



REPUBLIKA HRVATSKA

MINISTARSTVO ZAŠTITE  
OKOLIŠA I ENERGETIKE

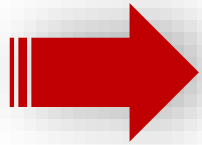
# **National waste management plan for the period 2017-2022**

**Zagreb, February 3, 2017**

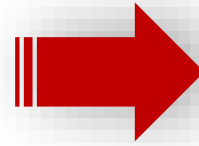
# Basis for the adoption of WMP

- Commitments from the Croatian accession treaty with EU,
- Law of sustainable Waste Management (OG 94/2013),
- Proposals for the amendment of directives on waste within the circular economy which the European Commission is planning to adopt, and which are suggested a very ambitious objectives for recycling.

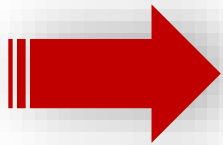
# New approach to waste in the EU



Proposal to amend of  
EU Directive on Waste:  
**recycling of waste**  
60% (55%) by 2025  
65% (60%) by 2030



Proposal to amend of  
EU Directive on  
Packaging and  
Packaging Waste:  
**recycling of packaging  
waste**  
65% by 2025  
75% by 2030



Proposal to amend of EU Directive  
on landfills:  
**waste disposal**  
10% by 2030 (or 50 kg / inh. / yr.);  
Exemptions: 25% by 2030 (or 125  
kg / inh. / yr.)

**These objectives are still  
under discussion (constantly  
changing).**

# Objectives and commitments for Croatia

24.7.2014.

waste separation (7)

*paper, glass, plastic, metal, textile, bulky, problematic waste*

1.1.2015.

possibility of separation :

*paper, glass, plastic, metal*

31.12.2018.

existing landfills remediation  
and establish a system of WMC  
(13)

1.1.2020.

separately collect 50%

*paper, glass, plastic, metal*

# Objectives and commitments for Croatia

## Waste disposal

Biodegradable municipal waste that can be disposed annually at all landfills in the Republic of Croatia in relation to the weight of biodegradable municipal waste produced in 1997:

- 75% or 567,131 tons to 31. Dec. 2013
- 50% or 378,088 tons to 31. Dec. 2016
- 35%, or 264,661 tons to 31. Dec. 2020

## Restrictions on waste disposal

Maximum allowed mass of waste that is disposed annually at all inconsistent landfills in Croatia is:

- 1.71 million tons to 31 Dec. 2013.
- 1.41 million tons to 31 Dec. 2014.
- 1.210.000 tons to 31 Dec. 2015.
- 1.010.000 tons to 31 Dec. 2016
- 800,000 tons to 31 Dec. 2017.

# Waste management in Croatia



**Current state**



# Waste management in Croatia

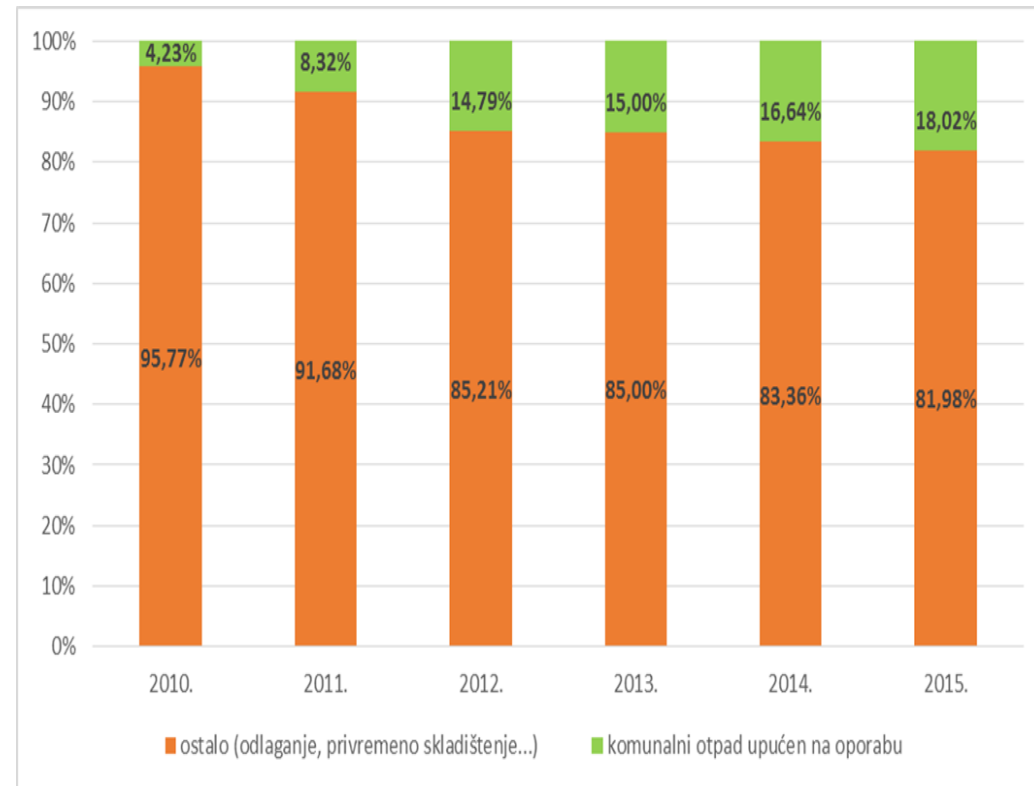
**Total amount of produced waste in Croatia in 2014.  
(municipal and production waste) - 3,7 mil. t  
This amount is 10,5% more than 2012**

## TARGETS:

1. 800.000 t of waste landfilled in non-compliant landfill site in 2017.  
- 2018. - **today ~ 1.300.000 t.**
2. Stop landfilling waste in non-compliant landfill site by  
**31.12.2018.**
3. Reduction to 264.661 t of biodegradable municipal waste in  
landfill site by 31.12.2020. - **today 800.000 t.**
4. Preparing for recovery and recycling 5 % of mass of waste paper,  
metal, plastic and glass by 2020 - **today 18%.**

# Waste management in Croatia 2015.

- The quantities of generated waste (municipal and industrial) 3.6 mil. Tonnes (2014) - 97% non-hazardous waste.
- The rate of separate collection of municipal waste is 24%.
- Waste disposal 82%
- The rate of recovery is 18% (slowly increasing – insufficient).
- Negligible amounts of biowaste the recovery (only 6%)
- The reduction of biodegradable municipal waste is not sufficient.





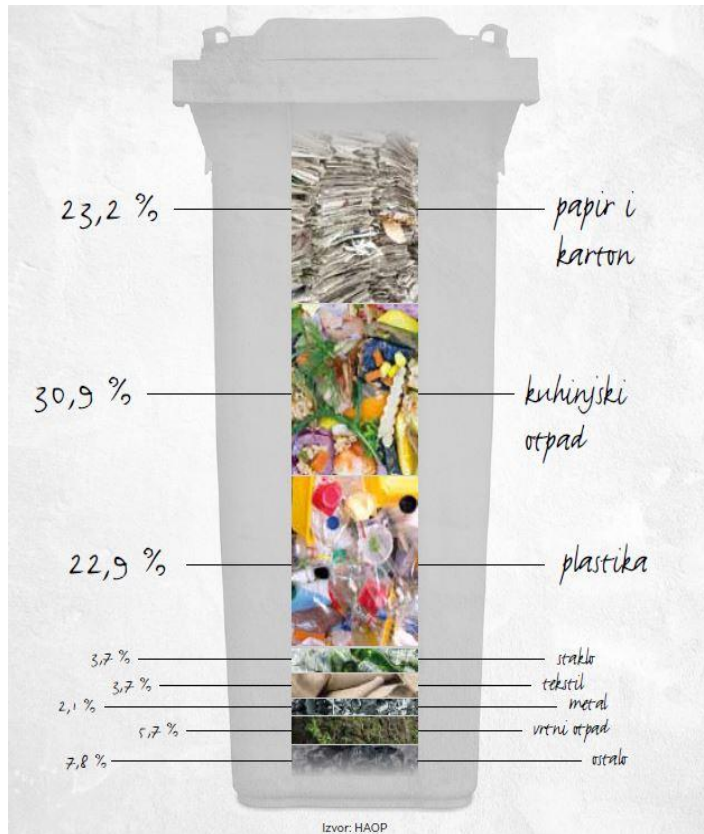
# Waste management in Croatia 2015.

<b>Total amount of municipal waste 2015.</b>	<b>1.653.918 t</b>
Total amount of industrial waste 2014.	1.607.450 t
Generated municipal waste per capita per year	386 kg/god
Mixed municipal waste	76% 1.262.844 t
<b>Separate collection</b>	<b>24%</b> 391.074 t
<b>Recovery of municipal waste</b>	<b>18%</b> 298.026 t
<b>Disposal of municipal waste</b>	<b>82%</b> 1.355.892 t

<b>County</b>	<b>The rate of separate collection (%)</b>
Zagrebačka	16,93%
Krapinsko-zagorska	14,43%
Sisačko - moslavačka	4,74%
Karlovačka	8,32%
Varaždinska	16,99%
Koprivničko-križevačka	23,40%
Bjelovarsko - bilogorska	7,00%
Primorsko-goranska	24,73%
Ličko-senjska	10,02%
Virovitičko-podravska	15,81%
Požeško-slavonska	10,21%
Brodsko-posavska	23,44%
Zadarska	12,10%
Osječko-baranjska	9,11%
Šibensko-kninska	10,33%
Vukovarsko-srijemska	9,12%
Splitsko-dalmatinska	10,72%
Istarska	17,82%
Dubrovačko-neretvanska	11,57%
<b>Međimurska</b>	<b>38,47%</b>
Grad Zagreb	15,80%
<b>TOTAL:</b>	<b>24 %</b>

# Waste composition

## Estimated composition of mixed municipal waste in the Republic of Croatia in 2015

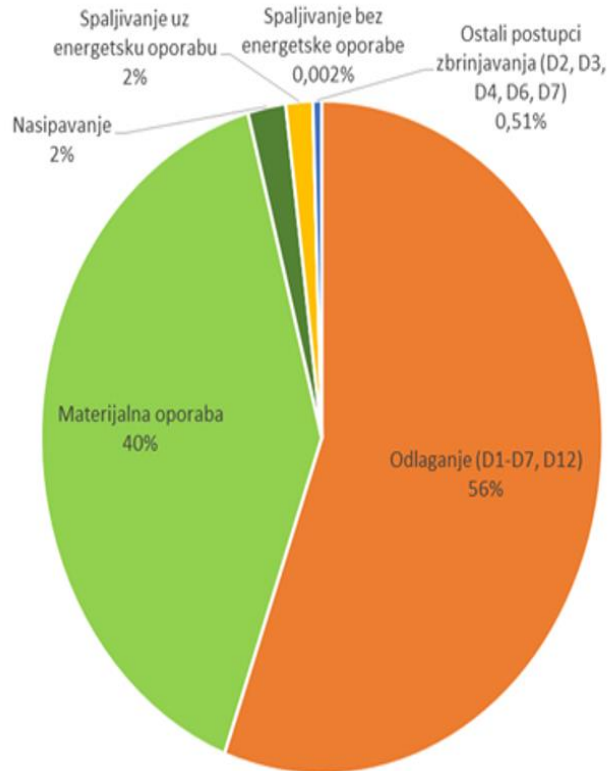


Components	Rate (%)
Metal	2,1
Wood	1,0
Textile / clothes	3,7*
Paper and cardboard	<b>23,2*</b>
Glass	3,7
Plastic	22,9
Rubber	0,2
Leather/bones	0,5
Kitchen waste	<b>30,9*</b>
Garden waste	<b>5,7*</b>
Other (soil, dust, sand, undefined)	6,3
<b>Total</b>	<b>100</b>

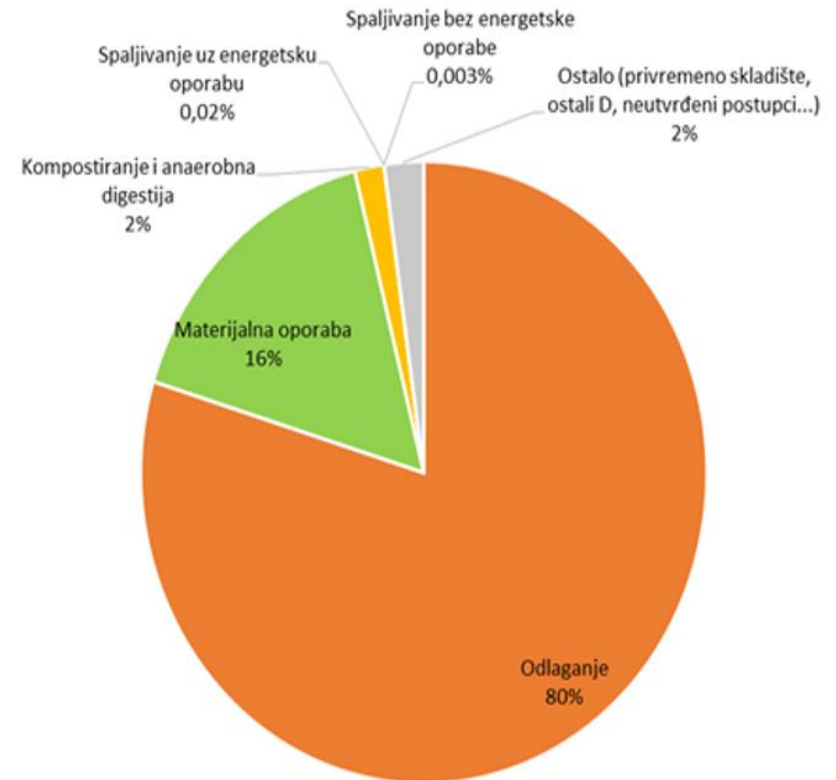
**\*) 63,5% biodegradable waste**

Source: HAOP (Croatian agency for environment and nature)

# Waste treatment



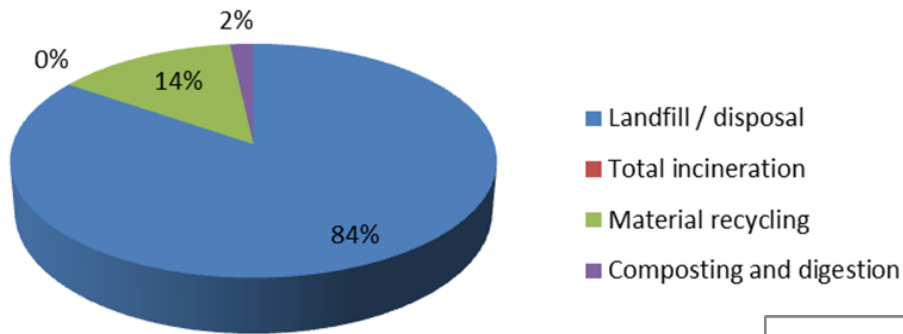
Total waste (municipal and industrial) (2015, HAOP):  
 Disposal 56%  
 Recovery 46%



Municipal waste (2015, HAOP)  
 Disposal 80%  
 Recovery 20%

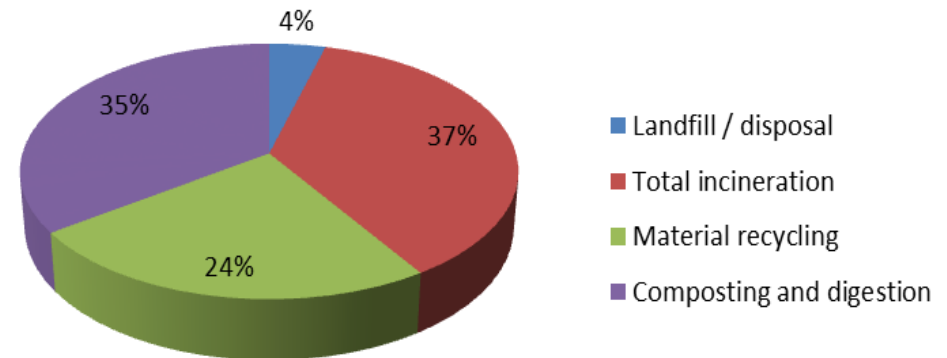
# Waste treatment

## Croatia

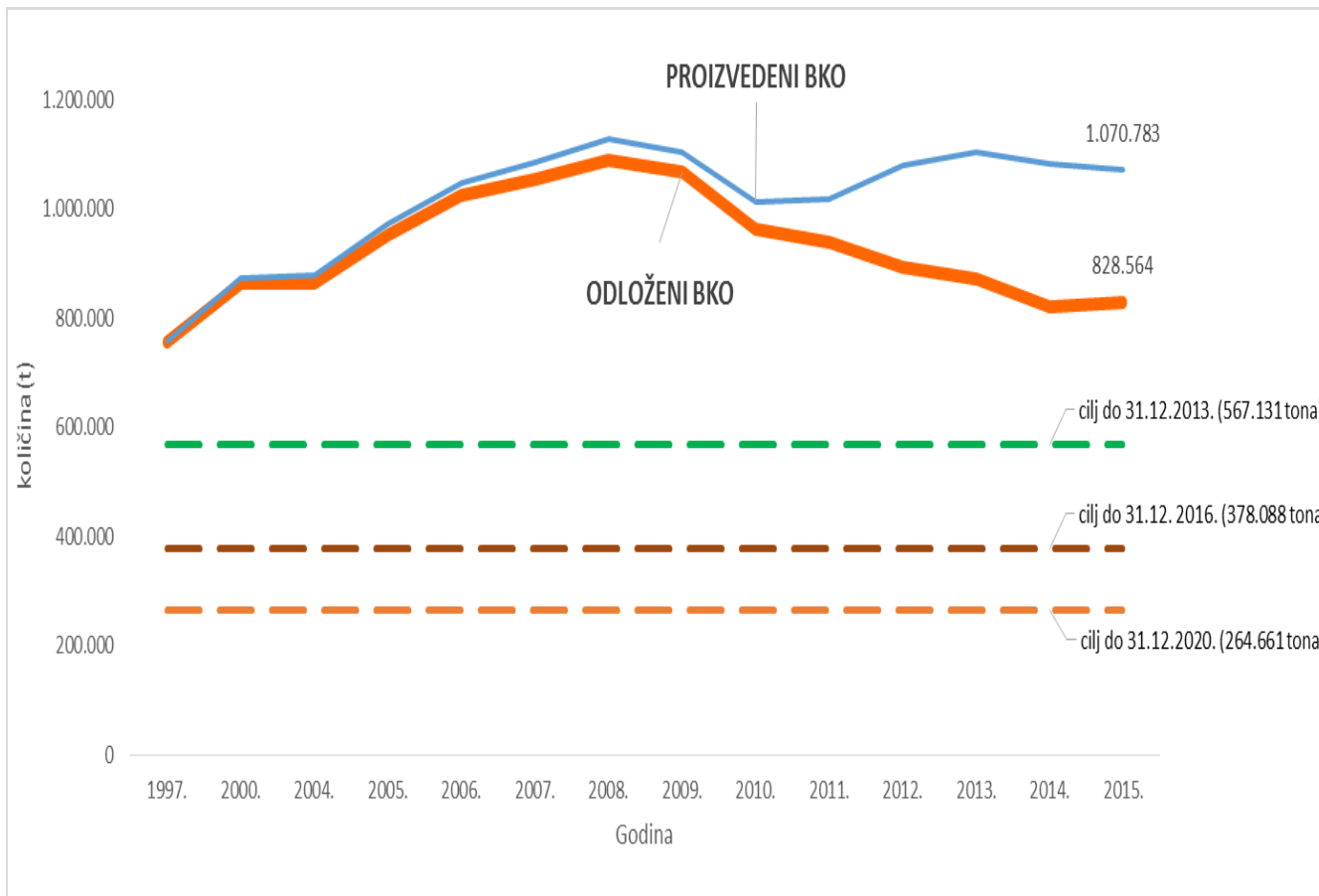


## Comparison

## Austria



# Waste treatment



Generated and disposed biodegradable municipal waste in the period from 1997 to 2015 compared to the prescribed objectives (HAOP, 2016)

Generated BDW:  
1997. 158 kg/inh.  
2015. 250 kg/inh.

The rate of biodegradable waste (paper textile, biowaste, garden and park waste) in MMW: **65%**

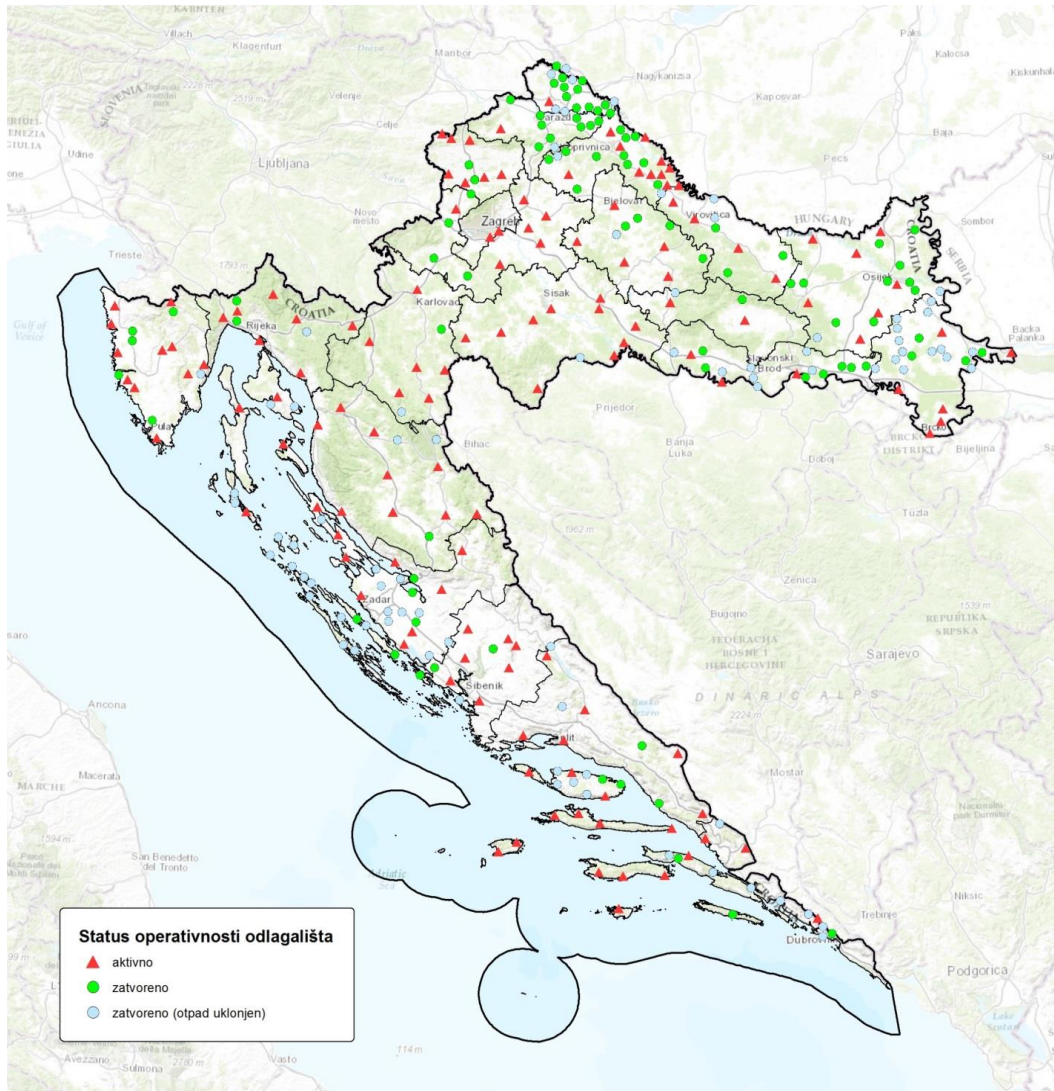
Generated BDW:  
2015. 1.070.783 t

Disposed BDW:  
2015. 828.564 t

Objective:  
2016. 378.088 t

Disposed 46% more than prescribed

# Waste management facilities



## Landfills

Initial state: approximately 300 landfill locations.

2015.

**148** active landfills

By the end of 2015:

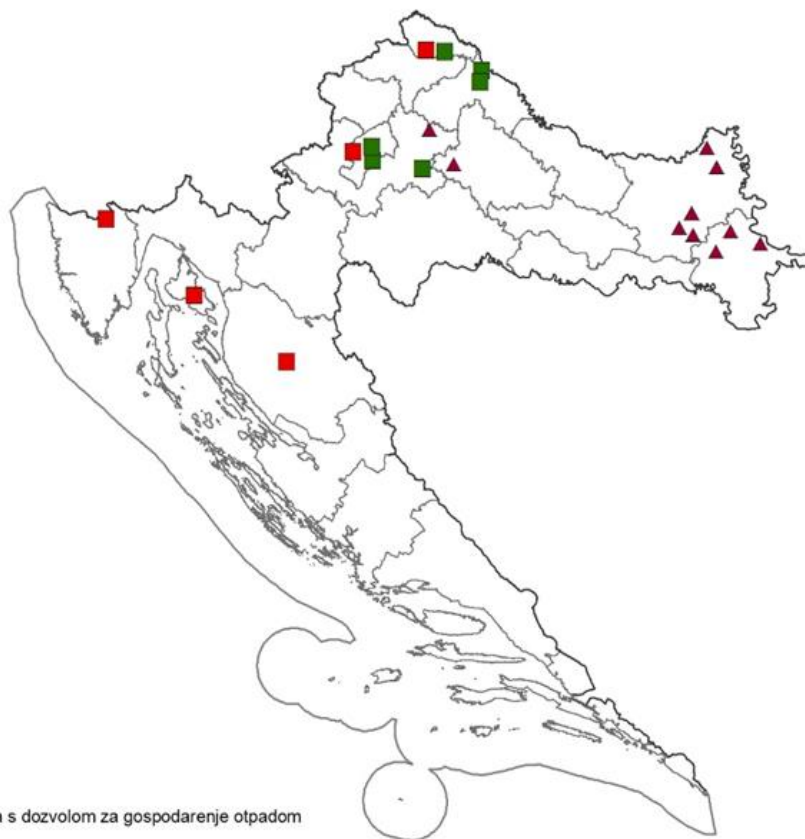
**174** landfills closed, and from the 83 locations waste is removed

2008-2015:

171 landfills - remediated,  
134 landfills - remediation in preparation or in progress.

# Waste management facilities

Pregled kompostišta i bioplinskih postrojenja u RH



## Kazalo

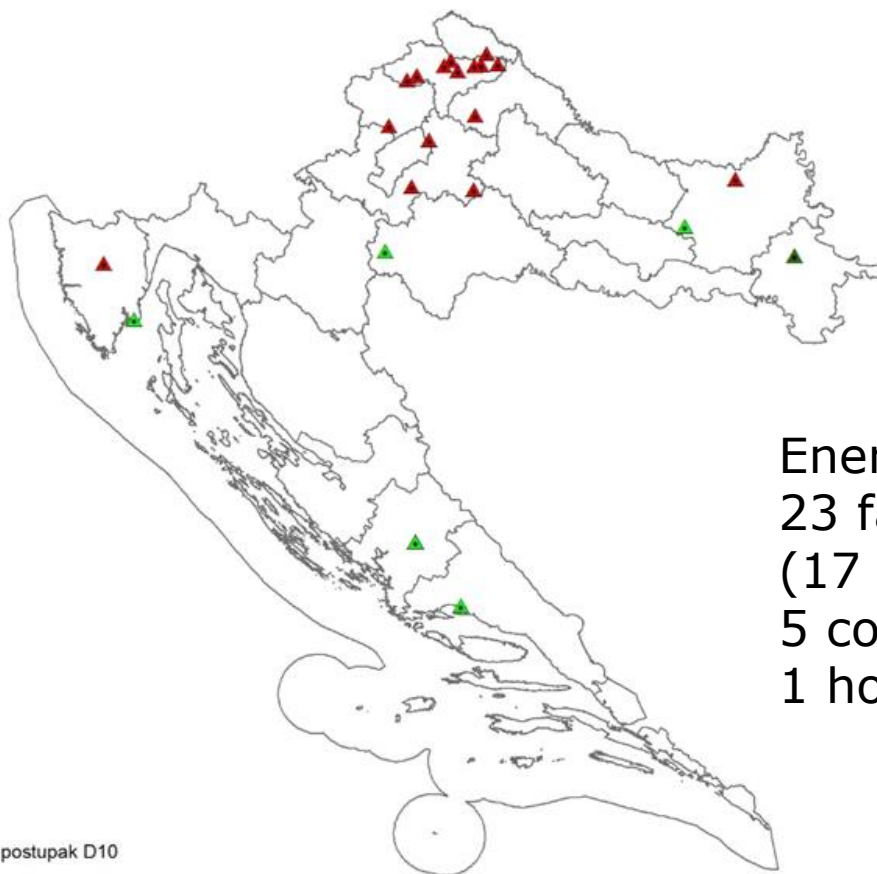
- ▲ Bioplinska postrojenja s dozvolom za gospodarenje otpadom
- Kompostišta - Aktivna s valjanom dozvolom
- Kompostišta - Nisu aktivna

Biological treatment:  
10 composting plants  
10 anaerobic digestion  
(biogas facilities)

Izrada: HAOP, 2016.

# Waste management facilities

Postrojenja za energetsku uporabu i spaljivanje otpada u 2016. godini



Energy recovery :  
23 facilities  
(17 for its own waste,  
5 combustible waste R1,  
1 hospital - incineration D10),

## Kazalo

- ▲ Tvrtnka s dozvolom za postupak D10
- ▲ Tvrtnke s dozvolom za postupak R1
- ▲ Tvrtnke upisane u Očevidnik energetskih oporabitelja određenog otpada

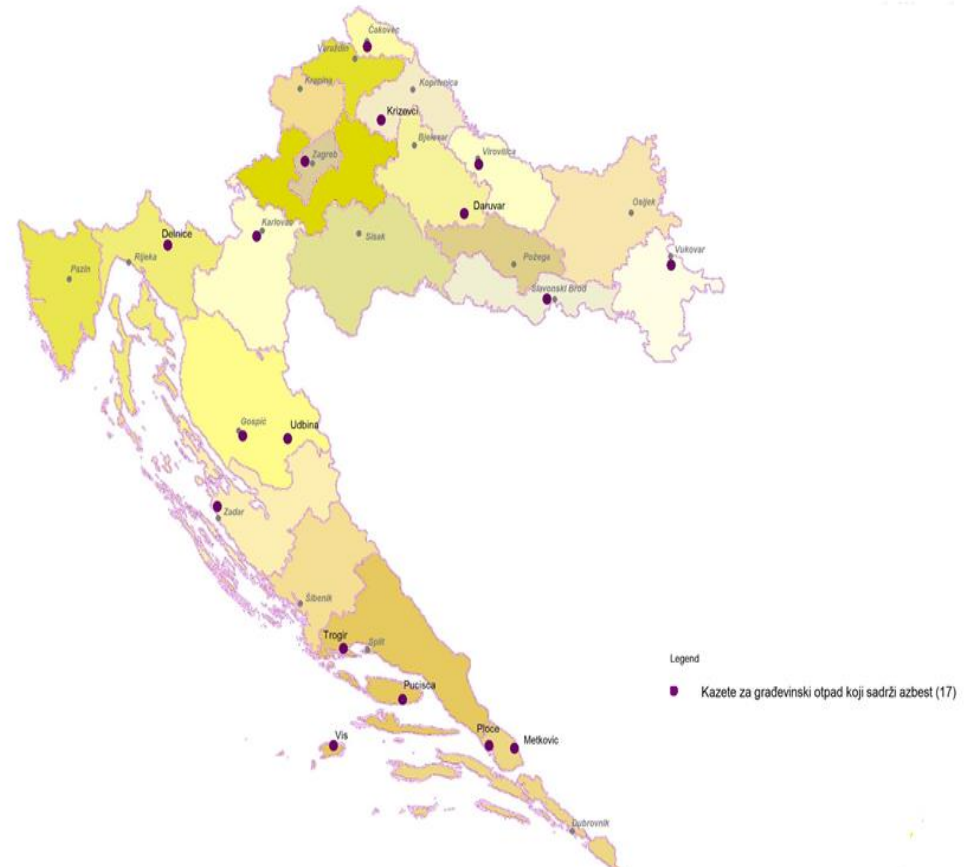
Izrada: HAOP, 2016.



# Waste management facilities



**Recycling yards (84, 2016)**  
(HAOP, Oct. 2016)



Special landfill cells for disposal of construction **waste containing asbestos** (17 landfills)

# Waste management in Croatia



## Plan 2017-2022



# WMP 2017-2022

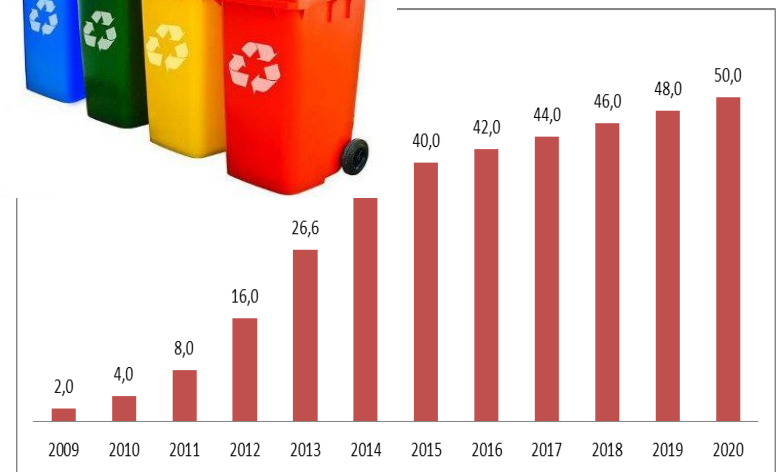
- Waste Management Plan is based on the circular economy that will enable the development of recycling industry and generate new “green” jobs.
- The emphasis of the plan is to respect the hierarchy of waste management, waste prevention, reuse, recycling and composting.
- The basis of the new system are recycling centers with sorting and composting of separately collected waste and preparation for recycling.

## Priorities

Waste prevention and Re-Use



Separate waste collection, sorting, composting and recycling



## Priorities

Waste treatment (R & D)



Closure and remediation of landfill sites



# WMP 2017-2022

## The objectives of the waste management for the year 2022 compared to 2015

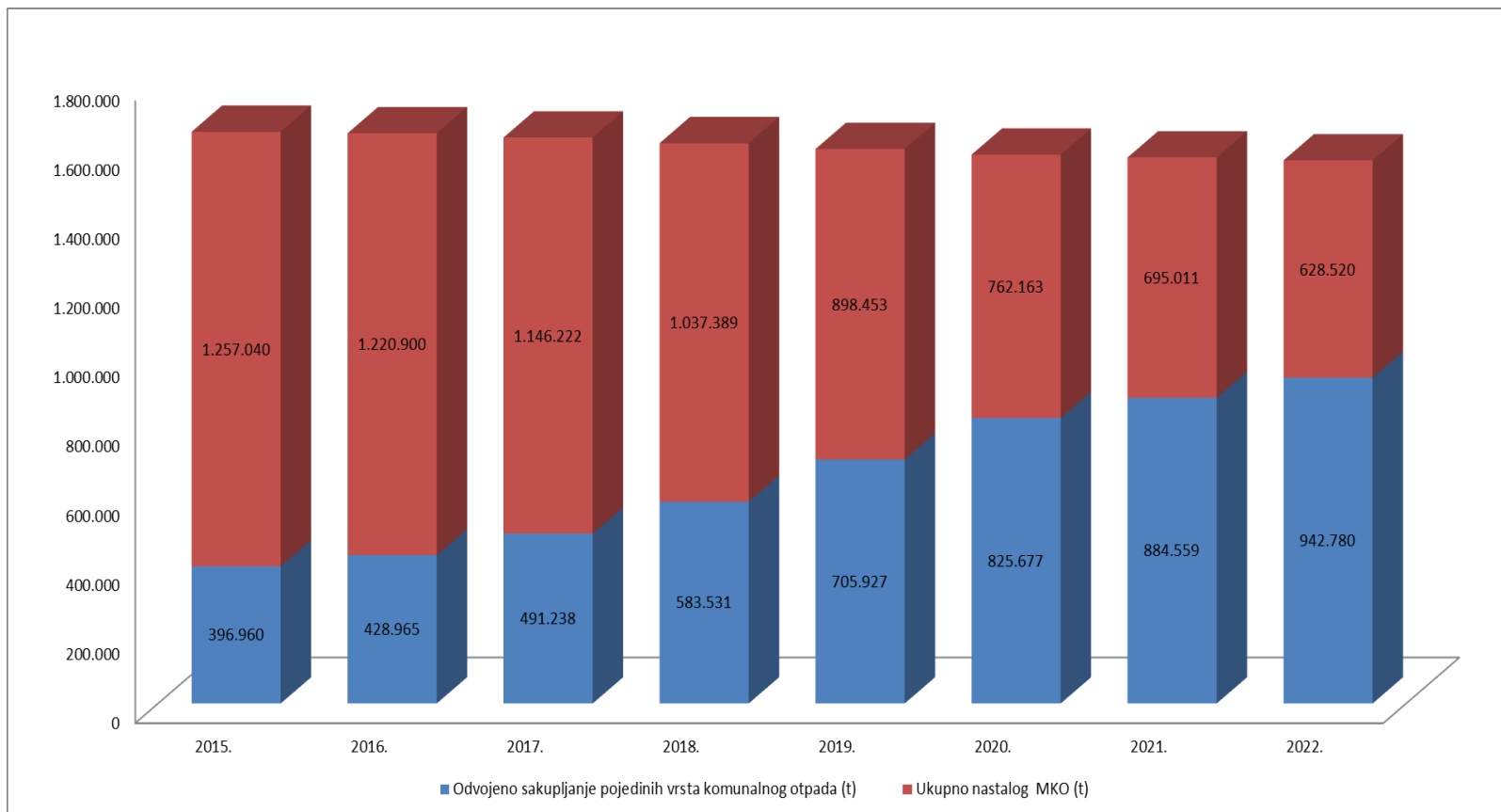
Nr.	Objective		
1.	Improve the system of municipal waste management	1.1	Reduce the total amount of municipal waste by 5%
		1.2	Separately collect 60% of the weight of generated municipal waste (mainly paper, glass, plastic, metal, organic waste, etc.).
		1.3	Separately collect 40% of the mass generated biowaste which is an integral part of municipal waste
		1.4	Disposed of to landfills less than 25% of municipal waste
2.	Improve the system of special waste management	2.1	Separately collect 75% of the weight of generated construction waste
		2.2	Establish a management system for sludge from waste water treatment plants
		2.3	Improve the management system of packaging waste
		2.4	Establish management system for marine waste
		2.5	Establish management system for waste ships, wrecks and sunken things matter on the seabed
		2.6	Improve the management system of other special categories of waste

# WMP 2017-2022

## The objectives of the waste management for the year 2022 compared to 2015

Nr.	Objective		
3.	Improve the management system of hazardous waste		
4.	Remediate sites contaminated with waste		
5.	Continuously implement an education-information activities		
6.	Improve waste management information system		
7.	Improve supervision of waste management		
8.	Improve administrative procedures in waste management		

# WMP 2017-2022



**The dynamics of increasing the amount of separately collected municipal waste by 2022**

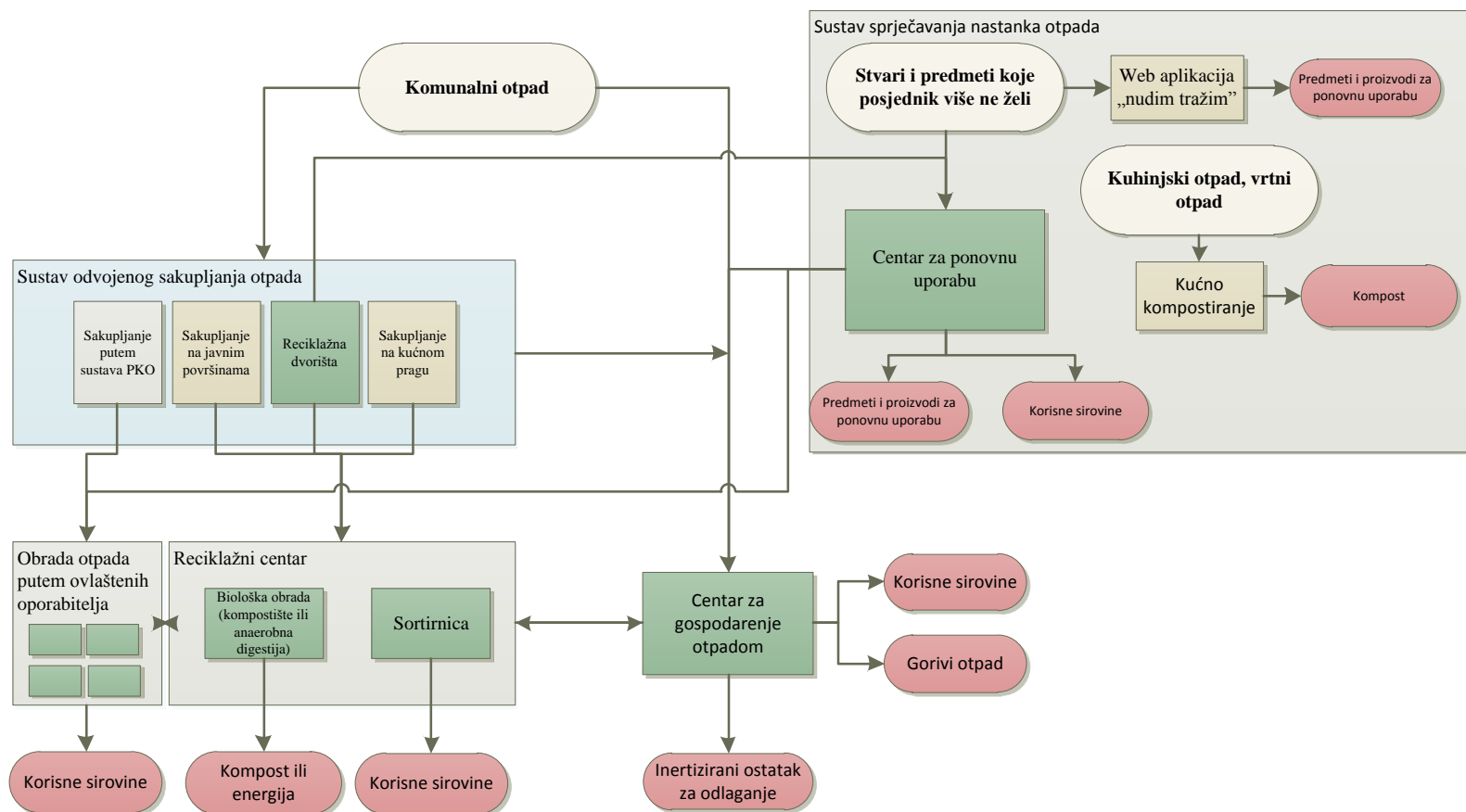


# WMP 2017-2022

## Objectives for 2022

Total municipal waste		
≤ 1.571.222 t		
Separate collected municipal waste (60%)		Mixed municipal waste
≥ 942.733t		≤ 628.489 t
Paper, glass, plastic, etc.	Biowaste	
≥ 741.617 t	≥ 201.116 t	

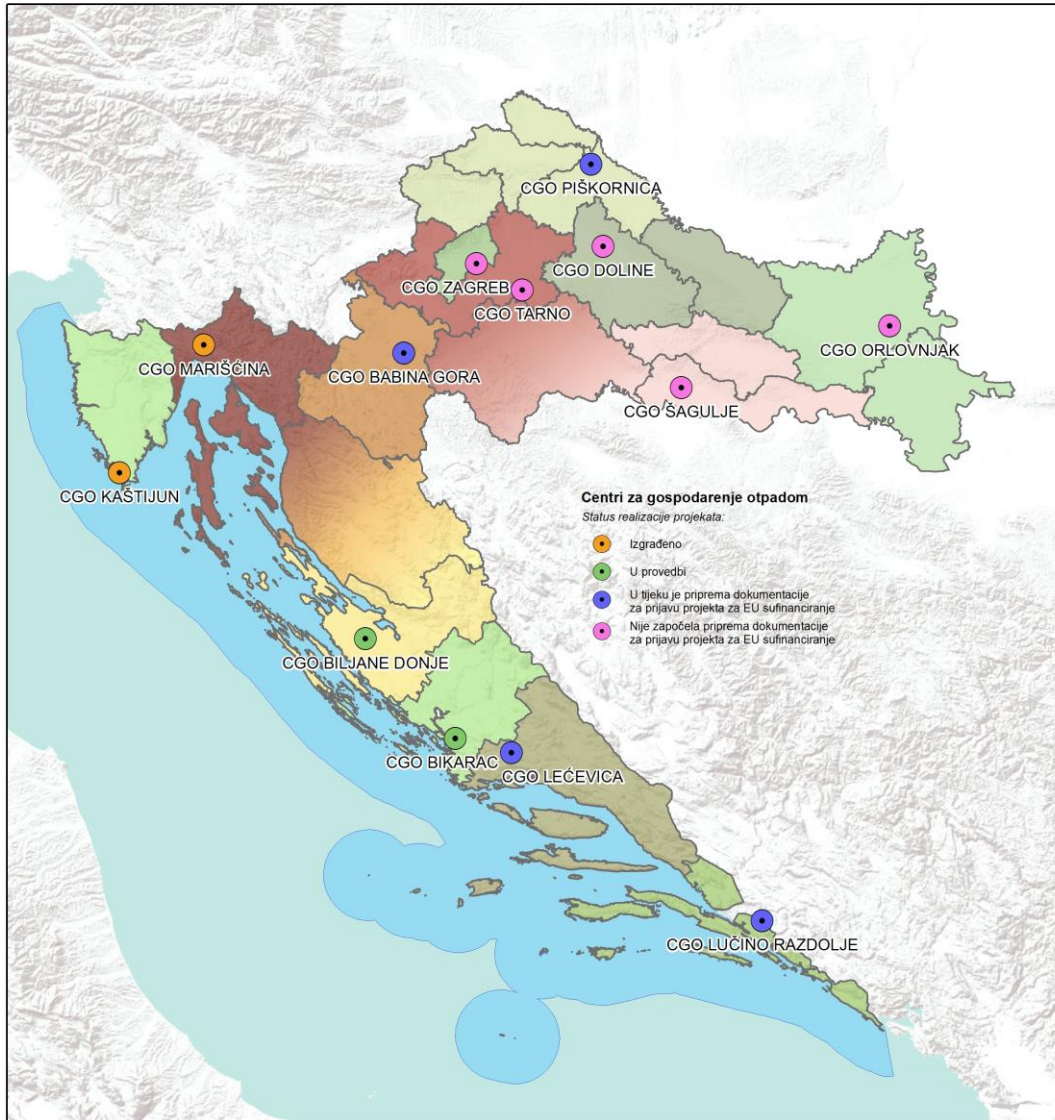
# WMP 2017-2022



- Građevine i uređaji za gospodarenje otpadom
- Oprema za gospodarenje otpadom
- Sustavi za gospodarenje otpadom
- Izlazni materijali

**Scheme of municipal waste management**

# WMP 2017.-2022. – WMC



Waste management centers (WMC):  
13 planned  
2 built  
2 in preparation  
(source: FZOEU, 2016).

Others:  
Feasibility study in accordance with WMP 2017-2022

# WMP 2017-2022 – financing

## Indicative ratios of funding by source and years (kn)

	2017.	2018.	2019.	2020.	2021.	2022.	Total:
State budget	245.000	3.775.000	15.325.000	1.970.000	1.075.000	1.025.000	23.415.000
EU	107.655.000	232.000.000	1.192.026.250	926.302.885	543.425.000	418.850.000	3.420.259.135
Municipalities and cities	26.800.000	54.000.000	257.350.000	182.984.500	24.880.000	29.300.000	575.314.500
Counties	8.200.000	21.600.000	91.875.000	108.300.000	135.390.000	91.800.000	457.165.000
FZOEU (Fund)	135.256.900	132.400.000	83.937.500	60.560.715	48.080.000	30.525.000	490.760.115
HAOP (Agency)	750.000	825.000	311.250	0	0	0	1.886.250
HV (Croatian waters)	0	500.000	4.500.000	3.750.000	3.750.000	3.000.000	15.500.000
Private investment	0	15.000.000	27.000.000	30.000.000	12.000.000	9.000.000	93.000.000
<b>Total:</b>							<b>5.077.300.000</b>

# WMP 2017-2022



## Conclusion

# WMP 2017-2022

Some of the most important measures:

- encourage separate collection of paper and cardboard, metals, glass and plastics,
- collecting on the doorstep,
- introduction of stimulating measures for the collection of municipal waste according to composition and quantity,
- introduction of fees for municipal waste disposal,
- encouraging domestic and municipal composting,
- construction of sorting plants,
- IT support to the monitoring of waste streams,
- emergency measures for the City of Zagreb and Split,
- educational - informative measures.

		Percentage of waste in relation to the RH	Separate collecting (%)
City of Zagreb (t)	305.000	18%	15,8%
City of Split (t)	70.000	4%	0,04%
Total generated RH (t)		1.650.000	



**Thank you for your attention!**