgaya Nagar Panchayat is also dumped at dumping site near village Neyali. Other 5 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

Except Gaya Nagar Nigam, no other ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 20 hectare barren near Burhi Village in Gaya District for installation of common treatment & disposal facility for 7 towns under the Cluster. The identified land will be adequate for disposal of rejects for 25 years.

**Cluster – 4 towns:** There are 9 towns (Biharshariff, Khusroorpur, Bakhtiyarpur, Hilsa, Barbigha, Earsaliganj, Silao, Rajgir & Islampur) included in the cluster. Biharshariff is the major town having population of 2,97,268 as per census 2011 which generates about 100-110 MT per day municipal waste. The waste generation from other 8 towns is about 70% of the waste generated by Biharshariff alone. The Biharshariff Municipal Corporation awarded work of collection & transportation of municipal waste in some wards to an agency M/s A2Z Ltd. in 2012. The agency provided services to the Biharshariff Municipal Corporation for only one year but discontinued the services due to paucity of funds with BMC. Presently, Biharshariff Municipal Corporation is doing work of collection and transportation of waste through existing municipal workers. Although, the Municipal Corporation has identified a small piece of land 2.5 Acre for setting up a compost plant, presently the waste is being dumped at non designated low lying area. Other 8 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 15 hectare private land used for growing crops in only one season near Bharkiyat Village in Nalanda District for installation of common treatment & disposal facility for 9 towns under the Cluster. The identified land will be adequate for disposal of rejects for 20 years.

**Cluster – 5 towns:** There are 5 towns (Chhapra, Dighwara, Marhaura, Revelganj and Sonepur) included in the cluster. Chhapra is the major town having population of 2,02,352 as per census 2011 which generates about 60-70 MT per day municipal waste. The waste generation from other 4 towns is about 50% of the waste generated from Chhapra Municipal Corporation alone. The Chhapra Nagar Parishad has purchased some essential equipment for door to door collection of waste and transportation of waste. All 5 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 40 hectare grazing land near Mahananda Village in Chhapra District for installation of common treatment & disposal facility for 5 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 6 towns:** There are 5 towns (Buxar, Dumraon, Koath, Jagdishpur and Shahpur) included in the cluster. Buxar is the major town having population of 1,02,861 as per census 2011 which generates about 30-40 MT per day municipal waste. The waste generation from other 4 towns is almost equal to the waste generated from Buxar Municipal Corporation alone. All 5 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 50 hectare grazing land near Kothiya Village in Buxar District for installation of common treatment & disposal facility for 5 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 7 towns:** There are 6 towns (Motihari, Bettiah, Sugauli, Areraj, Chanpatia and Raxaul) included in the cluster. Motihari & Bettiah are two major towns having population of 1,26,158 & 1,32,209 respectively as per census 2011. These towns generate each about 35-40 MT per day municipal waste. The waste generation from other 4 towns is 40 MT per day i.e. equal to waste generated by one of the two major towns. Motihari Nagar Parishad has entrusted work of door to door collection of waste to a local NGO from few wards. All other ULBs are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 60 hectare barren land near Dughbalia Village in West Champaran District for installation of common treatment & disposal facility for 6 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 8 towns:** There are 6 towns (Mujaffarpur, Hajipur, Motipur, Kanti, Lalganj & Mahnar) included in the cluster. Mujaffarpur is the major town having population of 3,54,462 as per census 2011 which generates about 120 to 130 MT per day municipal waste. Hajipur is another class-I town which generates about 45 MT per day municipal waste. The waste generation from other 4 towns is only about 35 MT per day. The Mujaffarpur Municipal Corporation awarded work of collection & transportation of municipal waste from 12 wards to an NGO "NIDAN" in 2010. The NGO provided services to the Mujaffarpur Municipal Corporation for 3 years but discontinued the services due to paucity of funds with MMC. Presently, Mujaffarpur Municipal Corporation is doing work of collection and transportation of waste through existing municipal workers. The waste is being dumped at dumping site identified by the ULB. Hajipur Nagar Parishad is in the process of procurement of SWM equipments for collection & transportation waste. Other 5 towns are doing

collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 35 hectare private land used to grow crop in one season only near Sondho Village in Vaishali District for installation of common treatment & disposal facility for 6 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 9 towns:** There are 8 towns (Begusarai, Gogri Jamalpur, Bakhri, Teghra, Balia, Khagaria, Barauni and Bihat) included in the cluster. Begusarai is the major town having population of 2,52,008 as per census 2011 which generates about 85-90 MT per day municipal waste. The waste generation from other 7 towns is about 100 MT per day. The Begusarai Nagar Parishad and Khagaria Nagar Parishad have initiated the process for procurement of equipments for door to door collection of waste and transportation of waste. All 8 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 30 hectare private land used to grow crop in one season near Belsardih Village in Begusarai District for installation of common treatment & disposal facility for 8 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 10 towns:** There are 8 towns (Darbhanga, Jhanjharpur, Dalsinghsarai, Rossera, Madhubani, Samastipur, Benipur & Jaynagar) included in the cluster. Darbhanga is the major town having population of 2,96,093 as per census 2011 which generates about 100-110 MT per day municipal waste. The waste generation from other 7 towns is about 90-100 MT per day. The Darbhanga Municipal Corporation awarded work of collection & transportation of municipal waste in some wards to an agency M/s A2Z Ltd. in 2012. The agency provided services to the Darbhanga Municipal Corporation for only one year but discontinued the services due to paucity of funds with DMC. Presently, Darbhanga Municipal Corporation is doing work of collection and transportation of waste through existing municipal workers. Darbhanga Municipal Corporation is in the process of purchase of an identified private land of appx. 10 Acre area for setting up a compost plant. Presently, the waste is being dumped at non designated low lying area. Other 7 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the 7 ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 70 hectare barren land near Hayghat Village in Darbhanga District for installation of common treatment & disposal facility for 8 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 11 towns:** There are only 3 towns (Kishanganj, Bahadurganj & Thakurganj) included in the cluster as no other town is located within 50 Km from the identified/existing site. Kishanganj is the major town having population of 1,05,782 as per census 2011 which generates about 30-35 MT per day municipal waste. The waste generation from other 2

towns is only 30% of total waste generated from all 3 towns. Kishanganj Nagar Parishad has entrusted work of door to door collection of waste to a local NGO from few wards. All other 2 ULBs are doing collection and transportation of waste through municipal workers but not in an organized manner.

The Kishanganj Nagar Parishad has its own land of appx. 7 hectare area which can be used for installation of processing plant and disposal of waste. The Nagar Parishad Kishanganj is dumping its waste on this site without treatment & in a non-scientific way. As the other two small towns have no land for waste processing and disposal, the Executive officer, Kishanganj Nagar Parishad who will be the chairperson of Landfill Management Committee has been asked to accept the waste of these two towns. The two towns will contribute the cost of processing and landfill on pro-rata basis. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 12 towns:** There are 6 towns (Purnea, Katihar, Araria, Manihari, Kasba & Banmakhi) included in the cluster. Purnea & Katihar are two major towns having population of 2,82,248 and 2,40,838 respectively as per census 2011 which generates about 80-100 MT per day municipal waste. The waste generation from other 4 towns is only 20% of total waste generated from all 6 towns. Katihar Nagar Nigam has entrusted work of door to door collection of waste to a local NGO from few wards. Purnea Nagar Nigam is doing the work of door to door collection of waste through existing sanitation workers. All other 4 ULBs are also doing collection and transportation of waste through municipal workers but not in an organized manner.

The Purnea Nagar Nigam owns a land of appx. 20 hectare area which can be used for installation of processing plant and disposal of waste. The Katihar Nagar Nigam has no land with them for processing & disposal of waste. Other 4 towns also do not have land for processing & disposal of their waste. Although, Purnea Nagar Nigam may hesitate to accept the waste of other 5 ULBs, the PMC has been requested to accept the waste of other 5 ULBs on cost sharing basis. Installation, Commissioning & Management of Common processing and disposal facility has not yet been discussed with the ULBs. The available land will be adequate for disposal of rejects for more than 25 years.

**Cluster – 13 towns:** There are 6 towns (Munger, Sultanganj, Haveli Kharagpur, Jamalpur, Jamui and Jhajha) included in the cluster. Munger is the major town having population of 2,13,303 as per census 2011 which generates about 70-80 MT per day municipal waste. Jamalpur is also a Class-I city included in the cluster having population of 1,05,434 as per 2011 census and generating 30-35 MT per day waste. The waste generation from other 4 towns is about 35% of total waste generated from all 6 towns of the cluster. All 6 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 25 hectare waste land with patches of agriculture land near Locha Bind Toli Village in Munger District for installation of common treatment & disposal facility for 6 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 14 towns:** There are 5 towns (Bhagipur, Naugachhia, Kahalgaon, Banka & Amarpur) included in the cluster. Bhagalpur is the major town having population of 4,00,146

as per census 2011 which generates about 140 MT per day municipal waste. The waste generation from other 4 towns is only 25% of the waste generated by Bhagalpur alone. The Bhagalpur Municipal Corporation awarded work of collection & transportation of municipal waste from few wards to an agency M/s Ramky Enviro Engineers Ltd. in 2010. The agency provided services to the Bhagalpur Municipal Corporation for 3 years but discontinued the services due to paucity of funds with BMC. Presently, Bhagalpur Municipal Corporation is doing work of collection and transportation of waste through existing municipal workers but dumping the waste in unidentified low lying area. Other 4 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified a large chunk of land appx. 200 hectare near village Agarpur in District Bhagalpur, part of which may be Government land. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 15 towns:** There are 7 towns (Patna, Khagaul, Phulwarishariff, Danapur Nizamat, Danapur Cantt, Fatuha & Masaudhi) included in the cluster. Patna is largest town and capital city of Bihar having population of 16.84,297 as per census 2011 which generates about 750-800 MT per day municipal waste. Danapur is also a class-I city having population of 1,82,429 as per 2011 census. Khagaul, Phulwarishariff & Danapur are Urban Agglomerate towns of Patna city. The total waste generation from towns other than Patna is only 20% of the total waste generated from 7 towns. The Patna Municipal Corporation awarded work of collection & transportation of municipal waste in some wards of Patna to an agency M/s A2Z Ltd. in 2010. The agency provided services to the Patna Municipal Corporation for only one year but discontinued the services due to paucity of funds with PMC. Phulwarishariff, Khagaul & Danapur ULBs also awarded work of collection & transportation of waste to an agency M/s ramky Enviro Engineers Ltd. in year 2012 but discontinued the services due to paucity of funds with the ULBs. Presently, Patna Municipal Corporation and Khagaul, Phulwarishariff and Danapur Nagar Parishad are doing work of collection and transportation of waste through existing municipal workers. The waste is being dumped at identified land fill site near Bairiya chak village on Gaya Road, Patna. Other 2 ULBs are doing collection and transportation of waste through municipal workers but not in an organized manner.

Patna Municipal Corporation owns a land of 75 Acre area near Bairiya Chak village on Gaya Road, Patna where a Waste to Energy plant will be set up and scientific landfill will be developed. Concessionaire has been appointed by BUIDCO (a subsidiary of Govt. of Bihar) who will start the work of installation of W2E plant very soon. The available land will be adequate for disposal of rejects for 15 years. In the meantime alternate land for disposal of rejects will be identified.

**Cluster – 16 towns:** There are only 4 towns (Jehnabad, Tekari, Makhdumpur and Arwal) included in the cluster. Jehanabad is the only major town having population of 1,03,202 as per census 2011 which generates about 30-35 MT per day municipal waste. The total waste generation from other 3 towns is almost equal to that of Jehanabad alone. All 4 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support

Program for Urban Reforms has identified appx. 100 hectare barren land with patches of agriculture land near Dharawat Village in Jehanabad District for installation of common treatment & disposal facility for 4 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 17 towns:** There are 8 towns (Sitamarhi, Bairgania, Belsand, Dumra, Janakpur Road, Shivhar, Dhaka and Madhuban) included in the cluster. Sitamarhi is the largest of these towns having population of 1,03,202 as per census 2011 which generates about 20-25 MT per day municipal waste. The total waste generation from all 8 towns is 65-70 MT per day. All 8 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 25 hectare waste land with patches of agriculture land near Hira Kanhauli Village in Sitamarhi District for installation of common treatment & disposal facility for 8 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 18 towns:** There are 6 towns (Saharsa, Supaul, Murliganj, Ghoghardiha, Narmali and Madhepura) included in the cluster. Saharsa is the largest of these towns having population of 1,56,540 as per census 2011 which generates about 45-50 MT per day municipal waste. The total waste generation from all 6 towns is about 100 MT per day. All 6 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 20 hectare private land used for growing crop in one season near Ghailarh Village in Saharsa District for installation of common treatment & disposal facility for 6 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 19 towns:** There are only 3 towns (Bagha, Ramnagar and Narkatiaganj) included in the cluster. Bagha is the largest of these towns having population of 1,12,634 as per census 2011 which generates about 35-40 MT per day municipal waste. The total waste generation from all 3 towns is about 60 MT per day. All 3 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 18 hectare waste land near Bishunpurwa Village in Pashchim Champaran District for installation of common treatment & disposal facility for 3 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 20 towns:** There are 5 towns (Chakia, Mehsi, Pakridayal, Kesaria and Sahibganj) included in the cluster of which none is the class-I town. However, Pakridayal is the largest town having population of 29,582 as per census 2011 which generates about 7-8 MT per day municipal waste. The total waste generation from all 5 towns is about 30 MT per day. All 5

towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 20 hectare waste land near Kesaria town in East Champaran District for installation of common treatment & disposal facility for 5 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 21 towns:** There are 7 towns (Siwan, Kataiya, Mairwa, Mirganj, Maharajganj, Gopalganj and Barauli) included in the cluster. Siwan is the major town having population of 1,35,066 as per census 2011 which generates about 40-45 MT per day municipal waste. Total generated by other 6 towns is about 55 MT per day. All 7 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 20 hectare private land growing crops in one season near Phulwaria town in Siwan District for installation of common treatment & disposal facility for 7 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 22 towns:** There are only 3 towns (Jogbani, Birpur and Forbesganj) included in the cluster of which none is the class-I town. However, Forbesganj is the largest town having population of 50,475 as per census 2011 which generates about 15 MT per day municipal waste. The total waste generation from all 3 towns is about 30 MT per day. Forbesganj ahs purchased required equipments for collection & transportation of waste. However, all 3 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 20 hectare waste land near Mirganj town in Gopalganj District for installation of common treatment & disposal facility for 3 towns under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

**Cluster – 23 towns:** There are 5 towns (Mokamah, Barahiya, Barh, Lakhisarai and Shekhpura) included in the cluster of which none is the class-I town. However, Lakhisarai is the largest town having population of 99,979 as per census 2011 which generates about 30 MT per day municipal waste. The total waste generation from all 5 towns is about 100 MT per day. Lakhisarai ULB is in the process of purchasing required equipments for collection & transportation of waste. Presently, all 5 towns are doing collection and transportation of waste through municipal workers but not in an organized manner.

None of the ULBs have land for installation of processing plant and landfill site. Therefore, the State Urban Development Department with the help of technical team of Support Program for Urban Reforms has identified appx. 15 hectare private land near Barahiya town in Lakhisarai District for installation of common treatment & disposal facility for 3 towns

under the Cluster. The identified land will be adequate for disposal of rejects for more than 30 years.

The state government is getting prepared Detailed Project Reports of Integrated Solid Waste Management for 35 statutory towns of Bihar. The status and estimated cost of projects is mentioned in Annexure-B. 17 of these 35 DPRs will be submitted to National Ganga River Basin Authority for approval & funding whereas 10 DPRs are proposed to be submitted to KfW seeking funds.

## 3. Management Principles

The municipal solid waste management system should be based on the following important principles:-

- Effective segregation,
- Collection & Storage
- Transportation
- Maximum resources recovery
- Effective treatment and
- Safe disposal

## 4. Segregation at Source (at each Household level)

If the municipal waste is segregated at the source of generation, it will make the Solid Waste management System easy and effective. Therefore, segregation at source will be encouraged through massive public awareness. The households, shopkeepers and other commercial establishments will be asked to store domestic wastes in two bins 10-15 liter capacity. Kitchen Waste which is biodegradable in nature shall be stored in a separate bin and recyclable material such as paper, plastic, glass, metals, rubber, clothes etc. shall be stored in another bin.

## 5. Collection (at each city level)

- Urban local bodies (ULBs) should provide service of daily door to door collection of waste to all households, shops and commercial establishments at a pre-informed fix time.
- This service will be regular and reliable
- Recyclable material can be collected at longer regular intervals as may be convenient to the waste producer and the waste collector, as this waste does not normally decay and need not be collected daily.
- Domestic hazardous waste is produced occasionally. Such waste need not be collected from the doorstep. People could be advised or directed to deposit such waste in special bins in the city for disposal.
- Collection of waste can be done by:

  (i) Municipal workers themselves.

(ii) Contracting the collection of wastes to a competent organization or to a private agency or to an NGO.

(iii) Privatizing through rag pickers and kabaris or Self Help Groups working in this field (wherever available).

- Procedure of collection:
  The entire city should be divided into zones and each zone should cover number of wards such that the population covered in each zone is between 50,000 to 1,00,000. In smaller towns, these criteria may be relaxed to cover population of 10,000 to 20,000 in each zone. There will be at least two zones in every town so that the work of one zone is awarded to one agency (if the services are to be outsourced to private agency). Each of the ward should be manned with adequate number of sanitary workers with adequate required facilities such as hand cart/ tricycle/ motorized vehicle, whistle, uniform, hand gloves, mask etc.
  The hand cart/ tricycle should be equipped with 6 to 8 bins of about 25-30 liter capacity bins with handle. Hand cart/ tricycle will be used for collection of waste from congested narrow lanes or slums whereas motorized vehicles will be used to collect waste from area located on wider roads/main roads. The motorized vehicle should be having two compartments, one for recyclable material (0.5 cum capacity) and another for biodegradable material (1.3 to 1.5 cum capacity) with hydraulic tipping arrangement.
  Each of the sanitary workers should be made responsible for 200-250 households if collection is done by handcart/ tricycle and 1500-2000 households if collection is done by motorized vehicle. One driver and one sanitary worker is required for each motorized vehicle.
  These workers should go to the houses on pre-determined fixed time to collect the waste. They should blow the whistle or vehicle horn with specified sound.
- The sanitary workers after collection of the waste from households will also collect the waste from each shop and commercial establishments at a pre-intimated fixed time on every day (10:00 AM to 12:00 Noon). They will also transfer the waste in to hand cart/ tricycle/ motorized vehicle from litter bins placed on footpath in the commercial area.
- Community bins of 1.1 cum capacity should be installed in the area where door to door collection is possible and residents should be made aware of putting their wastes into the bins in segregated manner as specified.

## 6. Regulatory measures (at each city level)

### 6.1 Residents

Following should be regulated by stringent law and vigilance monitoring for all the waste generators including households, restaurant, hotels, shops, offices, institutions, workshops:

- They shall not throw any solid waste in their neighbourhood, on the street, open spaces, and vacant plots or into drains.

- They shall (a) keep the food waste / bio-degradable waste in a domestic waste container (10-15 liter capacity), preferably with a cover, and (b) keep dry / recyclables wastes in other container or in bags or sacks.
- Wet wastes should not be disposed of in plastic carry bags.
- Keep domestic hazardous waste such as battery, sharp edged material, electronic wastes etc. separately, for disposal at the place designated by the ULB.
- A private society, association of flats/multi-storied buildings etc. shall provide a community bin compatible with the lifting vehicle of Urban Local Body/ Service Provider and large enough (1.1 cum capacity) to hold the waste generated by the members of their society/association for storage of wet domestic wastes and instruct all residents to deposit their domestic waste in this community bin to facilitate collection of such waste by the local body from the designated spot.
- In case of multi storied buildings where it may be difficult for the waste collector to collect recyclable waste from the doorstep, the association of such buildings may optionally keep one more community bin for storage of recyclable material.
- In slums, where because of lack of access or due to narrow lanes, it is not found convenient to introduce house-to-house collection system, community bins of suitable sizes should be placed at suitable locations by the local body to facilitate the storage of waste generated by them. They may be directed to put their waste into community bins before the hour of clearance each day.

**6.2 Shopkeepers in Commercial Area**

- The shopkeepers should be directed to store the waste in a small container until the sanitary worker comes and collect the waste from them. The shopkeepers should be directed not to throw the waste on in the street/ on road.

**6.3 Pedestrian**

- The pedestrian should be asked not to litter the waste on the roads & streets. They should put the rejects/ waste in the litter bins placed on the footpath or on the road side in the commercial area/ markets.

**6.4 Vegetable/Fruit Markets Waste**

- These markets produce large volumes of solid waste and local bodies should direct the association of the market to provide large size containers compatible with the transportation system of the local body or depending on the size of the market, local body itself may provide large size containers with lid or skips for storage of market waste at suitable locations within markets on full cost/partial cost recovery from the market association.
- Shopkeepers should be directed that they shall not dispose of waste in front of their shops/establishments or anywhere on the streets or in open spaces and instead shall deposit their waste as and when generated into the large size container that may be provided for storage of waste in the market.
- Such wastes should be removed on a daily basis either departmentally or through contractors on full or part-cost-recovery basis as may be deemed appropriate by local bodies.
- Large containers kept in the fruit and vegetable markets should be removed during night time or non-peak hours and the waste from meat and fish markets should be

collected through closed pick-up vans service by engaging a contractor, or departmentally as deemed expedient by the local body.

**6.5 Marriage Halls/Banquet Halls/Community Halls**

- A lot of waste is generated when marriage or social functions are performed at these places and unhygienic conditions are created. Suitable containers with lids which may match with the primary collection or transportation system of local bodies should be provided by these establishments at their cost and the sites of their placement should be finalized in consultation with urban local bodies to facilitate easy collection of waste. On-site bio-digesters for food waste should be encouraged.
- The special arrangement should be made for collection of waste from marriage halls, Banquet Halls, community halls, etc. daily on a full-cost recovery basis. The cost of such collection could be built into the charges for utilizing such halls. This service may be provided preferably through a contractor or departmentally as the local bodies deem fit. On-site, processing of food wastes by bio-methanation followed by power generation or composting may be encouraged.

**6.6 Hospitals/Nursing Homes/Pathological Laboratories/Health Care Centres**

These establishments produce bio-medical waste as well as general municipal waste. They should be directed that:

- They shall refrain from throwing any bio-medical waste on the streets or open spaces, as well as into municipal dust bins or domestic waste collection sites.
- They shall also refrain from throwing general municipal solid waste on footpaths, streets or open spaces. They should handover general municipal waste to the sanitary workers or should store the waste in a large size container compatible with the transportation system of ULB.
- They are required to store waste in colour-coded bins or bags as per the directions of the Govt. of India, Ministry of Environment Bio-Medical Waste Management & Handling Rules, 1998 and follow the directions of Central Pollution Control Boards and State Pollution Control Boards from time to time for the handling, transportation, treatment and disposal of biomedical waste.

**6.7 Construction & Demolition Wastes**

Directions should be given that:

- No person shall dispose of construction waste or debris on the streets, public spaces, footpaths or pavements.
- Till finally removed, construction waste shall be stored only within the premises of buildings, or in containers where such facility of renting out containers is available. In exceptional cases where storage of construction waste within the premises is not possible, such waste producers shall take prior permission of the local authority or the State Government as may be applicable for temporary storage of such waste and having obtained and paid for such permission, may store such waste in such a way that it does not hamper the traffic, the waste does not get spread on the road and does not block surface drains or storm water drains.
- To facilitate the collection of small quantities of construction and demolition waste generated in a city, suitable sites may be identified in various parts of the city and people notified to deposit small quantities of construction and demolition waste.

Containers could be provided at such locations and small collection charge levied for receiving such waste at such sites and for its onward transportation. Rates may be prescribed for such collection by local bodies. Contracts could also be given for managing such sites.

- Local bodies should prescribe the rate per tonne for the collection, transportation and disposal of construction waste and debris and notify the same to the people.
- Every person who is likely to produce construction waste may be required to deposit with the concerned local body an approximate amount in advance at the rates as may be prescribed by the local body from time to time, for the removal and disposal of construction waste from his premises by the local body. Such amount may be deposited at the time when the building permission is being sought and in cases where such permission is not required, at any time before such waste is produced.
- The charges for removal of construction waste to be doubled for those who fail to deposit the amount in advance.
- Large local bodies may provide skips (large containers) to the waste producers on rent for the storage of construction waste so that double handling of the waste can be avoided or use front end loader & trucks to pick up such waste. In small towns this may be done manually using trucks, tractors and manpower.

**6.8 Garden Waste**

- Private gardens should as far as possible convert plant & leaves waste in to compost and re-use on-site. Where it is not possible to dispose of garden waste within the premises and the waste is required to be disposed of outside the premises, it shall be stored in large bags or bins on-site and transferred into a municipal system weekly on a payment basis. The generation of such waste should as far as practicable be regulated in such a way that it is generated only a day prior to the date of collection of such waste. It should be stored in the premises and kept ready for handing over to the municipal authorities or the agency that may be assigned the work of collection of such waste.
- Garden waste and fallen leaves from avenue trees within large public parks and gardens should be composted to the extent possible. However, if such waste has to be disposed of, large skips may be kept, which match with the municipal transportation system for transportation of such waste. Such skips may be provided by local bodies or State Governments owning such parks and gardens. In case of private parks and gardens they should make their own storage arrangement which matches with the municipal primary collection and transportation system.
- The waste stored in public and private parks, gardens, lawn plots etc. should be collected on a weekly basis by arranging a rotation for collecting such waste from different areas, on different days to be notified to the people to enable them to trim the trees and lawns accordingly and keep the waste ready. This waste may be got collected through a contractor or departmentally as deemed appropriate by the urban local authorities. Cost recovery may be insisted upon, based on the volume of waste collected.

**6.9 Dairy and Cattle-Shed Waste**

- The dairies and cattle breeders having sheds within the city limits should be asked to move the cattle sheds outside the city limits and until this is implemented they should be directed not to stack the cow dung, grass or other stable wastes within their premises or on the roadside. They must transfer the waste produced by them daily into the specified municipal storage containers nearby, which should be collected at regular intervals by local bodies for which they should pay based on quantity.

7. **provision of litterbins on streets and public places (at each city level)**

- With a view to ensure that streets and public places are not littered with wasted materials such as used cans, cartons of soft drinks, used bus tickets, wrappers of chocolates on empty cigarette cases and the like generated while on a move, litter bins may be provided on roadside footpaths in commercial places, important streets, markets, public places, tourist spots, bus stand etc. at a distance of 100 metres or less depending on the local condition. Similar bins for disposal of animal droppings could be placed in posh areas.
- Removal of waste from these litterbins should be done by sanitary workers after door to collection from households or during their street cleaning operations. Waste from the litterbin should be directly transferred into the handcarts/ tricycles/ motorised vehicles of the workers.
- Such facilities of litterbins can be created at no cost to local bodies by involving the private sector and giving them advertisement rights on the bins for a specified period or by allowing them to put their names on the bins as a sponsor. Litterbins should be put in posh area as well as poor areas in the proportion decided by local bodies.

8. **Storage Depots (at each city level)**

All the waste collected through Primary Collection System, from the households, shops and establishments should be stored in large capacity containers placed at designated sites for not more than 24 Hours. Segregation of recyclable waste should also be done at these places so as to reduce the disposable waste and recovery of recyclable waste. The system of secondary storage of waste in large containers should be such that:

- It is out of reach of stray animals
- It should not obstruct the traffic or spread on road.
- It is easily accessible in terms of distance for the user.
- It is fully covered and not exposed.
- It is able to hold the expected waste generated, depending on the size and population of the area.
- It is aesthetically acceptable.
- It is designed for easy to operate, handle, transfer and transport.

Large Transfer Stations should be designed and constructed/ Installed at suitable places in the town, if the distance from the storage depot to the waste processing site is more than 15 Km. All necessary facilities such as shade, ramp, electricity, water and guard room etc. should be provided in the transfer stations.

### 9. Transportation of waste (at each city level)

The waste from secondary storage depot should be taken to the processing and disposal site either directly necessitating a large fleet of vehicles and manpower or through cost effective systems which are designed to ensure that all the waste collected from the sources of waste generation is transported within reasonable time.

- Transportation of the waste stored at waste storage depots at regular intervals is essential to ensure that no garbage bin/container overflows and waste is not seen littered on streets.
- Waste should be transported in covered vehicles. These vehicles must be designed to carry maximum quantity of waste without causing nuisance in the environment and without causing inconvenience to the public:
- These could be multi- container vans known as twin bin dumper placer.
- Twin Bin Dumper Placers should be used in the towns where the waste generation is up to 30 MT per day and the size of the secondary storage containers is 2.5 cum or 3.0 cum capacity. One dumper placer is required to lift and transport 6-7 MT per day waste.
- These should be covered, so that the waste is not visible to the eyes or be exposed in the open.
- These are operated hydraulically without much human efforts. Vehicles with compaction arrangement should be used so that maximum quantity of waste is transported in minimum time.
- Compactors should be used in bigger towns where the Waste is generated @ more than 30 MT per day and secondary storage containers are of 1.1 cum capacity. One refuse compactor of 14 cum capacity is required to lift and transport 30 MT per day waste.
- Latest technology options for compaction and transportation of waste should be adopted.
- Bins or containers of wastes must be cleared and transported at regular intervals.
- Transportation should be done:
    - Daily for community bins.
    - Before they start overflowing, if required, twice or thrice a day.
    - Depending on the characteristic of waste, they should follow different routes, as the disposable site is different for the different type of wastes.

### 10. MSW Processing / Treatment Techniques (at Cluster level)

Current treatment strategies are directed towards reducing the amount of MSW that needs to be land filled, as well as recovering and utilizing the material present in the discarded wasted as a resources to the largest possible extent. Different methods are used for treatment of MSW and the choice of proper method depends upon refuse characteristics, land area available and disposal cost as follows:

#### 10.1 Thermal conversion of MSW

This process transforms MSW into gaseous, liquid and solid conversion products. This process also generates energy due to burning of materials, different methods are explained below:

#### 10.1.1 Incineration

It is a controlled combustion process for burning solid wastes in presence of excess air (oxygen) at high temperature of about 1000° C and above to produce gases and residue containing non-combustible material. One of the most attractive features of the incineration process is that it can be used to reduce the original volume of combustible MSW by 80–90%. However, due to toxic gaseous emissions, this technology is not very much encouraged.
The un-recyclable waste which can neither be used to produce RDF nor to produce energy nor to produce compost nor to use for road construction shall be incinerated.

**10.1.2 Incineration with Heat recovery**

The incineration process, which is used for volume reduction, may also lead to heat recovery. With existing incinerators, waste heat boilers can be installed to extract heat from combustion gases without introducing excess amounts of air or moisture. This technology should be used for high quantity of mixed waste for generation of power. This technology may be viable only for mixed waste more than 150 MT/day. There are 10 clusters including Patna where waste to energy plants are proposed to be set up of capacity to process 200 MT /day to 1000 MT/day mixed waste.
In Cluster – 2: 200 MT /day
In Cluster – 3: 250 MT/day
In Cluster – 4: 200 MT/day
In Cluster – 8: 200 MT/day
In Cluster – 9: 200 MT/day
In Cluster – 10: 200 MT/day
In Cluster – 12: 250 MT/day
In Cluster – 13: 200 MT/day
In Cluster – 14: 200 MT/day
In Cluster – 15: 1000 MT/day
These plants will be set up on PPP mode where the investor will invest his own money. However, Viability Gap Fund (VGF) @ Rs. 1.00 lac per MT is estimated to be provided to the concessionaire. The total amount of VGF for 10 waste to Energy Plants will be Rs. 29 Crore.

**10.1.3 Palletisation / Refuse Derived Fuel (RDF)**

Palletisation is a process of producing fuel pellets from MSW. The raw MSW is processed for concentrating the combustible fraction of it by segregating the non-combustible portion. The complete process involves drying, removal of non-combustibles by air separation (density separation), grinding or shredding of combustible fraction usually by a hammer mill, mixing and production of pellets under high pressure. The pellets can be transported easily and stored for many months without any disintegration. These pellets could be used for heating in the boilers and the generation of steam which in turn, is used to produce power. Pellets also, can be used along with conventional fuels for industrial operations.

**10.1.4 Combination of Incineration with Heat Recovery and Palletisation**

Combination of two methods should be adopted depending upon the quantity and quality of waste. If the waste received at site is in excess of desired quantity for production of power by gasification, the excess quantity of waste should be used for palletisation. The waste generated from Patna cluster consisting Patna and 3 Urban Agglomeration towns should be used for processing by this methodology.

**10.2 Recovery of Biological Conversion Products (Biological Process)**

Biological conversion of MSW is becoming more and more popular these days. End products include compost, methane, alcohols and variety of other intermediate organic compounds. Principal processes used for biological conversion are: aerobic composting, biomethanation and vermicomposting. Brief description of these processes has been given in subsequent sections.

**10.2.1 Aerobic composting**

Composting is the most responsible technical solution for many small towns in the country, especially, where the climate is arid and the soil is in serious need of organic supplements. The objectives of this treatment are stabilization of the organic matter in order to reduce possible environmental impacts (odors, pathogens...) and sanitary risk, mass and volume reduction of waste, production of compost to be used as soil conditioner. The end product is non-odorous and free of pathogens and weed seeds. Mechanical aerobic compost plant of capacity 50 MT/day to 150 MT/day should be installed in 13 clusters with a total capital investment of Rs. 16 Crore as detailed below:

**Tentative Requirement of land and capital cost excluding cost of land**

| S.No. | Capacity of Plant | Minimum Area of land Required in Acres for each plant | Cost each plant (Rs. in Lacs) | Number of clusters | Appx. Cost of compost plants (Rs. In lacs) |
|---|---|---|---|---|---|
| Microbial/Mechanical Composting: | | | | | |
| 1 | 50 T/day | 4 | 100.00 | Cluster-11<br>Cluster-20<br>Cluster-22 | 300.00 |
| 2 | 100 T/day | 7.5 | 125.00 | Cluster-5<br>Cluster-6<br>Cluster-16<br>Cluster-17<br>Cluster-18<br>Cluster-19<br>Cluster-21<br>Cluster-23 | 1000.00 |
| 3 | 150 T/day | 10 | 150.00 | Cluster-1<br>Cluster-7 | 300.00 |

**10.2.2 Bio-methanation (anaerobic digestion)**

Anaerobic digestion is the process for biological decomposition of organic wastes in the absence of air (oxygen). The organic wastes are hydrolyzed, liquefied and gasified with the help of methanogenic bacteria. In anaerobic process, the organic compounds are converted to methane and carbon dioxide. Small decentralised plants should be installed with gas separators and power generator in small municipality.

**10.2.3 Vermicomposting**

Vermicomposting involves stabilization of organic waste through the joint action of earthworms and aerobic microorganisms. Initially, microbial decomposition of

biodegradable organic matter occurs through extra cellular enzymatic activity (primary decomposition). Earthworms feed on partially decomposed matter consuming 5 times their body weight of organic matter per day. The ingested food is further decomposed in the gut of the worms resulting in particle size reduction. The material or worm cast excreted is a fine, odorless, granular product. This can be used as a bio-fertilizer in agriculture. Besides providing micro and macro nutrients this is also a rich source of beneficial microorganisms and exudates of worms, which can stimulate plant growth and enhance productivity. As we are in the process to adopt cluster approach, there is no requirement of vermin-compost plant to be installed at town level.

The total amount required for setting up different processing plants for 23 clusters will be Rs. 45 Crore.

**11. Disposal of waste (at cluster level, as proposed)**

- ULBs shall adopt suitable technology or combination of such technologies to make use of wastes so as to minimize the burden on landfills.
- The mixed waste can be incinerated to generate electricity. The rejects such as ash & debris shall be disposed of in common landfill.
- The biodegradable wastes shall be processed by composting, vermi-composting, anaerobic digestion or any other appropriate biological processing for stabilization of wastes. It must be ensured that compost or any other end product shall comply with standards. Mixed waste containing recoverable resources shall follow the route of recycling or other appropriate technologies.
- Land filling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing. Land filling shall also be carried out for residues of waste processing facilities as well as pre-processing rejects from waste processing facilities. Land filling of mixed waste shall also be avoided unless the same is found unsuitable for waste processing.
- At least 3 impervious layers (i) 6" thick clay layer (ii) 1.5 mm thick HDPE liner and (iii) 6 mm thick synthetic clay liner should be provided in the landfill trench.
- A leachate collection system with perforated pipe grid at the top of the impervious layer should be provided and treatment plant for collected leachate should be provided.

**11.1 Regional Landfill**

Landfilling is the most simple and economical measure as far as natural decomposition occurs at the disposal site. Sanitary landfill is an acceptable and recommended method for ultimate disposal of MSW. It is necessary component of MSWM, since all other options produce some residue that must be disposed of through landfilling. Sanitary Landfilling is a process of dumping of MSW in a scientifically designed area spreading waste in thin layers, compacting to the smallest practicable volume and covering with soil on daily basis. The methane (rich biogas) is produced due to anaerobic decomposition of organic matters in MSW. Garbage has a potential to generate about 150 to 250 m3 of biogas per ton of MSW depending upon its quality.

Regional land fill is the method of disposal of rejects received from cluster of towns. The cluster of towns should be identified in such a manner that no town is located more than 50

Km aerial distance from the Regional Landfill site. The rejects of processing plant received from each town of the cluster are transported to the Regional Landfill for ultimate disposal. The details of identified Regional Landfill Sites covering 90 towns divide in 14 clusters is given in Annexure-A.

The Regional Landfill should be managed by a Committee comprising Municipal Commissioner/ Executive Officer of all participating ULBs of cluster. The Municipal Commissioner/ executive Officer of largest ULB (in terms of population of 2011 census) should be the chairperson of the committee. The committee will invite tenders to construct and operate & manage the Regional Landfill. The capital cost and O&M cost should be jointly borne by each participating ULB in proportion to the population of the town. All participating ULBs should be responsible to send only the rejects of the processing plant of their town.

The Regional Landfill Management Committee should obtain Environmental Clearance from State Environmental Impact Assessment Authority (SEIAA) under Environment Protection Act, 1986 and EIA Notification 2006 amended from time to time.

The Central Pollution Control Board in its National Action Plan has provided Criteria for Cluster/Regional Facility according to which common facility should have no settlement at least 3-5 km from its periphery. This criteria may not be realistic. Many of the landfill sites are located just outside villages. We have followed criteria of 500 m distance from habitation [as mentioned in CPHEEO manual on MSW] while identifying Regional Landfill sites.

Similarly, one of criteria for selection of Cluster/ Regional facility in National Action Plan of CPCB is "Common facility perhaps should not be designed for handling waste say less than 3000-5000 tons per day". This criteria is also perhaps not practical when we consider towns within 50 Km area. The existing largest landfill of India is Pune which has been designed for Waste generation of 1000 tons per day. Our identified common facility are capable to manage 30-1000 tons per day MSW.

## 12. Proposal for Processing & Disposal of Municipal Waste for each Cluster:

**Cluster-1:** A committee will be constituted comprising Municipal Commissioner Ara as Chairperson and Executive Officers of other 6 ULBs as member of the committee which will be responsible for installation of 150 MT capacity compost plant and construction of engineered landfill at identified site "near Matiara village in Bhojpur District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 15 Ha. Hence, the identified land is more than sufficient.

**Cluster-2:** A committee will be constituted comprising executive Officer of Sasaram Nagar Parishad as Chairperson and Executive Officers of other 9 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Rajpur Village in Rohtas District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 22 Ha. Hence, the identified land is more than sufficient.

**Cluster-3:** A committee will be constituted comprising Municipal Commissioner Gaya as Chairperson and Executive Officers of other 6 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Burhi Village in Gaya District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 25 Ha. Hence, the identified land will be adequate for 25 years, just sufficient to meet the requirement of MSW Rules, 2000.

**Cluster-4:** A committee will be constituted comprising Municipal Commissioner Biharshariff as Chairperson and Executive Officers of other 8 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Bharkiyat Village in Nalanda District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 25 Ha. Hence, the identified land will be adequate for 20 years. Therefore, another landfill site will be identified after 15 years.

**Cluster-5:** A committee will be constituted comprising Executive Officer, Chhapra as Chairperson and Executive Officers of other 4 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Mahananda village in Chhapra District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 12 Ha. Hence, the identified land is more than sufficient.

**Cluster-6:** A committee will be constituted comprising Executive Officer, Buxar as Chairperson and Executive Officers of other 4 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Kothiya village in Buxar District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 8 Ha. Hence, the identified land is more than sufficient.

**Cluster-7:** A committee will be constituted comprising Executive Officer, Motihari as Chairperson and Executive Officers of other 5 ULBs as member of the committee which will be responsible for installation of 150 MT capacity compost plant and construction of engineered landfill at identified site "near Dughbalia village in West Champaran District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 14 Ha. Hence, the identified land is more than sufficient.

**Cluster-8:** A committee will be constituted comprising Municipal Commissioner Mujaffarpur as Chairperson and Executive Officers of other 5 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Sondho Village in Vaishali District. The committee will invite proposals through tendering process and award the work to a competent agency to install

suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 21 Ha. Hence, the identified land is more than sufficient.

**Cluster-9:** A committee will be constituted comprising Municipal Commissioner Begusarai as Chairperson and Executive Officers of other 7 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Belsardih Village in Beegusarai District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 21 Ha. Hence, the identified land is more than sufficient.

**Cluster-10:** A committee will be constituted comprising Municipal Commissioner Darbhanga as Chairperson and Executive Officers of other 7 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Hayghat Village in Darbhanga District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 21 Ha. Hence, the identified land is more than sufficient.

**Cluster-11:** A committee will be constituted comprising Executive Officer, Kishanganj as Chairperson and Executive Officers of other 2 ULBs as member of the committee which will be responsible for installation of 50 MT capacity compost plant and construction of engineered landfill at existing site of Kishanganj Nagar Parishad. The capital cost including cost of land can be shared by the member ULBs on proportionate basis (proportionate to the population). The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 5.5 Ha. Hence, the identified land is more than sufficient.

**Cluster-12:** A committee will be constituted comprising Municipal Commissioner Purnea as Chairperson and Executive Officers of other 5 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at existing landfill site of Purnea Nagar Nigam near village Muraria. The capital cost including cost of land can be shared by the member ULBs on proportionate basis (proportionate to the population). The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 23 Ha. Hence, the identified land will be adequate for 25 years, just sufficient to meet the requirement of MSW Rules, 2000.

**Cluster-13:** A committee will be constituted comprising Municipal Commissioner Munger as Chairperson and Executive Officers of other 5 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Lohcha Bind Toli Village in Munger District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 18 Ha. Hence, the identified land is more than sufficient.

**Cluster-14:** A committee will be constituted comprising Municipal Commissioner Bhagalpur as Chairperson and Executive Officers of other 4 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at identified location near Agarpur Village in Bhagalpur District. The committee will invite proposals through tendering process and award the work to a competent agency to install suitable processing plant (preferably waste to energy plant) and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 19 Ha. Hence, the identified land is more than sufficient.

**Cluster-15:** A committee will be constituted comprising Municipal Commissioner Paatna as Chairperson and Executive Officers of other 6 ULBs as member of the committee which will be responsible for installation of Waste to Energy Plant and construction of landfill at existing location at Bairiya Chak on Gaya Road, Patna. The work order for installation, commissioning and operation & maintenance of process plant & landfill has been awarded to M/s Sunil Hightech Ltd. who will start the work shortly. The committee will monitor the construction & installation work and will develop mechanism of management of the processing plant & landfill at Patna. The available land for landfill will be adequate for 15 years only. In the meantime, the committee will identify another site for landfill.

**Cluster-16:** A committee will be constituted comprising Executive Officer, Jehanabad as Chairperson and Executive Officers of other 3 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Dharawat village in Jehanabad District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 7 Ha. Hence, the identified land is more than sufficient.

**Cluster-17:** A committee will be constituted comprising Executive Officer, Sitamarhi as Chairperson and Executive Officers of other 7 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Hira Kanhauli village in Sitamarhi District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 8.5 Ha. Hence, the identified land is more than sufficient.

**Cluster-18:** A committee will be constituted comprising Executive Officer, Saharsa as Chairperson and Executive Officers of other 5 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Ghailarh village in Saharsa District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 11.5 Ha. Hence, the identified land is more than sufficient.

**Cluster-19:** A committee will be constituted comprising Executive Officer, Bagha as Chairperson and Executive Officers of other 2 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Bishunpurwa village in West Champaran District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to

construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 7 Ha. Hence, the identified land is more than sufficient.

**Cluster-20:** A committee will be constituted comprising Executive Officer, Pakridayal as Chairperson and Executive Officers of other 4 ULBs as member of the committee which will be responsible for installation of 50 MT capacity compost plant and construction of engineered landfill at identified site "near Kesariya town in East Champaran District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 4 Ha. Hence, the identified land is more than sufficient.

**Cluster-21:** A committee will be constituted comprising Executive Officer, Siwan as Chairperson and Executive Officers of other 6 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Phulwaria village in Siwan District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 12 Ha. Hence, the identified land is more than sufficient.

**Cluster-22:** A committee will be constituted comprising Executive Officer, Forbesganj as Chairperson and Executive Officers of other 2 ULBs as member of the committee which will be responsible for installation of 50 MT capacity compost plant and construction of engineered landfill at identified site "near Mirganj town in Gopalganj District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 4 Ha. Hence, the identified land is more than sufficient.

**Cluster-23:** A committee will be constituted comprising Executive Officer, Lakhisarai as Chairperson and Executive Officers of other 4 ULBs as member of the committee which will be responsible for installation of 100 MT capacity compost plant and construction of engineered landfill at identified site "near Barahiya town in Lakhisarai District". The committee will invite proposals through tendering process and award the work to a competent agency to install Aerobic Compost Plant with Refused Derived Fuel and to construct engineered landfill for disposal of rejects. The area required for processing & landfill for 30 years is 11 Ha. Hence, the identified land is more than sufficient.

### 13. Financial Aspect

Solid Waste Management (SWM) is the responsibility of ULBs under the Constitution of India. To carry out this essential activity an annual provision for the recurring and capital expenditure should be made in the municipal budget. The municipal budget is based on the total income from various revenue sources and other funds including the grants from Central and State Government. The provision of funds for solid waste management is commonly observed to be made on adhoc basis and is not related to the requirement.

Solid Waste Management receives a comparatively inadequate share out of the total municipal budget as the municipal agencies assign a low priority to this work resulting in poor services. Today, there is an urgent need to overhaul the system by making substantive

changes in management & technology, which would inevitably require capital investment far beyond the current budgetary capacity of the municipal agencies. Any solid waste management system will require provision of financial resources for its smooth running. The present structure of revenue does not contain any instrument specifically dedicated to the needs of SWM. It is also obvious that in future the municipal agency will find it increasingly difficult to draw the required amounts from the existing revenue resource. As per the Manual on Solid Waste Management published by the Ministry of Urban Development the annual requirement of funds for efficient SWM reveals that when the principle of Full Cost Pricing is applied the Total Annual requirements are often 2-3 times the amount being allocated at present. Thus, it is important that the beneficiaries also share the responsibility of waste management following the 'Polluters pay principle'. The SWM will have to provide SWM Tax/Cess, and to cover not only the annual cost of operation, required to be repaid but also the indirect costs. This alone will assure the financial viability of the effective solid waste management in the cities.

The State Government has issued a notification of levying user charges for Municipal Solid Waste Management in the towns. However, the concerned ULBs should work out the SWM Tax/Cess to be charged from the beneficiaries depending upon their economic status. A provision of cross-subsidy should be included in such exercise. It should be based on the frequency of service, volume/weight of the waste or combination of both or on family basis. It can be multiplied by a factor based on assessment of location, building value and income of occupant. However, provision of cross subsidy for slum areas is desirable. Separate structure of tariff will have to be specified for community bin system and for house to house collection system. It should also lay down the method of charging and recovery of charges for transportation of acceptable industrial solid waste and demolition waste. There should be a provision for revision of the rates at specific intervals. For specific identified occupations, contracting out of work should be considered. However, such contracts should be performance based and appropriately framed with in-built monitoring and penalty mechanisms.

### 14. Mobile Sanitation Courts

It is the tendency of the public to take their civic responsibilities lightly. It is therefore necessary that while on one hand people are motivated to participate effectively in keeping the cities clean, there should be a fear of punishment if they fail to discharge their civic obligations. Provision of Mobile Sanitation Courts is therefore very useful to ensure littering of roads and disobeyance of other legal provisions or orders to improve the sanitary conditions. The mobile sanitation court would be able to recover its full cost from the fines that may be imposed by the court. There is, therefore, no likelihood of any financial burden on the local body.

### 15. Redressel of Public Grievances

The local body should draw up a citizen's charter clearly stating what level of service it proposes to provide to the citizens and how soon citizens can expect their grievances to be attended. Sanitation being very vital for health and environment, efficient machinery should be organized by the local body to receive public complaints and attend to them expeditiously. Formats may be prescribed for receiving such complaints, replying to the applicants as soon as the complaints have been redressed and for monitoring the pending complaints. Online complaint redressel system should be developed through on going e-municipality project.

## 16. Management Aspects

With a view to avoiding the problems of lack of coordination and passing of the responsibility on others, it is necessary to have one person exclusively in charge of SWM in the city. The overall control in relation to collection, transportation, processing and disposal of all waste, including workshop facilities, should lie with him. He should also be responsible for the cleaning of open drains under 24 inches depth, collection of silt, construction waste and debris and vehicle deployment and maintenance. There should be work allocation norms for the sweepers, transport system and other workers. Advanced work schedule should be prepared and followed every month.

SWM services are highly labour intensive on account of increased wage structure of the Government and municipal employees this service is becoming more and more expensive. Besides, the efficiency of the labour force employed in the urban local bodies is far from satisfactory. Hence, possibility to outsource certain work should be explored.

### 15.1 Institutional Setting

The fact of ownership has to be settled. With ownership must come the assumption of full responsibility for the long term sustainable performance of the Solid Waste Management System. The ULBs should be mandated to replace inadequately qualified and inefficient staff with staff necessary to maintain the solid waste management system. For outsourcing the job, a stringent pre-qualification criterion should be developed for the contractors, which inter-alia should include sufficient number of sufficiently qualified persons and the contract agreement should be performance based for which necessary performance indicators should be evolved.

### 15.2 Management Plan

Rules for operation and maintenance of the solid waste management system must be established in the form of a handbook together with a legal requirement to keep honest records of specified parameters that refer to the performance of the system including the quality of work performed by each individual. Apart from the enhancement of capacities of ULBs, there should also be additional checks by a local committee of qualified civil society representatives, health officers and officers from other departments who should be empowered to visit and issue a note of caution when any component of SWM system is not working or inadequately working.

### 15.3 Standardised Procedures

- A manual of standardised procedures should be established for the activities of the entire MSWM system.
- These procedures should be mandatory and penalties established for each default. The same penalties should apply whether the system is operated directly by a ULB or by an external contractor.
- A surveillance mechanism should be created to investigate every instance of non-compliance reported to the ULBs using fast and modern communication means such as SMS by mobile to the authorities.
- The staff responsible for solid waste management should be professionally qualified and trained.

- The operation manual should be available to each staff.
- Each staff member should be given responsibility in terms of specific activity along with date and time in writing.
- The duty assignment records should be maintained in a Master File which should be checked by officers of Nodal office and State Pollution Control Board on regular basis.
- Training of the MSWM staff should be planned and implemented properly.
- Strict action is required to be taken against the staff in case of default.
- Each staff member should submit a monthly report indicating duty performed by him and how it is matching with the assignment given to him.
- In case of deviation, sufficient reason should be recorded.
- Every ward should be monitored for its cleanliness and satisfaction of the citizen.
- The monitoring results should be compiled on monthly basis and submitted to the Nodal office in the form of a monthly report.
- The report should be reviewed by the Nodal Officer. In case of any problem in SWM system, the Nodal Officer should discuss it with in-charge of the SWM System and suggest remedial measures.
- There should be a quarterly meeting of all the in-charges of all the wards of a city including lower staff to discuss the problems and remedial measures.
- The outcome of the meeting should be recorded in form of minutes and communicated to State Pollution Control Board within 15 days of the meeting.
- There should be a separate cell in the State Pollution Control Board for monitoring management of MSWM System in the State.
- This cell should constantly interact with the Nodal Officer on performance of MSWM System and other related issues.
- The cell should also conduct vigilance monitoring of the MSW System at least once in a month.
- The monitoring should include checking of ward wise records of the MSW System and their functioning to evaluate their performance and compliance of MSW Rules.
- In case of unsatisfactory observations, the cell should issue notice to the Nodal Officer under EP Act, 1986.
- An annual report on the performance of city wise MSW System record should be prepared city-wise and submitted to the State Boards highlighting all the important points including deficiencies and annual expenditure.
- It may be useful to involve local communities in monitoring the functioning of the entire MSWM System.
- It is necessary to have a cadre of professional staff in municipalities headed by technically qualified chief executives for planning and implementation of MSWM System."

17. Road Map:

- All the ULBs should procure the required equipments by December 2015 while the Corporation & Council towns should also outsource the municipal waste collection & transportation services to the private agencies by end of June 2015.
- The committee of cluster towns should be constituted by June, 2015 and start functioning by July 2015.

- The "Bihar Municipal Land Purchase Rules, 2014" is likely to be approved by the State Cabinet. Thereafter, the Committee for landfill management for at least 10 clusters should purchase land for setting up common waste processing plants & common Landfill by December, 2015.
- Committee for landfill management for remaining 13 clusters should purchase land for setting up common waste processing plants & common landfill by June 2016.
- Committee for landfill management for at least 10 clusters should get the waste processing plant installed and landfill sites developed by the end of year 2016.
- Committee for landfill management for remaining 13 clusters should get the waste processing plant installed and landfill sites developed by the June 2017.

True Copy

Annexure – 'C'

Annexure - B

32

पत्रांक–03/न्या0 -16-07/2014 2185 /न0वि0एवंआ0वि0

# बिहार सरकार
## नगर विकास एवं आवास विभाग

प्रेषक,

विशेष कार्य पदाधिकारी,
नगर विकास एवं आवास विभाग।

सेवा में,

सभी नगर आयुक्त, नगर निगम, बिहार।
सभी कार्यपालक पदाधिकारी, नगर परिषद/नगर पंचायत।

दिनांक– 20/4/15

विषयः– **माननीय National Green Tribunal (NGT), New Delhi द्वारा Original Application on-199/2014 मामले में दिनांक–20.03.2015 को पारित आदेश के अनुपालन के संबंध में।**

महाशय,

उपर्युक्त विषयक विषयांकित वाद में माननीय NGT द्वारा दिनांक–20.03.15 को पारित आदेश के अनुपालन में कहना है कि अपने निकाय के अधीन Multi Layer Plastic के स्थान पर Therom Plastic का उपयोग करना सुनिश्चित किया जाय। सुलभ संदर्भ हेतु पारित आदेश की प्रति वेबसाईट पर उपलब्ध है।

विश्वासभाजन,

20/4/2015

विशेष कार्य पदाधिकारी,
नगर विकास एवं आवास विभाग,
बिहार, पटना।

Annexure 'B'
33

Annexure-C

OIC

पत्रांक–03/न्या0–16–07/2014/ 2186 /न0वि0एवंआ0वि0

## बिहार सरकार
## नगर विकास एवं आवास विभाग

प्रेषक,

अनिल राय,
विशेष कार्य पदाधिकारी,
नगर विकास एवं आवास विभाग।

सेवा में,

श्री राकेश कुमार,
सदस्य सचिव,
बिहार राज्य प्रदूषण नियंत्रण पर्षद,
बेल्ट्रॉन भवन, शास्त्री नगर पटना–800023

दिनांक– 20/4/15

विषय :– माननीय National Green Tribunal (NGT), New Delhi में Original Application N0-199/2014- अलमित्रा एच0 पटेल बनाम भारतीय संघ एवं अन्य मामले में प्रतिशपथ पत्र दायर करने हेतु संशोधित राज्य नगरीय ठोस अपशिष्टों के प्रबंधन हेतु विस्तृत कार्य योजना प्रतिवेदन का प्रेषण।

महाशय,

निदेशानुसार उपर्युक्त विषयक प्रश्नगत मामले में माननीय National Green Tribunal (NGT), New Delhi द्वारा दिनांक–20.03.2015 को पारित आदेश के अनुपालन में संशोधित राज्य नगरीय ठोस अपशिष्टों के प्रबंधन हेतु विस्तृत कार्य योजना की प्रति अग्रेत्तर कार्रवाई हेतु संलग्न है।

अनु0–यथोक्त।

विश्वासभाजन,

(अनिल राय)
विशेष काय पदाधिकारी,
नगर विकास एवं आवास विभाग।