

添付資料

GENERAL OVERVIEW ON SOLID WASTE MANAGEMENT IN VIETNAM

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Hanoi 24/2/2016

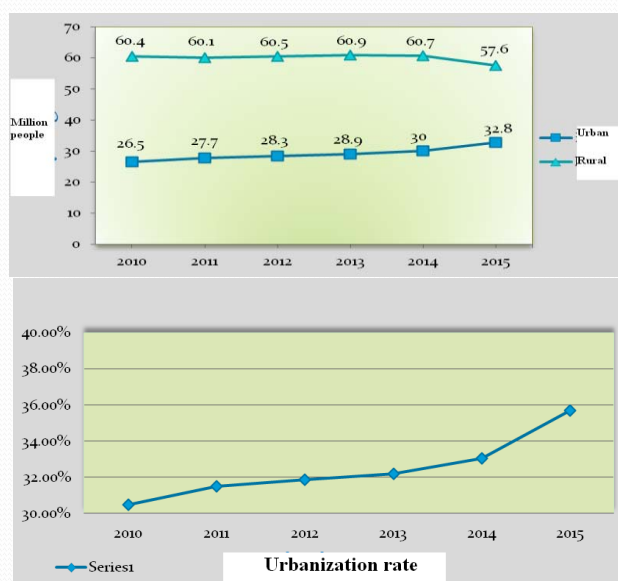
Contents

- 1. General Background**
- 2. General overview on solid waste management**
 - 2.1. Planning on solid waste management
 - 2.2. Solid waste generation and collection
 - 2.3. Recycling, Final disposal
 - 2.4. Solid waste treatment cost
- 3. General assessments on current situation of solid waste management**
- 4. Policies/solutions**

General Background

- Urbanization leading to rapid growth of the urban population. In 2015, the urban population was approximately 91,9 million people, in which urban population was 32,8 millions and it was 59,1 millions in rural areas.
- Vietnam is one of the most dynamic countries in the region with rather high economic growth and expected to continue to increase rapidly in the near future.
- Solid waste increasing both in quantity, type, and toxicity. Some types of waste are emerging, such as e-waste; construction waste; food waste; waste at sea ...
- The solid waste management faces many challenges. It is forecasted to be 39.9 million tons / year in 2020.

Urban population growth



Population and GDP in big cities in Vietnam

Item	Unit	Nationwide	Hanoi	HCM	Hai Phong	Da Nang	Can Tho
Population	1,000 people	90,729	7,266	8,075	1,946	1,008	1,242
	%	100%	8%	9%	2%	1%	1%
GDP	Billion	3,937,900	514,449	852,524	102,403	58,620	91,669
	%	100%	13%	22%	3%	1%	2%

Source: Hanoi Statistics Office, Hanoi Statistical Yearbook 2014".

General Overview on solid waste management

Solid waste management planning

- 55/63 provinces/cities complete the solid waste management planning
- Solid waste management planning of 3 river basins was approved by the Prime Minister
- Rural solid waste management planning: most communes have completed the new rural planning in which the position, scale of landfill and treatment facilities were determined.



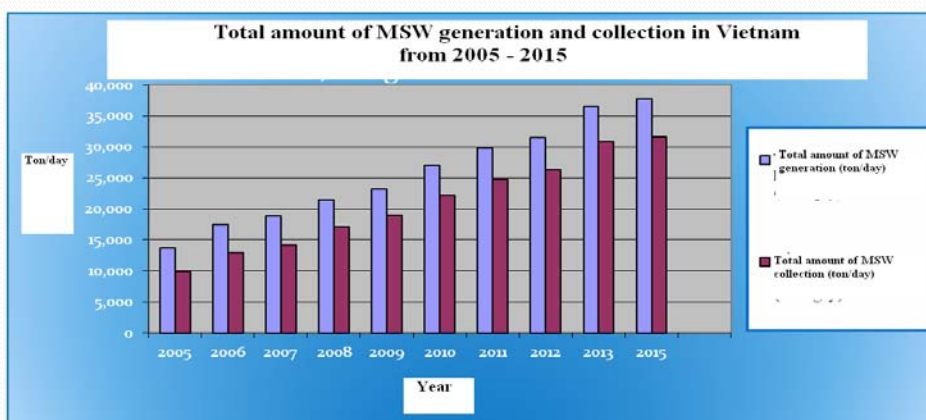
General Overview on solid waste management

Current status of solid waste generation and collection

- Total amount of solid waste generated over the country in 2015 was 13.870 thousand tons.
- 55% of total collected amount is treated at intermediate treatment facilities, 45% remaining is directly landfilled.
- Landfill volume calculated as the total volume of municipal waste landfilled directly and residues from intermediate treatment facilities, equivalent to 63% of the total volume of collected municipal solid waste (MSW).
- 37% of total volume of collected MSW is minimized by recycling or processed at concentrated treatment facilities.

General Overview on solid waste management

Current status of solid waste generation and collection



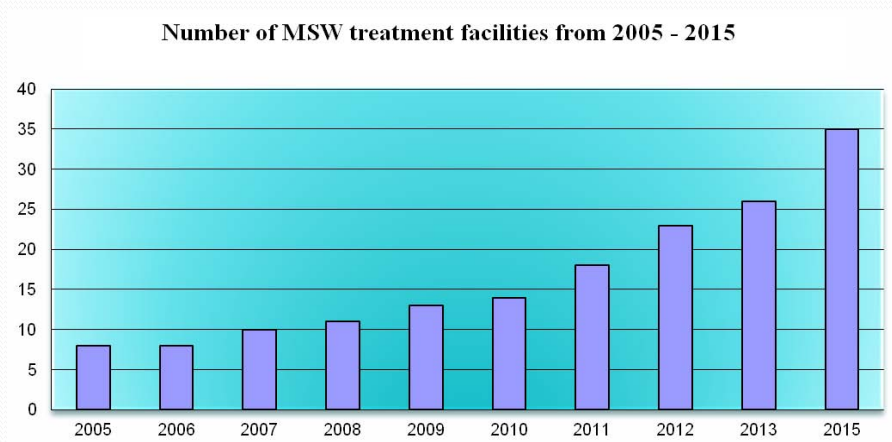
General Overview on solid waste management

- MSW collection



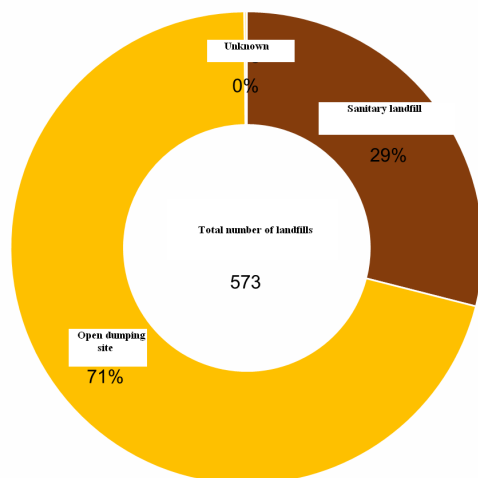
General Overview on solid waste management

- MSW treatment/recycling



General Overview on solid waste management

• MSW landfilling



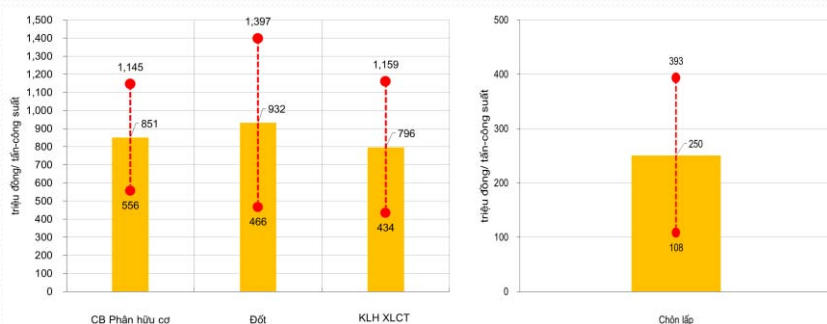
- Number of landfills with area of 20 ha and over making up 5.7% of total.

- Landfills with area bigger than 01 ha and smaller than 20ha making up 59.4%.

- Landfills with area smaller than 01ha making up 35%.

Overall assessment of solid management situation

• Investment cost for solid waste management



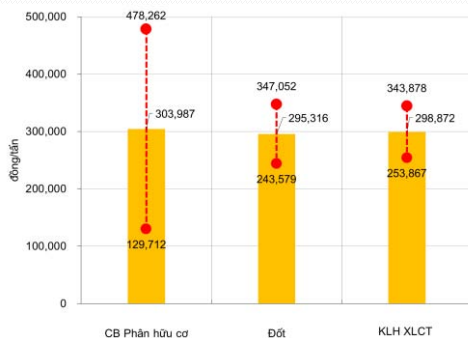
- Investment cost for composting facilities is 851 million VND/ton, 932 million VND/ton for incineration method, and 796 million VND/ton for waste management complexes.

- Investment cost for landfill is 250 million VND/ton

Source: JICA -JET (2015),

Overall assessment of solid management situation

• Cost for waste treatment



- Average cost for composting businesses is 304,000 VND/ton

- Average cost for incineration businesses is 295,000 VND/ton

- Average cost for waste management complexes is 299,000 VND/ton

- Average cost for landfill of household waste is 123,000 VND/ton

Source: JICA -JET (2015),

Overall assessment of solid management situation

Results:

- Most of the local authorities have made a Solid waste management Master plan to use as a base for attracting investors
- Collection and treatment ratio has increased and the treatment of solid waste is gradually improving
- Some local technologies are applied quite effectively
- The first steps in preventing, minimizing of waste generation are starting to be implemented
- The private sector is actively participating and sharing more with the public service sector under the PPP method

Overall assessment of solid management situation

Difficulties in solid waste management :

- Not enough budget for waste management and not enough management personals
- Deployment of master plan is slow, difficulties in finding investors, while the landfills are already overloaded
- In areas where there are composting sites, there are many business that cannot sell their compost.
- Lack of technical information, so local authorities don't have any choice, but to believe in the investor's knowledge while investing in constructions.
- The current treatment fee is providing to be to difficult for businesses to cover their investment, construction costs as well and operation and management.....

Some policies / solutions

1. Complete the legal system and explaining documents about solid waste management
2. Improve "Total solid waste management" abilities, including the life of waste (prevent, minimize, collection, transportation, reuse and recycle, treatment and final disposal) with the relation to economy, society, resources and environment.
3. Develop solid waste management technologies, especially recycling technologies
 - Promote recycling: (i) compost; (ii) biogas; (iii) recovery of materials...
 - Hygiene incineration: (i) recovery of energy; (ii) hygiene landfill
4. Minimize waste generation: (i) receive treatment fee according to generated amount of waste; (ii) aim for cleaner productions.
5. Prolong landfill lifetime
6. Improve collection, transportation and treatment of solid waste; develop treatment areas through PPP partnerships



Thank you very much!

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SEMINAR ON : “ EFFICIENT WASTE MANAGEMENT AND
RECYCLING BY INTEGRATION OF VARIOUS FUNCTIONS –
INTRODUCTION OF RECYCLING INDUSTRIAL PARK (RIP)
IDEA”

**WASTE RECYCLING ACTIVITY IN VIETNAM
CURRENT AND DEVELOPMENT DEMAND**

Professor, Dr. Nguyen Thi Kim Thai
*Deputy Director of Institute for Urban
Environment and Industry of Vietnam*

**National targets for materials
recycling from solid waste**

*Source: Decision No 2149/2009 / QĐ-TTg dated 17/12/2009 of the Prime Minister for approval
The national strategy on integrated management of solid waste to 2025, vision 2050*

Content	Time		
	2015	2020	2025
Municipal solid waste is collected / recycled	85/60	90/85	100/90
Industrial waste is collected / recycled	50/30	80/50	90/60
Sludge of septic tank in from urban grade 2/ other urban centers	30/10	50/30	100/50
The amount of plastic bags used in supermarkets, trade centers (*: decreased compared to 2010)	40 *	65 *	85 *
Urban has recycling works which separate solid waste at household	50	80	100
Amount of non-hazardous industrial solid waste is collected / recycled	80/70	90/75	100/100
Amount of arising industrial solid wastes are collected	60	70	100
Amount of non-hazardous medical solid wastes is collected / hazardous medical solid wastes is collected	85/70	100/100	100/100

(unit: %)

**RECYCLING ACTIVITY CURRENT
SITUATION OF SOLID WASTE**

**Potential recycling of materials from
municipal solid waste in Viet Nam**

**Typical composition of
municipal solid waste:**

Organic waste : 49 % - 53 %

Recycling material:

Glass : 0.3 % - 2.0%

Metal : 1.0 % - 5.0%

Paper : 4.7 % - 9.5%

Plastic : 2.5 % - 6.5%



Composition of solid waste in VietNam (Sources: N.T. Kim Thái- ĐHXD)

(% weight)

Nº	Composition	Hanoi ^s	Da Nang	Hà long ²	Cao Lanh ³
1	Organic waste	53,80	66,0	50,2	68,85
2	Plastic	3,42	4,0	10,6	3,8
3	Paper, caton	4,2	3,1	5,3	6,30
4	Metal	1,4	4,9	3,9	3,46
5	Glass	1,0	0,9	2,5	1,04
6	Inert	28,18	16,4	24,4	14,93
7	Rubber	4,9	1,6	0,6	-
8	Cloth	1,7	2,3	2,4	1,62
9	Hazardous	1,4	0,8	0,1	-
Total		100	100	100	100
Recycle material (GTTB)		16,62	16,80	25,1	16,22

Note: ^s- Special municipal
²- municipal tye 2 ;

¹ Municipal type 1
³ Municipal type 3

THÀNH PHẦN CHẤT THẢI RẮN





Aluminum recycling in Van Mon – Yen Phong

Scrap recycling in Chau Khe – Bac Ninh

7

- Most types of lead acid batteries after use which are purchased and processed by private facility.

- The recycling facilities applied fusing technology to recover lead from the waste batteries.

- Recycling activities are mainly carried out on a small scale / size of households in the recycling villages;

- The recycled materials then become the ingredients product for manufacturing batteries or other products.

- The waste from the recycling process is usually acidic liquid waste is illegal discharge into drainages.

Lead Recycling
Dong mai, Van Lam
Hung Yen



8

Recycling activities

- Scale



R&D : Recycling PO& RO?

Recycling RPF



Transform to compost



Recycled glass into brick

CURRENT SITUATION OF INDUSTRIAL WASTE RECYCLE ACTIVITIES

Potential recycling of materials from solid waste of typical industry in Viet Nam

(Environmental economics institute, HUE Construction university)

Composition	Industries					
	Circuit board assembly/ camera	Car parts manufacturing	Electric wire production	Steel Manufacturing	Car manufacturing	Ceramic
Municipal solid waste	13,50	11,5	8,8	10,5	12,1	22,5
wrapping paper	28,6	23,7	21,2	13,4	22,5	11,0
Waste oil	5,2	6,9	5,7	7,6	8,2	2,6
Waste plastic	5,8	8,5	12,8	3,8	8,7	2,2
Waste metal	2,5	7,5	15,2	25,5	7,6	1,0
sludge containing heavy metals (Pb, Cu, Hg..)	22,6	23,5	20,4	18,2	24,6	12,5
Chemical waste (paint sludge, vecni, color chemical...)	5,0	7,0	3,5	2,6	5,4	7,4
corrodent	1,4	2,0	1,8	1,3	2,4	3,4
Inert (ash...)	15,4	9,4	10,6	17,1	8,5	37,4
Recycle materials	Trên 42,1	46,6	54,9	50,3	47,0	16,8

Unit: The average rate in% of the total amount of waste

Recycling technologies of hazardous industrial waste typically

Source: Ministry of natural resources and the environment , 2013

TT	Technology	Amount of applicable facilities	Amount of modul	Capacity
1	Treatment, recycling of waste oil	13	14	3-20 tons/day
2	Treatment of wate lamp	8	8	0,2 tons/day
3	Treatment of elictronic waste	4	4	0,3 – 5 tons/day
4	Recycling lead batteries	6	6	0,5 – 200 tons/day
5	Treatment and recover Zinc	1	3	5.500 kg/h

Solvent recycling



Waste oil recycling



Recover and recycling of electronic waste



Recycle plastic to Bio oil
Exprimnt project (R-D) in Da Nang



Recycle sludge from industrial wastewater treatment plant

RECOVERY, RECYCLING OF SOLID MEDICAL WASTE

- Activity of recovery and recycling of solid medical waste is currently implementing is not in accordance with regulations on management of medical solid waste was issued;
- In 2010, discovery many medical waste put out for sale, recycling of everyday objects;
- The re-use of rubber gloves, plastic materials have been created more risks for those directly involved as collection agents, who collect and recycle the scrap



Decision No. 43/2007 / QD-BYT of the Ministry of Health issued the Regulation on management of medical wastes

Appendix 4:

Waste list are allowed to collect for recycling

The materials that are unstick normal waste, contain the hazardous components...(infectious, hazardous chemicals, radioactive substances, cytotoxic drugs) are allowed to collect for recycling, including

a) Plastic:

•Plastic bottles containing liquid doesn't contain hazardous such as 0.9% NaCl solution, glucose, sodium bicarbonate, ringer lactate, polymeric solution, kidney dialysis and plastic bottles contain unharful liquid.

•Other plastic materials unstick hazardous ingredients;

b) Glass:

- Glass bottle containing liquid doesn't contain hazardous components.

- Glass bottle containing injections doesn't contain hazardous components

-c) Paper: paper, newspaper, cardboard, cardboard boxes, cans and other material medicine paper.

d) Metal: The metal materials unstick hazardous components.

Risks from waste recycling activities

1. 1. Almost of the recycling process is done on a small scale and use outdated technology, thus causing environmental problems include:

@ Water pollution, soil due to indiscriminate dumping of waste from scrap cleaning

@ Wastewater from the washing process large amounts of raw materials containing heavy metals, toxins and poured directly into water sources without treatment;

@ The toxic gases are released into the atmosphere directly as HCl. Pb heavy metal dust. Hg. Zn. Cr.)

@ The type of solid waste including chemical bags, rings chemicals, heavy metals indiscriminate of empty land next to heavy polluting water heavy.

@ Environmental pollution has a certain impact on the health of workers and residents in the recycling and the surrounding area.



17

Risks from waste recycling activities

2. The impact on the health and safety occupational for employees activities are focused on:

- Daily laborers directly exposure to noise, dust, toxic gases from the rudimentary production equipment, causing risks for respiratory diseases and incapacitation due to heat.

- Daily workers exposed of waste hazardous components in plastic.

- The risk of fires involving flammable materials such as fuel, oil, waste plastics ;

- Working conditions in most of the existing recycling facilities are really a threat to workers.



18

Necessity of improving recycle waste operation.

- ❖ Review, evaluate, modify, supplement and perfect the system of legal documents and policies and mechanisms to promote the prevention, reduction, reuse, recycling of solid waste:
 - Review, evaluate, modify, supplement and perfect the system of legal documents and policies and mechanisms to promote the prevention, reduction, reuse, recycling of solid waste:
 - Promulgation of regulations and policies to encourage the purchase of recycled products
- ❖ Development of recycling industry on the basis of research, pilot application and replicate the recycling technology; recovery and treatment of waste products;
- ❖ Development the waste recycling centers with concentrated scale;
- ❖ Development of market for exchange on recycling and waste
- ❖ Speeding up international cooperation, increase exchanges and technical cooperation with the international organizations, non-governmental organizations:
 - Increase the exchange of experience in the field of recycling and reuse of solid waste.
 - Attracting foreign investment in infrastructure construction to minimize, recycle and reuse of solid waste.
 - To receive technical assistance, technology transfer and training activities reducing, recycling and reusing of solid waste.

A number of important documents were issued in relation to activities for recovery and recycling of waste

- ❖ Environmental Protection Law of Vietnam National Assembly of the Socialist Republic of Vietnam approved May 6, 2014, effective from 01.01.2015;
- ❖ Decree No. 38/2015 / ND-CP on the management of waste and scrap, dated 24.04.2015, effective from 15.06.2015
- ❖ Circular No. 36/2015 / TT-BTNMT on June 30, 2015 by the Minister of Natural Resources and Environment on Hazardous Waste Management effective from 01.09.2015
- ❖ Decision No. 16/2015 / QD-TTg dated 05/22/2015 stipulated for the recovery and processing of waste

THE PRIME MINISTER

Decision No. 16/2015/QĐ-TTg dated May 22, 2015 of the Prime Minister on regulations on recall and treatment of discarded products

Pursuant to the Law on Government Organization dated December 25, 2001;

Pursuant to the Law on Environmental Protection dated June 23, 2014;

Pursuant to the Government's Decree No. 38/2015/ND-CP dated April 24, 2015 on waste and scrap management;

After considering the request of the Minister of Natural Resources and Environment,

The Prime Minister hereby grants the Decision on providing regulations on recall and treatment of discarded products.

Chapter I

GENERAL PROVISIONS

Article 1. Scope of application and subject of application

1. Scope of application:

This Decision provides regulations on recall and treatment of discarded products throughout the Socialist Republic of Vietnam.

2. Subject of application

This Decision shall apply to manufacturers, consumers and other organizations or individuals involving recall and treatment of discarded products in Vietnam.

Discarded products discharged from production, trading and service establishments that do not belong to the applicable entities defined in this Decision shall be governed by regulations laid down in the Government's Decree No. 38/2015/ND-CP dated April 24, 2015 on providing regulations on waste and scrap management.

Article 2. Interpretation of terms

Terms used herein shall be construed as follows:

1. Discarded product refers to wastes derived from products of which the useful life has expired or products discarded after being used in the list annexed to this Decision.

2. Recall of discarded products refers to the act of receiving and collecting discarded products for management and treatment in accordance with legal regulations.
3. Manufacturer refers to the generic name of production, trading and service establishments, including:
 - a) Production establishments that belong to the list annexed to this Decision and are located within Vietnam;
 - b) Any establishment fulfilling the role as an official importer or official distributor (also known as level-one distributor) of products made in foreign countries or manufactured by exporting and processing enterprises or those operating in free tariff zone in the list annexed hereto.
4. Distributor refers to wholesaling and retailing establishments or sales agent defined in the list annexed hereto (except for official importers or official distributors).
5. Point of recall refers to the station where discarded products are collected and which is established directly by manufacturers, or by manufacturers in association with distributors.
6. Consumer refers to the end user of products before these products are discarded, including: Household families; individuals; offices of State administrative agencies; educational institutions.
7. Collecting organization or individual refers to any organization or individual carrying out operations of direct collection of discarded products from consumers and transportation of these products to the point of recall.

Article 3. List of discarded products and schedule of recall or treatment

1. The list of discarded products and schedule of recall and treatment shall be defined in the Appendix attached hereto.
2. The list of discarded products and schedule of recall and treatment are submitted to the Prime Minister by the Ministry of Natural Resources and Environment for any amendment or supplementation to be considered to ensure conformity with conditions in Vietnam for specific periods.

Article 4. Method for recall and treatment of discarded products

1. Discarded products shall be recalled in the following manners:
 - a) Direct manufacturers carry out or enter into cooperation with one another to carry out the recall through the point of recall or a system of points of recall;

- b) Manufacturers work with or authorize waste transportation or treatment organizations with appropriate competence to carry out the recall;
 - c) Waste transportation and treatment organizations with appropriate competence directly carry out the recall in accordance with regulations on waste management without any of the manufacturer's collaboration or authorization.
2. The point of recall shall recall discarded products by types in a consistent manner without possible reliance on trademarks or manufacturers.
 3. Transfer, collection, storage and transportation of hazardous products discharged from consumers to points of recall shall not require the permit for hazardous waste management but must conform to the technical regulations on environment which govern collection, storage and transportation of discarded products.
 4. Discarded products after being discarded must be managed and treated in accordance with legal regulations on waste management.

Chapter II

RESPONSIBILITY AND RIGHT CONCERNING RECALL AND TREATMENT OF DISCARDED PRODUCTS

Article 5. Responsibility of manufacturers

1. Manage collection of discarded products sold out to Vietnam's market.
2. Establish points or system of points of recall by taking the following forms:
 - a) Establish at their own expense or collaborate with other manufacturers in establishing this kind of point of recall;
 - b) Establish this kind of point of recall in the separate area or collaborate with distributors in establishing points of recall at the facility of distributors.
3. Points of recall must conform to technical regulations on environment which govern collection, storage and transportation of discarded products.
4. Take responsibility to accept their own discarded products; encourage receipt of discarded products of the same type as theirs sold out to the market, regardless of trademarks or manufacturers.
5. Receive their discarded products in the market recalled by other manufacturers for the purpose of treatment as requested.
6. Establish and implement appropriate, preferential and communicative policies for consumers or collecting organization or individual so that they transfer discarded products to receiving stations.

7. Manage the transportation of discarded products from points of recall to intermediate stations (if available) and treatment establishment in accordance with regulations on waste management.

8. Manage treatment of discarded products which have been recalled in accordance with regulations on waste management in the following forms:

a) Direct treatment;

b) Transfer of discarded products to domestic waste treatment with appropriate competence;

c) Outward export of discarded products for treatment;

d) Recycling;

dd) Other forms in accordance with regulations.

9. When hazardous discarded products are transferred to organization competent to carry out the treatment from points of recall directly established by themselves, they are required to provide and use hazardous waste documents in the name of the representative of the owner of hazardous discharge in accordance with regulations.

10. Submit the annual report to Vietnam Environment Administration on the following information:

a) Amount of manufactured or imported products which have been sold in Vietnam's market;

b) List of points of recall and discarded product treatment stations;

c) Result of recalling and treating discarded products;

d) Circumstances under which discarded products are refused and reasons for this refusal.

11. Report to the Department of Natural Resources and Environment on points of recall outside of distribution facilities and the precincts of manufacturing establishments.

12. Publicly communicate information about the list of points of discarded product recall and treatment; result of discarded product recall and treatment through the website of Vietnam Environment Administration and their own website (if available).

13. The Ministry of Natural Resources and Environment shall provide regulations on warning signs and symbols as well as procedures for management of points of recall.

Article 6. Right of manufacturers

1. If they decide to recall and treat discarded products at their own expense, they will be given supportive and preferential policies in accordance with legal regulations.
2. Have access to partnership with other manufacturer in order to recall and treat discarded products with different trademarks but same types.
3. Appoint manufacturers' association of which they are member to act on their behalf to recall and treat their discarded products.
4. Recall of discarded products with different trademarks but same types shall make up the recall efficiency of such manufacturer.
5. Request other manufacturers to take their discarded products in the market back for treatment after being recalled by the requesting manufacturer.
6. Sign a contract with waste transportation and treatment organizations with appropriate competence in accordance with regulations.
7. Recall discarded products which are not directly manufactured by themselves but are considered as constituents of products made by themselves and sold in the market.
8. Establish intermediate stations used for transporting discarded products from points of recall to storage facilities before taking them to treatment facilities.
9. Refuse to receive discarded products under the following circumstances:
 - a) Discarded products are delivered by waste transportation and treatment organization without any authorization or cooperation;
 - b) Discarded products with same types but different trademarks are made by other manufacturers.

Article 7. Responsibility of consumers, distribution facilities, waste transportation and treatment organizations, and collecting organizations or individuals

1. Consumers shall assume responsibility to transfer discarded products in the following forms:
 - a) Carrying discarded products to points of recall at their own expense;
 - b) Transferring discarded products to collecting organizations or individuals to transport them to points of discarded product recall;
 - c) Handing discarded products over to waste transportation and treatment organizations with appropriate competence;

d) Bringing discarded products back to organizations or individuals specializing in repair, maintenance and replacement of products. Receiving organizations or individuals are required to assume their responsibilities as the owner of discharge in accordance with regulations.

2. Distribution facilities shall assume the following responsibilities:

a) Coordinating with manufacturers in establishing points of recall and receiving discarded products at their own facilities as requested by manufacturers;

b) Storing discarded products at points of recall in accordance with regulations;

As for transfer of hazardous discarded products, they are required to provide and use hazardous waste documents in the name of the representative of the owner of hazardous discharge in accordance with regulations;

d) Providing information used for manufacturers' reporting to the Ministry of Natural Resources and Environment by completing the given form.

3. Waste transportation and treatment shall take the following responsibilities:

a) Comply with regulations on waste management while recalling and treating discarded products as agreed upon with manufacturers;

b) Do not carry hazardous discarded products to points of recall after collecting them from production, trading and service facilities without any authorization or cooperation confirmed by manufacturers;

c) Upon receiving discarded products from points of recall, they must transfer them to appropriate waste treatment facilities in accordance with regulations on waste transportation.

4. Collecting organizations or individuals must, after receiving discarded products from consumers, transfer them to points of recall in accordance with regulations.

Article 8. Right of consumers, collecting organizations or individuals and distribution facilities

1. Consumers, collecting organizations or individuals, when carrying discarded products to points of recall, shall have the following rights:

a) Enjoy benefits specified in the manufacturer's policy;

b) Have the right to request manufacturers to accept discarded products launched in the market by such manufacturers;

c) Report to the Ministry of Natural Resources and Environment or the local Department of Natural Resources and Environment on any refusal of manufacturers to receive discarded products.

2. Distribution facilities that belong to the entities stipulated at Point 3, Appendix IV of the Government's Decree No. 18/2015/ND-CP on providing regulations on environmental protection planning, strategic environment assessment, environmental impact assessment and environmental protection plan, are not required to establish the environmental protection plan when participating in collection of distributed products.

3. Transportation of hazardous discarded products from consumers to points of recall does not require the permit for hazardous waste transportation but is not allowed to exceed load limits defined in the technical regulations on environment in terms of collection, storage and transportation of discarded products.

Chapter III

RESPONSIBILITY OF REGULATORY AGENCIES FOR COLLECTION AND TREATMENT OF DISCARDED PRODUCTS

Article 9. Responsibility of the Ministry of Natural Resources and Environment

1. Issue documents providing guidance on implementation of this Decision and technical regulations on environment in terms of collection, storage and transportation of discarded products; provide instructions on and manage implementation.

2. Develop and manage data about recall and treatment of discarded products; publicly announce the list of points of recall which conform to technical environmental requirements in accordance with regulations.

3. Propagate, raise awareness of organizations or individuals so that they get involved in discarded product recall and treatment.

4. Examine, inspect, monitor and impose penalties on organizations or individuals that commit violations against regulations on discarded product recall and treatment.

5. Preside over, cooperate with relevant Ministries, departments in submission of report to the Prime Minister to seek any amendment and supplementation to the List of discarded products and schedule of recall and treatment annexed hereto.

Article 10. Responsibility of provincial People's Committees

1. Propagate, raise awareness of organizations or individuals so that they get involved in discarded product recall and treatment.
2. Introduce policies, support and provide favorable conditions for manufacturing enterprises to establish points of recall and manage discarded product recall and treatment within their areas in accordance with regulations laid down in the Government's Decree No. 19/2015/ND-CP dated February 14, 2015 on providing specific provisions on implementation of several articles of the Law on Environmental Protection.
3. Manage, inspect and examine recall and treatment of discarded products within their areas in accordance with legal regulations on environmental protection.
4. Direct the People's Committees at all levels to carry out recall and treatment of discarded products within their jurisdiction.

Chapter IV

IMPLEMENTARY PROVISIONS

Article 11. Effect

1. This Decision takes effect on July 15, 2015.
2. The Decision No. 50/2013/QD-TTg of the Prime Minister dated August 9, 2013 on providing regulations on recall and treatment of discarded products shall be abolished from the effective date of this Decision.
3. Ministers, Heads of ministerial-level agencies, Heads of Governmental agencies, the President of the People's Committees of centrally-affiliated cities or provinces and related organizations or individuals, shall be responsible for implementing this Decision./.

The Prime Minister

Nguyen Tan Dung

APPENDIX

LIST OF DISCARDED PRODUCTS AND SCHEDULE OF RECALL AND TREATMENT *(Issued together with the Decision No. 16/2015/QD-TTg of the Prime Minister dated May 22, 2015)*

No.	DESCRIPTION	SCHEDULE OF RECALL
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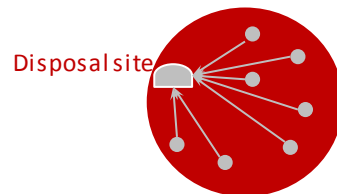
		AND TREATMENT
I	ACCUMULATOR AND BATTERY	
1	Accumulators of all types	01/7/2016
2	Batteries of all types	01/7/2016
II	ELECTRIC AND ELECTRONIC EQUIPMENT	
1	Compact light; fluorescent light	01/7/2016
2	Desktop or laptop; computer monitor; CPU (micro processor)	01/7/2016
3	Printer; fax machine; scanner	01/7/2016
4	Photo camera; movie camera	01/7/2016
5	Cell phone; tablet computer	01/7/2016
6	DVD, VCD, CD recorder and other tape or disc player	01/7/2016
7	Photocopier	01/7/2016
8	Television; refrigerator	01/7/2016
9	Air conditioner; laundry machine	01/7/2016
III	DIFFERENT KINDS OF LUBRICANTS	01/7/2016
IV	INNER TUBE, TYRE	
1	Inner tubes of all kinds	01/7/2016
2	Tires of all kinds	01/7/2016
V	VEHICLE	
1	Motorcycles, motorbikes of all kinds	01/01/2018
2	Automobiles of all kinds	01/01/2018



Appropriate and Efficient Waste Management Required for Development of City

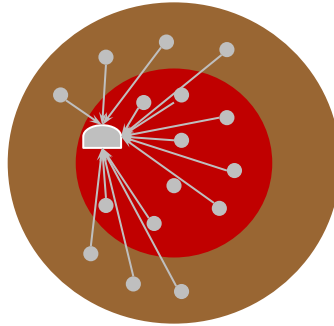
Tomonori ISHIGAKI
National Institute for Environmental Studies, Japan

Development of City and Waste Management



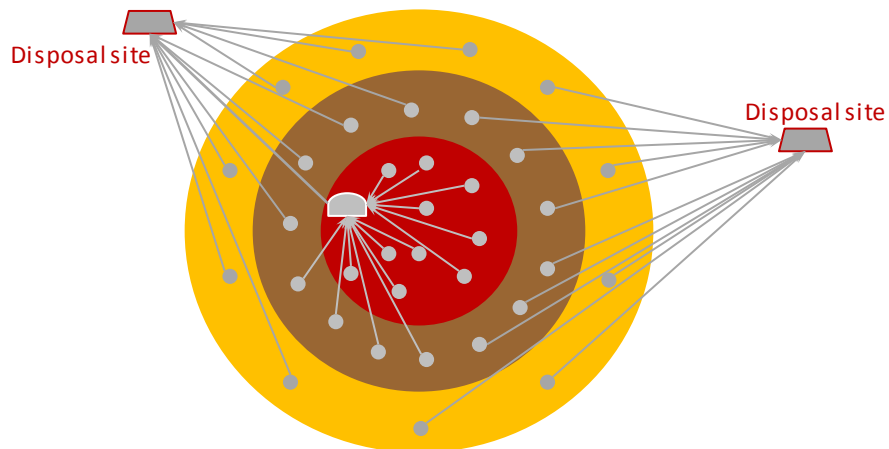
City growth and expansion will complicate waste logistics

Development of City and Waste Management



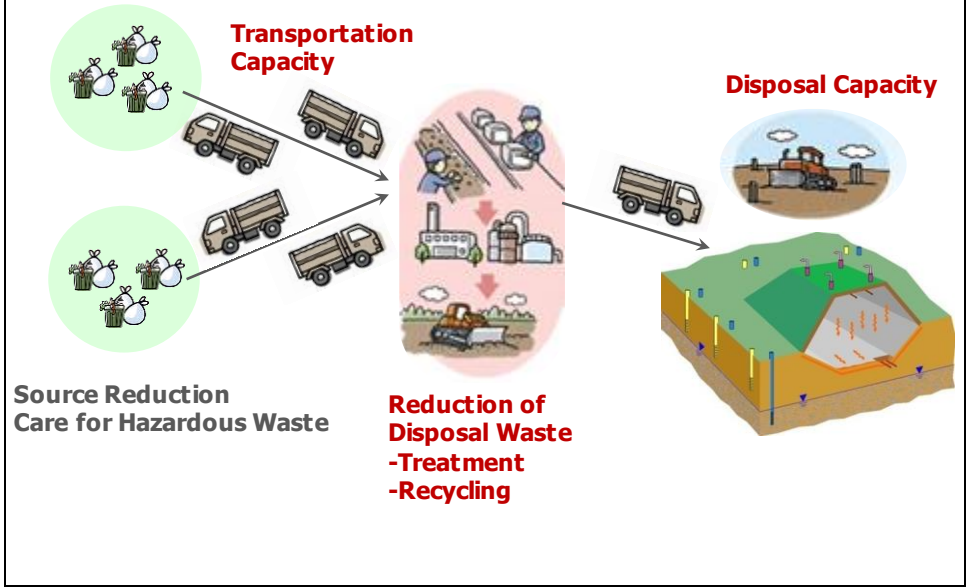
City growth and expansion will complicate waste logistics

Development of City and Waste Management

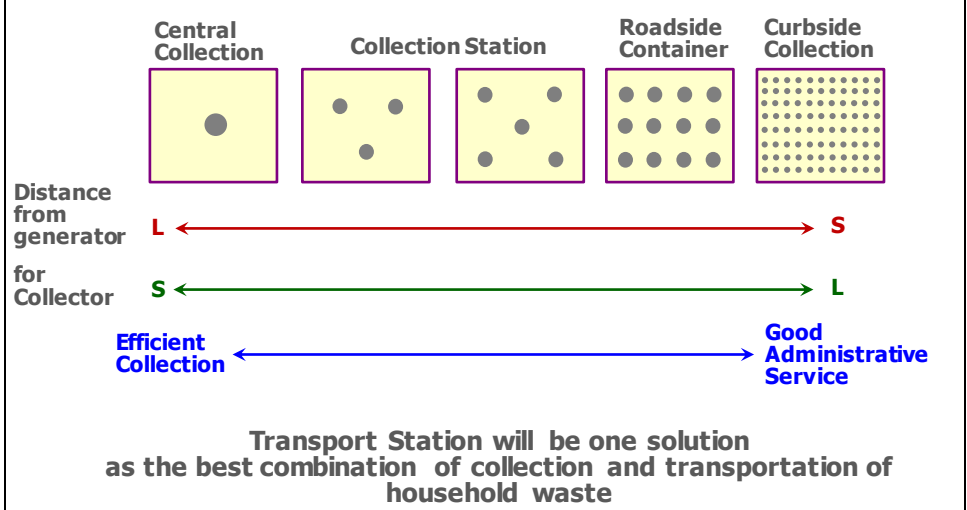


City growth and expansion will complicate waste logistics

Appropriate Waste Management under Developing Situation



Transportation Capacity



Benefit of Central Collection

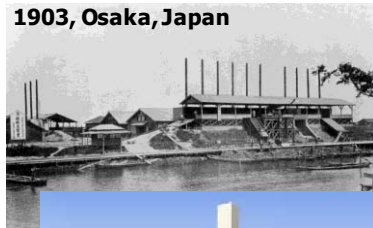
- **Logistics management**
 - Total reduction of travel per waste
 - Capacity
 - Frequency
 - Traffic
- **Physical Compaction**
 - Volume Reduction
- **Resource Recovery**
 - Valuables: Metal, Plastics
 - for Fuels, Materials in Industry

Central Collection = Central Treatment
(1) to reduce the volume and hazard
(2) to maximize recycling

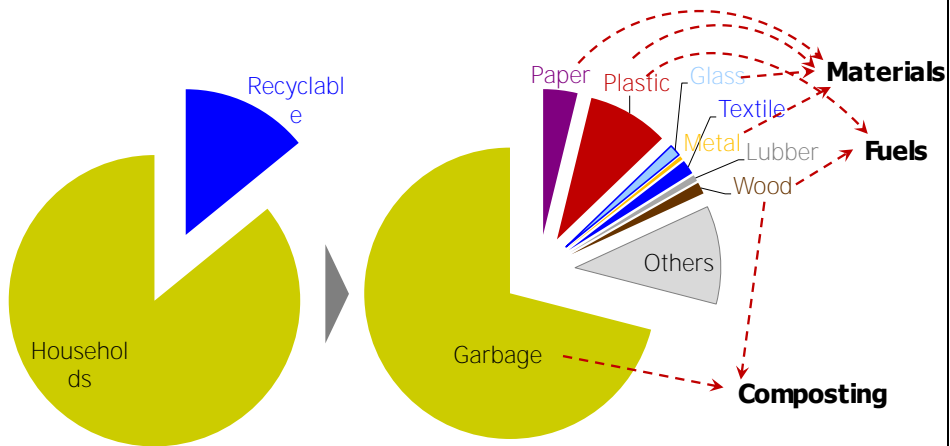
Mass Waste Treatment Technology

- **Waste to Energy (Mass Burning)**
 - Volume reduction and Sanitation
 - Energy Production
- **Mechanical Biological Treatment**
 - Volume Reduction and Energy production

1903, Osaka, Japan

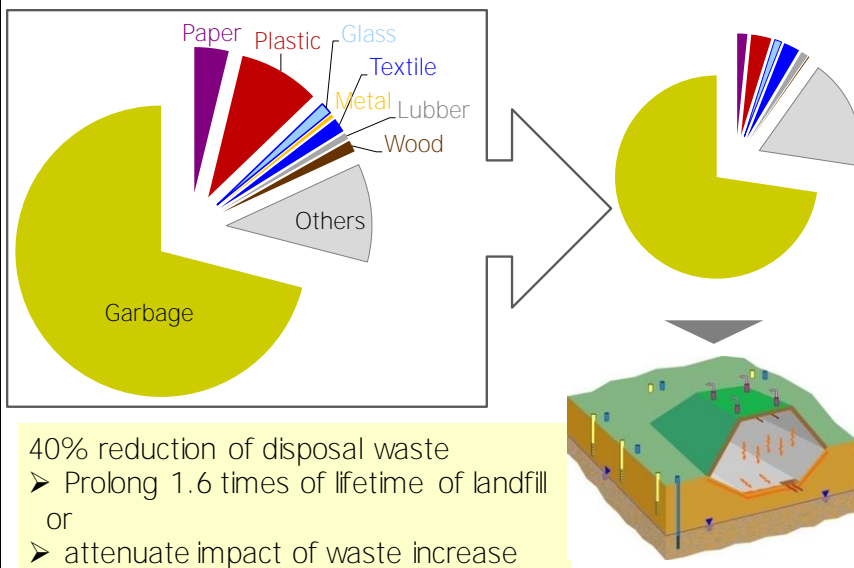


Separation Enhances Recycling (and Reduction of Disposal)



**One-stop service for "Treatment/ Recycle" and "Users/ Suppliers" give an advantage of scale
It also can be helpful to save the time and cost.**

Reduction of Disposal Waste and Extension of Landfill Lifetime



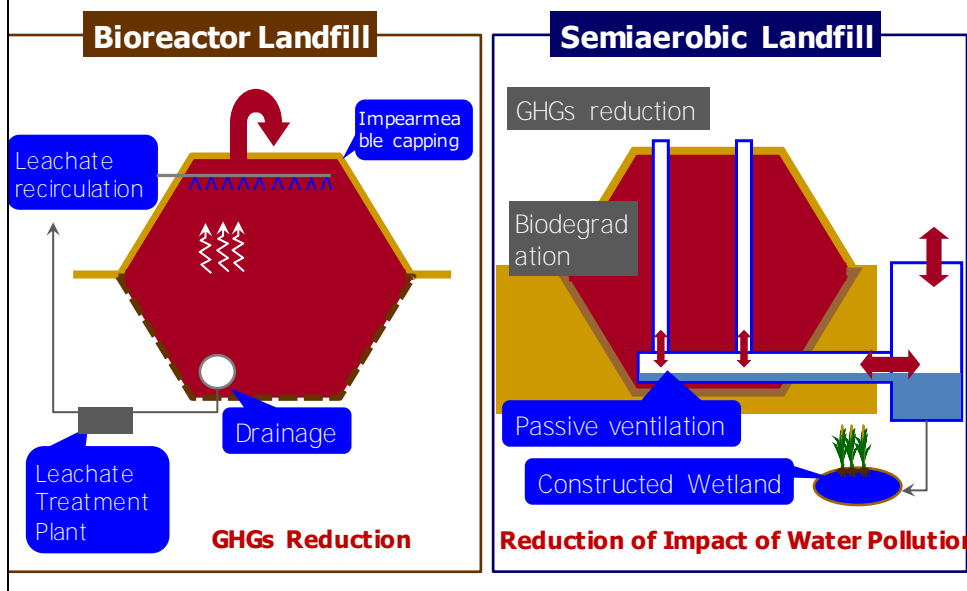
40% reduction of disposal waste
 ➤ Prolong 1.6 times of lifetime of landfill
 or
 ➤ attenuate impact of waste increase

Disposal Capacity

- Promotion of Biodegradation
- Compaction (Solidification)
 - Prevention of hazard risk
 - Financial cost
- Expansion
 - sometimes bad practice



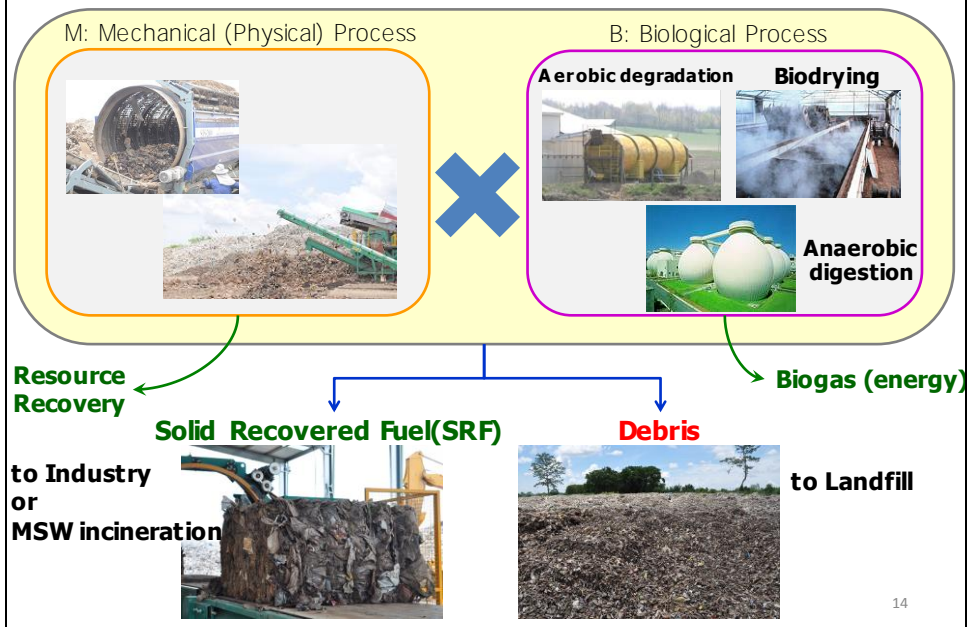
Degradation-Promotive Landfills



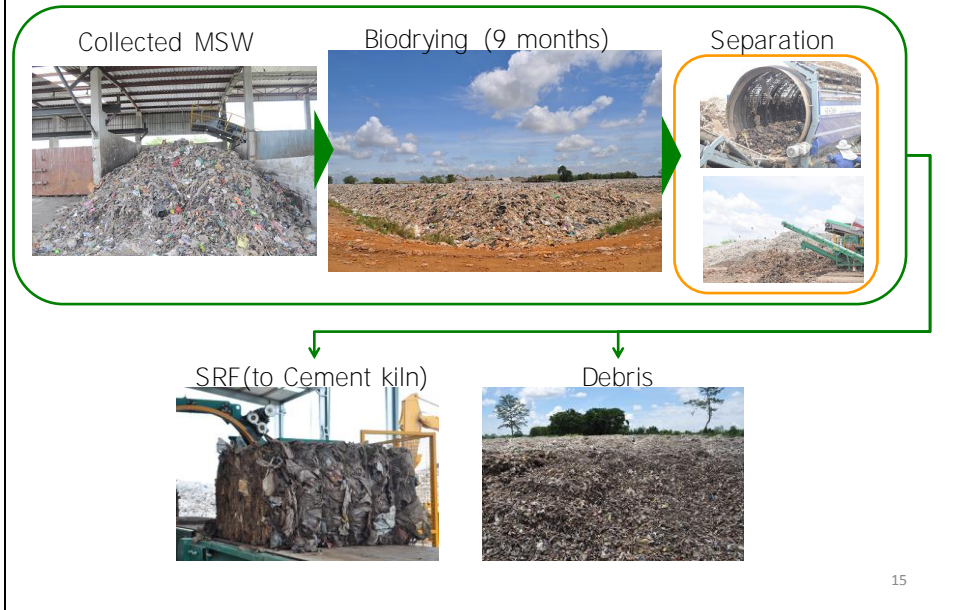
Case study: Mechanical Biological Treatment (MBT) for MSW Pretreatment before Landfilling

13

Waste Treatment in MBT



Survey on MBT Plant in Thailand



Features of MBT in P-city in Thailand

moisture
60-70%

6000kJ/kg

High moisture by garbage
High degradable fraction/ low calorie

118 mg/g

Waste: High moisture and Degradable fraction

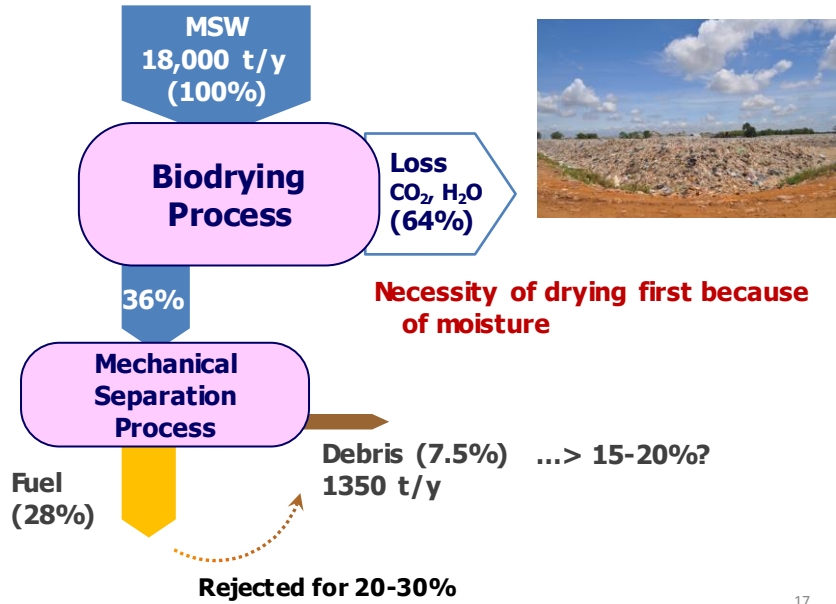
Money: Limitation of Budget

Output: Limitation of RDF Consumer

Allowed by Cement furnace only (but highly rejected)
Not pelletized but bulk RDF was transported

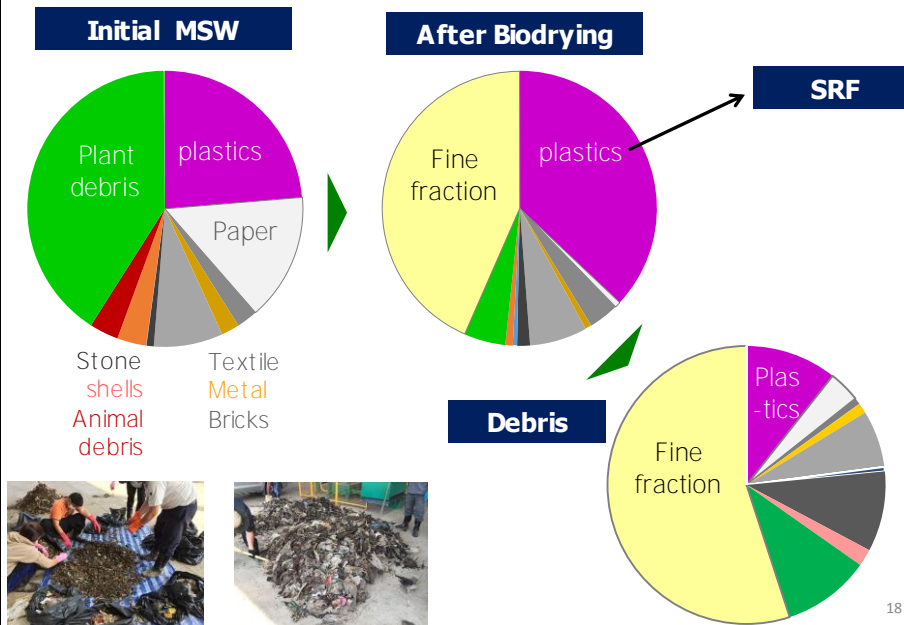


Mass balance in MBT plant in Thailand



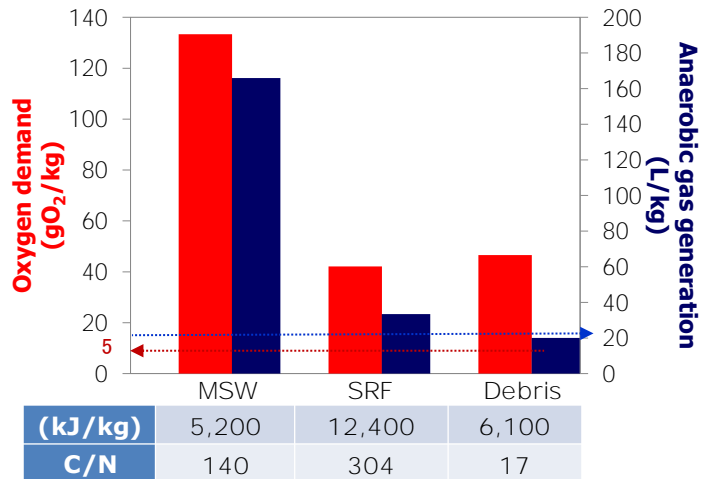
17

Composition of Debris



18

MBT as Pretreatment of Landfilling



**Organics potential of landfilling was reduced (70-80%)
Not enough from viewpoints of emission from landfills
Separation efficiency will affect the organics in debris**

Summary

- Waste Management System is not immutable but should be always updated according to development and growth of city
- Central collection via transfer station could be a solution for reducing the unnecessary cost, time, labor
- Central Treatment must be simultaneously considered for minimizing the ineffectiveness of total system