



Thematic Session 6: Holistic Waste Management/ Integration of 3Rs



Presenter :

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National Environment Commission Secretariat

Bhutan



Waste Management Policies

- ❖ Waste Prevention and Management Act of Bhutan, 2009
- ❖ Waste Prevention and Management Regulation, 2012
- ❖ National Integrated Solid Waste Management Strategy 2014
- ❖ Waste Prevention and Management (Amendment) Regulation 2016
- ❖ National Waste Management Strategy, 2019



National Integrated Solid Waste Management Strategy 2014



The 4R Principle:

- ❖ Reduce plastic and promote alternatives.
- ❖ Reuse non-avoidable waste as far as possible.
- ❖ Recycle: Maximise / enhance life cycle of both organic and inorganic products.
- ❖ Be Responsible for waste management, and take measures to prevent waste-related pollution.



National Waste Management Strategy, 2019

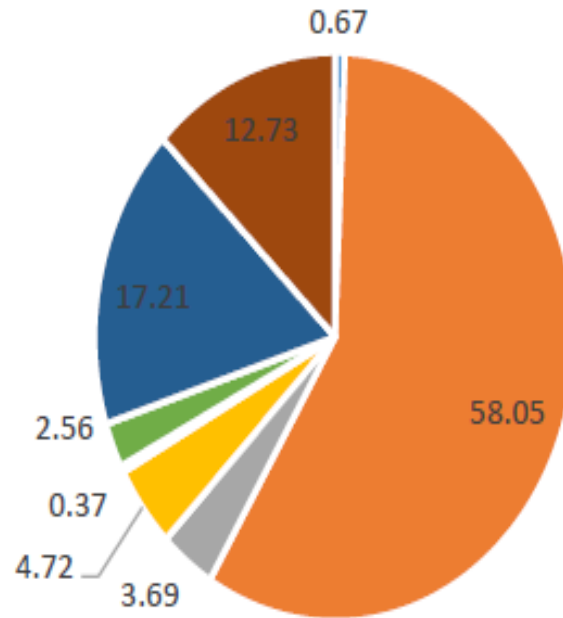


❖ The NWMS goal is to continuously move/promote towards “Zero Waste Bhutan by 2030” incorporation of the concept of 4Rs principles; stakeholder participation, timely and appropriate waste collection and disposal, and proper waste monitoring and evaluation.



Composition of MSW

Total: 30 Ton



- Metals
- Organics
- Glasses
- Textiles/Leathers
- Electrical & Electronics
- Others
- Paper/paper boards
- Plastic materials

Source: MoWHS, 2008



Waste Collection by Private Entities

Firm Name	Waste Type	MT/day or Week	Remarks
Greener Way	Dry	24-25 MT/day	Covers Central and South Zone of Thimphu Thromde
	Wet	12-15 MT/day	
	Recyclable		Only PET bottle, card boxes, tins/Al, HDPE/LDPE are separated at the transfer station and glasses are not recovered.
Clean City	Total	24 TL/Week, 5trucks	Covers the Northern Zone of Thimphu



Segregated Waste Collection Schedule



Revised waste collection schedule for Central and Southern Thimphu City.

SL/ No.	AREAS CODE	SUNDAY				TUESDAY				WEDNESDAY				THURSDAY				FRIDAY				SATURDAY			
		S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4
1.0	WCA01	2								2								2							
2.0	WCA02					2								2											
3.0	WCA03					2									1										
4.0	WCA04	2								2									3						
5.0	WCA05				1					1				1				1							1
6.0	WCA06				1					1				1				1							1
7.0	WCA07							1						1									2		
8.0	WCA08							2							2								1		
9.0	WCA09		2										2						2						
10.0	WCA10			2								2							1						
11.0	WCA11					1									2									2	
12.0	WCA12		2										2							2					
13.0	WCA13			2						2									2					2	
14.0	WCA14		1									1							2						
15.0	WCA15							2								2							1		
16.0	WCA16								2						1									2	
17.0	WCA17		2									2								3					
18.0	WCA18	1										2								2					

Collection Timing:

Shift 1 (S1) = 07:00AM – 09:00AM

Shift 3 (S3) = 05:00PM – 08:00PM

Shift 2 (S2) = 11:00AM – 02:00PM

Shift 4 (S4) = 09:00PM - 10:00PM

Collection Category:

Dry Waste Collection Period

Wet Waste Collection Period

Transfer Station



Olakha, Thimphu



1. Municipal Solid Waste



i. Organic Waste:

Management System: Compost plant at Serbithang → capacity of 25 MT per day

Market: the manure bag of 12 kg was sold at Nu. 110

Closing of Serbithang Compost Plant was brought to public notice as per Kuensel's announcement on 17th June 2017 due to human settlement complaints.



Household Compost Product



Organic composting of food waste was initiated by Thimphu Thromde in March 2018.

Method: Micro-organism decomposition or *Takakura* composting technology

Participants: 15 community compost centers including Jigme Dorji Wangchuck National Referral Hospital and Royal Bhutan Army and over 1200 individual home composting

Market: Self-Help Women group sells back the compost to Thimphu Municipal and Thimphu Municipal sells to the market

Quantity: Almost one ton of organic waste is used on a daily basis.



ii) Paper and Paperboards



Paper Recycling Unit: Bhutan Youth Development Fund recycles 15 tons of waste paper every month to egg trays.

Funded by: UNDP Global Environment Facility (GEF) under the Small Grant Program (SGP)

Waste papers are supplied at Bjemina paper plant at Nu. 6.5 per kg

Market: YDF sells a tray at Nu.2.8 to a retailer.



Continuation...



Production: The paper recycling unit produces 20,000 egg trays per week and makes it up to 1.3 million trays in a year (GEF-CSO Network, 2017).

Drying capacity of the plant has been upgraded from 6,800 trays to 10,200 trays as of August 21st 2015.

YDF also give employment opportunity to recovering drugs abusers, supports the Drug Education and Rehabilitation Services (Kuensel, 2015).



ii) Plastics



The Green Road: Private entity

Primary priority: Utilization of waste plastics in bituminous mix in road construction. Up-cycling of waste plastics into durable products.

First trial: 56 kilometres of road was blacktopped using approximately 200 tonnes of waste plastic on 15th October, 2015

Source of plastics: Thimphu landfill and local collection from households and shops. Now expanded to Phuentsholing Landfill and Pasaka Industrial Estates

Quantity: the company collects 500 to 1500 kg of plastic and produces 1000-1200 kg of shredded plastic on a daily basis using 5 shredding machines as of 28th February, 2019



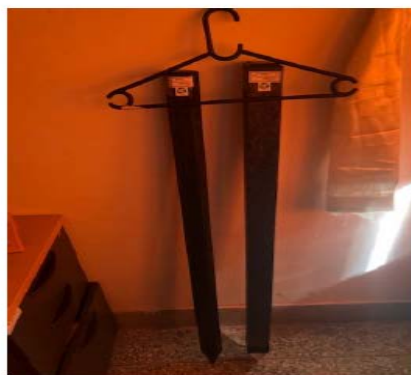
The Green Road



Secondary priority: The Local Shop



Saucer pieces from plastic waste



Fencing poles and cloth hanger.

Basket weaving threads from waste plastic.

Shredder



Plastic Pellets

DID YOU KNOW?

Bhutan imports flowerpots from India worth Nu.20 million annually.



Nu.400.



Nu.100



Reinforcement of Plastic Ban Notification 1999



- ❖ **When:** 1st April, 2019
- ❖ **Who:** The National Environment Commission
- ❖ **What:** Ban on use/sale of plastic carry bags, doma wrappers and home made ice cream pouches
- ❖ **How:**
 1. A fine of Nu. 500 for the first offence
 2. A fine of Nu. 1000 for the second offence
 3. Subsequent violation shall result in cancellation of the trade license.



Plastic Ban Notification 1999



- ❖ **When:** 2nd June 1999
- ❖ **Who:** The Ministry of Trade and Industry in consultation with the MoH, MoC, NEC and BCCI
- ❖ **What:** Ban on use/sale of plastic carry bags, doma wrappers and home made ice cream pouches
- ❖ **How:**
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2. Medical Waste

Management: The Waste Autoclave



The old Vertical waste autoclave machine



The new Horizontal waste autoclave machine



Deep Burial Pit



- ❖ Deep burial pit in a nationally standardize design was constructed
- ❖ Has two chambers (one is being used and other one is kept lock)
- ❖ Only sharps and pathological wastes are disposed

Waste Storage & Treatment House



- ❖ Pilot Project on Model Health Care Waste Management
- ❖ Concurrently, will serve as a training center for support staff on waste management
- ❖ Completed and formally handed over to the hospital administration on 21st of June 2016.
- ❖ Its of first kind in the country and the same design will be replicated to other four hospitals like Gelephu, Samtse, Wangdue and Damphu
- ❖ Through ADB support, similar structure constructed in eight more districts during the 12th FYP



3. Industrial Waste

- ❖ Hazardous waste from the industries are disposed into the Pasakha Industrial Estate's landfill under the Department of Industry , Ministry of Economic Affairs and Non-Hazardous waste are disposed at Association of Bhutan Industries landfill.
- ❖ A tipping fee for waste collection and disposal of Nu.1240 per ton is collected from the Industries.
- ❖ A sum of Nu. 2.5 million till date has been collected as waste tipping fee from DoI, which is directly deposited to the government revenue account at Ministry of Finance (MoF)



4. E-Waste



- ❖ The Department of Information Technology and Telecom under the Ministry of Information and Communication is mandated to ensure prevention and management of e-waste.
- ❖ DITT collects e-waste from govt. offices and hands over to the Department of National Properties (DNP)
- ❖ DNP organizes auctions and maintains records of the e-waste surrendered by government agencies
- ❖ Bhutan Alternatives: Private Enterprise
 - collects old toner cartridges and sells after refilling



Other Initiatives



i. Flagship Program (12th Five Year Plan)

- One of the aims: to achieve waste reduction through segregation, recycling and disincentives under the leadership of Her Majesty The Queen of Bhutan.

- Components aligning with thematic session includes:

o **Waste Collection and Management**



Waste Drop off-Center

❖ Also addressed in the National Waste Management Strategy, 2019

o Installation of Waste drop-off center at strategic locations and creation of waste bank



Continuation....



- **Waste Treatment and disposal** - Commercial compost plants, household composting systems, user paid sanitary landfills, sustainable sewerage treatment plants, e-waste management centers and incineration plants will be established throughout the country at strategic locations as required

- **Awareness** - Education and awareness to bring about positive change in the attitude and behavior and mindset of the public through additional R “Responsibility”



ii. Zero Waste Hour



Theme: “My Waste, My Responsibility”

Vision: A “Zero Waste Society” through involvement of all offices, institutions and every Bhutanese citizen to build a nation that is socially and environmentally responsible.

When: 2nd June 2019 by Her Majesty The Queen

Who: Every government offices, private entities, CSOs, and every citizen



Continuation....



How: Observe at least one (01) hour on the Second Day of Every Month as “Zero Waste Hour” by cleaning respective surrounding areas



2nd June 2019, Thimphu



Youth Action for 4Rs in schools



Youth Action for 4 Rs was launched on 4th June 2015 by Her Majesty the Gyaltseen Jetsun Pema Wangchuck

- ❖ Promote segregation, reuse, recycling of wastes in the school.



Bags out of plastic waste

Offence and fine schedule

Section 150	Offence (acts of noncompliance)	Fine amount (Nu. per instance)
150.1	Littering at any public places	100
150.2	dumping of wastes in places other than approved sites	500
150.3	Operating business establishments without providing waste bins for customer usage	1000
150.4	Any nature of waste being found within a boundary of a household or business unit	500
150.5	Urinating or defecating in a public place	100
150.6	sale of goods or services on the streets and pedestrian walkways without approval	1000
150.7	dumping wastes into the streams, rivers, drainage systems or other water bodies	1000
150.8	dumping of industrial waste in areas other than designated location or facility	20000
150.9	collection of waste without permit from the relevant authority	100
150.10	dumping of construction waste including excavated materials and structural demolition waste in places other than designated sites	9000 per truck load
150.11	Upon completion of a construction work, failure to clean up the remnants of the construction materials in and around a construction area, streets, roads or pedestrian pathways	10000
150.12	Placing or storing of goods, including commercial and construction materials, on the streets, roads, and pedestrian pathways without permission of the relevant authority	2000



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Thank you
and
Tashi Delek!