No. J-11017/41/2012-MGNREGA (UN)
Government of India
Ministry of Rural Development
Department of Rural Development
(Mahatma Gandhi NREGA Division)

Krishi Bhawan, New Delhi
Dated: 09.02.2018

To,
Principal Secretaries/ Secretaries/ Commissioners
Rural Development
All State/UTs

Sub: - Solid Waste Management (SWM) under MGNREGS

Sir/Madam,

Para 4 (1) IV (i) of Schedule 1 of the MGNREG Act provides for rural sanitation works under Rural Infrastructure category, wherein solid and liquid waste management works (SLWM) may be undertaken amongst other listed works. Accordingly, works like construction of Individual Household Latrines (IHLs), soak pits, village drains for disposal of grey water and construction of infrastructures for composting are already being undertaken on a large scale under MGNREGS. Some states have also constructed stabilization ponds and taken up 3/ 5 ponds system for treatment of grey water. The solid waste management also has been taken up in a few states as pilot projects.

2. The Ministry has studied some of the solid waste management models being operated in the States. After detailed deliberations and discussions, the Ministry has found that the West Bengal model appears to be a maturer model and is more aligned to the provisions of the Act. It ensures sustainability of the project as the state has taken into account the various sources of income generation possible through the composting activities as well as by way of collecting user charges, GP funds etc.

3. The salient features of the West Bengal Model are as follows –

i. The main objective is to achieve sustainable waste management, which is economically viable, and without detrimental effects to human health or to the environment with user friendly practices.

ii. The DPR of the SWM (enclosed for one project) covers in depth analysis of total waste generated from households, shops, schools, ICDS, hut, marriage halls etc, distance from the SWM unit, transportation and segregation, organic and inorganic (i/c recyclable) waste. The land requirement for compost pits, vermi-compost shed, segregation shed, tri-cycle parking space, cleaning & drying of waste, recycle waste shed, office-cum godown and other staff facilities.

iii. The sources of funds for various activities have been identified as under-
a) The cost on training and exposure of sanitary workers, supervisors etc and on IEC (advertisements and awareness) initiatives are borne by National Rural Livelihoods Mission (NRLM).

b) All the durable assets like vermi-compost unit, segregation unit, tri-cycle shed, office room & store room, toilets, bathroom are funded from MGNREGS. Expenditure on wages and other items of recurring nature are not met from MGNREGS.

c) The funds from Mission Nirmal Bangla (MNB) i.e. SBM-G have been utilized for providing e-rickshaw / push cart for door to door collection, brooms, baskets, spades, safety kits, gloves, vaccinations of workers, buckets etc including mMaintenance of e-rickaws for two years.

Further, all the recurring expenditures like wages to sanitary workers (waste collectors and segregators), supervisors and office accessories have been covered under Mission Nirmal Bangla (SBM-G) for two years.

d) The Solid Waste Management work for the GP will become self sustaining by collecting collection charges from households, shops, hut, government institutions, sale of recyclable / reusable waste items and sale of compost / vermi-compost. It has been found that monthly recurring expenses for wages, accessories, medical and miscellaneous expenses will be met out from the earnings of the GP through SWM in the long run.

iv. The space requirement for SWM unit and landfill area may vary from place to place depending upon the number of HHs and other criteria. The land for all these activities will be provided by the concerned Gram Panchayat.

4. The guidelines of SBM (G) provides that SLWM can be taken up by the Gram Panchayat (GP) with financial assistance capped for a GP on the basis of number of households to enable all GPs to implement sustainable SLWM projects viz. maximum of Rs.7 lakh for a GP having up to 150 households, Rs.12 lakh up to 300 households, Rs.15 lakh up to 500 households and Rs.20 lakh for GPs having more than 500 households. Funding for SLWM project under SBM(G) is provided by the Central and State Government in the ratio of 60:40. SLWM projects can be made financially viable by dovetailing funds from other programmes and sources of funding like MGNREGS, MPLAD, MLALAD funds, Finance Commission, CSR contribution, Swachh Bharat Kosh, donor funding, etc. Funding from programmes of other Ministries and departments may also be converged. It is clear that SWM can be taken up from SBM funds and that MGNREGS is one of the many possible sources for supporting SLWM efforts of the GP/ community.

5. In view of above it is recommended to adopt the West Bengal Model for promoting solid waste management initiative in the State/UTs. Only permissible works that are durable and tangible in nature shall be taken up under MGNREGS for promoting solid waste management.
It has been found that some states are making payment of wages to sanitary workers and supervisors for collection and segregation of waste through MGNREGS. This is not permissible as per provisions of the Act, given their recurring nature. Therefore, payment of wages for sanitary workers and supervisors for collection of waste and segregation will be discontinued without delay. Alternative arrangements for accessing funds of other relevant schemes for making payment of wages may be put into place.

It is reiterated that wages to sanitary workers and supervisors will be borne from any scheme other than MGNREGS.

Yours faithfully,

Aparajita Sarangi
Joint Secretary (MGNREGA)
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

AT

HEMTABAD GRAM PANCHAYAT UNDER HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR.

PROJECT IMPLEMENTING AGENCY HEMTABAD GRAM PANCHAYAT HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR.
HEMTABAD GRAM PANCHAYET
HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

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INTRODUCTION

Hemtabad Gram Panchayet is adjacent to the Hemtabad Development Block which lies South corner of Hemtabad Development Block in the jurisdiction of Raiganj Sub-Division of Uttar Dinajpur District and occupying an area of 3975.38 Hectres enclosed by Kamalabari (II) Gram Panchayet on the West under Raiganj Dev. Block, Bishnapur & Chainagar Gram Panchayet on the North under Hemtabad Dev. Block, Bangalbari Gram Panchayet on the East-south under Hemtabad Dev. Block, Barua Gram Panchayet on the South under Raiganj Dev. Block, Bhandar Gram Panchayet on the East under Kaliyaganj Dev. Block. State Highway SH-10 passes through the heart of the Panchayet. The river Kulik and the Cannal Kahaloi flows through this Gram Panchayet area. In Hemtabad Gram Panchayet, there are 23 nos Mouja, 21 nos Gram Sanshad and 23 nos village as per Gram Panchayet Record. Raiganj Sub-Divisonal Head Quater is 8 km and District Head Quater is also 8 km apart from this Gram Panchayet. The total population is nearly 37952 Nos. Bengali is the main language but a sizeable number of Urdu and Adibashi speaking people lives in this GP. The main cultivation of villagers is Paddy, Jute, Wheat, Musters seeds, and Maize. The famous Paddy of Uttar Dinajpur named as "Tulai Panji" is also cultivated here.
HEMTABAD GRAM PANCHAYET
HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

BASIC INFRASTRUCTURE

PROJECT IMPLEMENTING AGENCY :-

Hemtabad Gram Panchayet under guidance of Hemtabad Development Block.

NAME & DETAILS OF THE SITE :-

Name of GP : Hemtabad
Sansad : Paschim Kashimpur
Mouza : Kashimpur
J.L. No : 79
Plot No : 419 & 4120
Total Area : 46 Satak

GRASS ROOT LEVEL IMPLEMENTING AGENCY :-

Women / Men Self Help Groups of Hemtabad Gram Panchayet.

TECHNICAL SUPPORT, TRAINING AND MONITORING :-

a) P&RD Department, Government of West Bengal.
b) State Sanitation Cell (HRD Cell).
c) DRDC Uttar Dinajpur.
d) District Sanitation Cell.
e) Hemtabad Development Block.

Nirman Sohajak
4 No, Hemtabad G.P.
P.O.-Hemtabad, U/D.

Prodhari
No.-4 Hemtabad G.P.
P.O.-Hemtabad, U/DINAJPUR.
TARGET SANSHAD:

a) Paschim+Madhya Kashimpur  
b) Purba Kashimpur  
c) Sonabandh  
d) Hemtabad Uttar  
e) Hemtabad Dakshin  
f) Kantore Chhoto  
g) Kanotore Boro  
h) Araji Kashimpur  
i) Baraibari

TARGET BENIFICIARIES:

Households of the Five Gram Sanshad area / Market Shops / Primary Schools / SSK / ICDS / Hut & Bazar and workers involved Women / Men Self Help Groups in this Project.
HEMTABAD GRAM PANCHAYET
HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

OBJECTIVES & ACTIVITIES

OBJECTIVE :-

a) To keep the area neat & clean and pollution free.
b) To achieve sustainable waste management, which is economically viable, and without detrimental effects to human health or to the environment.
c) To demonstrate complete resource recovery from inorganic waste (through re-using, re-cycling etc.) and organic waste (composting/vermin composting) by involving Women/Men/Self Help Group & NGO, RSM etc.
d) User friendly practice.

ACTIVITIES TO BE UNDERTAKEN :-

This project is fully concentrated in residence, shops, Govt. buildings and hut & bazaar in Gram Panchayet under Hemtabad Development Block and also to Hemtabad Municipality if they agree.

So, first of all we have to create awareness about source segregation, type of Organic & Inorganic waste, current waste disposal system to keep the village clean among the villagers, shopkeepers and Schools by the following ways.

a) To make the source segregation more effective we will aware people to dump Organic & Inorganic waste in the earmarked container (Red & Green) in their houses which will be supplied to them by the Implementing Agency.
b) Garbage collection will be done every morning in a day (7.00 A.M to 9.00 A.M or as suitable to be fixed at local level) from household and residents / commercial shops (including Sundays and all Holidays) through Tricycle by trained workers.

c) Finally the waste will be brought to “Community Based Waste Management Unit” for the secondary segregation and for the future progress for income generation by producing vermi compost to make the project self sustain.

Everyday activities in the unit are waste collection, segregation, composting and cleaning etc.
GRAM PANCHAYET AT A GLANCE

1. How much is the total population and area of Gram Panchayet?
   Ans. 38775 Nos approx and area is 3975.38 hectre

2. Total number of houses within Gram Panchayet?
   Ans. 7668 nos approx.

3. Total number of Gram Sansads within Gram Panchayet?
   Ans. 21 nos

4. Is there any public toilet within the Gram Panchayet area? If so, how many & what type?
   Ans. Yes. One Number of Community Toilet.

5. How is the present condition of drinking water supply / drinking water in the Gram Panchayet area?
   Ans. Ordinary Hand Pump, Mark-II Tube well.

6. What is the main livelihood of the people residing in the Gram Panchayet?
   Ans. Agriculture.

7. How many Haats, Markets, Market Complex have in the Gram Panchayet area?
   Ans. 02 Nos Hat and 01 Nos market including 01 Nos Market Complex.

8. Temporary Haat/Market, if any- number, how many days in a week they attend?
   Ans. 02 Nos Hat attends once in a week & the other attends regular.

9. How many religious places are there in the Gram Panchayet?
   Ans. Mandir-27 nos, Masque-48 Nos, Church-0 Nos.
10. How many Community Hall are there in the Gram Panchayet?
   Ans. Nil.

11. How many Hotels are there in the Gram Panchayet?
    Ans. 12 Nos.

12. Total number of Schools in the Gram Panchayet?
    Ans. SSK-15 Nos, MSK-01 Nos, FPS-16 Nos, H.S.-04 Nos, Jr. High- 6 Nos.

13. Total number of Anganwadi Centres in the Gram Panchayet?
    Ans. 61 nos.

14. How much waste is generated per head per day on an average? (on the basis of discussion with the villagers & experience)
    Ans. 200 g/d.

15. Is there any agency for selling fertilizer? If so, how many?
    Ans. Yes, 10 Nos.

16. Is the fertilizer selling agency sales Bio-fertilizer?
    Ans. Yes.

17. If Bio-fertilizer is produced then what are the probable places for sale?
    Ans. Small cultivator.

18. Is there any arrangement for sale of re-usable waste?
    Ans. No.

19. What are the present system of waste disposal?
    Ans. Partly drainage system for liquid waste.

20. In GP area where there are possibilities of getting land for waste management and how much available? Position of available land – high / low/medium.
    Ans. There is a one vested medium land plot of 46 satak (i.e. 2070 Sft) under Hemtabad GP.
21. Number of functional Self Help Groups in the area?  
   Ans. 46 nos.

22. How many Registered NGO / SHG in the area are involved in Public Health programme?  
   Ans. 03 nos NGO.

23. If SLWM unit is launched then how much fees can be charged per family per month in the Gram Panchayet?  
   Ans. Rs. 15/Month.

24. How many Tri-Cycles will be required in the Gram Panchayet? (One Tri-Cycle for 300/350 households/ 03Nos E-Cycle/GP)  
   Ans. 6 Nos Tri-Cycle/ 03 Nos E-Cycle.

25. Initially, how many Sansads in the Gram Panchayet may be taken up for starting the work?  
   Ans. 09 nos.

26. How many Sansads in the Gram Panchayet have metal road/ morrum road/ kuchha road?  
   Ans. 21 Nos Sansads having Metal, PCC & Earthen road.

27. How many Gram Sansads in the Gram Panchayet located more than 3-4 kms from the SLWM unit?  
   Ans. 12 nos.

28. Whether any initiative was taken previously in the Gram Panchayet for Solid Waste Management? If so, what is the present condition of that project?  
   Ans. No.

29. How many households in the Gram Panchayet showed interest for giving wastes?  
   Ans. 1807 Nos.

30. Is it necessary to prepare a map showing roads in the Gram Panchayet?  
   Ans. Yes.
HEMTABAD GRAM PANCHAYET
HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

Source of solid waste

<table>
<thead>
<tr>
<th>Sansad No.</th>
<th>Name of Sansad</th>
<th>Total House Hold</th>
<th>Active House Hold</th>
</tr>
</thead>
<tbody>
<tr>
<td>XII</td>
<td>Paschim+Madhya Kashimpur</td>
<td>643</td>
<td>335</td>
</tr>
<tr>
<td>IX</td>
<td>Purba Kashimpur</td>
<td>322</td>
<td>158</td>
</tr>
<tr>
<td>XIII</td>
<td>Sonabandh</td>
<td>262</td>
<td>137</td>
</tr>
<tr>
<td>X</td>
<td>Hemtabad Uttar</td>
<td>450</td>
<td>220</td>
</tr>
<tr>
<td>XI</td>
<td>Hemtabad Dakshin</td>
<td>472</td>
<td>278</td>
</tr>
<tr>
<td>VIII</td>
<td>Kantore Chhoto</td>
<td>350</td>
<td>175</td>
</tr>
<tr>
<td>VII</td>
<td>Kanotore Boro</td>
<td>258</td>
<td>132</td>
</tr>
<tr>
<td>III</td>
<td>Araji Kashimpur</td>
<td>384</td>
<td>119</td>
</tr>
<tr>
<td>XIV</td>
<td>Baraibari</td>
<td>631</td>
<td>253</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3772</td>
<td>1807</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Other Sources</th>
<th>Total Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shop in Hemtabad PS Market</td>
<td>200</td>
</tr>
<tr>
<td>2</td>
<td>High School</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Jr. High School</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Primary School</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>ICDS</td>
<td>21</td>
</tr>
<tr>
<td>6</td>
<td>SSK &amp; MSK</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Hut</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Marriage hall</td>
<td>1</td>
</tr>
</tbody>
</table>
# Distance from S.W.M Unit to Active sansad area

<table>
<thead>
<tr>
<th>Sansad No.</th>
<th>Name of Sansad</th>
<th>Total House Hold</th>
<th>Distance to S.W.M Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>XII</td>
<td>Paschim+Madhya Kashimpur</td>
<td>643</td>
<td>1 Km</td>
</tr>
<tr>
<td>IX</td>
<td>Purba Kashimpur</td>
<td>322</td>
<td>0.5 Km</td>
</tr>
<tr>
<td>XIII</td>
<td>Sonabandh</td>
<td>262</td>
<td>1 Km</td>
</tr>
<tr>
<td>X</td>
<td>Hemtabad Uttar</td>
<td>450</td>
<td>1.5 km</td>
</tr>
<tr>
<td>XI</td>
<td>Hemtabad Dakshin</td>
<td>472</td>
<td>1.5 km</td>
</tr>
<tr>
<td>VIII</td>
<td>Kantore Chhoto</td>
<td>350</td>
<td>1.5 km</td>
</tr>
<tr>
<td>VII</td>
<td>Kanotore Boro</td>
<td>258</td>
<td>1.5 km</td>
</tr>
<tr>
<td>III</td>
<td>Arajri Kashimpur</td>
<td>384</td>
<td>2 km</td>
</tr>
<tr>
<td>XIV</td>
<td>Baraibari</td>
<td>631</td>
<td>1.5 km</td>
</tr>
</tbody>
</table>
METHODOLOGY

Source segregated waste collected from all resident, shops and area cleaning (Organic and Inorganic) will be brought to their SWM sheds by the workers and inorganic waste is segregated (Recyclable, organic and Non-Recyclable) packed separately after segregation and recyclable can be sold locally. Organic waste is treated with Cattle dung for microbial decomposing process.

The Organic waste is to be laid on a composting bed in different layers. Each layer being treated with cattle dund for microbial inoculums and convert. This progress takes 45-60 days to complete. This cattle dung composting will increase the temperature and also reduce the volume at original to 1/3. After the end of the process the whole manure are sieved and can be used. Cattle eatable items can be fed to Cattle and through this process waste will be converted in to dung in less than 24 hours time and in future the same dung can be fed to Bio-gas plant to trap Methane gas and then the slurry can be used for composting tanks to get the best Organic manure. Through this process, aerobic composting duration will be reduced.

Waste water can be used for fodder cultivation / tree plantation around SWM centre / other greening works etc.
SUMMARY AND CONCLUSION

The production of degradable organic waste and its safe disposal becomes the current global problem. Meanwhile the rejuvenation of degraded soils by protecting topsoil and sustainability of productive soils is a major concern at the international level. Provision of a sustainable environment in the soil by amending with good quality organic soil additives enhances the water holding capacity and nutrient supplying capacity of soil and also the development of resistance in plants to pests and diseases. By reducing the time of humification process and by evolving the methods to minimize the loss of nutrients during the course of decomposition, the fantasy becomes fact. Earthworms can serve as tools to facilitate these functions. They serve as “nature’s plowman” and form nature’s gift to produce good humus, which is the most precious material to fulfill the nutritional needs of crops. The utilization of vermicompost results in several benefits to farmers, industries, environment and overall national economy.

To farmers: • Less reliance on purchased inputs of nutrients leading to lower cost of production • Increased soil productivity through improved soil quality • Better quantity and quality of crops • For landless people provides additional source of income generation

To industries: • Cost-effective pollution abatement technology

To environment: • Wastes create no pollution, as they become valuable raw materials for enhancing soil fertility

To national economy: • Boost to rural economy • Savings in purchased inputs • Less wasteland formation.
HEMTABAD GRAM PANCHAYET
HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

Design calculation

A. S.W Generation

Sansad Name: Paschim+Madhya Kashimpur , Sansad No: XII

- Number of active house hold = 335
- Number of Person in one family = 5 nos
- Total active population in Sansad = 1675 nos.

Per capita Solid waste generation = 240 gm/day
SW generation from single active household = 1.2kg/day
SW generation from all active house hold in sansad = 402kg/day

Sansad Name: Purbo Kashimpur, Sansad No: IX

- Number of active house hold = 158
- Number of Person in one family = 5 nos
- Total active population in Sansad = 790 nos.

Per capita Solid waste generation = 220 gm/day
SW generation from single active household = 1.1kg/day
SW generation from all active house hold in sansad = 173.80 kg/day
<table>
<thead>
<tr>
<th>Sansad Name</th>
<th>Sansad No</th>
<th>Number of active house hold</th>
<th>Number of Person in one family</th>
<th>Total active population in Sansad</th>
<th>Per capita Solid waste generation</th>
<th>SW generation from single active household</th>
<th>SW generation from all active house hold in sansad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonabandh, Sansad No : XIII</td>
<td>=137</td>
<td>=5 nos</td>
<td>=685 nos.</td>
<td></td>
<td>=200 gm/day</td>
<td>=1.0kg/day</td>
<td>=137.0 kg/day</td>
</tr>
<tr>
<td>Hemtabad Uttar, Sansad No : X</td>
<td>=220</td>
<td>=5 nos</td>
<td>=1100 nos.</td>
<td></td>
<td>=200 gm/day</td>
<td>=1.0kg/day</td>
<td>=220.0 kg/day</td>
</tr>
<tr>
<td>Hemtabad Dakshin, Sansad No : XI</td>
<td>=278</td>
<td>=5 nos</td>
<td>=1390 nos.</td>
<td></td>
<td>=200 gm/day</td>
<td>=1.0kg/day</td>
<td>=278.0 kg/day</td>
</tr>
<tr>
<td>Kantore Chhot, Sansad No : VIII</td>
<td>=175</td>
<td>=5 nos</td>
<td>=875 nos.</td>
<td></td>
<td>=150 gm/day</td>
<td>=0.75kg/day</td>
<td>=131.25 kg/day</td>
</tr>
</tbody>
</table>
Sansad Name: Kantore Boro, Sansad No: VII

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number active of house hold</td>
<td>=132</td>
</tr>
<tr>
<td>Number of Person in one family</td>
<td>= 5 nos</td>
</tr>
<tr>
<td>Total active population in Sansad</td>
<td>=660 nos</td>
</tr>
<tr>
<td>Per capita Solid waste generation</td>
<td>=200 gm/day</td>
</tr>
<tr>
<td>SW generation from single active household</td>
<td>=1.0kg/day</td>
</tr>
<tr>
<td>SW generation from all active house hold in sansad</td>
<td>=132.0 kg/day</td>
</tr>
</tbody>
</table>

Sansad Name: Araji Kashimpur, Sansad No: III

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of active house hold</td>
<td>=119</td>
</tr>
<tr>
<td>Number of Person in one family</td>
<td>= 5 nos</td>
</tr>
<tr>
<td>Total active population in Sansad</td>
<td>=595 nos</td>
</tr>
<tr>
<td>Per capita Solid waste generation</td>
<td>=175 gm/day</td>
</tr>
<tr>
<td>SW generation from single active household</td>
<td>=0.875kg/day</td>
</tr>
<tr>
<td>SW generation from all active house hold in sansad</td>
<td>=104.125 kg/day</td>
</tr>
</tbody>
</table>

Sansad Name: Baraibari, Sansad No: XIV

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of active house hold</td>
<td>=253</td>
</tr>
<tr>
<td>Number of Person in one family</td>
<td>= 5 nos</td>
</tr>
<tr>
<td>Total active population in Sansad</td>
<td>=1265 nos</td>
</tr>
<tr>
<td>Per capita Solid waste generation</td>
<td>=175 gm/day</td>
</tr>
<tr>
<td>SW generation from single active household</td>
<td>=0.875kg/day</td>
</tr>
<tr>
<td>SW generation from all active house hold in sansad</td>
<td>=221.375 kg/day</td>
</tr>
</tbody>
</table>
Total Number of active house hold in all sansad = 1807  
Total active Population in all sansad = 9035  
Total SW in all sansad = 1799.55 kg/day,  
Solid waste generation from other sources = 600.0 Kg/day  

Total SW Say, = 2399.55 kg/day  
= 2400.00 kg/day

**B. Waste Bin (Container) for every house hold**

SW generation from single household =1kg/day  
Volume needed for 1 kg SW=2L/day  
Avg. Density of SW=(1/2)=0.5kg/L  
SW volume of 2 days store=4 liter

**C. Considering organic 60% & Inorganic 40%**

Volume of organic SW per house hold in 2 days =2.4 liter  
keeping 50% empty space for easy handling =1.2 liter  
Total volume = 3.6 liters  

Volume of inorganic SW per household in 2 days =1.6 liter  
Keeping 50% empty space for easy handling =0.8 liter  
Total volume = 2.4 liter

**** Provide two plastic bins (red & green) with lid, each of 5 L capacity for inorganic and organic wastes to all active households in GP

**** For public or commercial establishments provide larger containers each of = 20 Litre

Nirmal Sahayak  
4 No. Hemtabad G.P.  
P.O.-Hemtabad, U/D.
D. Transportation:

Pedal Tri-cycle (PTC) will be used for primary transportation.
Size of the container = L(1.2m) x B(0.75m) x H(0.75m)=0.675M³
Keeping empty space (26%) for easy handling=0.175M³
Space provide for SW=0.5M³

Volume in PTC for SW =(0.5x1000)=500 L[1m³ =1000 Liter]
Carrying capacity of single PTC=[500 x 0.5]
=250 kg.

Partition in PTC container
space of PTC container will be dividing in 2 compartments.
Collect Separately,
60% as organic =150 kg &
40% as inorganic =100 kg.

E. Partial decomposition

In a GP total waste generation =2400 kg/day
60% as organic =1440 kg/day
40% as inorganic =960 kg/day
Organic waste generate in one month = 43200 kg/month

**Land required for partial decomposition of organic solid waste**

Partial decomposition (PD) heap:
One PD unite (5m X 1.5m X 1.5m)=11.25M³ [1 M³=1000L,
Density=0.5]
=5625 kg
Say=5500 kg.
Total nos. PD unit needed for organic waste generated in one month=43200/5500=7.85 nos.
say = 8 nos.
F. Vermi Compost unit

Organic wastes generation (60%) in one month = 43200 kg/month
Partially decomposed waste generation = 21600 kg/month
Single vermi Bed \( (27 \text{m} \times 1 \text{m} \times 0.5 \text{m}) = 13.5 \text{ m}^3 \)
\[ = 6750 \text{ kg.} \]
Total Vermi bed needed = \( (21,600/6750) = 3.20 \) nos
Say = 3 nos.

G. Total waste generation in GP having 1800 house hold = 2400 kg
PTC required in GP = \( [2400/(250 \times 2)] = 4.80 \) nos.
Say = 5 nos.

Keeping PTC as stand by = 1.
Total PTC required in GP = \( (5+1) = 6 \) nos.

H. Land area for 8 partial decomposition heaps.

Land area for one heap = \( L(5 \text{m}) \times B(1.5 \text{m}) = 7.5 \text{ m}^2 \)
Land area for 8 heap = \( (7.5 \times 8) = 60 \text{ Sqm.} \)
Equal area needed for turning up of 8 heap = 60 m2

Free space between two column of heaps = \( [2 \text{m} \times (8 \times 1.5)] = 24 \text{ m}^2 \)
Total area for partial decomposition = (60+60+24)=144 m²
=1549.44 Sq.ft. (1m²=10.76 sq.ft)
=2.152 katha

Area for segregation of organic wastes at SLWM unit
=(7.5m X 6m)=45m²
=484.20 Sq. ft.
= 0.673 katha

Total area required =(2.152 +0.673) =2.82 katha
Say, = 3.0 katha.

I. Total land area for vermi compost shed

Vermi bed area =L(27m) X B(1m) X nos(3)=81m²

Free space for movement/carrying =L(27m) X B(2.15m) =98.05 m²
Say, = 58 m²

Work space = (6.05 m x 5 m)=30 sqm

Total area for vermi composting = 169sqm=2.52 katha
Say, = 2.60 katha.

J. Recyclable material Segregation unit

In a GP total SW generation = 2400 kg/day
Organic wastes generated @ 60% = 1440 kg/day
Total inorganic waste generated @ 40% =960 kg/day
Recyclable inorganic waste generated @ 15% = 360 kg/day
Inorganic waste for land filling @ 25% = 600 kg/day.

**K. Area for sorting or segregation for 960 kg @ 5 m²/100 kg**

= 48 Sqm.

Additional area (50%) required for storing = 24 m²

Total area for sorting & storing of recyclable wastes = 72 m²

= 774.72 sq. ft. = 1.07 katha

Cleaning, washing & drying of plastic, plastic bottle etc.

= (35 ft x 35 ft) = 1050 ft²

= 1.46 katha

Total area for sorting, storing, cleaning, washing & drying

= (1.07 + 1.46) = 2.53 katha

Say = 2.60 katha

Total land required = 3 partial decomposition = 3.0 katha

Vermi compost shed = 2.60 katha

Sorting, storing & cleaning washing = 2.60 katha

= 8.20 katha

Say = 9 katha
Particulars

1. The shed area (vermi composting bed for house hold, garden wastes etc) for 3 beds. \([95 \text{ft} \times 20 \text{ft}] = 1900 \text{ ft}^2\)

2. Segregation with temporary shed [organic]
   \((254 \text{ ft} \times 20 \text{ ft}) = 500 \text{ ft}^2\)

3. Partial decomposition open space with brick soling
   \(=[(L=5 \text{m}) \times (B=1.5 \text{m}) \text{ for 8 heaps}] \&\)
   Equal area for turning up (8 heaps)\(=1600 \text{ ft}^2\)

4. Tri-Cycle parking space (with shed)
   \([\text{Size 7 ft} \times 5 \text{ ft for 8 nos.}] = 400 \text{ ft}^2\)

5. Cleaning, washing & drying open space with net cementing
   \([35 \text{ ft} \times 30 \text{ ft}] = 1050 \text{ ft}^2\)

6. Recyclable packing & storing unit with shed \(= 775 \text{ ft}^2\)

7. Toilet, urinals, bathrooms for 20 user. \([10 \times 12] = 120 \text{ ft}^2\)

8. hand pump – water facilities for all activities
   \& other facilities \([8 \text{ ft} \times 12 \text{ ft}] = 100 \text{ ft}^2\)

9. Office cum godown with shed for vermin accessories \([40 \text{ ft} \times 20 \text{ ft}] \)
   \(= 800 \text{ ft}^2\)

\(\text{“A” total} = 7245 \text{ ft}^2\)
B. 10% extra of total area
   (For Plantation, path way etc.)

   \[ \text{[A+B] grand total} = 7970 \text{ ft}^2 \]

   \[ = 11 \text{ katha.} \]
HEMTABAD GRAM PANCHAYET  
HEMTABAD DEVELOPMENT BLOCK, UTTAR DINAJPUR  
COMMUNITY BASED SOLID WASTE MANAGEMENT UNIT

Analysis of Capital expenditure for HEMTABAD Gram Panchayat

Source of fund – NRLM- 5 lakh

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars</th>
<th>Quantity</th>
<th>Amount(Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Training to waste collectors, Segregators &amp; supervisor before starting the project. (@ Rs 3000/- each)</td>
<td>01 Nos</td>
<td>3000.00</td>
</tr>
<tr>
<td>2</td>
<td>Training &amp; Meeting to waste collectors, Segregators &amp; supervisor after starting the project in every month for 02 years. (@ Rs 2500/- each)</td>
<td>24 Nos</td>
<td>60000.00</td>
</tr>
<tr>
<td>3</td>
<td>Exposure visit of trainers to Kamlabari-1 GP regarding this project which is already ongoing. (@ Rs. 7000/- each)</td>
<td>01 Nos</td>
<td>7000.00</td>
</tr>
<tr>
<td>4</td>
<td>Meeting with GP members (02 times). (@ Rs 3000/- each)</td>
<td>02 Nos</td>
<td>6000.00</td>
</tr>
<tr>
<td>5</td>
<td>Meeting with waste collectors, Segregators &amp; supervisor before starting the project. (@ Rs. 3000/- each, Two times)</td>
<td>02 Nos</td>
<td>6000.00</td>
</tr>
<tr>
<td>6</td>
<td>Meeting in 09 nos Sansad with household regarding awareness. (@ Rs. 6000/- each)</td>
<td>09 Nos</td>
<td>54000.00</td>
</tr>
<tr>
<td>7</td>
<td>Wall writing (45 Nos) in GP area 05 Nos each for 09 nos sansad (45 X 1500.00/each)</td>
<td>45 Nos</td>
<td>81000.00</td>
</tr>
<tr>
<td>8</td>
<td>Writing on vats / Arresting buckets @ 15.00/each)</td>
<td>2628 Nos</td>
<td>60000.00</td>
</tr>
<tr>
<td>9</td>
<td>Awareness through Leaflet Distribution.</td>
<td>GP Area</td>
<td>50000.00</td>
</tr>
<tr>
<td>10</td>
<td>Permanent Display Board with fixed RCC Pillar.</td>
<td>4 Nos</td>
<td>90000.00</td>
</tr>
<tr>
<td>11</td>
<td>Flex Banner/ Display(10 Nos) at Bazars &amp; gathering with suport. (@ 5000/- each)</td>
<td>10 Nos</td>
<td>50000.00</td>
</tr>
<tr>
<td>12</td>
<td>Awareness through Micking (for 15 days ) in GP area. @ Rs. 1000/- each )</td>
<td>15 Nos</td>
<td>15000.00</td>
</tr>
<tr>
<td>13</td>
<td>Awareness through Street Drama in 09 Nos. Sansad, Bazars &amp; Gatherings. (9 times) @ 2000/- each)</td>
<td>09 Nos</td>
<td>18000.00</td>
</tr>
<tr>
<td></td>
<td>Total =</td>
<td></td>
<td>500000.00</td>
</tr>
</tbody>
</table>
### Source of fund –MGNREGS-Rs 10 Lakh

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Particulars</th>
<th>Quantity</th>
<th>Amount(Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vermi Compost unit</td>
<td>1 Unit</td>
<td>Rs. 4,50,000/-</td>
</tr>
<tr>
<td>2</td>
<td>Segregation unit</td>
<td>1 Unit</td>
<td>Rs. 2,00,000/-</td>
</tr>
<tr>
<td>3</td>
<td>Tri cycle Shed</td>
<td>1 Unit</td>
<td>Rs. 1,02,000/-</td>
</tr>
<tr>
<td>4</td>
<td>Office Room &amp; Store Room</td>
<td>1 Unit</td>
<td>2,00,000/-</td>
</tr>
<tr>
<td>5</td>
<td>Toilet, Bathrooms with running water</td>
<td>1 Unit</td>
<td>40,000/-</td>
</tr>
<tr>
<td></td>
<td>Electricity</td>
<td>1 Unit</td>
<td>8000/-</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>Rs. 10,00,000/-</strong></td>
</tr>
</tbody>
</table>
# Source of fund – MNB 20 lakh

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars</th>
<th>Quantity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>E-Rikshaw for door to door waste collection. (@ Rs. 1,50,000/- each)</td>
<td>3 Nos</td>
<td>450000.00</td>
</tr>
<tr>
<td>A-2</td>
<td>Broom sticks, aluminium baskets, spades, long handle steel forks, scrapers, pick axels, shovels, crowbar, sieve, etc. (for 2 years)</td>
<td>As per requirement</td>
<td>13300.00</td>
</tr>
<tr>
<td>A-3</td>
<td>Safety kits, aprons, caps, gloves, vaccination etc. (for 2 years)</td>
<td>As per requirement</td>
<td>10000.00</td>
</tr>
<tr>
<td>A-4</td>
<td>Maintenance of E-Rikshaw. (for 2 years)</td>
<td>As per requirement</td>
<td>56000.00</td>
</tr>
<tr>
<td>A-5</td>
<td>Cost of Vermi</td>
<td>As per requirement</td>
<td>40000.00</td>
</tr>
<tr>
<td>A-6</td>
<td>Buckets (@ Rs. 50.00/each)</td>
<td>3814 Nos</td>
<td>190700.00</td>
</tr>
<tr>
<td>A-7</td>
<td>Vats (@ Rs. 4000.00/each)</td>
<td>10 Nos</td>
<td>40000.00</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td>800000.00</td>
</tr>
</tbody>
</table>

| B-1   | Daily waste collector (Parivesh Dyuts), (06 X 26 days X 24 months )       | 6 Nos     | 673920.00 |
| B-2   | Weekly waste collector (Parivesh Dyuts), (02 X 12 days X 24 months )     | 2 Nos     | 103680.00 |
| B-3   | Daily waste segregator, (02 X 26 days X 24 months)                         | 2 Nos     | 224640.00 |
| B-4   | Supervisor, (01 X 26 days X 24 months)                                     | 1 Nos     | 168480.00 |
| B-5   | Office Accessories                                                         | LS        | 29280.00  |
|       | **Total**                                                                  |           | 1200000.00 |

**TOTAL (A+B) = 2000000.00**
## Monthly Income

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Particulars</th>
<th>Quantity</th>
<th>Amount(Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minimum @ Rs 15/Month for both door to door waste collection fees.</td>
<td>1807 Nos.</td>
<td>Rs. 27,105/-</td>
</tr>
<tr>
<td>2</td>
<td>Minimum @ Rs 30/month from PS market Shops for waste collection fees.</td>
<td>200 nos.</td>
<td>Rs. 6,000/-</td>
</tr>
<tr>
<td>3</td>
<td>Minimum @ Rs 150/Month from Community marriage Hall for waste collection fees.</td>
<td>1 No</td>
<td>Rs. 150/-</td>
</tr>
<tr>
<td>4</td>
<td>Minimum @ Rs 100/Week from hut for waste collection fees</td>
<td>4 Weeks</td>
<td>Rs. 400/-</td>
</tr>
<tr>
<td>5</td>
<td>Minimum @ Rs 50/month from Govt. Institution for waste collection fee.</td>
<td>35 Nos.</td>
<td>Rs. 1750/-</td>
</tr>
<tr>
<td>6</td>
<td>Sale of Recyclable/ Reusable worth of 360 kg/day @ Rs. 1/kg.</td>
<td>30 Days</td>
<td>Rs. 10,800/-</td>
</tr>
<tr>
<td>7</td>
<td>Sale of vermi @ Rs. 6/Kg.</td>
<td>4000kg</td>
<td>Rs. 24,000/-</td>
</tr>
</tbody>
</table>

**Total = Rs.70,205/-**
### Monthly Expenditure

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Particulars</th>
<th>Quantity</th>
<th>Amount (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Daily waste collector (Paribesh Dyuts), (6 X 26 X 1 X 180)</td>
<td>6 Nos</td>
<td>Rs. 28,080/-</td>
</tr>
<tr>
<td>2</td>
<td>Weekly waste collector (Paribesh Dyuts, (2 X 12 X 1 X 180)</td>
<td>2 Nos</td>
<td>Rs. 4320/-</td>
</tr>
<tr>
<td>3</td>
<td>Daily wage segregators, (2 X 26 X 1 X 180)</td>
<td>2 Nos</td>
<td>Rs. 9360/-</td>
</tr>
<tr>
<td>4</td>
<td>Supervisor, (1 X 26 X 1 X 270)</td>
<td>1 Nos.</td>
<td>Rs. 7,020/-</td>
</tr>
<tr>
<td>5</td>
<td>Hand gloves, mask, hand wash soap etc.</td>
<td>L.S.</td>
<td>Rs. 2100/-</td>
</tr>
<tr>
<td>6</td>
<td>Medical Expenditure @ Rs 150/Worker</td>
<td>11 Nos.</td>
<td>Rs. 1650/-</td>
</tr>
<tr>
<td>7</td>
<td>Monthly Miscellaneous like Bags, rope for packing etc.</td>
<td>LS</td>
<td>Rs. 10,000/-</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>Rs. 62,530</strong></td>
</tr>
</tbody>
</table>

Total gross income = [70,205 - 62,530] = Rs. 7675/-
### SPACE REQUIREMENT FOR SLWM UNIT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>Size (Sq. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Office Room, Security Room, Rest Room &amp; Godown</td>
<td>800</td>
</tr>
<tr>
<td>2</td>
<td>Toilet, Urinal &amp; Wash Room</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>Water facility (Drinking and all other activities)</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>PTC Parking Shed (10 nos)</td>
<td>450</td>
</tr>
<tr>
<td>5</td>
<td>Segregation of organic waste shed</td>
<td>500</td>
</tr>
<tr>
<td>6</td>
<td>Partial Decomposition open space (6 heaps)</td>
<td>2160</td>
</tr>
<tr>
<td>7</td>
<td>Vermi compost shed (4 beds)</td>
<td>2520</td>
</tr>
<tr>
<td>8</td>
<td>Sorting &amp; Storing of Recyclable waste shed</td>
<td>850</td>
</tr>
<tr>
<td>9</td>
<td>Cleaning-Washing-drying of plastic Bottles etc Open Space</td>
<td>750</td>
</tr>
<tr>
<td>10</td>
<td>Plantation, Beatification, Pathway, drain etc. (10% Total area)</td>
<td>825</td>
</tr>
</tbody>
</table>

**Total** 9075

Space requirement for SWM Unit=9075 sq.ft.=12.60 Katha, say 13.0 katha.
Land filling (for 30 years)

Land filling area required for 30 years
\[ = \frac{1:10 \times \{663\text{kg/days} \times 30 \text{ years}\} \times \left( 1.00 - 0.30 \right)}{(500\text{kg/m}^3 \times 6\text{m})} \]
\[ = 1863.36 \text{ m}^2 \]

Additional area (30%) required for movement
\[ = \frac{30}{100} \times 1863.36 \text{ m}^2 = 559.0 \text{ m}^2 \]

Total area required:
\[ = 1863.36 \text{ m}^2 + 559.0 \text{ m}^2 = 2422.36 \text{ m}^2 \] Approx, 36.0 katha.