



TAIEX-ECRAN

**Workshop on Trans Frontier Shipment of Waste,
Waste Management and
Landfilling of Waste**

Waste management in Croatia

Podgorica, 3-5 November 2015

Ministry for Environmental and Nature Protection

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Ministry for Environmental and Nature Protection (MENP)

Environmental Protection and Energy Efficiency Fund

In accordance with the provisions of the Environmental Protection Act, the Fund is established for the purpose of securing additional resources for the financing of projects, programmes and similar activities in the field of conservation, sustainable use, protection and improvement of the environment.



Croatian Environment Agency

Croatian Environment Agency is an independent public institution established by a decision of the government of the Republic of Croatia to collect, integrate, and process environmental data.



Ministry for Environmental and Nature Protection

Central authorities for implementing environmental management and protection policy in Croatia
(Coordinating role)

Strategy of Waste Management in the Republic of Croatia
(OG No. 130/05)

Waste Management Plan of the Republic of Croatia for 2007-2015 (OG No. 85/07,126/10, 31/11)

Act on Sustainable Waste Management
(OG No. 94/13)

Waste management priority order



According to the waste management hierarchy priority is the prevention and/or reduction of waste generation, followed by preparation for re-use, then recycling and other methods of recovery, while the disposal of waste, which includes landfilling, is the least desirable method of waste management.

Waste separation

Separate collection is the collection of waste in a way that a waste stream is kept separate by type and nature so as to facilitate treatment and preserve the valuable properties of waste.

By 1 January 2015 Republic of Croatia must take measures via its competent authorities to ensure separate collection of the following types of waste: waste paper, waste metals, waste plastics and glass, electric and electronic waste, waste batteries and accumulators, end-of-life vehicles, end-of-life tyres, waste oils, textile and footwear waste and medical waste.

The local self-government unit is obliged to fulfill separate collection of difficult wastes, waste paper, waste metals, waste glass, waste plastics, waste textiles and bulky municipal waste.

Municipal waste

The amount of municipal waste produced in Croatia in 2010 was 367 kg per capita, which is still lower than the European average of 502 kg.

By joining the European Union, the Republic of Croatia took over [certain restrictions on waste disposal](#).

To help improve the state of environment and fulfill aims, it is important to provide [separate waste collection](#).

Municipal waste

Analysis of waste in Croatia show that annually municipal waste generation is around 1,500,000 tons (367 kg / capita – year 2010).

The structure of waste was following (year 2007 - %):

- Paper - 20
- Organic waste – 42
- Plastic – 12
- Glass – 7
- Textile – 8
- Metals – 4
- Others – 7
- Total - 100

Packaging waste

- Returnable packaging
- Non-returnable packaging
- Packaging contaminated with hazardous substances



Special waste categories

- bio-waste
- textile and footwear waste
- packaging waste
- end-of-life tyres
- end-of-life vehicles
- waste batteries and accumulators
- waste oils
- asbestos-containing waste
- clinical waste
- waste electrical and electronic equipment and devices
- end-of-life ships
- marine waste
- construction waste
- wastewater treatment sludge
- wastes from titanium dioxide production
- polychlorinated biphenyls waste and polychlorinated terphenyls waste



Waste Management Plan

The waste management system in Croatia at the county level respectively at the regional waste management centers (WMC) at the level of several counties, will be implemented in a such a way that existing landfills will be closed and at the same time WMC will be constructed, all depending on co-financing from EU funds.

In Croatia, will be built 13 waste management centers. The first 2, **Marišćina and Kaštijun**, will start operating by the end of this year. For next 5 in the next six months requests for funding from EU funds will be submitted and tenders for the remaining 6 will be by the end of 2015.

Waste Management Plan

WMC is a system of buildings and equipment for processing, recovery and/or disposal of waste, and usually consists of a plant for mechanical-biological waste treatment (MBT plant), buildings needed for center operating, wastewater treatment plants, internal infrastructure, other equipment, landfill for residual waste and transfer stations.

Financing:

- European Union + Fund for Environmental Protection and Energy Efficiency - **90%**
- Local/Regional government - **10%**

WMC Kaštijun and Marišćina



Landfill - legal base

Directive 1999/31/EC on the landfill of waste

Directive is transposed in Croatian legislation:

Act on Sustainable Waste (OG No. 94/13) and

Ordinance on the methods and conditions for the landfill of waste, categories and operational requirements for waste landfills (OG No. 117/07, 111/11, 17/13, 62/13)

New Ordinance (OG No. 114/15) from 21 October 2015!

Landfill of waste

Landfills are classified in one of the following categories:

- landfill for hazardous waste,
- landfill for **non-hazardous** waste,
- landfill for **inert** waste.

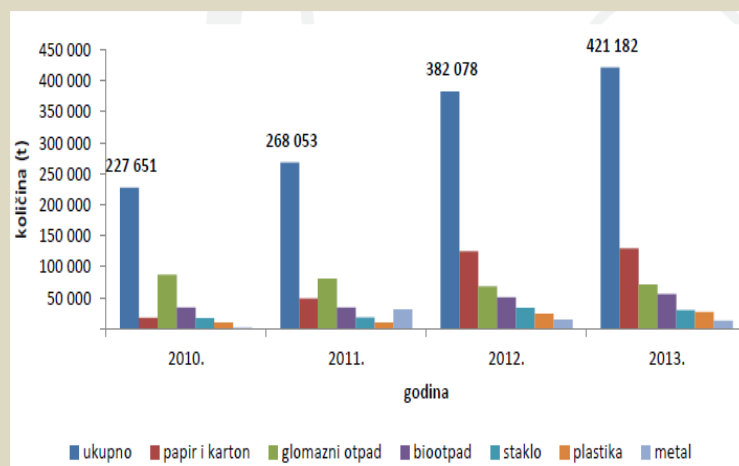
Landfilling of waste

Landfilling is in Croatia the most common method of waste disposal.



Amount of disposed non-hazardous waste in Croatia for the period 1995-2013

Landfilling of waste



Amount of separated municipal waste in Croatia for the period 2010-2013

Landfilling of waste

Data for year 2014:

- 149 landfills for non-hazardous waste – till the end of the year closed 6,
- 1.769.725 tons of total disposed waste from which:
 - 819.759 tons of biodegradable municipal waste
- 9,87% less total amount of waste than in year 2013
 - all types of non-hazardous waste was 1.963.641 tons
 - 5,2% less amount of biodegradable municipal waste



- Target for biodegradable municipal waste not achieved!

Landfilling of waste

The maximum allowable mass of biodegradable municipal waste which may be deposited annually in all landfills and non-compliant landfills in the Republic of Croatia in relation to the mass of biodegradable municipal waste generated in 1997 shall be as follows:

- 75 % or 567,131 tons by 31 December 2013
- 50 % or 378,088 tons by 31 December 2016
- 35 % or 264,661 tons by 31 December 2020

Landfilling of waste

The maximum allowable mass of waste deposited annually in all non-compliant landfills of the Republic of Croatia is as follows:

- 1,710,000 tons by 31 December 2013
- 1,410,000 tons by 31 December 2014
- 1,210,000 tons by 31 December 2015
- 1,010,000 tons by 31 December 2016
- 800,000 tons by 31 December 2017

It shall be prohibited to deposit waste in non-compliant landfills of the Republic of Croatia after 31 December 2017

Landfilling of waste

Disposal of untreated municipal and similar waste is associated with significant risks to human health: dust, odors, birds, insects, rodents, risk of explosion and fire, and other hazards from landfill gas and leachate which pollute surrounding surface and ground water. Landfilling is certainly also linked to long-term contamination of the soil and others.

All existing landfills in Croatia must fulfill requirements of new Ordinance **until 31 December 2018**.

Existing landfills that do not fulfill requirements laid down in new Ordinance shall be considered not comply and **must be remediate and closed** no later than one year from the date of opening of the waste management center for the county in which they are located.

Landfill remediation

Methods:

- ex-situ
- in-situ

Key criteria for the choice of technical solutions for the reconstruction:

- Environmental impact (50%),
- Technical characteristics of location (30%) and
- Economic characteristics of location (20%).

Landfill remediation

Condition before remediation in situ.

Remediated and closed landfill - Rijeka Viševac.



Landfill remediation – "black spots"

In Croatia are determined 13 „black spots" of which 4 are remediated by the end of 2012, on 5 locations remediation is in progress and on 4 is in preparation.

