



# **Business Opportunities in Municipal Waste Stream**

## **- Case of The Republic of Korea -**

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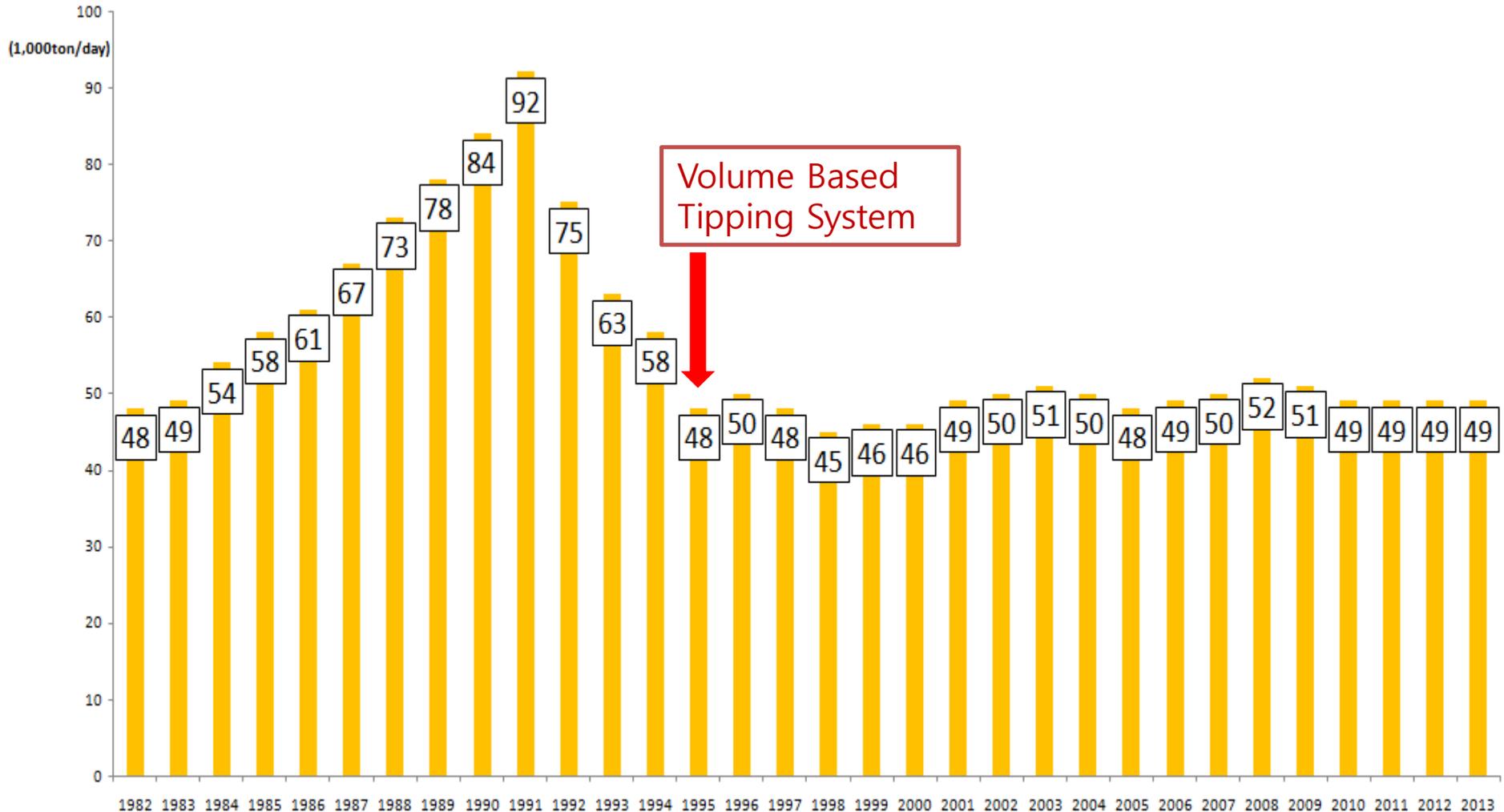
**President  
Korea Society of Waste Management**

**Parallel Round Table(1) – Presentation(2)**



# Current Status of Household Waste

- Household waste('82~'13)
  - Total household waste generation in 2013 is 48,728 tons/day

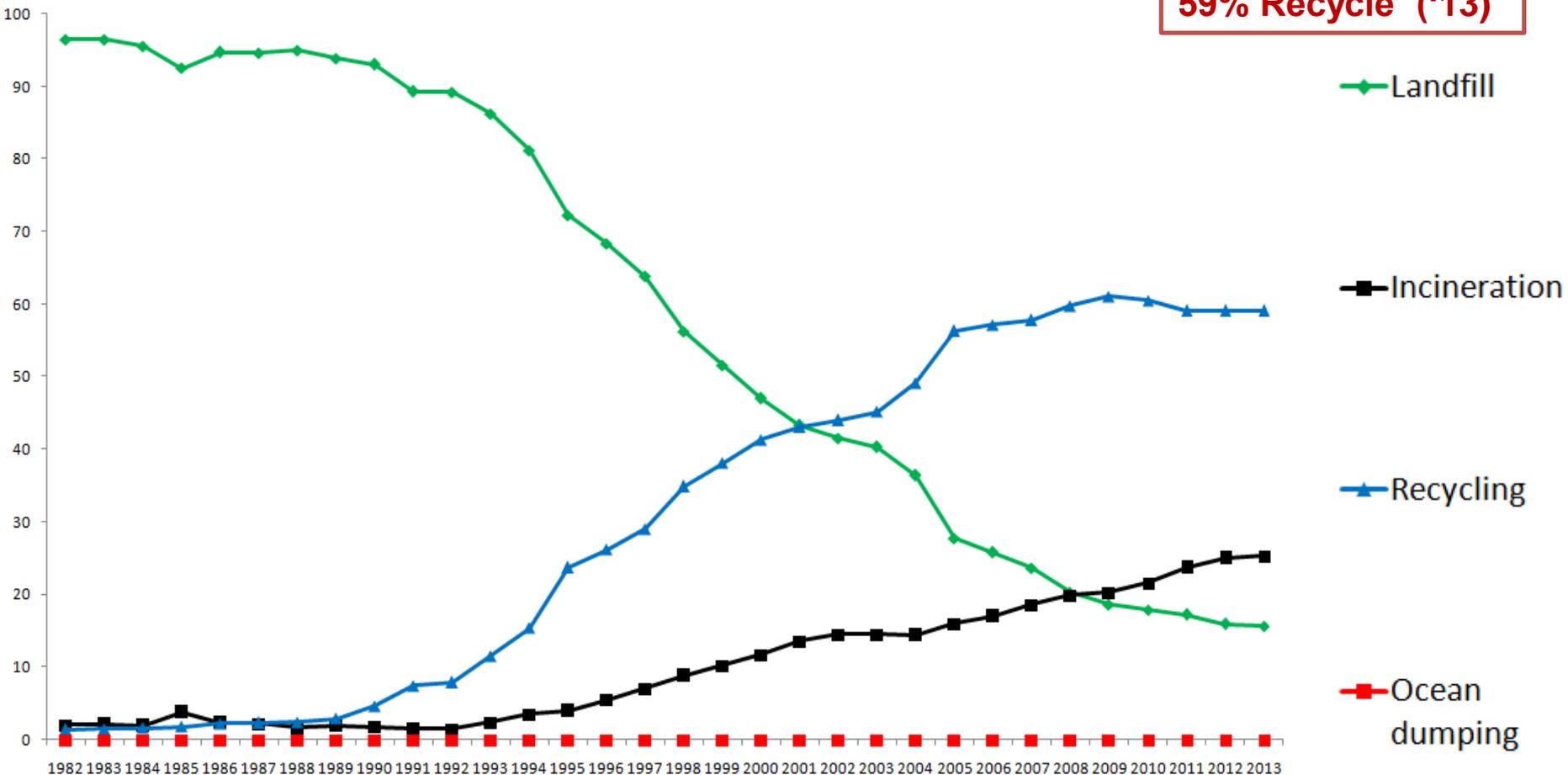


# Current Status of Household Waste

## ■ Treatment of Household Waste ('82~'13)

> 96% Landfill('82)

16% Landfill  
25% Incineration  
59% Recycle ('13)

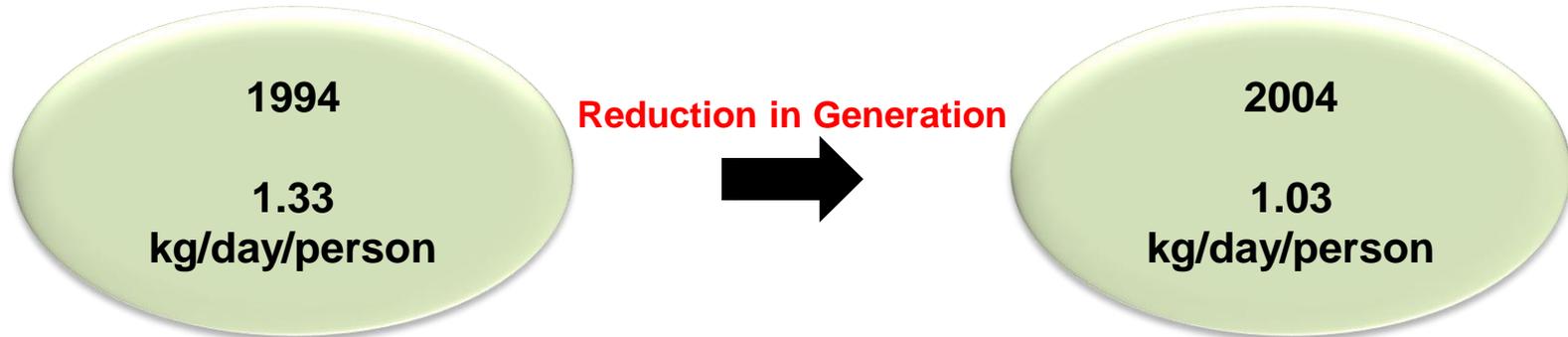


Source: Environment statistics yearbook, Korean Ministry of Environment

# Changes in Waste Management Policy

## Volume Based Tipping System(1995.1~ )

- Effect(Reduction on waste generation & Benefit on economy)



Cost saving in transportation and landfilling : about 6 billion \$

## Summary

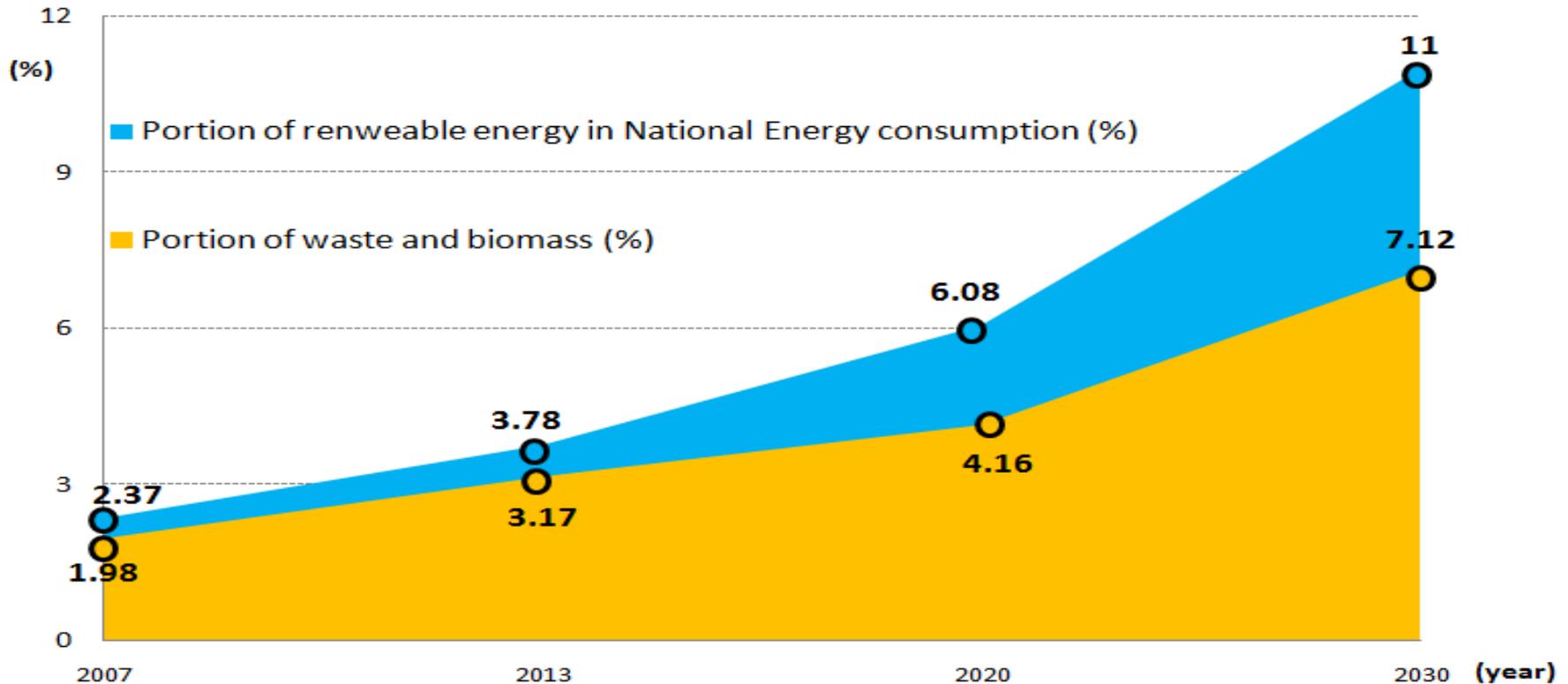
Households purchase plastic bags. Price of a bag by volume will be determined by local governments depending on the cost of waste handling. (partially supported by central government.)



# Changes in Waste Management Policy

## Comprehensive Plan on Waste to Energy (2008- )

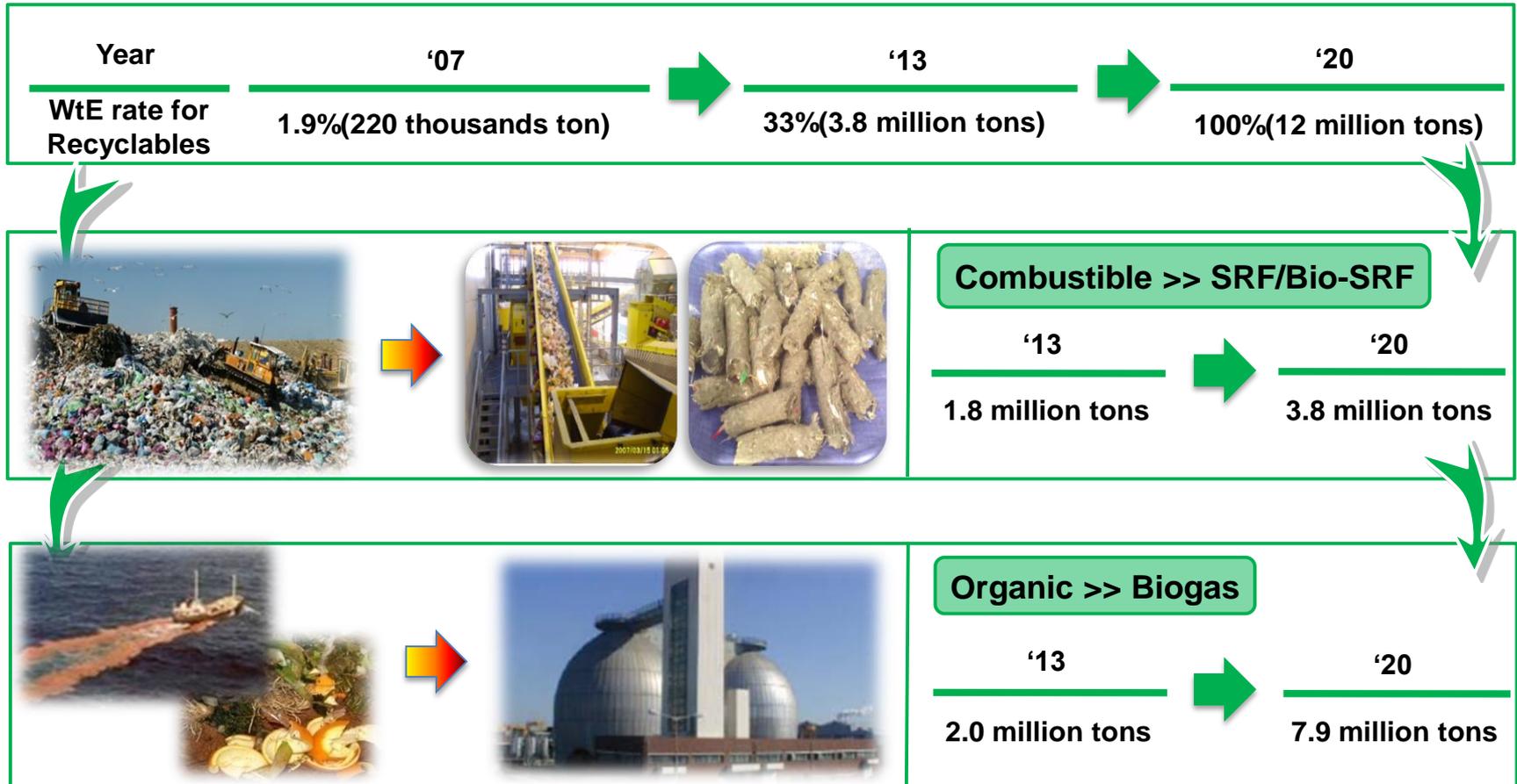
Background : Target of **renewable energy** portion in Korea



- To meet the share of national renewable energy (6.08 and 11% in 2020 and 2030, respectively), still around 70% of renewable energy would be supplied from waste and biomass.
- Waste to Energy has taken major fraction of renewable Energy in Korea.

# Changes in Waste Management Policy

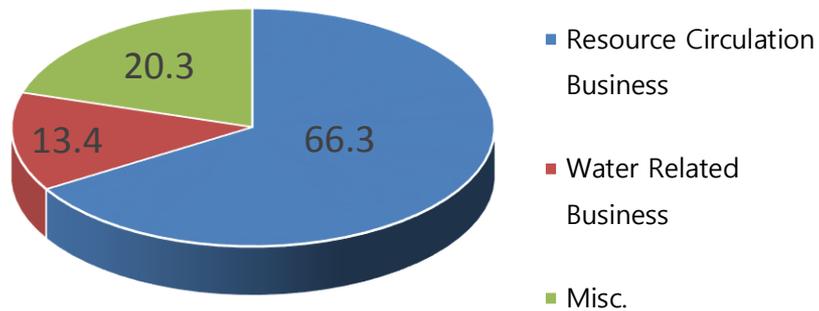
## • Comprehensive plan on waste to energy (2008-2020)



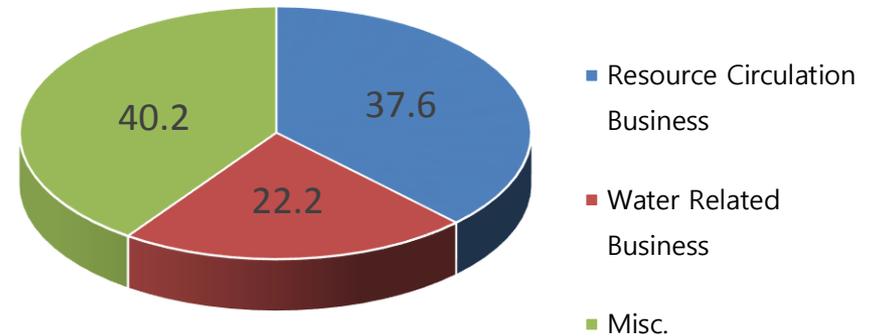
# Number of Company and Employee in Environmental Business

Classification	Yr. 2012		Yr. 2013	
	Company	Employee	Company	Employee
<b>Total</b>	49,913 (100%)	290,413 (100%)	56,411 (100%)	421,166 (100%)
<b>Resource Circulation Business</b>	33,094 (66.3%)	109,161 (37.6%)	21,978 (39.0%)	129,434 (30.7%)
<b>Water Related Business</b>	6,702 (13.4%)	64,465 (22.2%)	6,666 (11.8%)	62,393 (14.8%)
<b>Environmental Restoration Business</b>	1,926 (3.8%)	24,515 (8.4%)	1,465 (2.6%)	18,714 (4.4%)
<b>Climate Change Mitigation Business</b>	- -	- -	2,297 (4.1%)	15,631 (3.7%)
<b>Air Quality Business</b>	1,909 (3.8%)	15,296 (5.3%)	2,757 (4.9%)	29,689 (7.0%)
<b>Environmental Safety &amp; Health Business</b>	2,522 (5.17%)	54,427 (18.7%)	3,726 (6.6%)	36,779 (8.7%)
<b>Sustainable Environment &amp; Resource</b>	19 (0.03%)	3,708 (1.3%)	12,855 (22.8%)	82,596 (19.6%)
<b>Environmental Data, Information, Monitoring Business</b>	3,741 (7.5%)	18,841 (6.5%)	4,667 (8.3%)	45,930 (10.9%)

Number of Company  
in Environmental Business(2012)

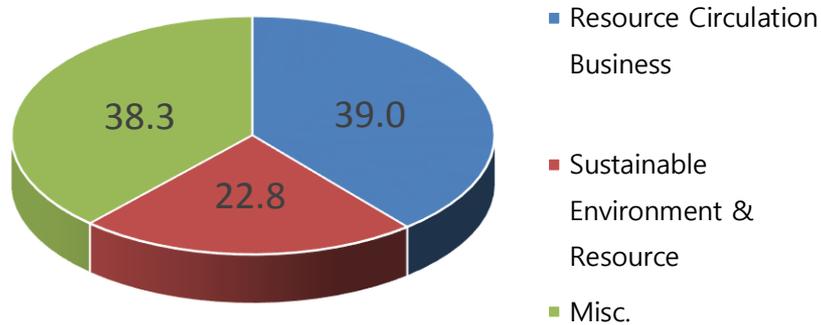


Number of Employee  
in Environmental Business(2012)

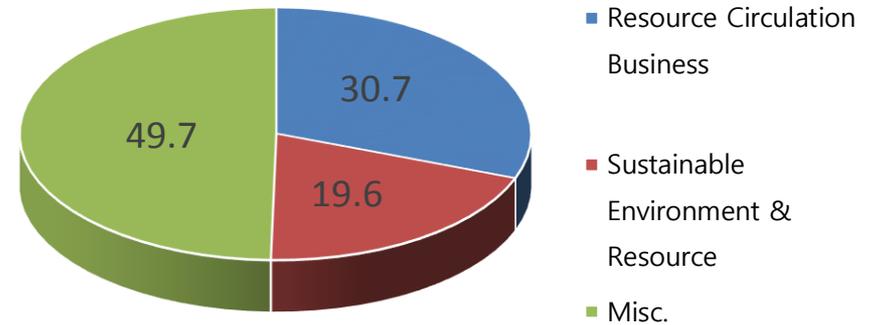


- Misc. : • Environmental Restoration Business,  
• Climate Change Mitigation Business,  
• Air Quality Business,  
• Environmental Safety & Health Business,  
• Sustainable Environmental & Resource,  
• Environmental Data, Information, Monitoring Business

Number of Company  
in Environmental Business(2013)



Number of Employee  
in Environmental Business(2013)



Misc. : • Water Related Business,

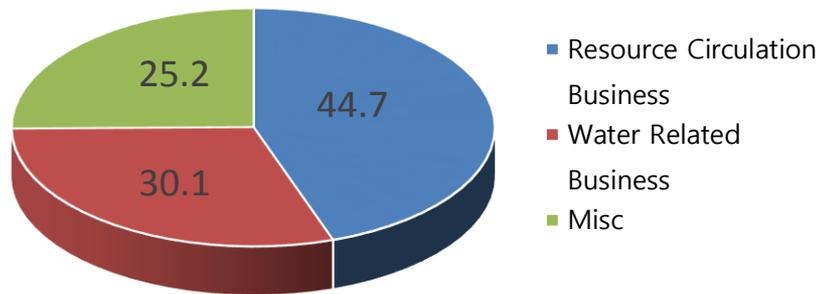
- Environmental Restoration Business,
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- Environmental Safety & Health Business,
- Environmental Data, Information, Monitoring Business

# Sales in Environmental Business

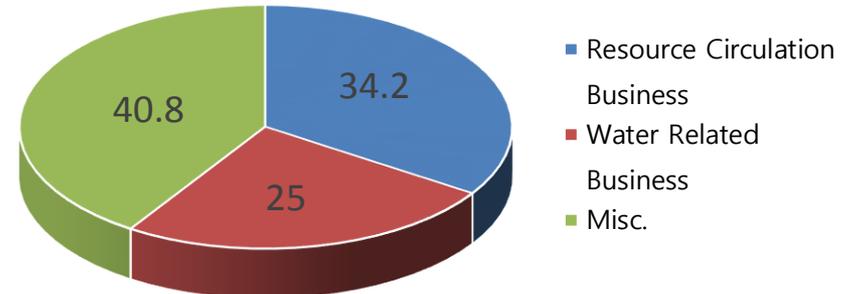
(Unit : Mil. USD)

	Total	Resource Circulation Business	Waste Collection, Hauling, Processing, Recycling	Water Related Business	Environmental Restoration Business	Climate Change Mitigation Business	Air Quality Business	Environmental Safety & Health Business	Sustainable Environment & Resource	Environmental Data, Information, Monitoring Business
2012	74,744 (100%)	33,436 (44.7%)	12,134 (36.3%)	22,500 (30.1%)	1,286 (1.7%)	- -	4,626 (6.2%)	5,699 (7.6%)	225 (0.4%)	6,973 (9.3%)
2013	81,640 (100%)	27,952 (34.2%)	12,896 (30.9%)	20,438 (25.0%)	1,448 (1.8%)	2,403 (2.9%)	5,516 (6.8%)	6,749 (8.3%)	11,314 (13.9%)	5,820 (7.1%)

Sales in Environmental Business(2012)



Sales in Environmental Business(2013)



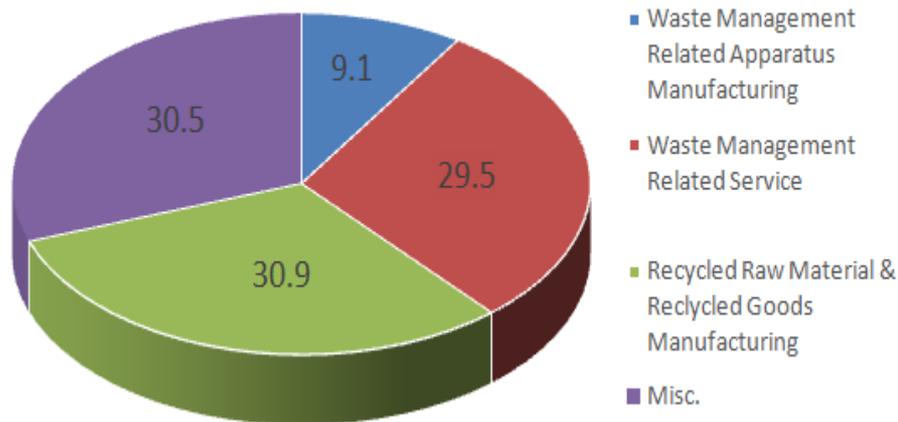
- Misc. :
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  - Sustainable Environmental & Resource,
  - Environmental Data, Information, Monitoring Business

# Sales in Resource Circulation Business

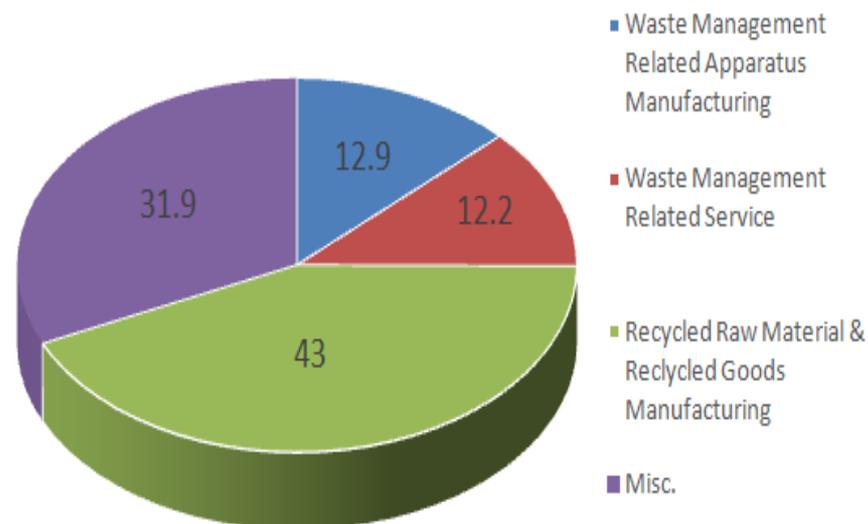
(Unit : Mil. USD)

Classification	Yr. 2012	Yr. 2013	↑ ↓
<b>Total</b>	33,436 (100%)	27,952 (100%)	- 16.4%
<b>Waste Management Related Apparatus Manufacturing</b>	3,055 (9.1%)	3,602 (12.9%)	17.9%
<b>Waste Management Related Facility Construction</b>	655 (2.0%)	733 (2.6%)	12.0%
<b>Waste Management Related Service</b>	9,879 (29.5%)	3,417 (12.2%)	- 65.4%
<b>Waste to Energy Related Apparatus Manufacturing</b>	3,304 (9.9%)	985 (3.5%)	- 70.2%
<b>Waste to Energy Related Facility Construction</b>	0 (0%)	368 (1.4%)	-
<b>Waste to Energy Related Service</b>	0 (0%)	2,599 (9.3%)	-
<b>Recycled Raw Material &amp; Recycled Goods Manufacturing</b>	10,325 (30.9%)	12,022 (43.0%)	16.4
<b>Recycled Goods Flow</b>	6,177 (18.5%)	3,319 (11.9%)	- 46.3
<b>Analysis, Data collection, Evaluation</b>	38 (0.1%)	907 (3.2%)	2,257.7%

## Sales in Resource Circulation Business(2012)



## Sales in Resource Circulation Business(2013)



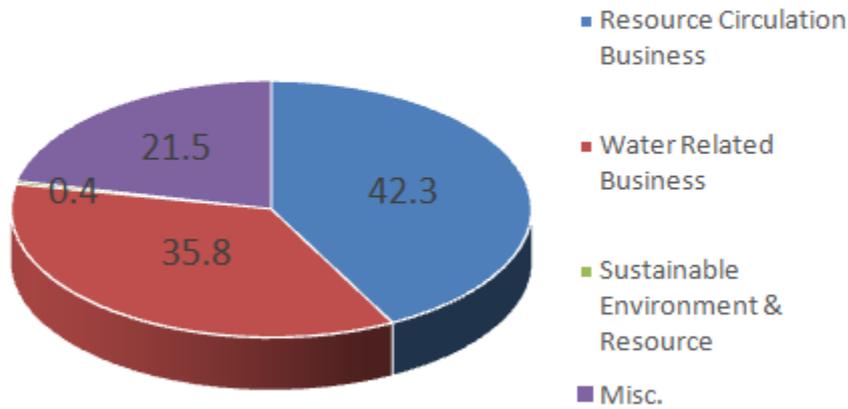
- Misc. : · Waste Management Related Facility Construction,  
· Waste to Energy Related Apparatus Manufacturing,  
· Waste to Energy Related Facility Construction,  
· Waste to Energy Related Service, · Recycled Goods Flow,  
· Analysis, Data collection, Evaluation

# Investment in Environmental Business

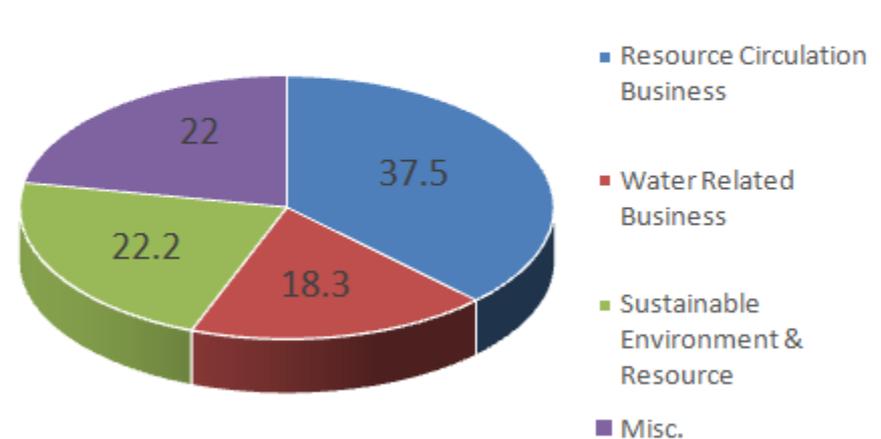
(Unit : Mil. USD)

Classification	Yr. 2012	Yr. 2013	↑ ↓
<b>Total</b>	2,789 (100%)	4,145 (100%)	48.6%
<b>Resource Circulation Business</b>	1,181 (42.3%)	1,555 (37.5%)	31.7%
<b>Water Related Business</b>	999 (35.8%)	757 (18.3%)	- 24.3%
<b>Environmental Restoration Business</b>	33 (1.2%)	71 (1.7%)	115.5%
<b>Climate Change Mitigation Business</b>	0 (0%)	93 (2.2%)	-
<b>Air Quality Business</b>	123 (4.4%)	314 (7.6%)	155.6%
<b>Environmental Safety &amp; Health Business</b>	208 (7.5%)	190 (4.6%)	- 8.9%
<b>Sustainable Environment &amp; Resource</b>	11 (0.4%)	920 (22.2%)	8,474.6%
<b>Environmental Data, Information, Monitoring Business</b>	235 (8.4%)	246 (5.9%)	5.0%

Investment in Environmental Business(2012)



Investment in Environmental Business(2013)



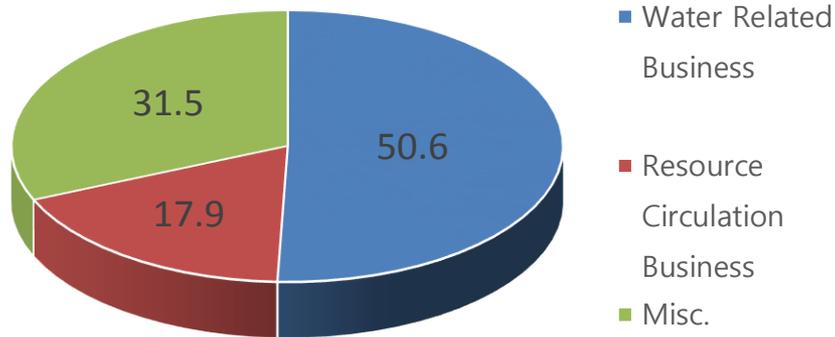
- Misc. : · Environmental Restoration Business,  
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# Export in Environmental Business

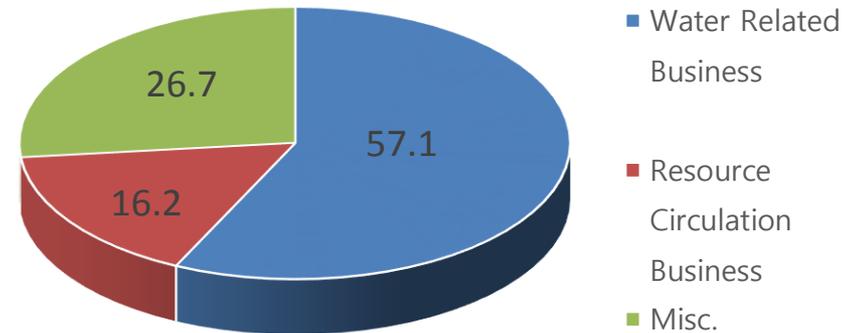
(Unit : Mil. USD)

Classification	Yr. 2012	Yr. 2013	↑ ↓
<b>Total</b>	6,638 (100%)	7,202 (100%)	8.5%
<b>Resource Circulation Business</b>	1,190 (17.9%)	1,167 (16.2%)	- 1.9%
<b>Water Related Business</b>	3,362 (50.6%)	4,114 (57.1%)	22.4%
<b>Environmental Restoration Business</b>	0 (0%)	53 (0.7%)	14,400.0%
<b>Climate Change Mitigation Business</b>	0 (0%)	12 (0.2%)	-
<b>Air Quality Business</b>	622 (9.4%)	572 (7.9%)	- 7.9%
<b>Environmental Safety &amp; Health Business</b>	760 (11.5%)	170 (2.4%)	- 77.7%
<b>Sustainable Environment &amp; Resource</b>	0 (0%)	690 (9.6%)	-
<b>Environmental Data, Information, Monitoring Business</b>	704 (10.6%)	425 (5.9%)	- 39.7%

Export in Environmental  
Business(2012)



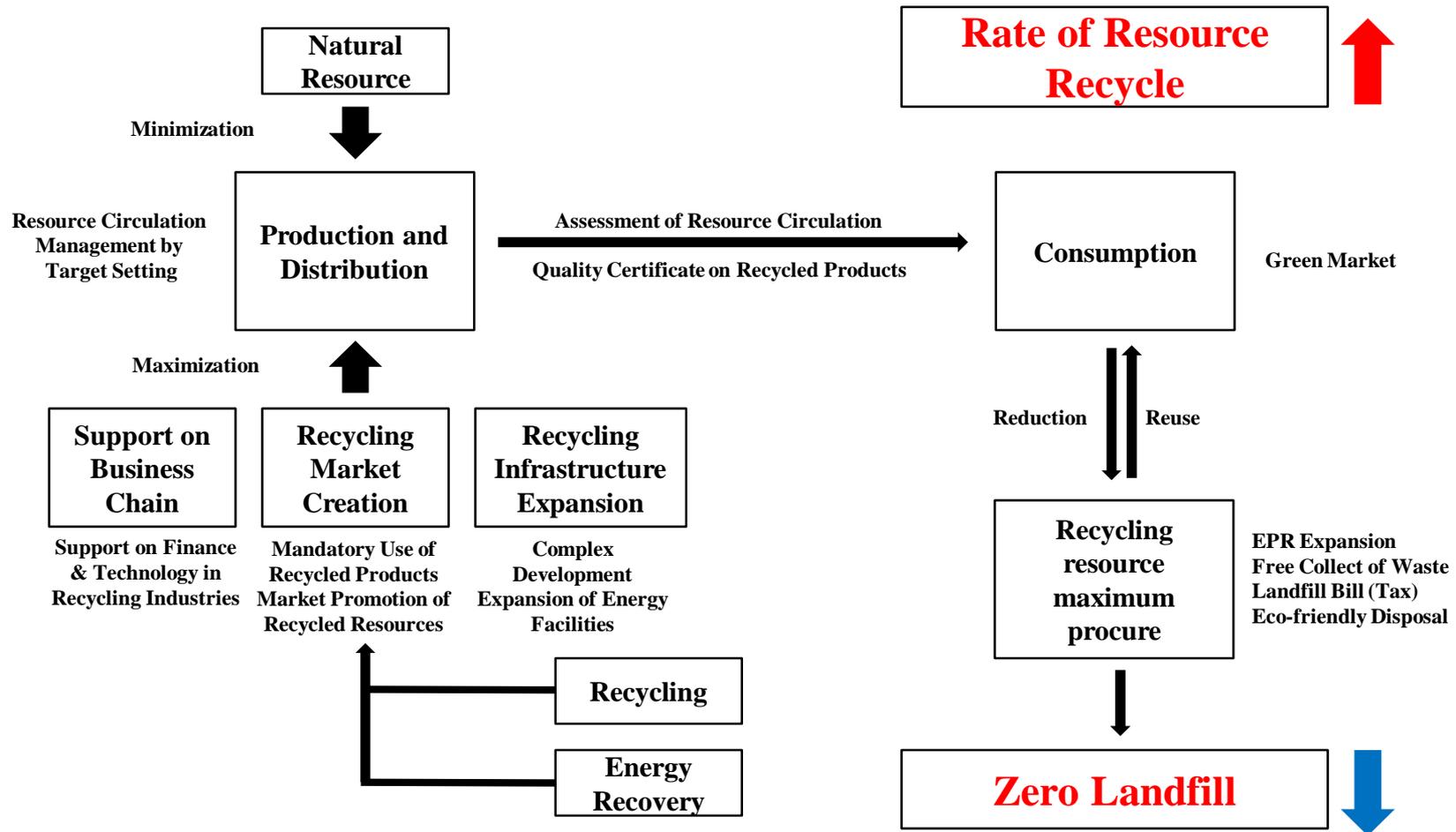
Export in Environmental  
Business(2013)



- Misc. :
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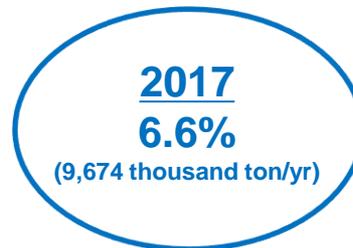
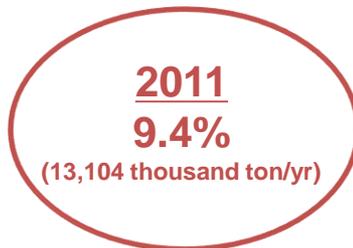
## ▪ New Waste Management Policy

### ▪ Structure of Resource Circulation Society (RCS)



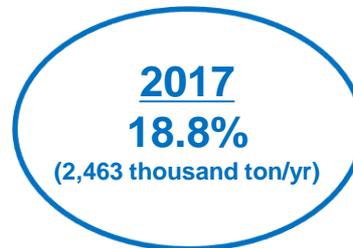
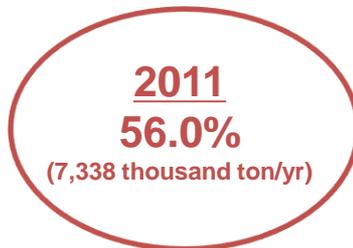
## ▪ New Waste Management Policy (Goals)

### ▪ Landfill Rate of Waste in Overall



※ Landfill rate of household waste of developed country is 0.42% in Germany, 0.97% in Sweden, 3.8% in Japan based on 2010  
So, those countries actually achieved the landfill zero of recycling available resource

### ▪ Landfill Rate for Recyclable Waste



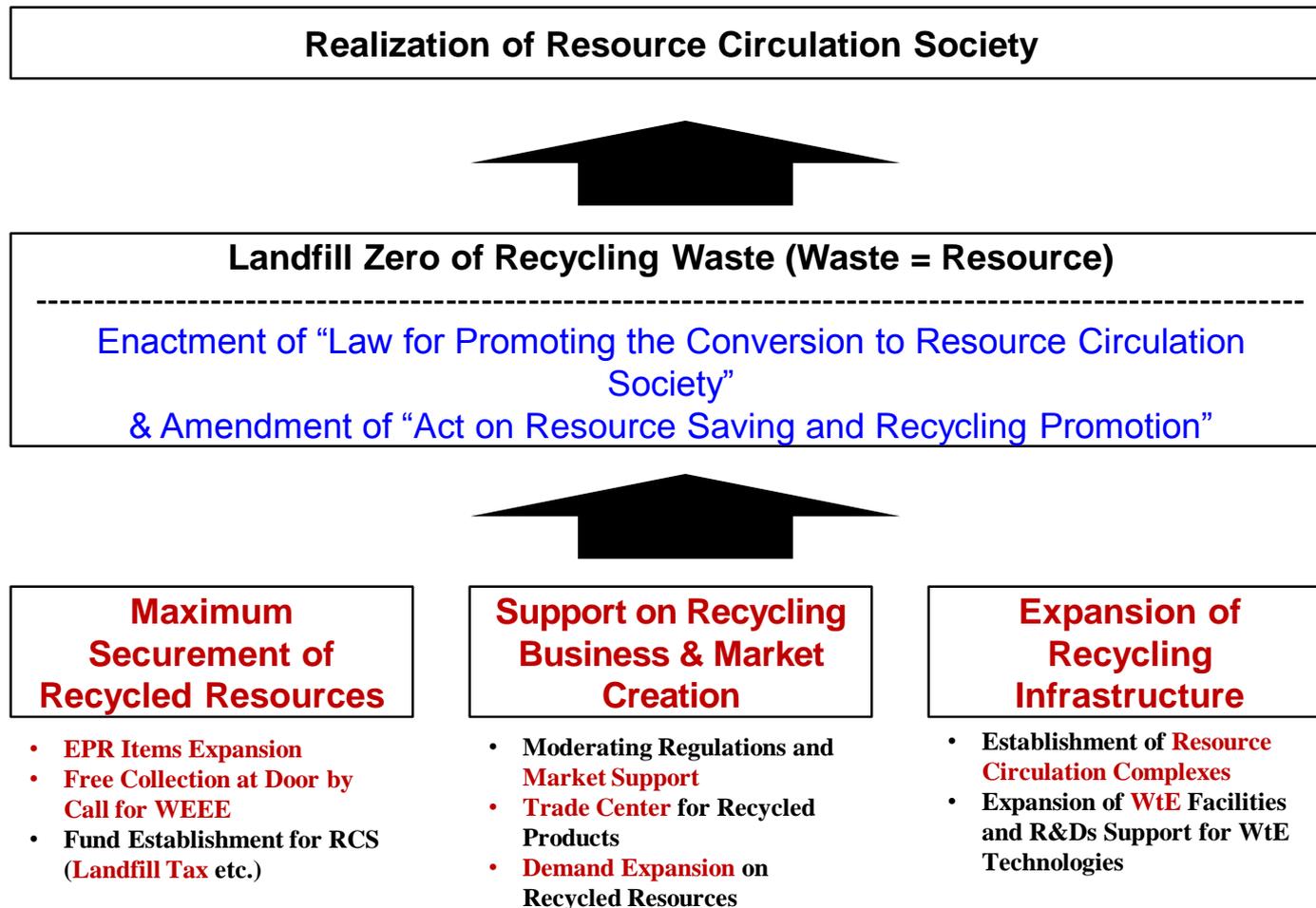
## ▪ New waste management policy

### ▪ Waste Treatment in Different Streams by 2020

Section		2011	2017	2020
Total	Total generation	139,916	147,494	147,172
	Landfill	13,104 / (9.4)	9,674 / (6.6)	4,416 / ( 3.0)
	Incineration	8,291 / (5.9)	11,634 / (7.9)	15,453 / (10.5)
	Recycling	116,157 / (83.0)	126,186 / (85.5)	127,303 / (86.5)
	Ocean dumping	-	-	-
Household waste	Total generation	17,861	18,052	18,166
	Landfill	3,063 / (17.1)	2,166 / (12.0)	892 / ( 4.9)
	Incineration	4,235 / (23.7)	4,152 / (23.0)	5,103 / (28.1)
	Recycling	10,563 / (59.1)	11,734 / (65.0)	12,171 / (67.0)
	Ocean dumping	-	-	-
Industrial waste	Total generation	54,013	54,243	56,700
	Landfill	9,093 / (16.8)	6,455 / (11.9)	2,656 / ( 4.7)
	Incineration	3,696 / ( 6.8)	7,106 / (13.1)	9,844 / (17.4)
	Recycling	38,860 / (71.9)	40,682 / (75.0)	44,200 / (78.0)
	Ocean dumping	2,364 / ( 4.4)	-	-
Construction waste	Total generation	68,042	75,199	72,306
	Landfill	948 / ( 1.4)	1,053 / ( 1.4)	868 / ( 1.2)
	Incineration	360 / ( 0.5)	376 / ( 0.5)	506 / ( 0.7)
	Recycling	66,734 / (98.1)	73,770 / (98.1)	70,932 / (98.1)
	Ocean dumping	-	-	-

## ▪ New waste management policy

- Strategy and Actions for Establishing Resource Circulation Society





# Thank you

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