



Adoption of decentralised waste management in Mbabane Town

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BACKGROUND ON MBABANE TOWN'S EXISTING SYSTEMS OF WASTE MANAGEMENT

Mbabane Town

- Mbabane, capital city of Swaziland has a population of 61,940 and 12 ward areas with *varying distribution of low-income communities and medium high communities.*
- Municipal Council of Mbabane is responsible for the management of waste programmes.
- Waste streams includes commercial and Residential waste, construction waste, special waste, garden waste and medical waste.

Existing status of waste management

- **Waste generation:** 48.4 TPD (Revised State of Environmental Report, 2016); waste Coverage is about 86 %
- **Collection:** Waste is collected 2 times a week from residential areas and daily within the Central Business District.
- **Treatment:** Currently 34% of the total waste generated is recycled and include; paper, cardboard, metals, glass, used oil, batteries and plastics; minimal treatment of food waste.
- **Disposal in engineered sanitary landfill**

Challenges

- How long can we be dependent on landfills? **One will get exhausted, will look out for another one!**
- Right now more than **70 percent of the expenditure goes in C&T**, for instance approx. E17,140,484 has been spent on waste management costs in the past three years (collection and disposal) & **70% spent on collection and only 30% disposal**
- Minimal processing, with no emphasis on wet waste processing
- No bylaws to support this.

**SOME GOOD INITIATIVES ALREADY
IN PLACE, NEED TO UPSCALE THEM**

WASTE REDUCTION INITIATIVES

Recycling of dry waste

- The recycling services are provided by one **Council Authorised Waste Recycler** located in the central business district.
- Currently 34% of the total waste generated is **recycled** and includes **paper, cardboard, metals, glass, used oil, batteries and plastics.**

Waste Recycling

- Buy back centers -2
- Community Recycling Centres-2
- School drop off centres-24
- Commercial business and office recycling
- Institutional Recycling (universities)-4



Drop off points pushing for segregation of waste



Reuse



Paper and Plastics – Ornaments, Necklaces, handbags, fruit bowls

Paper Bowls from newspaper

Food Waste Composting



**Fermentation
buckets**

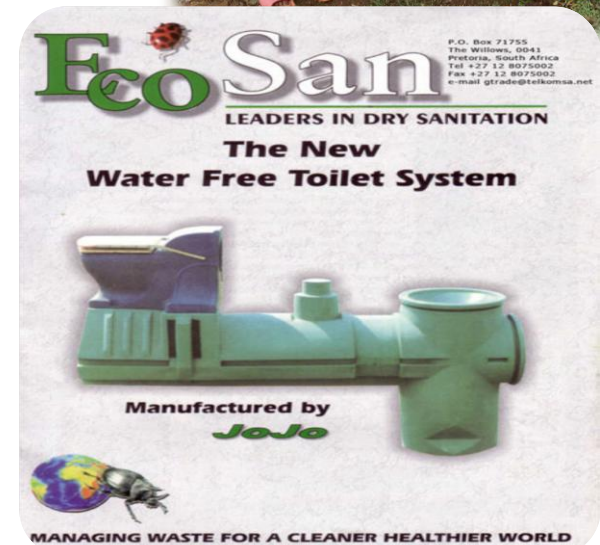


Japanese Bokashi Compost

Climate Smart Gardens and Composting



Human Waste (Faecal Waste) Composting



Community involvement and participation



Contd...

Composting of wet waste

As per information provided by the town council-

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- Food waste is composted on a monthly basis by the **Community Resource Persons (CRPs)** who were trained under the **Commonwealth Local Government Forum (CLGF)** funded project to raise awareness on the benefits of food waste compost.

UPCOMING INITIATIVES

- **Waste minimization initiatives focusing on waste recycling and food waste composting practices in Mbabane**
- **Main objective of the programme is to re-establish waste minimization initiatives focusing on waste recycling and food waste composting.**

Need to strengthen existing systems for waste management by...

- Operationalize segregation at source
- Strengthen collection and processing systems
- Develop decentralized systems for processing: waste is not waste, but resource
- Impose user-fees and penalties
- Adopt bylaws that support all this
- Reduce dependence on landfills

*It is only then we can move from **waste to resource management.***

HOW TO MAKE A CITY ADOPT DECENTRALISED WASTE MANAGEMENT

PRE-IMPLEMENTATION STAGE

Step 1

- Scoping

Step 2

- Ward/zone mapping

Step 3

- Propagation

IMPLEMENTATION STAGE

Step 5

- Collection and transportation of segregated waste to composting site/ Material Recovery

Step 6

- Site selection and development of processing/ Material Recovery Facility (MRF)

Step 7

- Wet Waste for composting/biomethanation, dry waste channelised to recyclers, non-recyclable, inert waste to sent co-processing in cement kilns/ sanitary landfill

Step 8

- Creation of market linkages for compost

Monitoring and Evaluation Stage

Step 10

- Developing benchmarks and indicators

Step 11

- Data collection and evaluation

Step 13

- Rating of the project - successful, non-successful or total failure

Step 14

- Feedback and troubleshooting

Key reasons why a city should adopt decentralized waste management approach

1. **Reduced dependence on land** --- with emphasis on source segregation, decentralized processing and provision of incentives to support segregation.
2. **Reduced cost on collection and transportation:** Upto 40–50 per cent of the municipal funds allocated for solid waste management are spent on salary of the staff and contractual workers, 20–40 per cent on collection and transportation and only 5 per cent on disposal. By adopting a decentralized approach, the cost of collection and transport will considerably reduce as waste will be treated much closer to the source.
3. **Additional resources will be generated** from composting and recycling, which means additional income for a large set of people (waste collectors, informal workers, recyclers etc.) in the chain.
4. **The environmental costs** incurred due to pollution of land, water and air resources from unsanitary landfills will also **reduce drastically**.

HOW WE DO THIS?



Objective

- Create a pilot to demonstrate decentralised waste management model
- This pilot could be replicated across Swaziland
- Achieve 100 percent source segregation
- Compost wet waste
- Channelize dry waste to recyclers
- Create market linkages for compost and make it a business model--- to benefit informal sector
- Commercial areas and eateries, hotels, etc. to give segregated waste
- Make Swaziland a **ZERO LANDFILL COUNTRY**, if achieves, becomes the only in Southern Africa



Authorities involved

- Swaziland Environmental Agency (SEA) , Swaziland
- Centre for Science and Environment (CSE), New Delhi
- Mbabane Town Council
- **Stakeholders such as** Hotels, Tourism sector, NGOs, Community Co-operatives/Groups and Households

Role and responsibility

- ***Swaziland Environment Authority***
 - ✓ Plays an important role in ensuring the project attains completion
 - ✓ Reviews progress from time to time
 - ✓ Removes major roadblocks by initiating discussion
- ***Centre for Science and Environment***
 - ✓ Co-ordinator and facilitator
 - ✓ Provision of technical support
 - ✓ Capacity building
- ***Mbabane Town Council***
 - ✓ Propagation support
 - ✓ Implementor
 - ✓ Infrastructure (MRF, processing facility) and manpower support
 - ✓ Bye-laws to support segregation



BRIEF DESCRIPTION OF THE PROCESS



Process to be developed

- Households(HHs) in urban, peri-urban areas of Swaziland to be mapped by town council/town board.
- The households to be given a pamphlet giving details on how to segregate.
- Once mapped, the town council can ask households to store waste in a segregated manner and put it at the nearest kerbside bins which are further modified to support collection of segregated waste.
- **In areas where D2D collection is prevalent, town council to have vehicles designed to collect segregated waste.**

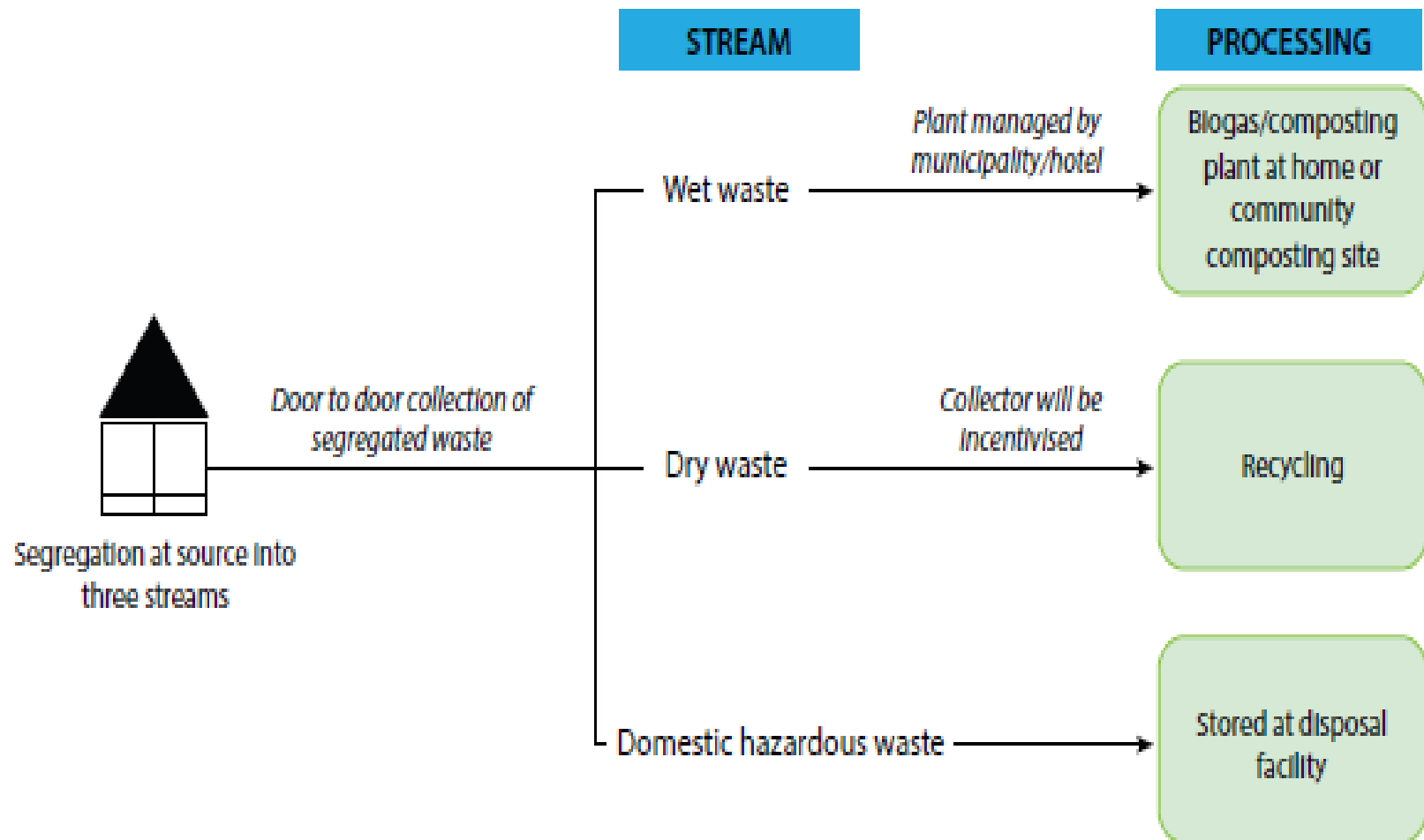


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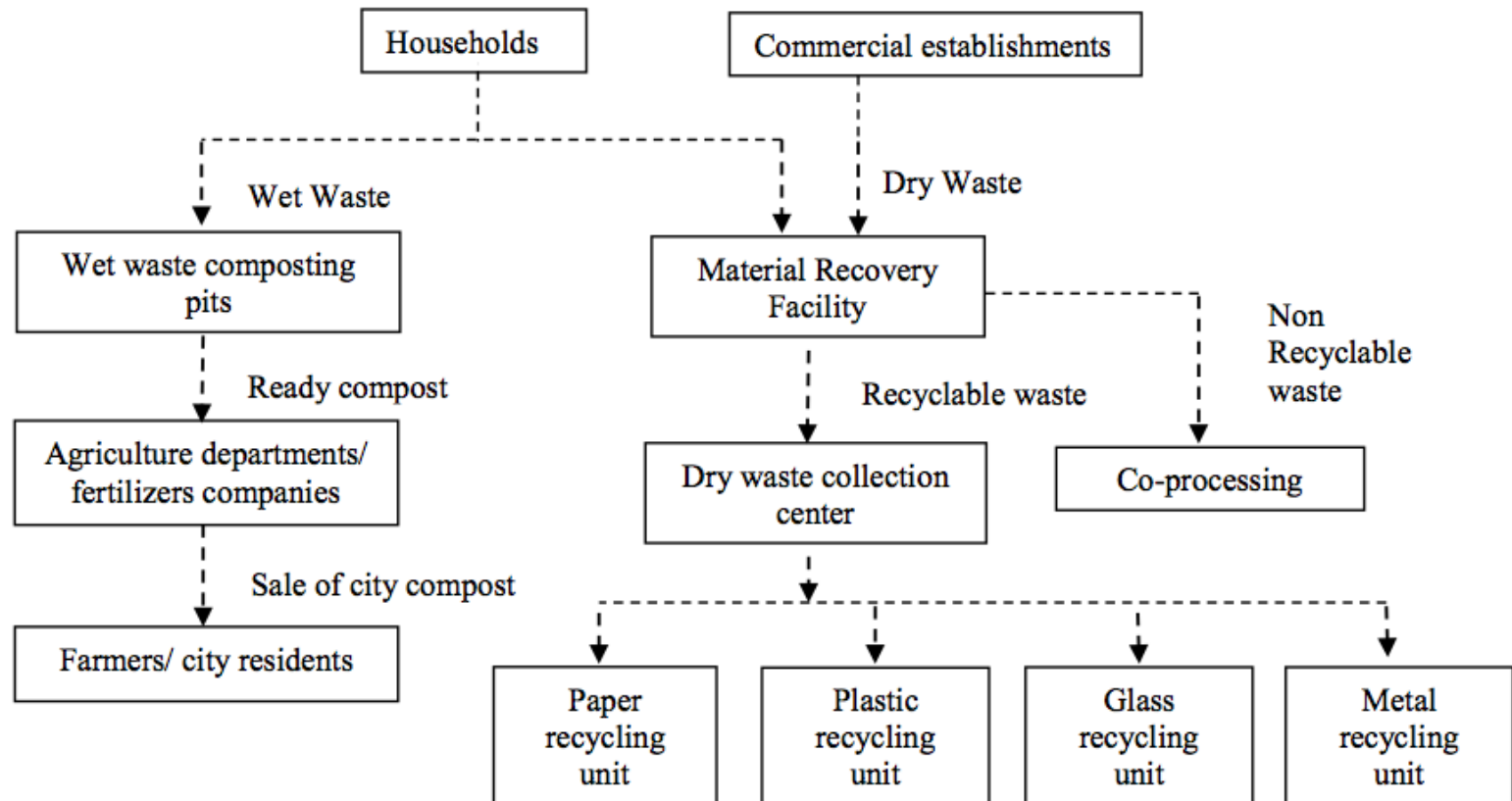
- The HHs where sticker is put will have to compulsorily segregate waste into wet, dry and domestic hazardous waste:
 - ✓ **Wet or organic or biodegradable** fraction such as vegetable and fruit peels, cooked food to be kept in the bin
 - ✓ **Dry fraction:** Recyclable resource---plastic, paper, glass, metal, others to be kept in bag
 - ✓ **Domestic Hazardous waste:** Expired medicines, chemicals, paints, sanitary waste to be kept in bag
- ULGs to arrange for appropriate infrastructure to support segregation---vehicles (tipper/pushcarts) with partitions



Proposed model for waste management in 200 households in Swaziland



DECENTRALISED MODEL OF WASTE MANAGEMENT



CASE STUDIES

1. MAPPING AND PROPAGATION IN MOBENI IN MATSAPHA

Workshop on decentralized waste management plan with Matsapha Town Council, 17th November, 2017



Sensitising the waste collectors of Matsapha Town Council on waste segregation



Selection of the Households (HHs) for the pilot in Mobeni



Mapping of proposed site for decentralised waste management in Mobeni, Matsapha



Site visit to the site after deliberation with municipality over suitability of area



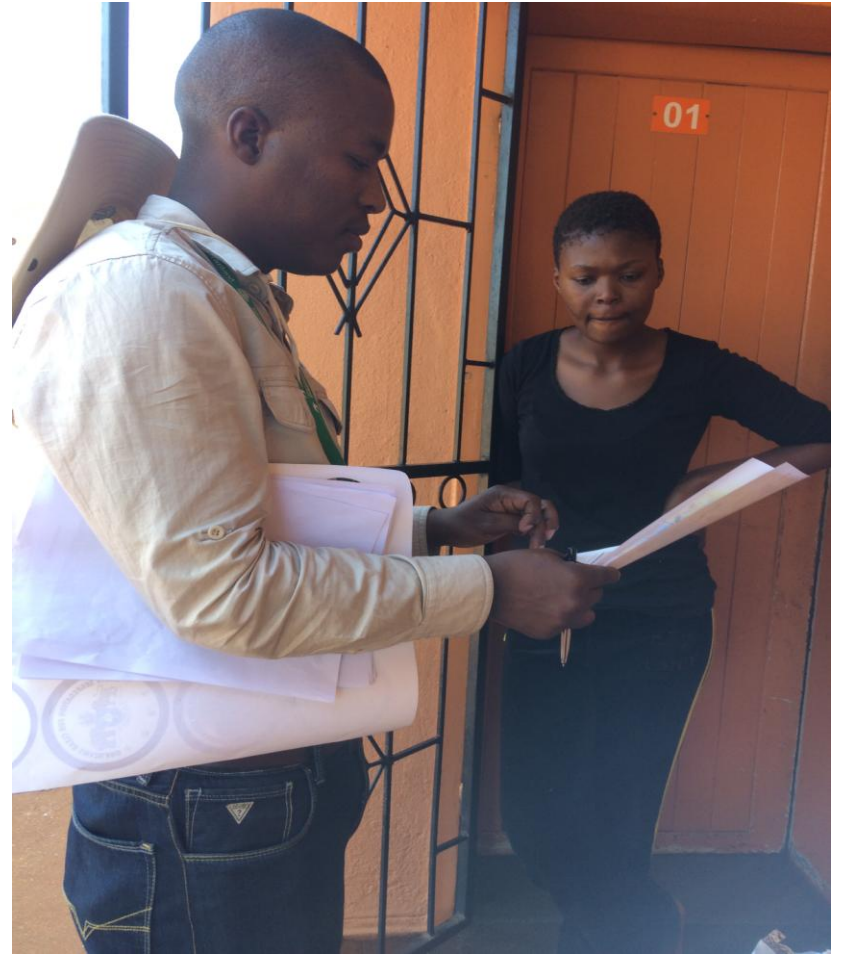
Door to door propagation by CSE & MTC explaining to residents the importance of and how to segregate household waste



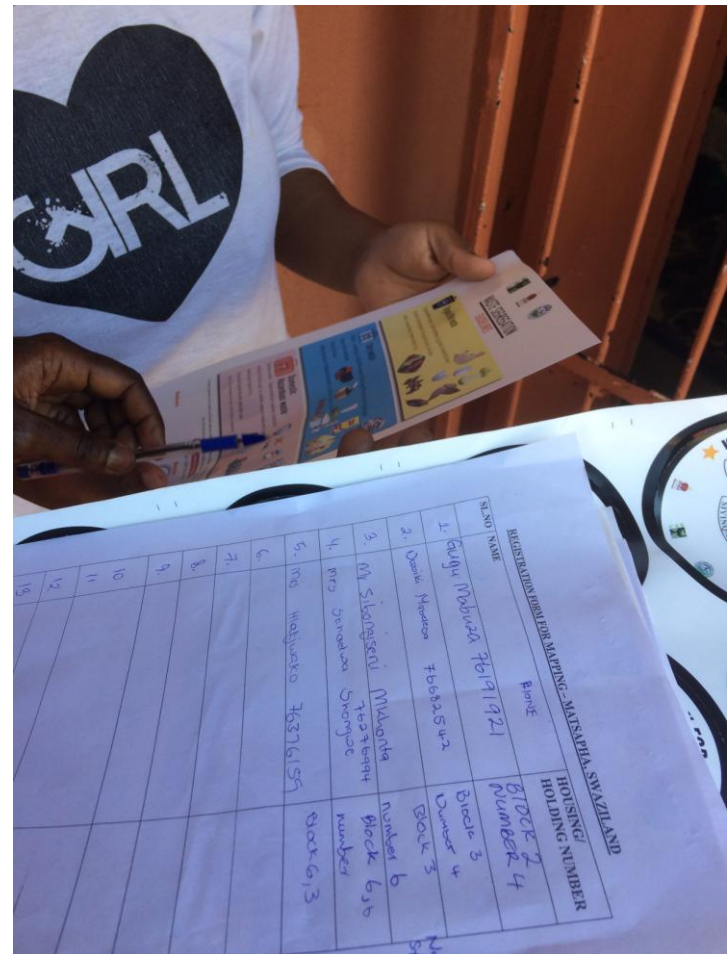
Propagation in HHs by waste collectors



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Registration of HHs to be part of the pilot



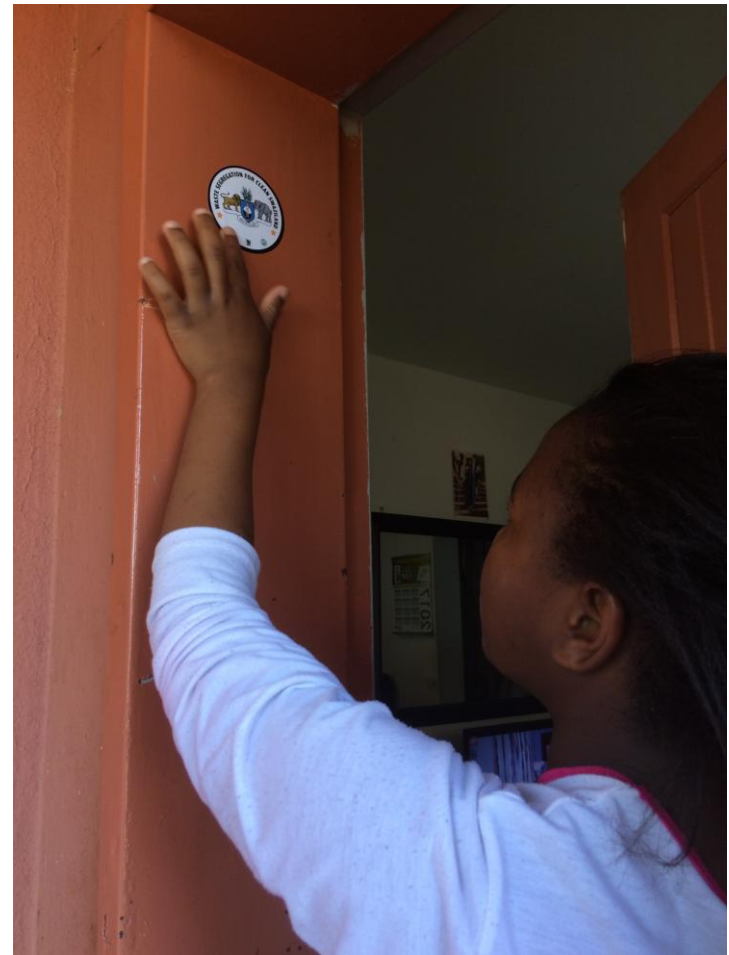
Distribution of pamphlets to HHs



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Sticker put on the door of every house as HHs commitment to segregate



Contd...



Household Mapping Sheet

REGISTRATION FORM FOR MAPPING - MATSAPHA, SWAZILAND		
SL.NO	NAME	HOUSING/ HOLDING NUMBER
1.	Gugu Mabuza 76191921	Block 2 Number 4
2.	Dabiki Mabasa 76632542	Block 3 Number 4
3.	Mr Sibongiseni Mkhonta 76276994	Block 3 number 6
4.	Mrs Shadwa Shongwe	Block 6, 6 number
5.	Mrs Hatjwako 76376159	Block 6, 3
6.	Mrs Gamedze 76047325	Block 6, 4
7.	SINDIE Namini 78208255	Block 8-5
8.	Mrs Nanguane 79784199	Block 8-8
9.		
10.		
11.		
12.		
13.		

REGISTRATION FORM FOR MAPPING - MATSAPHA, SWAZILAND		
SL.NO	NAME	HOUSING/ HOLDING NUMBER
1	Lenze Tsabedze 76581939	Block 1 no 3
2	Nompundo Nkambule 7678 3267	Block 1 no 1
3	Nompundo Sithole 76541803	Block 2 no 3
4	Simpfane Languya -	Block 9 no 3
5	Nomkhosi Nkambule 76052238	Block 9 no 5
6	Aiyanda Tsabedze 78237229	Block 9 no 6
7	Kwethu Mdluli 78441070	Block T. 1
8	Mandla Masutu 76806751	P



WASTE SEGREGATION **GUIDELINES**



Organic/Wet waste

Vegetable/fruit peels , Cooked food/leftovers, Egg shells /chicken/fish bones
Rotten fruits/vegetables, Tea bags/coffee grinds, Leaf plates
Fallen Leaves/twigs, Flowers/garlands, Grass



Dry waste

Plastic - Carrybags, Chips/toffee wrappers, Plastic cups, Milk/curd packets, Packaging waste
Paper and cardboard
Metal & Glass
Other dry waste -Rubber/thermocool , Ceramics/ wooden Chips



Domestic Hazardous waste

Sanitary waste - Diapers/sanitary napkins/ condoms *
Medical Waste such as needles, expired medicines, bandages
Bulbs/tube lights/CFLs
Discarded paint drums/ pesticide cans

**Wrap it in newspaper and give to the collector separately*



Please separate the waste as shown above and give it to the collector. Collector will not collect mixed waste any more.
Do not throw waste on the roads and litter in public places.

For more details contact:

Helpline: +268 2518 6637

Reduce

Reuse

Recycle



2. WASTE SEGREGATION FOR CLEAN ZANZIBAR

Waste Segregation for Clean Zanzibar
programme launched in Shaurimoyo, Zanzibar
on
6 September, 2017

for better solid waste management in Shaurimoyo

With a tripartite partnership between
Zanzibar Environmental Management Authority (ZEMA),
Zanzibar Urban Municipal Council (ZUSP) and
Centre for Science & Environment (CSE)

Objective

- Achieve 100 percent source segregation in 200 households of Shaurimoyo area by March, 2018
- 200 Households to give segregated waste
- Compost wet waste
- Channelize dry waste to recyclers
- Incentivise Waste Collector, upgrade livelihoods of informal sector
- Create market linkages for compost and make it a business model --
- to create jobs and businesses from waste
- Make cleanliness a movement
- Replicate to the rest of the island in a phased manner
- Make Zanzibar a **ZERO LANDFILL ISLAND**, to become the only area to achieve this objective in Zanzibar

Mapping of proposed site for decentralised waste management in Shaurimoyo, Stone Town



Site visit to the site after deliberation with municipality over suitability of area

Mapping of 200 households in Shaurimoyo dated 5th July, 2017



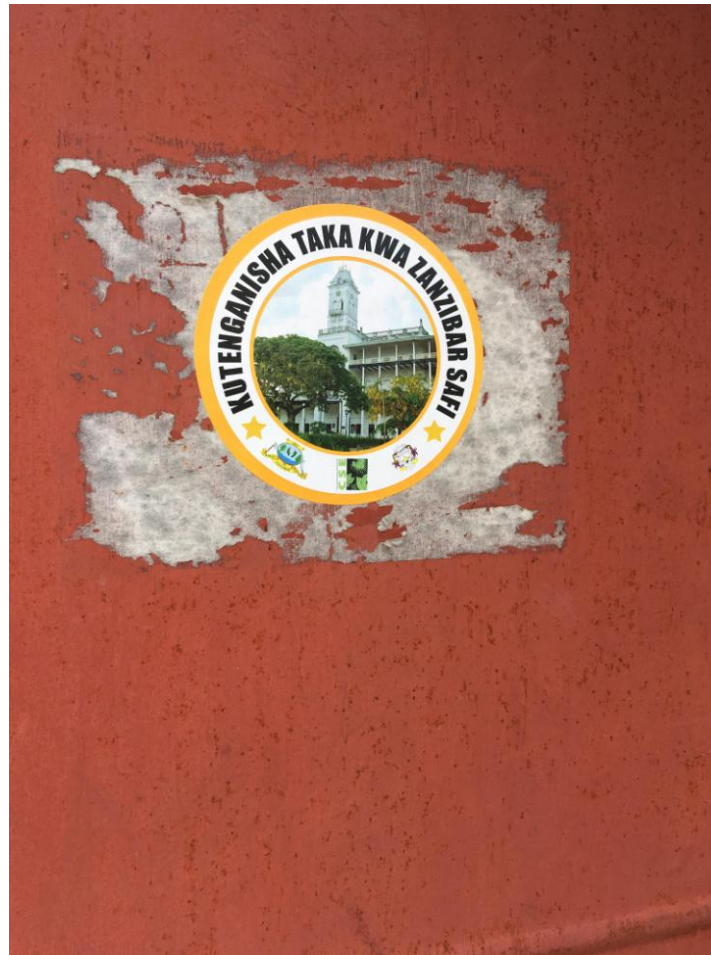
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Members from society taking consent from HH to segregate



Sticker put on the door of every house
that pledges to segregate



Door to door Propagation, in 200 Households (HHs) wards – about 1000-1500 population



Door to door propagation by CSE & ZUMC explaining to residents the importance of and how to segregate household waste on July 2017



Distribution of one bin and two bags on 6th September, 2017



**Inauguration of composting pit by DG, ZEMA and DDG,
CSE**

Punguza

Tumia tena

Rejesha

KUTENGANISHA TAKA KWA ZANZIBAR SAFI

SUPPORTED BY

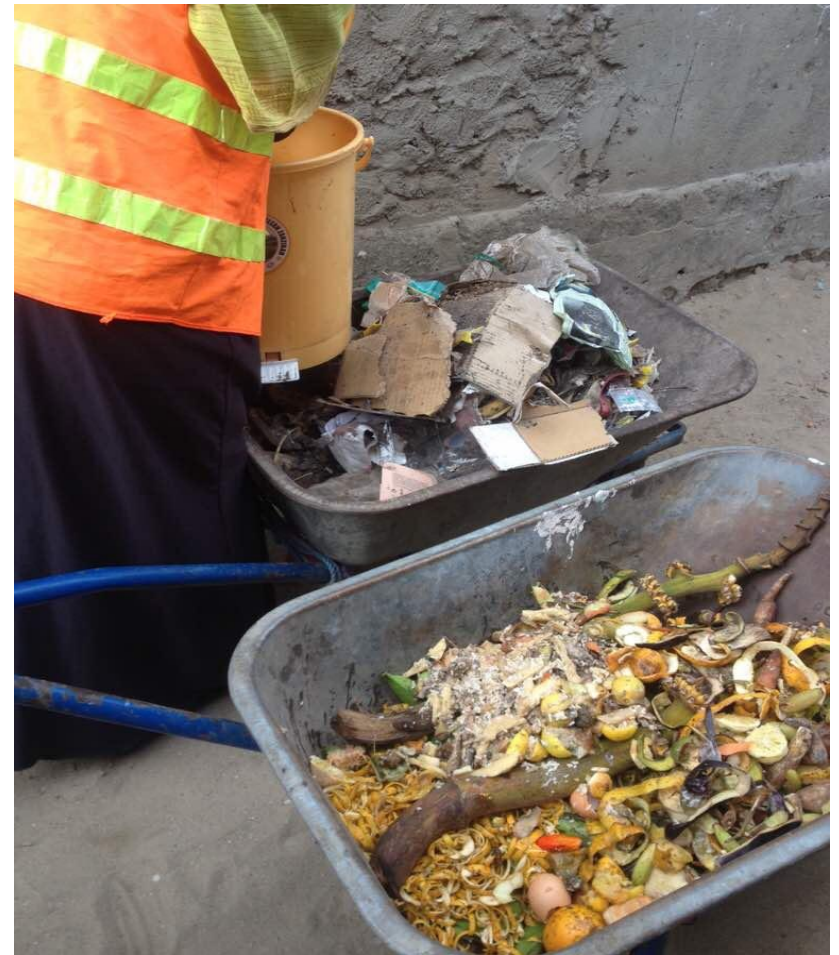
CENTRE FOR SCIENCE AND ENVIRONMENT INDIA
ZANZIBAR ENVIRONMENTAL MANAGEMENT AUTHORITY
ZANZIBAR URBAN MUNICIPAL COUNCIL

Over 80% Households giving segregated waste



First day of waste segregation on 11 September 2017

Segregated waste collected from Households by ZUMC



Waste workers collecting waste on 14 September 2017



Composting pit at the site



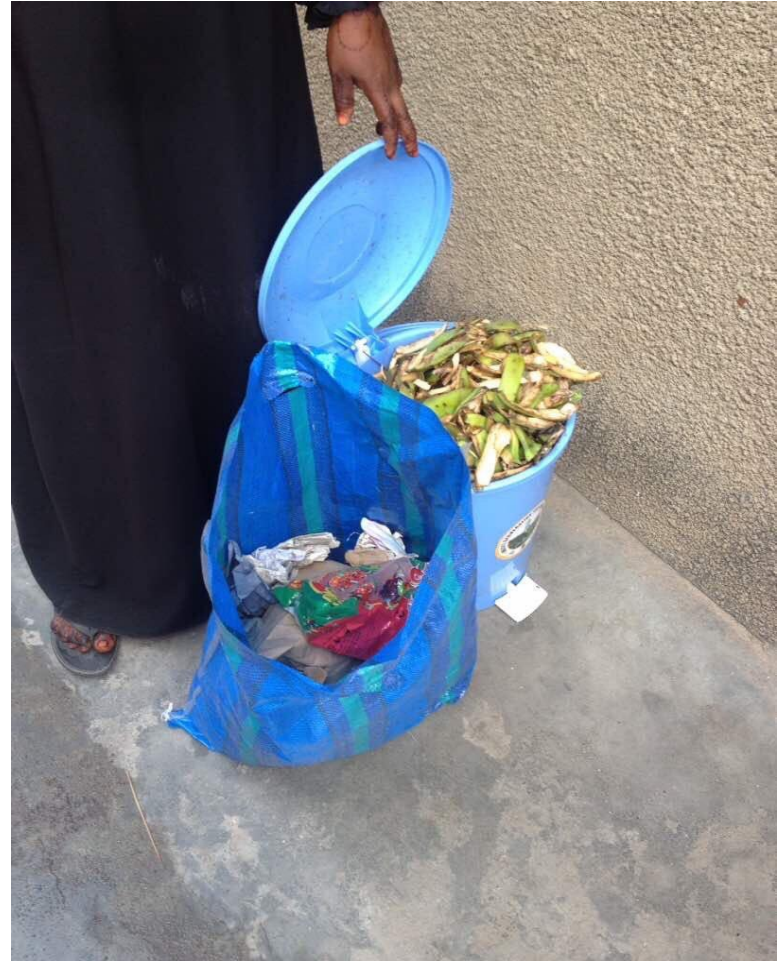
Segregated dry waste is stored in the Shaurimoyo waste management society office. PET, glass bottle and packaging waste

**70-80 kg Wet waste everyday goes to
composting site at Shaurimoyo**



Photograph of Composting pit, 15 September 2017

Wet and dry waste collection on 19 September 2017



Wet waste collection from HHs on 25 September



Segregated waste from HHs on 2 October



Segregated wet waste from HHs; Composting pit on 6 October



Incentives to collector

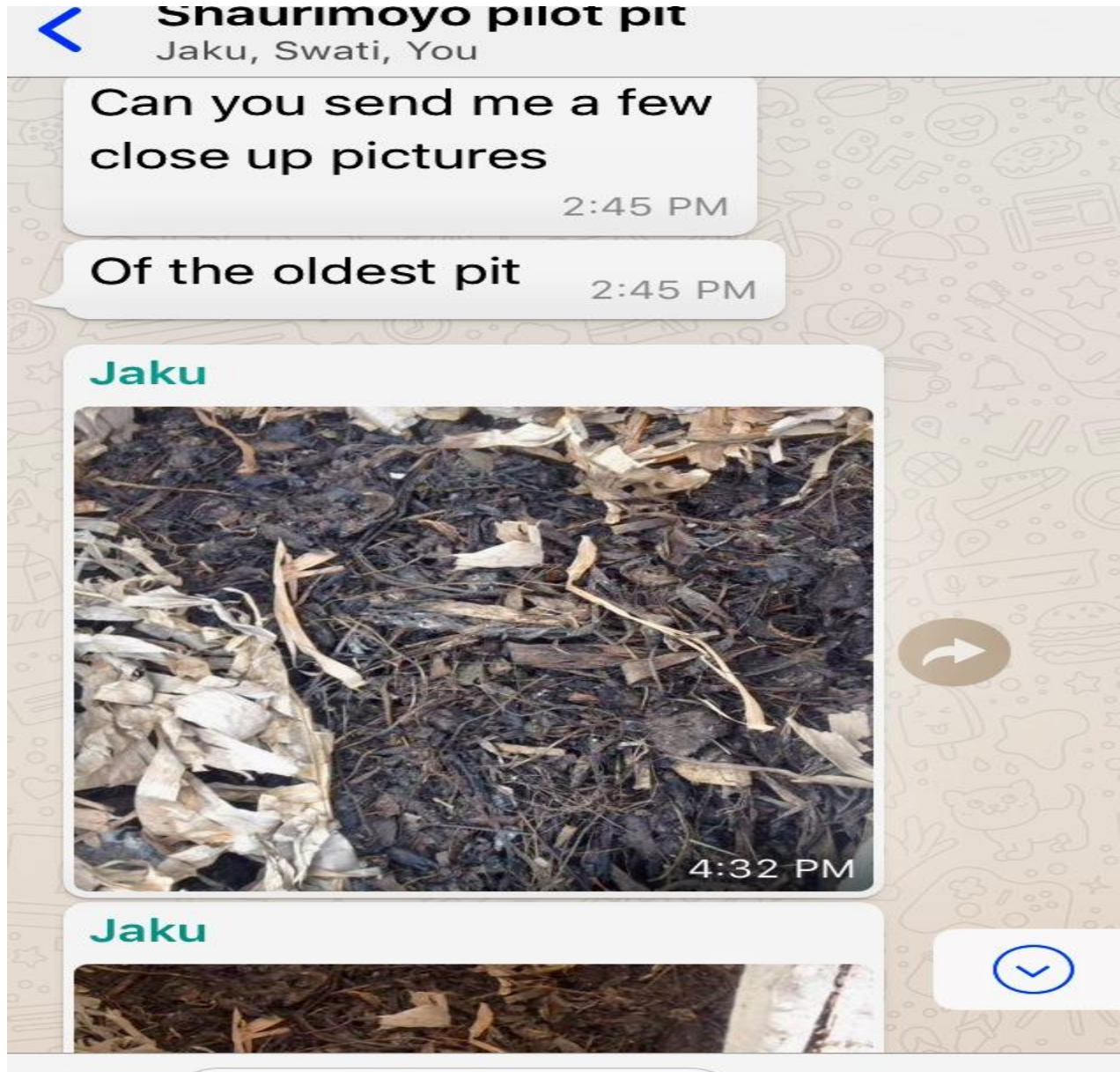
- Everyday, close to 30-50 kg plastic collected per ward
- Plastic sold to franchise 150 Tsh /kg @4Rs/kg
- Glass sold to franchise 200 Tsh /kg @5.7 Rs/kg

Weekly Data Collection (in Kilograms)

Date	% of segregation daily	Daily collection coverage in 200 Households(HH)	Amount of dry recyclable waste collected	Amount of Glass collected	Amount of Plastic Bottles (PET) collected	Amount of paper, cardboard, packaging collected	Amount of metal collected	Wet waste going into the compost pit
9/25/2017	More than 80%	Below 100 HH per day	50	14	42	45	7	232
10/4/2017	More than 80%	Below 100 HH per day	93	14	31	51	12	350
10/25/2017	More than 80%	Below 100 HH per day	50	2	40	112	8	280
11/6/2017	More than 80%	Below 100 HH per day	38	2	32	86	4	344

An online Google Sheet is created where information is filled up on a weekly basis by municipality and share with CSE. CSE further analysis the progress of work based on this data and shares with the local municipality.

How we monitor ?





Shaurimoyo pilot pit

Jaku, Swati, You

Mzee left

Thu, 14 Sep

Hi jaku can u share the photos here

8:40 AM ✓✓

Sat, 16 Sep

Jaku



12:26 PM

Swati

Great

12:26 PM





Jaku

en yesterday at 1:56 PM



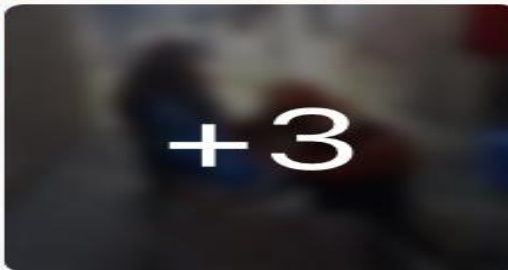
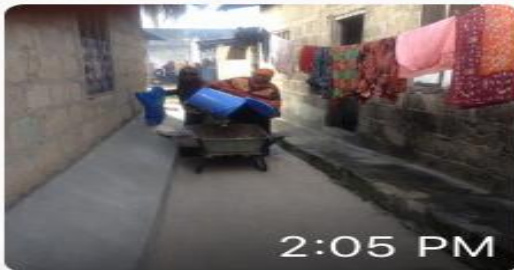
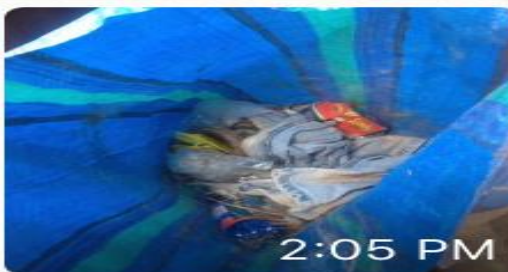
tomorrow

6:17 PM ✓✓

Ok

7:57 PM

Tue, 31 Oct



3. CSE'S INITIATIVE TO MAKE A CITY ADOPT DECENTRALISED WASTE MANAGEMENT IN INDIA

Swachhtha Swasthya Samridhi
programme launched in Muzaffarpur, Bihar on
15 December, 2016

for better solid waste management and sanitation in
Muzaffarpur

With a tripartite partnership for SWM between
Muzaffarpur Municipal Corporation (MMC)
Centre for Science & Environment (CSE)
ITC Ltd.

Door to door Propagation, in 12 wards



City has about 1 lakh population



Inauguration of solid waste management work in new wards



Door to door propagation by WoW volunteers explaining to residents the importance of and how to segregate household waste

Over 80% Households giving segregated waste



Segregated waste collected from Households by MMC





In some wards, segregation percentage is about 90 percent



Dry waste compartment on the tipper carrying dry waste collected from households



Wet waste compartment on the tipper carrying wet waste collected from households



A tricycle collector further segregates dry waste into PET, carry bags and packaging waste in Ward No. 3.

**7-8 tonne Wet waste everyday goes to
composting site, near Town Hall**



city to have 4 decentralized composting centers to cover 49 wards

Before sieving



Final Compost



Massive transformation in wards, no littering, Visibly clean



Ward 1



Ward 2



Ward 4

A slum area in Ward 11 transformed





Muzaffarpur city looks remarkably cleaner post implementation of the program

Pond Cleaning by volunteers



Propagation in commercial areas





Plastic getting further segregated at dry waste collection center

Byelaws on SWM

- Muzaffarpur has become the first city in Bihar to have its byelaws on solid waste management, passed by the elected board, to be notified by UD&HD.

दिनांक-16.08.2017 (बुधवार) को पूर्वान्ह 11:30 बजे से जुबना सहनी पार्क ऑडिटोरियम के ग्राउण्ड फ्लोर पर अवस्थित मीटिंग हॉल में श्री सुरेश कुमार, माननीय महापौर, नगर निगम मूजफरपुर की अध्यक्षता में हुई निगम बोर्ड की विशेष बैठक की कार्यवाही।

बैठक की कार्यवाही प्रारम्भ करने से पूर्व माननीय महापौर द्वारा बैठक में उपस्थित सभी माननीय सदस्यों एवं सीटिया कमिटी का अभिनन्दन करते हुए बैठक की कार्यवाही आगे बढ़ाने का दावा नगर निगम के सीटियों को करने हुए एवं अभिनन्दन किया गया। तत्पश्चात् नगर निगम के अध्यक्ष द्वारा सभी माननीय सदस्यों एवं सीटिया कमिटी का अभिनन्दन करते हुए बताया गया कि निगम बोर्ड की यह विशेष बैठक है, जिसमें दो विधियों पर आवश्यक निर्णय लेने हेतु ये प्रस्ताव रखे गये हैं :-

1. ठोस अपशिष्ट प्रबंधन नियम-2016 के कार्यान्वयन हेतु मूजफरपुर नगर निगम द्वारा तैयार उप-नियम-2017 पर विचार।
2. स्वच्छता-स्वास्थ्य-समुद्धि कार्यक्रम को कार्यान्वयन हेतु द्वा-हाईकिल, ट्रीपर एवं कटरनी के क्रय पर विचार।

प्रस्ताव संख्या-01 के संबंध में नगर निगम द्वारा माननीय सदस्यों को बताया गया कि सरकार द्वारा ठोस अपशिष्ट प्रबंधन के तहत बनाये गये नियम-2016 की निगमावली के अन्तर्गत मूजफरपुर नगर निगम द्वारा भी उप-नियम-2017 तैयार किया गया है। उक्त उप-नियम-2017 में कुल 52 कठिनाई हैं तथा प्रत्येक कठिनाई में किने गये प्राकान एवं प्रदत्त कठिनाई को दर्शाया गया है। नगर निगम द्वारा यह भी बताया गया कि यह प्रस्ताव प्रमाण सही, नगर विकास एवं आवास विभाग, बिहार, पटना द्वारा दिये गये निर्देश के अन्तर्गत में उपस्थित किया गया है, ताकि नगर निगम के आय-स्त्रोत में वृद्धि हो एवं नगर निगम की आर्थिक स्थिति सुदृढ़ हो। यदि यह उप-नियम-2017 बोर्ड द्वारा पारित हो जायगा तो इसे उप-कानून की सरकारी स्तर पर प्रकाशन की तारीख को एक माह बाद तक समाचार-पत्र, रेडियो, होर्डिंग, सरकारी स्कूलों पर दिवाले लेखन एवं स्थानीय टीवी पर फैलाने के माध्यम से उप-नियम के बारे में आमजन की जानकारी हेतु प्रचार-प्रसार कराया जायेगा।

दूसरी प्रस्ताव संख्या-02-स्वास्थ्य-समुद्धि कार्यक्रम के तहत कचड़ा-संग्रहण के संबंध में नगर निगम द्वारा बोर्ड को बताया गया कि प्रधान सचिव मन्त्रालय द्वारा निर्देश दिया गया है कि उक्त कार्यक्रम के तहत मा-अक्टूबर-2017 तक ही मूजफरपुर नगर निगम के बारे में यह कार्य करवाया जाय, उक्त सत्र एक वर्ष तक रहे। उक्त कार्य के कार्यान्वयन हेतु द्वा-हाईकिल, ट्रीपर एवं कटरनी क्रय करने की आवश्यकता होगी, जिसकी स्वीकृति बोर्ड द्वारा प्रदान की जानी है।

दूसरी के साथ नगर निगम द्वारा नगर प्रबंधन, नगर निगम, मूजफरपुर को तैयार किये गये उप-नियम-2017 में किये गये प्राधान को कठिनाई पर कर माननीय सदस्यों को अवगत कराने का निर्देश दिया गया। तत्पश्चात् नगर प्रबंधन द्वारा कठिनाई किये गये प्राधान को समझाया गया।

माननीय डॉ. पार्षद, श्री राजेश कुमार केजरीवाल, डॉ. पार्षद, डॉ. संजय-20, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-28, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-04, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-44, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-27, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-29, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-22, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-14, श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-21 एवं श्री राजेश कुमार, डॉ. पार्षद, डॉ. संजय-25 द्वारा उक्त उप-नियम-2017 में किये गये प्राधान पर अपना-अपना विचार एवं सुझाव से अवगत कराया गया।

तत्पश्चात् माननीय महापौर द्वारा बैठक में उपस्थित सभी माननीय सदस्यों को बताया गया कि मूजफरपुर नगर निगम एक स्वच्छता संस्था है। इसलिये नगर निगम की आय में वृद्धि करने के लिये इस उप-नियम को पारित किया जाना आवश्यक है, ताकि नगर निगम की आर्थिक-स्थिति सुदृढ़ हो सके इससे होने वाली आय से शहर को साफ एवं स्वच्छ रखने में मदद मिल सके। उन्होंने यह भी बताया कि सरकार का भी स्पष्ट निर्देश है कि अपने आय-स्त्रोत बढ़ाकर शहर की साफ-सफाई एवं विकास का कार्य करना सुनिश्चित किया जाय।

30. विवाद/आयोजन हॉल के लिए, आयोजन/समारोह की तारीख से मूलतः 7 दिन पूर्व, मूजफरपुर नगर निगम से अनुमति लेनी होगी और आयोजन/समारोह के स्थान पर कचरे के पुनर्चक्रण और नगर निगम की व्यवस्था करनी होगी। पुनर्चक्रण कचरा कचरा संग्रहणकर्ता को सौंप जाएगा। मूजफरपुर नगर निगम कुछ दिनों, हफ्तों, कुछ माह या एक वर्ष की अनुमति प्रदान कर सकता है। यह आयोजन/समारोह आयोजित करने के लिए मूलक प्रभावित करेगा। यदि अनुमति नहीं दिया जाता है, तो धारा 42 (j) के अनुसार जुर्माना लगाया जाएगा।

31. मूजफरपुर नगर निगम अस्थित प्रबंधन के लिए निम्नलिखित उपयोगकर्ता शुल्क प्रभावित करेगा:-

क्र. सं.	उपयोगकर्ता श्रेणी	मासिक उपयोगकर्ता शुल्क (रुपये में)
क. आवासीय		
1	आवासीय भवन (प्रति परिवार/प्लेट/घर)	₹30.00 आवासीय भवन एवं ₹60.00 प्लेट से
2	डोमडमटी और गरीबी रेखा से निचले आवास	₹0.00
ख. नै-आवासीय		
1.	फेरीवाला	
	(क) संरचना सहित (सड़क के किनारे)	₹30.00
	(ख) संरचना सहित	₹60.00
2.	हॉटिंग ज्वाइंट, रेस्तरां, कैफे, बाबा, मिठाई की दुकान, कॉफी हाउस, आदि	₹500.00
3.	मांस, मांस और पौष्टिकी की दुकानें	₹250.00
4.	पान की दुकानें सहित अन्य दुकानें	₹100.00
5.	रेस्टोरेंट बिना एलसी वाला	₹500.00
6.	रेस्टोरेंट एलसी	₹1000.00
7.	गेस्ट हाउस	₹1000.00
8.	मैन्स	₹2500.00
9.	होस्टल (अन्यथा)	₹1000.00
10.	धर्मशाला	₹1000.00
11.	स्टार होटल या समकक्ष होटल	₹3000.00
12.	वाणिज्यिक कार्यालय, सरकारी कार्यालय, सैनिक संस्थान	₹1000.00
13.	बैंक एवं इन्फोर्मेशन कार्यालय	₹1500.00
14.	कॉमिंग बसरोज	₹500.00
ग. स्वास्थ्य सेवा संस्थान (जैसे चिकित्सा कचरे को छोड़कर)		
1.	बड़े चिकित्सा प्रति इकाई	₹3000.00
2.	चिकित्सा प्रयोगशाला प्रति इकाई	₹2000.00
3.	अस्पताल (50 बेड तक)	₹2500.00
4.	अस्पताल (50 बेड से अधिक)	₹5000.00

45. यदि उपलब्धकर्ता के द्वारा नियन्त्रित उपलब्ध का कार्य जारी रहता है तो पर्यावरण संरक्षण अधिनियम-1986 के अन्तर्गत विधि-सम्मत कार्यवाई की जायेगी।

46. यदि कोई व्यक्ति या फेरीवाला सड़क या अन्य सार्वजनिक स्थानों पर कूड़ा फैलाने शुरू पाया जाता है, तो तत्काल जुर्माना लगाया जाएगा और जरूरत पड़े पर कार्रवाई की जायेगी।

47. यदि कचरा प्रबंधन कार्यबल इस प्रकार पाए गए उपलब्ध और की गई कार्यवाही के बारे में नगर निगम को सूचित करने के पक्ष में रिपोर्ट प्रस्तुत करेगा।

48. मूजफरपुर नगर निगम को प्रत्येक माह अपनी वेबसाइट पर उपलब्ध एवं उपलब्धकर्ता की सूचना और लगाए गए और क्यूरे हुए जुर्माने की तारीखें सही विधि से प्रकाशित करेगा।

49. मूजफरपुर नगर निगम, शोध पर पुनर्चक्रण का संदेश को फैलाने के लिए शहर के आवासीय और वाणिज्यिक क्षेत्रों में आईडीडी (सूचना, शिक्षा एवं प्रसार) और जानकारी सृजन आयोजित करेगा।

50. मूजफरपुर नगर निगम, शोध पर पुनर्चक्रण के सरकारी राजपत्र में प्रकाशन की तारीख के एक माह तक समाचार-पत्र, रेडियो, होर्डिंग और स्थानीय टीवी चैनलों के उपयोग के माध्यम से उपलब्धकर्ता के बारे में जानकारी प्रसारित करेगा। इससे बाद, उप कानून का संक्षेप हाईड्रस के माध्यम से प्रमुख सार्वजनिक स्थानों पर प्रदर्शित किया जाएगा।

51. मूजफरपुर ठोस अपशिष्ट प्रबंधन उप-कानून में बहुत सारे ऐसे बिन्दु हैं, जिसका अनुपालन बनाने में नगर निगम मूजफरपुर को सारे कठिनाई को सामना करना पड़ेगा। ऐसी स्थिति में जो भी उप-कानून के विषय कार्य करने वाले लोग हों, उनके विषय कठिनाई करने हेतु नगर निगम का एक अपना छोटा बजट की आवश्यकता पड़ेगी, जिसके तहत कम-से-कम दो सौ हजार रुपए प्रति माह, एक सैकड़ कटिंग पुलिस बल, दो दर्जन लाठी चार्ज एक या दो पुलिस पदाधिकारी होने चाहिए। मुझे सारे यह अतिरिक्त का मतलब है, चाहे कचड़ा प्रबंधन में अनियमित तारीख से इधर-उधर बाध, मिट्टी गिराकर रोड जाम करने, पॉलिथीन कचड़ा इकट्ठा कर-तक फेंकें जाने, बड़े-बड़े भवन बिना नक्शा स्वीकृति कराये बना लेने, स्वीकृति नसे की अनुमति का नही बना होना, बिना अनुमति के भवन में डेडिक्शन कर देना, जिम-जिम बिन्दु पर दण्ड-शुल्क निर्धारित की गई है, उस दण्ड की प्रति को नही देना, उसके उलट नगर निगम के कर्मों से भारीपट करवा या मरपीट करने पर उतावले को जाना, घर-दरवाजा नगर निगम के बिना-वापस फेंक कर गंदी बीकाना एवं शहर को साफ एवं स्वच्छ रखने में किसी भी प्रकार का अवरोध डालने वाली के विषय कठिनाई करने हेतु प्रत्येक नगर निगम में एक थाना स्थापित कराया जाना अनिवार्य है अन्यथा शहर को किलकुल साफ-सुखा रखना संभव नहीं है। शहर में कई थाने हैं, परन्तु किसी नगर निगम में बहुत पुलिस बल का संघर्ष तत्काल नहीं मिल पाता है। उनके विषय कार्यवाई करने के लिए थाने में जाने पर समुचित कार्यवाई नहीं हो पाती है। थाने के अधिकारी ईजाजत से लेकर सभी पुलिस बल पर पुरा नियंत्रण वर्ग के नगर निगम का होगा। यहां तक की अधिकारी ईजाजत पुलिस बल और लाठी चार्ज तक को नियंत्रित करने तक का पार सभी नगर निगम को सही प्रकार होना चाहिए, ताकि पुलिस बल और थाने के पदाधिकारी नगर



Public events to promote Swachhta

Further

- Improved rankings in the recent Swachh Survekshan, 2017
- Declared as Smart City on 23 June, 2017



- *All this due to the existing work on sanitation and cleanliness*

Why decentralised waste management approaches for Swaziland?

- Nature, Wildlife and Tourism is instrumental to Swaziland's economy
- Waste management needs to be in alignment with Swaziland's goal to become a developed country by 2022— can become developed by becoming waste wise!!
- Land is a valuable resource; cannot use it for disposal—sort, process, minimise, recycle, reuse.

Contd...

- Adoption of decentralised systems shall further help ULGs to save costs of collection, transportation and disposal of waste.
- In India, cities that have adopted for decentralised have cut their cost in waste management by 50-60 percent. Have used that money to invest in processing, recycling, upcycling initiatives. **Have made money via recycling and composting.**

**NEED OF INTEGRATED LOCAL BYLAWS
OR POLICY TO SUPPORT SEGREGATION
AND PROCESSING IN SWAZILAND**



Guiding principles to adopt integrated waste management

- ***No littering.***
- ***Minimize generation of waste.***
- ***Reduce, Reuse and Recycle***
- ***Practice segregation***
- ***Storage of segregated waste in different bins/bags.***
- ***Handover segregated waste to authorized waste collectors, recyclers and waste collection agencies.***
- ***Process biodegradable waste by adoption of composting and other decentralised technologies wherever applicable.***
- ***Pay monthly user fees to local bodies or any other persons authorized by the local body for sustainability of solid waste management.***
- ***Fines and penalties for littering and non-compliance.***



WASTE SPECIFIC OR INTEGRATED WASTE MANAGEMENT THREE FACTORS THAT GOVERN THE TYPE OF LEGISLATION

- Level of Urbanisation
- Level of Industrialation
- Level of Capacity in terms of Economy, technology and Manpower



SITUATION ANALYSIS

CASE 1- Countries with Higher Level of Urbanisation, Industrialisation and higher level of capacity in terms of economy, technology and manpower

- Waste of such countries are complex
- Higher quality waste is generated in each type of waste such as hazardous waste, biomedical waste, E-waste, Plastic waste, Municipal Waste etc.
- Technical and economical capacity IS High



WASTE SPECIFIC LEGISLATION TO BE PREFERRED



PREFERED WASTE SPECIFIC LEGISLATION

S no.	Type of waste	Legislation
1	Municipal waste	Municipal solid waste management and handling legislation
2	Hospital waste or waste from health care facilities	Biomedical waste management and handling legislation
3	Plastic waste	Plastic manufacture, sale and usage legislation
4	Hazardous waste	Hazardous waste management, handling trans-boundary rules
5	Batteries waste	Batteries management handling rules
6	E-waste	Electronic and electrical waste management and handling rule



SITUATION ANALYSIS (Continued)

Case 2- Countries with moderate higher level urbanisation but low level of Industrialisation and techno-economic capability. **Ideal for Swaziland**

Preference
Integrated Waste
Management
Legislation

- **MSW and plastic is predominant**
- **Biomedical waste and E-waste is moderate**
- **Other waste low in volume (such as industrial and hazardous)**



INTEGRATED WASTE LEGISLATION TO BE PREFERRED



SITUATION ANALYSIS (Continued)

Case 3- Countries with low level of urbanisation and industrialisation and techno-economic capability



Integrated Waste Management Legislation



Applicable legislations in Swaziland

- Enforcement through legal instruments
 - ✓ The Environment Management Act, 2002
 - ✓ The Waste Regulation, 2000
 - ✓ Litter Regulations, 2011
 - ✓ The Public Health Act, 1969
 - ✓ Urban Government Regulations, 1969
 - ✓ Swaziland Environmental Action Plan, 2007
 - ✓ The National Solid Waste Management Strategy, 2000

Matsapha landfill site



Open dumping in rural areas



Lavumisa dumpsite



Mbabane landfill site



Waste collection points in rural areas near Matsapha



Leachate collection tank, but no treatment



Recyclables buried in Piggs Peak landfill



Disposal site in Ngwenya

**Disposal in lakes and
water bodies**



Dumpsite near Malindza





Need for integrated policy/regulation

- Our landfills have everything- MSW, plastic, packaging, biomedical, ewaste---even hazardous
- Need regulation to manage this
- Different rules for different streams will not work in Swaziland as the waste generation in each stream is low as well as the waste composition is not complex.
- Integrated policy shall set the stage for the country to become waste wise- support segregation, process and ensure minimum waste goes to the landfill

**LET'S MAKE CLEANLINESS A
MOVEMENT IN SWAZILAND**