

gorenje



Waste treatment of biodegradable waste in Slovenia

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gorenje 60 YEARS

88 companies (66 international)

The production and sales of large household appliances

Home Appliances Division
(77%)

Ecology, Energy and Services
Division (18%)

Home Interior Division (5%)

Ecology

Comprehensive Waste Management

Industrijski odpadki
Industrial waste
Industrijski otpad

Ravnanje z industrijskimi odpadki –
kovinske in nekovinske sekundarne
surovine

Industrial waste management –

Nevarni odpadki
Dangerous waste
Opasni otpad

Ravnanje z nevarnimi odpadki
Hazardous waste management
Postupanje s opasnim odpadom

Komunalni odpadki
Municipal waste
Komunalni otpad

Ravnanje s komunalnimi odpadki
Municipal waste management
Postupanje s komunalnim odpadom

Energijska izraba odpadkov
Waste to Energy
Energetska eksploatacija odpadaka

Priprava alternativnih goriv iz
odpadkov in njihova energijska
izraba
Alternative fuels and energy

Projektni inženiring
Project management
Projektni inženjering

Projektiranje, svetovanje in nadzor,
projektni inženiring in izvedba
posebnih projektov
Project management, and

Analize in raziskave
Research and Analysis
Analize i istraživanja

Okoljske analize in raziskave,
monitoringi, izobraževanje,
svetovanje, laboratorijske analize,
okoljsko komuniciranje

surovina
CELOVITO OBVLADOVANJE ODPADKOV
COMPREHENSIVE WASTE MANAGEMENT
Gorenje Surovina, d.o.o., Ulica Vita Kraigherja 5, SI-2000 Maribor

KEMIS
Ker nam ni vseeno!

S-PUBLICUS
IZHODI ODPADKI IN PREDELAVA








ECONO

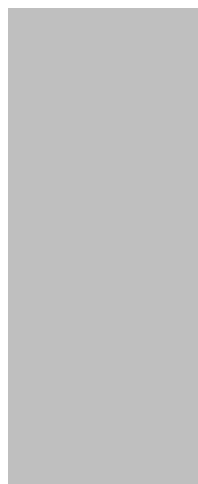
ERICO

gorenje

Gorenje Group – Company Profile



Consolidated Revenue	1,3 bn EUR
Average Number of Employees	10.907
Export	90%
Presented in	70 countries Worldwide, mostly in Europe
Brands	      



V.SU



Ecology – Consolidated Data



Consolidated Revenue

104,6 mio EUR

Net Profit

2,5 mio EUR

Average Number of Employees

556

Core Business

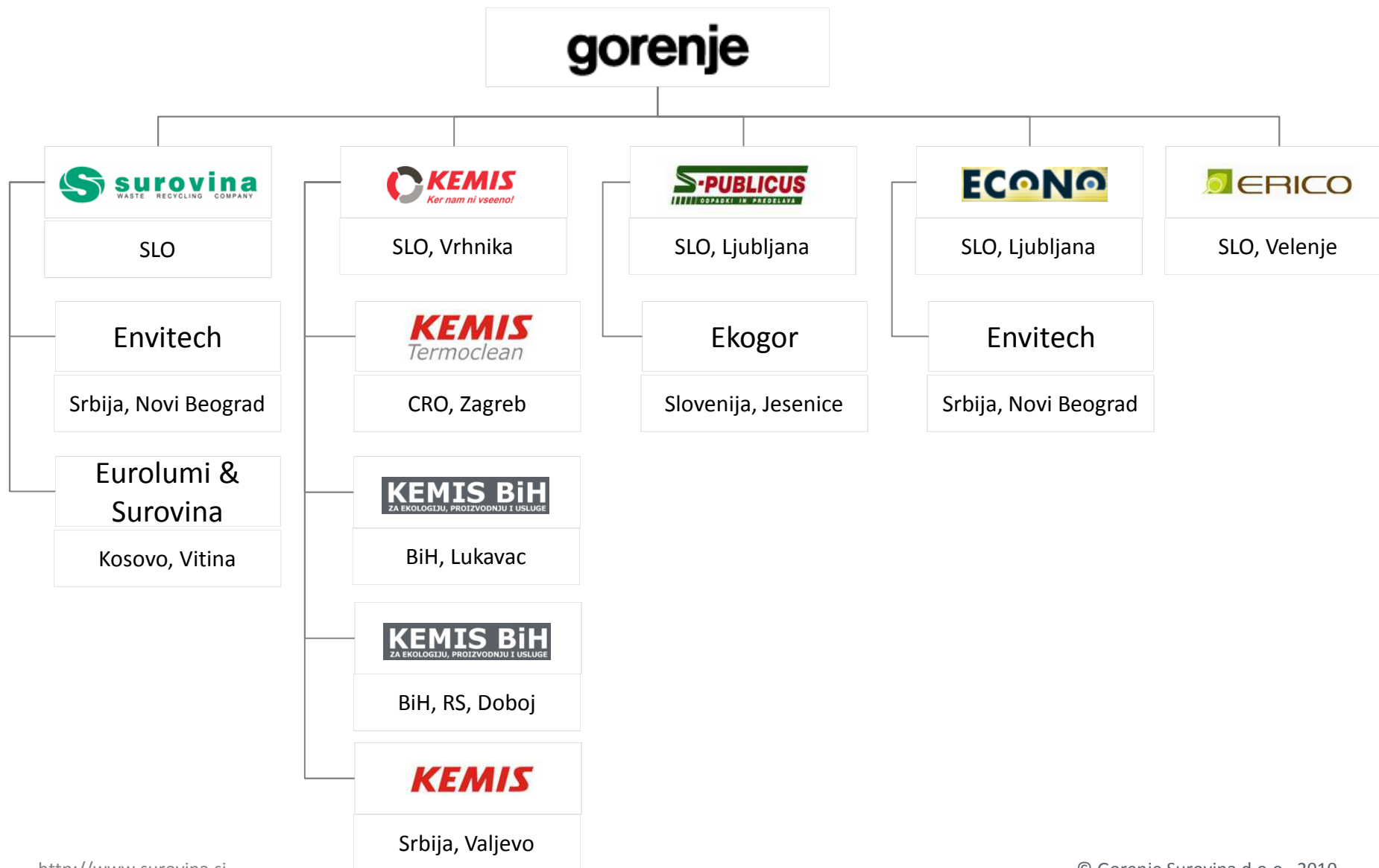
Comprehensive Waste Management Solutions

Region

SE Evrope



Ecology– Firms in Slovenia and subsidiaries in SE Europe



- In Slovenia in 2011 was produced 411 kg of municipal waste per capita. Average in EU in 2011 was 503 kg of municipal waste per capita.
- Slovenia, Greece , Portugal , Belgium, Sweden in Lithuania are the group of countries that generate between 400-500 kg of municipal waste
- In Slovenia was recycled 34% of municipal waste , the higher rate was in Germany (45 %), Ireland (37 %) and Belgium (36 %).
- In average in EU was treated 486 kg per capita. The treatment was: 37% (56% - 2001) landfilled, 23% (17%-2001) incinerated, 25% (17%-2001) recycled and 15% (10%) composted.

Municipal waste (paper, metals, plastic, glass) – Directive 2008/98/EC	2015	separate collection shall be set up for at least the following: paper, metal, plastic and glass
Municipal waste (paper, metals, plastic, glass) – Directive 2008/98/EC	2020	50% preparing for re-use and recycling
Landfill of biodegradable waste	2006*	to reduce the amount of biodegradable municipal waste that goes to landfill to 75% of 1995 levels
	2009*	to reduce the amount of biodegradable municipal waste that they landfill to 50% of 1995 levels
	2016*	to reduce the amount of biodegradable municipal waste that they landfill to 35% of 1995 levels

* Member States which in 1995 put more than 80 % of municipal waste to landfill may postpone the attainment of the targets by a period of four year.

Waste composition in Slovenia in 2011

PERIOD	Reduction of annual quantities of landfilled biological waste in % according to reference year 1995 (%)	Annual quantity of landfilled biological waste in municipal waste in percentage of total municipal waste generated in 1995 (%)	Annual quantity of biological waste in landfilled municipal waste* (1000t)
Reference year 1995		63	445
2000	0	63	445
2001	5	60	423
2002	5	57	401
2003	5	54	378
2004	5	50	356
2005	5	47	334
2006	5	44	312
2007	10	38	267
2008	10	32	223
2009-2010	5	28	200
2011-2012	5	25	178
2013-2015	5	22	156

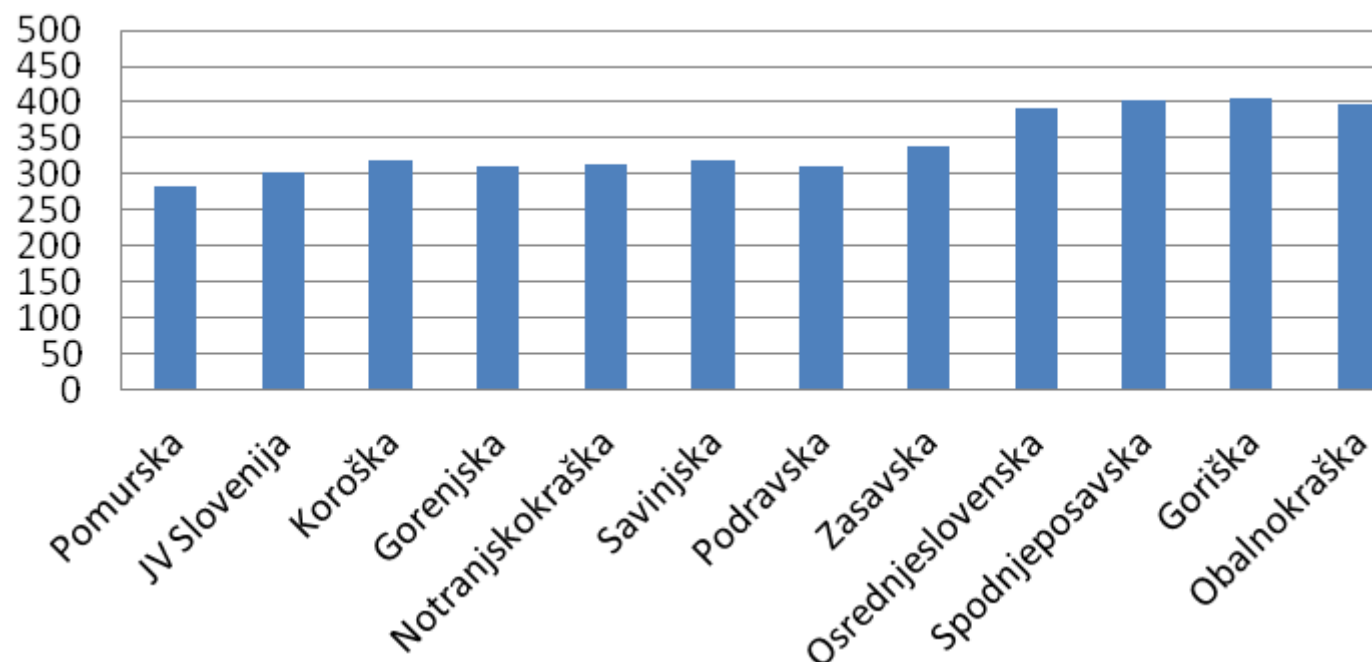
*In the reference year 1995 was generated 725.350 tons of municipal waste.

Waste type	2011		2020	
	Fraction of separate collected municipal waste (%)	Annual quantities of municipal waste for recycling (t/y)	Fraction of separate collected municipal waste	Annual quantities of municipal waste for recycling (t/y)
Waste paper	69,3	141.676	82,0	173.497
Biological waste	59,1	103.919	58,7	109.230
Plastic waste	26,6	33.853	52,3	70.842
Glass	32,9	34.946	81,6	91.947
Metals	51,2	10.995	87,9	19.833

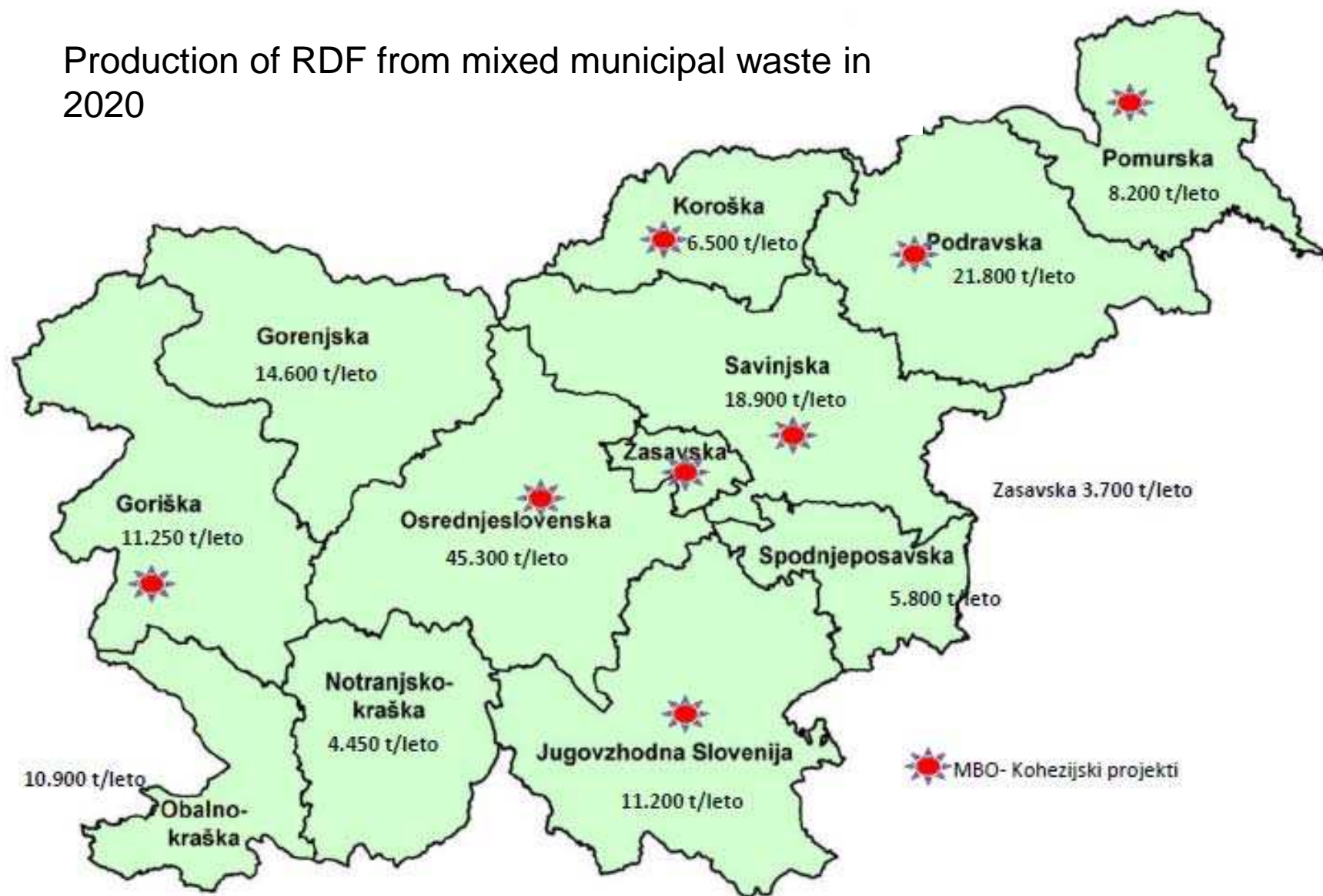
Composition of mixed municipal waste in %

Paper	14,41
Kitchen waste	16,54
Plastic	21,63
Glass	16,39
Metal	4,00
Textile	4,00
Composite materials	14,00
Wood	2,12
Oil	0,05
Non-biodegradable waste	5,85
Hazardous waste	1,00
Total	100,00

Generation of municipal waste in statistical regions in kg per capita in 2011



Production of RDF from mixed municipal waste in 2020

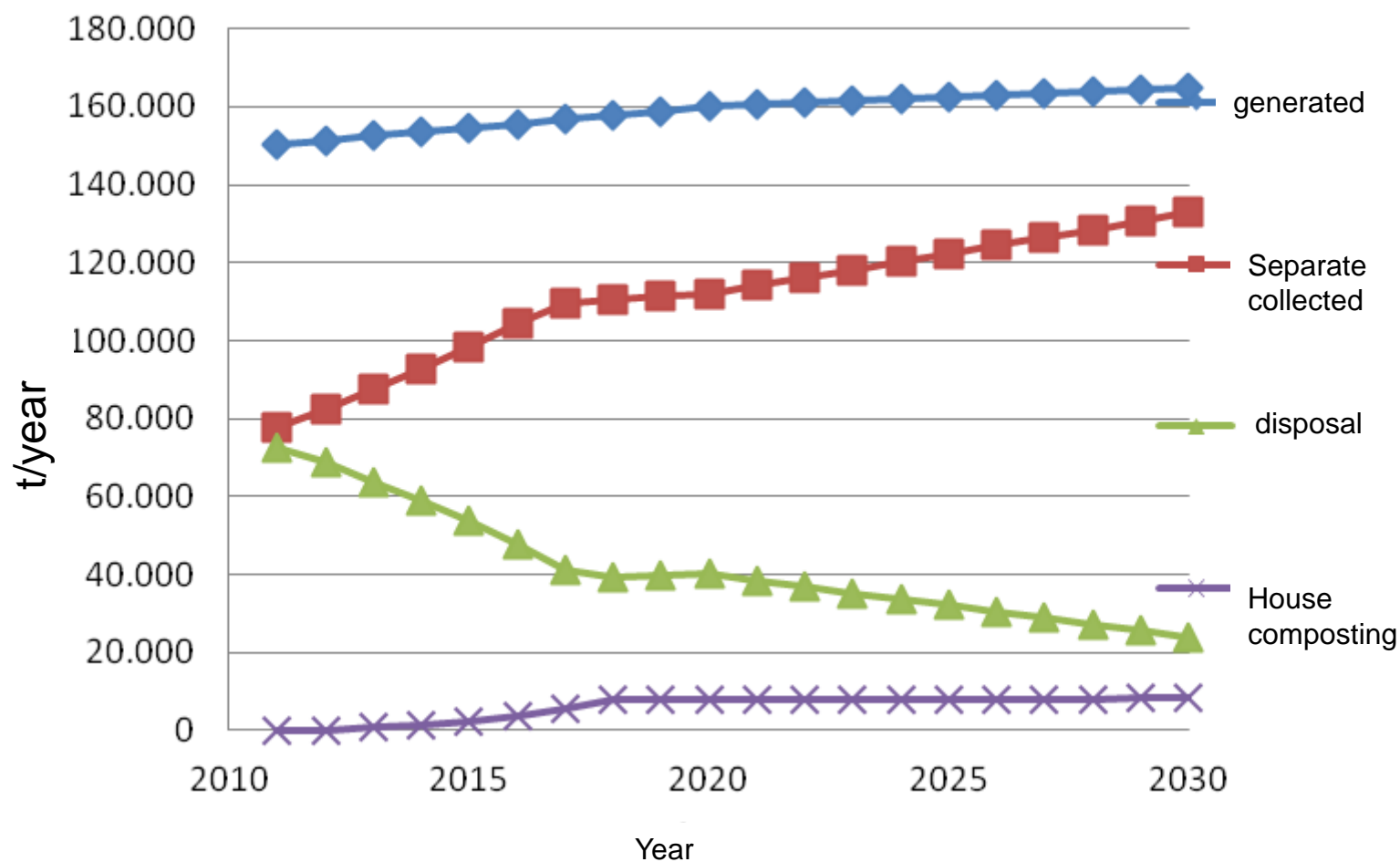


Waste composition in Slovenia in 2011

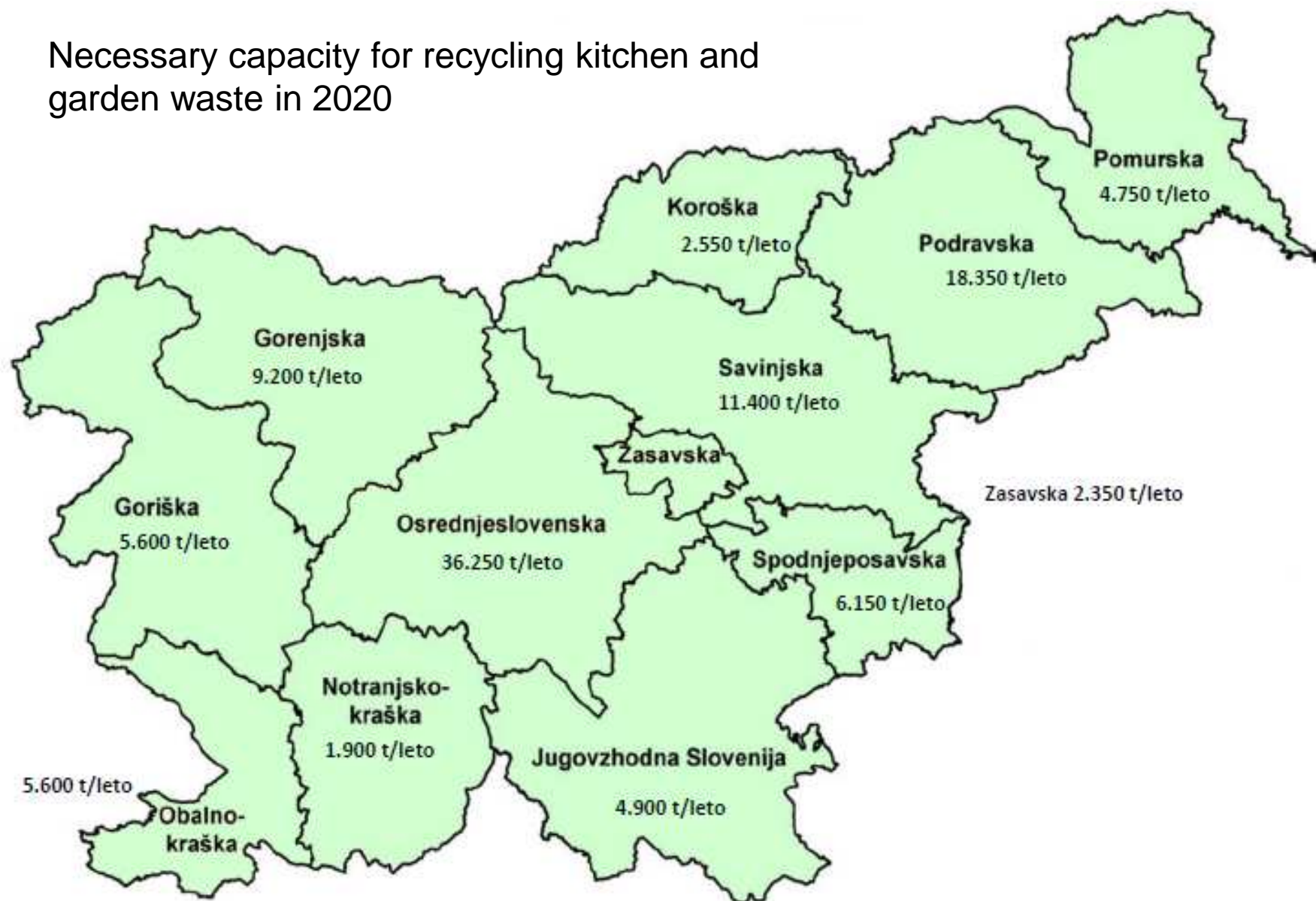
	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012 (10.4.13)</u>
Collected waste	881.016,678	898.329,104	888.560,421	749.073,973
Collected Municipal waste (1501+20)	825.747,423	796.413,455	721.719,744	671.682,396
Collected mixed municipal waste (200301)	585.751,970	540.913,065	435.872,904	361.744,482
Collected packaging waste(1501)	55.522,890	71.458,709	87.172,587	101.441,465
Collected biodegradable waste (200108+200201)	49.673,828	58.617,329	78.092,197	90.644,012
Landfilled (Public Utility Service)	750.754,623	662.093,308	507.795,883	335.066,374
Landfilled municipal waste (PUS)	629.732,230	562.722,210	419.228,470	294.679,064
Landfilled mixed municipal waste (PUS)	573.612,064	510.468,836	380.413,608	273.455,492

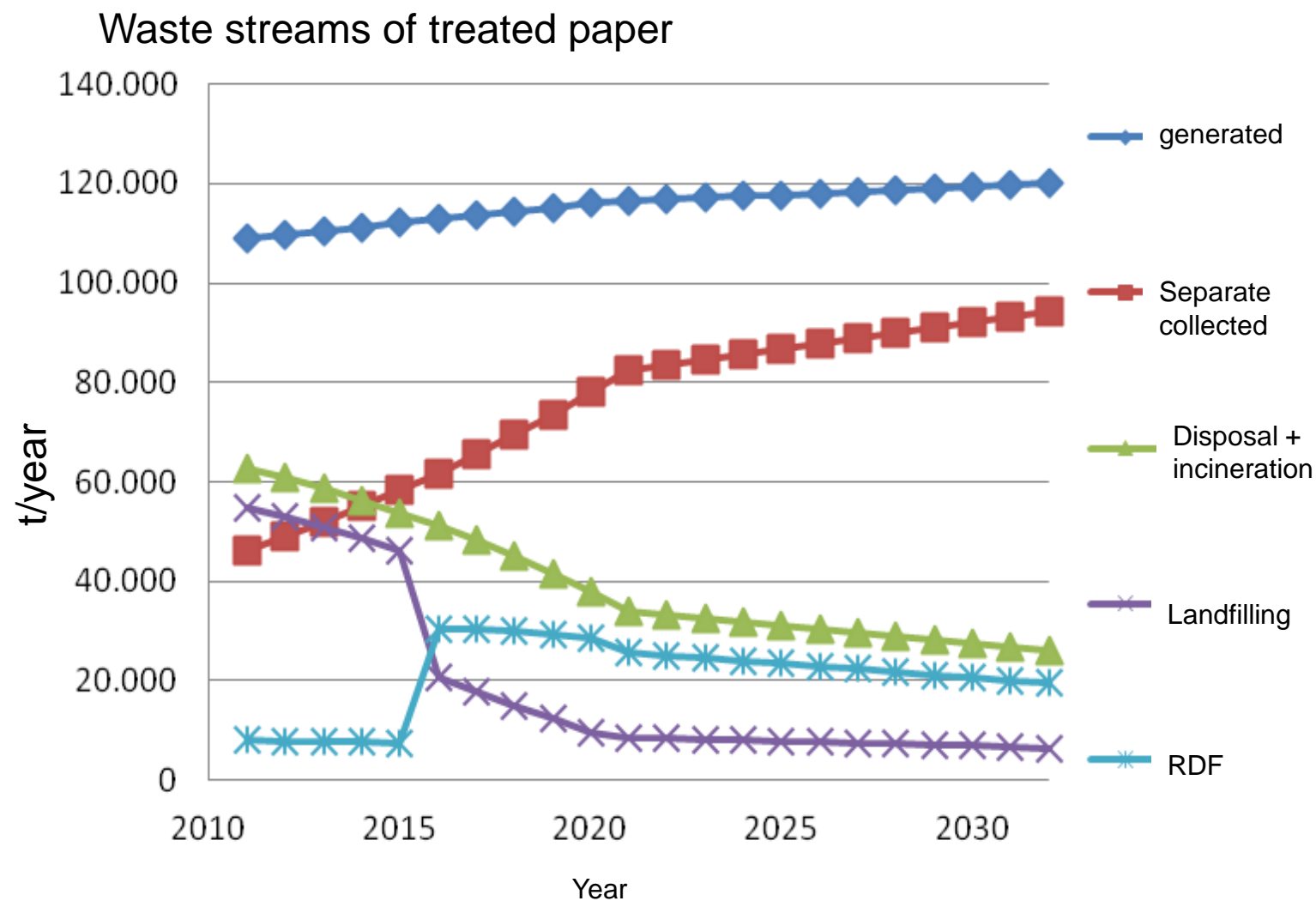
<u>Indicators</u> 2009-2012:	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
Separate collected fraction of MW	29%	32%	40%	46%
Fraction of mixed MW in collected MW	71%	68%	60%	54%
Fraction of separate collected packaging waste in MW	7%	9%	12%	15%
Fraction of separate collected biodegradable waste in MW	6%	7%	11%	13%
Fraction of landfilled waste of collected MW	76%	71%	58%	44%
Fraction of landfilled mixed municipal waste of collected MMW	98%	94%	87%	76%
Collected MW /capita (kg)	403	388	352	323
Landfilled MW /capita (kg)	307	274	204	143

Waste streams of treated biodegradable waste



Necessary capacity for recycling kitchen and garden waste in 2020

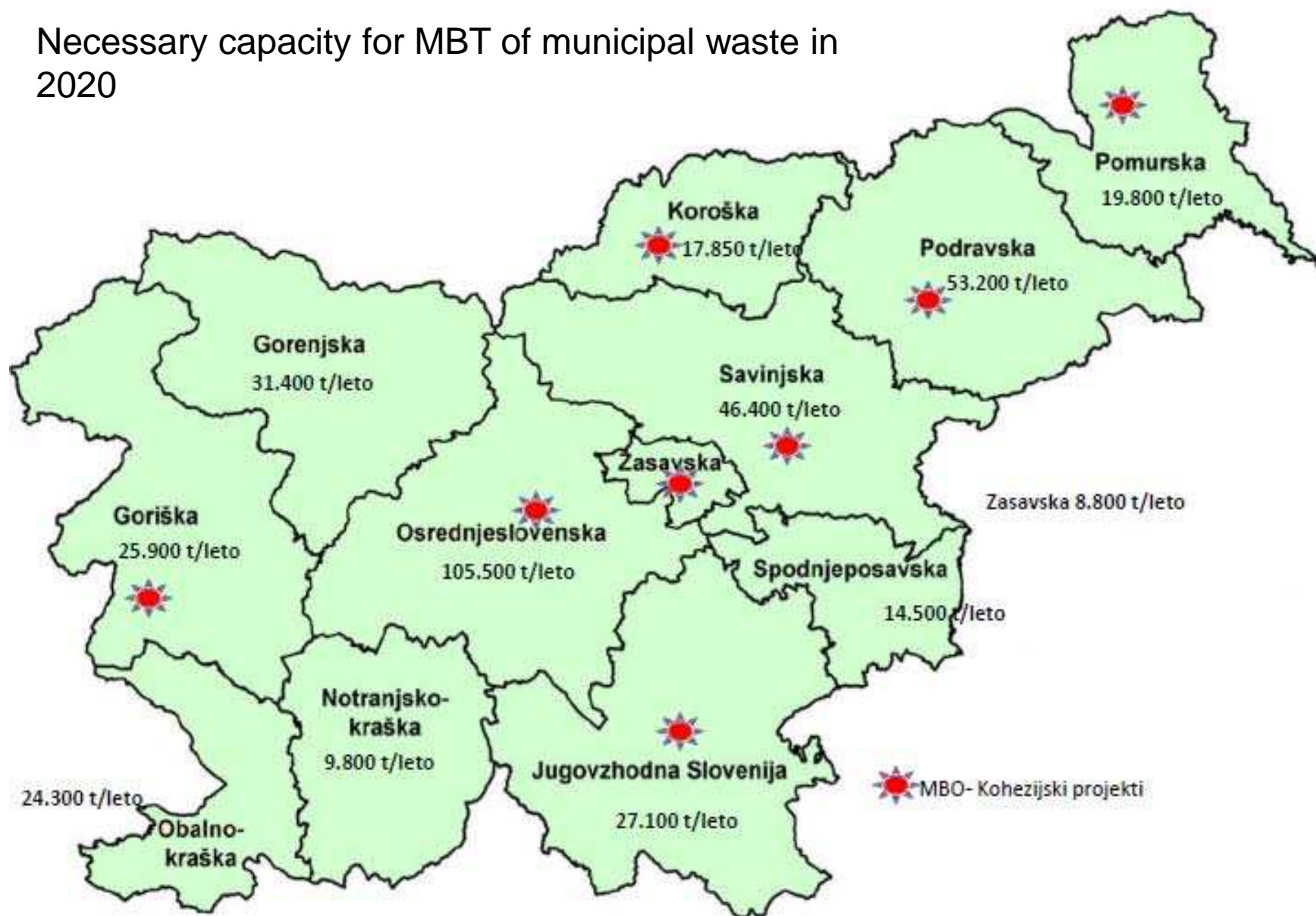




Fraction of waste in total produced municipal waste in 2020

Type of waste	2020
Fraction of mixed municipal waste (in %)	36
Fraction of all separate collected fractions (in %)	64
Fraction of separate collected biological waste (in %)	12
Fraction of incinerated municipal waste (in %)	24
Fraction of landfilled municipal waste (in %)	15
Municipal waste generated (in kg/capita)	447
Recycled municipal waste (in kg/capita)	271
Landfilled municipal waste (in kg/capita)	66
Capacity for treatment separate collected biological waste (in t/year)	83.232
Capacity for MB treatment mixed municipal waste (in t/year)	327.147

Necessary capacity for MBT of municipal waste in 2020



OBJECTIVES:

- to set up one collection point for separate fractions of municipal waste for every 500 residents in densely populated areas;



- to set up collection points for hazardous fractions of municipal waste in every densely populated area with more than 25,000 residents, and one collection point per 60,000 residents in larger settlements;



OBJECTIVES:

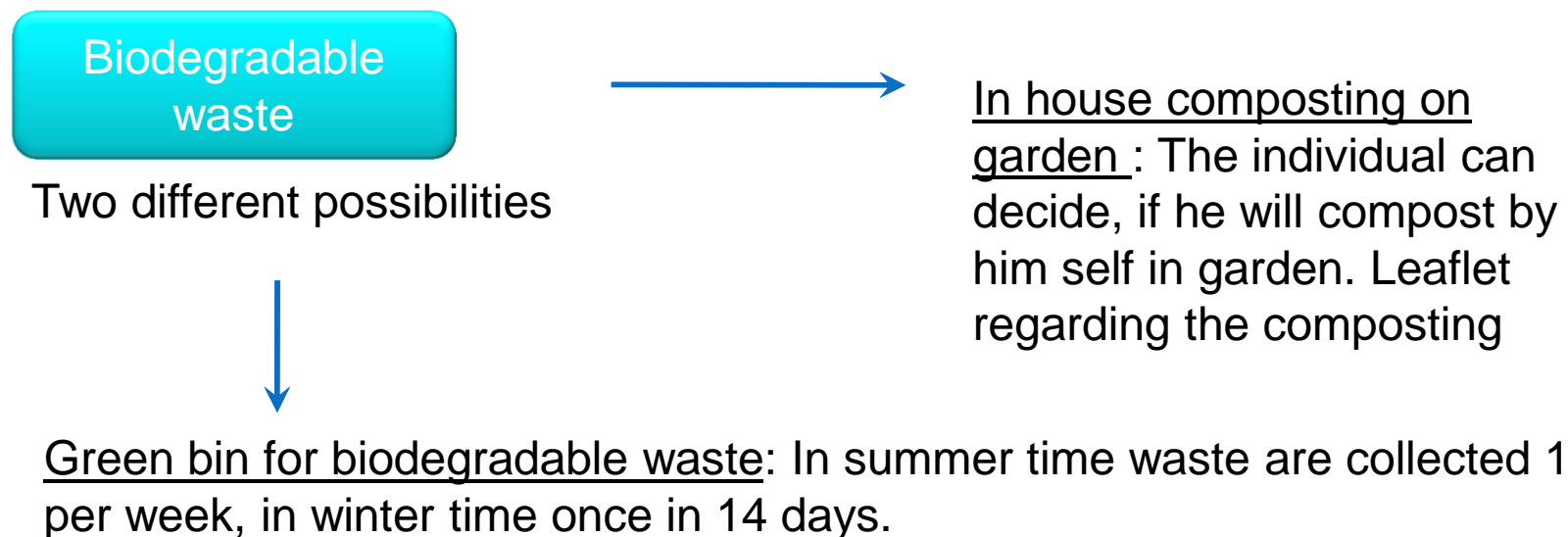
- to set up collection center for collecting separate fractions of municipal waste, with a delivery-to-collection-point system in each local community and in every densely populated area with more than 8,000 residents, and one collection center per 80,000 residents in larger settlements;

- Paper and cardboard
- Glass
- Packaging waste (plastic, metal, tetrapak...)
- Wood
- Plastic
- Metal
- Biodegradable waste
- Bulky waste
- WEEE
- Textile
- Used oil
- Hazardous waste
- Construction and Demolition waste



OBJECTIVES:

- to establish a supplementary system for the collection of hazardous municipal waste using mobile collection points;
- to establish a door to door collection system for organic kitchen waste from catering establishments and households and to include the biological processing of this waste;
- to ensure the biological processing of biological kitchen waste from households in home composters



Service	Price	Unit
Collecting municipal waste		
Infrastrucure	0,0043	€/kg
Service	0,1234	€/kg
Collecting biological waste		
Infrastrucure	0,0077	€/kg
Service	0,2331	€/kg
Treatment of municipal waste		
Infrastrucure	0,0000	€/kg
Service	0,0350	€/kg
Disposal of municipal waste		
Infrastrucure	0,0000	€/kg
Service	0,1686	€/kg

Total price for Municipal waste
331,3 €/t

Total price for biological waste
240,8 €/t

Service	Price	Unit
Collecting municipal waste		
Infrastrucure	0,2173	240 l bin
Service	5,5518	240 l bin
Collecting biological waste		
Infrastrucure	0,1469	240 l bin
Service	1,7198	240 l bin
Treatment of municipal waste		
Infrastrucure	0,0284	240 l bin
Service	0,9822	240 l bin
Disposal of municipal waste		
Infrastrucure	2,0224	240 l bin
Service	1,6157	240 l bin

Total price for Municipal waste
10,4187€/bin cca 208,356€/t

Total price for biological waste
1,8667 €/bin cca. 37,334€/t

Problems in collecting municipal waste:

High number of Public Utility companies for collecting municipal waste:

- 32 (53%) PUS cover less than 1% of population in RS (total of population 20,32%),
- 15 (25%) PUS cover between 1-2% of population in RS (total of population 20,23%),
- 8 (13%) PUS cover between 2-3% of population in RS (total of population 21,71%),
- 2 (3%) PUS cover between 3-4% of population in RS (7,03%),
- 1 (2%) PUS cover 6% of population in RS ,
- 1 (2%) PUS cover 7% of population in RS
- 1 (2%) PUS cover 17% of population in RS

- **High difference in results of separate collected municipal waste in different Municipalities**
- **It is difficult to supervision waste stream and quantities of municipal waste**

Problems – treatment of mixed municipal waste:

- The biggest problem is delay in construction regional center for MBT (the necessary capacity will be installed by the end of 2015)

Problems – landfilling of treated municipal waste:

- Due the non treatment of mixed municipal waste , we landfilled more municipal waste
- Landfilling of non treated municipal waste (violating Directive 1999/31/ES)
- Landfilling of biodegradable waste
- Landfills has high impact on quality of ground water

Problems – incineration of municipal waste:

- Without thermal treatment of municipal waste in Slovenia will not meet the goals.



Because we see
waste differently...

Green!