



# ***Event Report***

**EPPA Sub-regional Virtual Workshop on Integrated Waste  
Management Systems**

**12 May 2020**

**Live video conference**



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**NIRAS** **umweltbundesamt<sup>U</sup>**

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## ANNEXES

Annex 1: Agenda (provided as a separate document)  
Annex 2: List of Participants (provided as a separate document)  
Annex 3: Presentations (provided as a separate document)



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## 1 Introduction

### The sub-regional workshop

The sub-regional workshop on “Integrated Waste Management Systems” took place on 12 May 2020 via live video conference for the project beneficiaries: Albania, Kosovo\* and North Macedonia. The workshop was organized in cooperation with TAIEX, and under the EPPA project work programme, Activity 2.2 “Revisions of the waste management plans, policies and legislation, specific capacity building”.

The participants came from the relevant authorities of the EPPA beneficiaries. They represented the waste management units of the Ministry of Tourism and Environment of Albania, the Ministry for Infrastructure and Environment of Kosovo\* and the Ministry of Environment and Physical Planning of North Macedonia. Details are available in the list of participants.

The speakers represented EU Member States’ experience. There were experts from Austria (Umweltbundesamt – an EPPA implementing consortium member), and Croatia (Ministry of Environment and Energy). In addition, there were two speakers from the European Environment Agency. Details are available in the agenda.

The presentations are available in both the TAIEX website and in the EPPA project website.

### Background

With rapid population expansion and constant economic development, waste generation both in residential as well as commercial/industrial areas continues to grow rapidly in the EPPA beneficiaries, putting pressure on society's ability to process and dispose of this material. Furthermore, inappropriately managed solid waste streams can pose a significant risk to health and environmental concerns. Improper waste handling in conjunction with uncontrolled waste dumping can cause a broad range of environmental and health related problems. Improper solid waste management can also increase greenhouse gas (GHG) emissions, thus contributing to climate change.

Having a comprehensive waste management system for efficient waste collection, transportation, and systematic waste disposal, together with activities to reduce waste generation and increase waste recycling, can significantly reduce all these problems. An integrated solid waste management (ISWM) approach provides the opportunity to create a suitable combination of existing waste management practices to manage waste most efficiently.

The EU has been at the global vanguard in stimulating the transition to ISWM systems. In so doing, the EU has introduced several solid waste management components (categorised as either good governance or operations/infrastructure) which, when introduced in parallel, will ensure the creation of a sustainable ISWM system. As the EPPA beneficiaries undertake the various initiatives to accede to the EU, they will need to undertake similar initiatives to that taken by existing EU Member States to facilitate the creation of sustainable ISWM systems.

## 2 Objectives of the Training and Expected Results

The underlying rationale for this virtual workshop was to “create” and share the EU vision for creating sustainable ISWM systems with the EPPA beneficiaries. The agenda fully reflected the priorities identified by the EPPA beneficiaries during the consultation process undertaken in Autumn 2019 on progress with the implementation of the roadmaps created under the South-East Europe Waste Assessment (SEEWa) project. The objectives of the virtual workshop were:

- To define, and clarify, what is meant by an Integrated Solid Waste Management System;
- To assess the opportunities and challenges for implementing effective ISWM systems in the EPPA beneficiaries;



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- To share EU experience on the design and implementation of ISWM systems in established and New EU Member States; and
- To develop recommendations and steps on the way forward through a consultative process with stakeholders.

### 3 Highlights from the Workshop

#### 3.1 Welcoming Address

Ms. Madalina Ivanica introduced herself and welcomed the participants. She noted the agenda to be ambitious, requiring engagement for all those participating, and to be relevant for the beneficiaries. It is known that alignment with the waste acquis is a challenge, but a necessary one. Moreover, the increasing pressures of pollution, increased waste production, and pressures on natural resources make this a priority area for all, and not just the enlargement countries.

Ms. Madalina Ivanica mentioned the EU's previous Circular Economy Action Plan, an ambitious programme of action for production, consumption, and waste management, that sought to stimulate the transition to a greener economy and foster sustainable development. The EU also has a Strategy for Plastics, adopted in 2018, that sets the target to recycle all waste packaging by 2030, and to reduce the leakage of plastics into marine environments. The first circular economy action plan has concluded, with all actions delivered. In March 2020, the EC released the new circular economy package, a pillar of the EU Green Deal. The objective is to decouple economic growth from resource extraction, investing heavily in circular economy measures. The new action plan covers the entire life cycle of products with both legislative and non-legislative measures to increase the competitiveness of European industry, empower consumers, and to protect the environment. The full implementation of the waste acquis remains important to the success of the new action plan. The EU encourages its partners to adopt the same standards.

Mr. Mihail Dimovski explained the project background to the present workshop. The agenda has been prepared on the basis of seven national consultations on waste management held between September 2020 and January 2021. The agenda also reflects the new policy ambitions of the EU Green Deal. It is his hope that the beneficiaries use these opportunities to develop their own corresponding ambitions to meeting the targets of the Green Deal thus contributing to their alignment process. He finished by highlighting the experience of EU Member States available in the workshop and to the benefit of the beneficiaries present.

Mr. Simon Pow, the event chairman, reinforced the message of Ms. Madalina Ivanica in that it is essential to move away from a linear waste management model. The workshop is a step in that direction. He then explained the logic and content of the agenda giving the background and objectives of each session. He stressed that the participants can use the occasion to ask questions from the EU Member States experts and gain insights from their experiences, especially Croatia that went through the accession process recently.

#### 3.2 Session 1.a: Moving Towards a Sustainable Integrated Waste Management System: Theory and Practice from EU Countries.

Ms. Sanja Radović gave a presentation on the waste management system of Croatia. She started by presenting the administrative structure for waste management in Croatia, which is headed by the Ministry of Environment and Energy. The Ministry has oversight over the inspection, the environmental protection and energy fund, the regional self-government units (21), and the local self-government units (555). She then described Croatia's main waste management objectives, that included waste separation and collection targets, waste reduction targets, waste recycling targets, and remediation of existing landfills.



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Characterizing the status quo, Ms. Sanja Radović presented the legal and policy framework, the types and quantities of waste being produced in Croatia, and the coverage of organized collection amongst other indicators. She noted that the amount of municipal waste per capita has been increasing in the last five years, and in 2018 it amounted to 432 kg / capita.

	Produced	Separately collected	Recycled	Composting / anaerobic digestion	Incineration R1	Incineration D10	Disposal at a landfill
Total (t):	1.768.411	553.791	398.381	48.648	1.042	3,57	1.170.912
Total (%):		31,3%	22,5%	2,8%	0,06%	0,0002%	66,2%

Figure 1 - Municipal waste management in Croatia, 2018

According to 2018 data, the separate collection of municipal waste is carried out in 88% of local self-government units (492 local self-government units). The share of separately collected municipal waste (including mixed waste such as bulky waste, street cleaning waste, etc.) in 2018 was 31%. This is an increase of 3% compared to 2017, which is still not enough to achieve Objective 1.2 from the WMP of the Republic of Croatia.

Croatia has around 300 landfill locations. Work over the previous years has reduced that number significantly.

Status	Remediation in preparation	Remediation underway	Remediation completed	Total
Active landfills	25	14	61	100
Closed landfills	54	8	139	201
Total	79	22	200	301

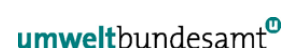
Figure 2 - Landfills in Croatia

For biological treatment, Croatia has 10 composting plants with a capacity of 107.689 t/year (2018), 25 anaerobic digestion (biogas) facilities with a capacity of 1.396.109 t/year (2018). The country also does energy recovery. Energy recovery of waste is carried out in three cement factories (fuel from waste), a lime production plant, and 35 biomass energy plants.

Croatia's Waste Management Plan 2017-2022 is based on the circular economy that will enable the development of the 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 is the recycling centres, with sorting and composting of separately collected waste and preparation for recycling. There are 11 planned centres, 2 have already been built, and others will follow in the future.



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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	

Figure 3 - Objectives for 2022

Some of the most important measures in the waste management plan are:

- 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; and
- Educational - informative measures.

Ms. Sanja Radović looked at the financing sources of Croatia's waste management. EU cohesion funds make an important contribution. .

	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
Total:							5.077.300.000

Figure 4 - Funding sources and amounts

On the national level, Croatia levies a number of fees to finance its waste management, namely:

- An incentive fee for reducing the amount of mixed municipal waste is prescribed by the Law on Sustainable Waste Management and the Regulation on Municipal Waste Management. The incentive fee is paid by local government units to the Environmental and Energy Efficiency Fund,



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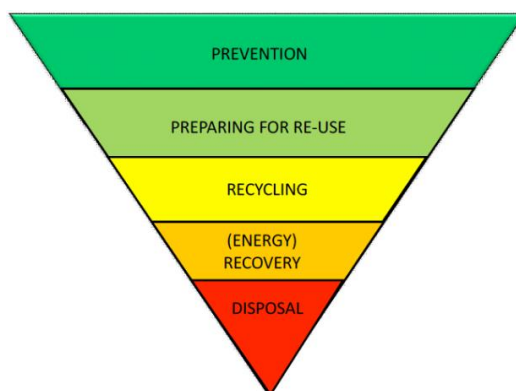
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and the funds are used to co-finance separate waste collection. The incentive charge for reducing the amount of mixed municipal waste is a measure designed to stimulate units of local self-government to implement, within the scope of their competences, measures to reduce the quantity of mixed municipal waste generated in their respective areas;

- Fee on environmental impacts of waste and fees for hazardous waste, prescribed by the Law on the Environmental Protection and Energy Efficiency Fund;
- Fees for the management of special categories of waste is prescribed by the Law on Sustainable Waste Management;
- Refunds for packaging waste is prescribed by the Law on Sustainable Waste Management, Ordinance on Packaging and Packaging Waste and the Regulation on the management of packaging waste; and
- The fee for the public service of municipal waste collection, is prescribed by the Law on Sustainable Waste Management and the Regulation on Municipal Waste Management

### 3.3 Session 1.b: Establishing the Regulatory Framework for Supporting Resource Efficient Integrated Solid Waste Management – Key EU Legislation for Facilitating the Creation of a “Recycling” Society.

Mr. Peter Wessman summarized the main elements of the EU waste acquis for integrated solid waste management and prevention, recycling, and reuse in the context of a circular economy. He explained that the EU’s policy is based on the waste hierarchy, where prevention is the most important option, followed by preparation for reuse (refurbishing), recycling, other recovery, for instance energy, and finally disposal. The hierarchy is legally mandatory, and it has to be absorbed by national institutions and reflected in investment, waste plans, etc.



*Figure 5 - The EU's waste hierarchy*

In line with this, the 7th Environment Action Programme sets the following priority objectives for waste policy in the EU:

- To reduce the amount of waste generated;
- To maximise recycling and re-use;
- To limit incineration to non-recyclable materials;
- To phase out landfilling to non-recyclable and non-recoverable waste; and
- To ensure full implementation of the waste policy targets in all Member States.

Answering to a question on what the critical steps should be to improve waste management in the EPPA beneficiaries, Mr. Peter Wessman stated that countries should learn from the experiences of Member States and the EEA. He noted that separate collection takes time to implement. It is important to develop awareness and slowly raise participation in such schemes to eventually move to higher recycling rates. In addition, it is important to create funding sources using the extended producer responsibility principle.



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Finally, the current structure of waste disposal needs to be mapped, especially with respect to landfills, in order to make sure the countries understand what they need to do to be in compliance with the Landfill Directive.

### **3.4 Session 2.a: Moving Towards a Financially Sustainable Waste Management System: The Challenges and Constraints Faced by EPPA Countries**

The beneficiaries were invited to reflect on the constraints they face aligning and implementing the EU waste acquis.

#### **3.4.1 Albania**

The Albanian representatives did not intervene, but they provided a PowerPoint that is part of the workshop's package. Please find it in the annex or on the EPPA website.

#### **3.4.2 Kosovo\***

Kosovo recently developed a new national waste management strategy and action plan with the support of GIZ. The objectives of the strategy are to focus on the full coverage of collection services, separation, and the treatment of other waste fractions. The strategy also aims to address the issue of illegal landfills. There are plans to increase waste collection fees to finance the system, although there is currently no earmarked funding to implement the strategy, except the 3.5 ME from the EUD for municipalities. The strategy has not been adopted yet. The Ministry also started planning to establish a deposit refund system. It is currently evaluating possible implementation modalities, and it will further discuss the possibilities with the private sector. In general, the implementation of the strategy will need political willingness, better enforcement, and financing.

#### **3.4.3 North Macedonia**

The North Macedonian representative presented the institutional framework for waste management. They are the Ministry of Environment and Physical Planning, the Environmental Administration within the Ministry, and the Macedonian Environmental Information Centre. North Macedonia has a strategy and plan for waste management, complemented by regional and municipal plans. In addition, the country adopted specific waste legislation for packaging waste, batteries and electronic waste.

The focus of waste management activities in previous years was to prepare planning documents for integrated regional waste management, mainly through IPA funds and the implementation of laws for specific waste streams. The main challenges at the moment are establishing regional systems in line with the prepared documents for all eight regions in the state. This means establishing at least one regional landfill per region with proper treatment infrastructure, transfer stations, equipment for collection and transport, and the closure of all non-compliant landfills and dump sites. In parallel, they are establishing primary selection for dry and wet fractions plus green waste for composting. Finally, the development of infrastructure for recovery and recycling is also a priority.

When asked about specific assistance needed in the future, the North Macedonian representative identified financing for infrastructure projects. Although North Macedonia plans to fund the system via fees, it still needs support for its construction.

### **3.5 Session 2.b: Introducing EPR as a Potential Financing Instrument to Support the Management of Special Waste Streams: Setting the Scene**

Ms. Sanja Radović presented the extended producer responsibility system in Croatia. The system is enshrined in the ordinances for special waste categories for waste tyres, waste oil, electrical and electronic waste, batteries, end of life vehicles and packaging waste. EPR is present in the 2017-22 Waste



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Management Plan in Objective 2.3 “Improve the management system of packaging waste” and Objective 2.5 “Improve the management system of other special categories of waste”.

The Republic of Croatia has extended producer responsibility for the following groups of products: packaging that does not contain hazardous substances, electrical and electronic equipment, portable batteries and accumulators, vehicles, lubricants, and tyres.



Figure 6 - Categories of waste with EPR

For all mentioned product groups, manufacturers are obliged to pay the prescribed fees to the Environmental and Energy Efficiency Fund when placing them on the market in the Republic of Croatia. The Fund (from the collected fees) fully pays for the costs of separate collection, transportation, and treatment of waste generated by the mentioned product groups. The fund has contracts with collection and recovery companies for the waste generated by the mentioned product groups.

The Fund is currently the only EPR scheme in the Republic of Croatia which brings together the producers of the mentioned product groups, and the collectors and processors of waste generated by these products. The producer who pays the prescribed fee to the Fund has no further obligations related to separate collection, transportation and processing of waste from products they put on the market.

With regard to improving the functioning of the Producer Extended Liability Program in the amendments to the Municipal Waste Management Regulation of September 2019, it is stipulated that the Fund finances the costs of collecting municipal waste, the flows of which mainly consist of packaging waste, for which a management fee is paid to the Fund, and it is stipulated that the financing of these costs shall be done on the basis of a contract between the Fund and the public service provider.

Regarding fees for the management of special categories of waste, manufacturers are obliged to pay the prescribed fees to the Environmental and Energy Efficiency Fund when placing products on the market in the Republic of Croatia.



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The table below shows the fees charged. The fees are prescribed by law varying only according to quantity. There is a reform process taking place to modulate fees according to the materials used and ease of recycling capacity.

Fee	Unit amount	
Packaging waste management fee and refund fee	150,00 kn/t - 1500 kn/t, 0,10 kn/kom, 0,50 kn/kom (return fee)	20-200 EUR/t, 0,01 EUR/pc, 0,06 EUR/pc (return fee)
Naknada gospodarenja otpadnim gumama	1.100,00 kn/t	146 EUR/t
Waste tire management fee	0,60 kn/kg	0,08 EUR/kg
Fee for disposal of waste lubricating oils	0,60 kn/l	0,08 EUR/lit
Waste batteries and accumulators management fee	8,40 kn/kg	1,12 EUR/kg
EE waste management fee	2,25 kn/kg	0,3 EUR/kg

Figure 7 - Fees applied

Regarding the first steps to establish an EPR system, Ms. Sanja Radović stated that political goodwill is very important, together with negotiations with producers on fees. It is not an easy process, and Croatia experienced difficulties. The process started in the 90s with an organisation of producers, but it did not work. Eventually the country established a national body to move the process forward (i.e. the environmental fund).

### 3.6 Session 2.c: The Introduction and Financing of Source Segregated Collection and Subsequent Recycling: Approaches and Case Studies from EU Member States.

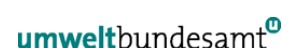
Mr. Christian Neubauer delivered a presentation on Austrian experience with the Introduction and Financing of Source Segregated Collection and Subsequent Recycling. He started by explaining the requirements on source separation and recycling set at EU level, as shown in the table below.

Recycling targets	Year*	Recycling target	Description
Waste from households (municipal waste)	2020 / 2025 / 2030 / 2035	50% / 55% / 60% / 65%	preparing for re-use and the recycling (see Art. 11 WFD)
Non-hazardous construction and demolition waste	2020	70%	preparing for re-use, recycling and other material recovery, including backfilling operations (see Art. 11 WFD)
Plastic packaging waste Wood packaging waste Metal packaging waste Aluminium packaging waste Glass packaging waste Paper & cardboard packaging waste All packaging waste	2025 / 2030	50% / 55% 25% / 30% 70% / 80% 50% / 60% 70% / 75% 75% / 85% 65% / 70%	minimum targets by weight for recycling (see Art. 6 of PPWD)
Waste electrical and electronic equipment (WEEE)	ongoing	Type specific	differentiated in rates for recovery and rates for prepared for re-use / recycling (see Annex V of WEEED)
Waste batteries and accumulators (WBA)	ongoing	Type specific	minimum recycling efficiencies (see Annex III of WBAD)

Figure 8 - Recycling targets



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Source separation	Year*	Collection target	Description
<b>Hazardous waste</b> fractions produced by households	by 1 January <b>2025</b>	-	set up separate collection for hazardous waste fractions produced by households (see Article 20 WFD)
<b>Waste oils</b>	<b>ongoing</b>	-	set up separate collection for waste oils , unless separate collection is not technically feasible taking into account good practices (see Art. 21 WFD)
<b>Bio-waste</b>	by 31 December <b>2023</b>	-	bio-waste is either separated and recycled at source, or is collected separately and is not mixed with other types of waste (see Art. 22 WFD)
<b>Waste electrical and electronic equipment (WEEE)</b>	<b>ongoing</b>	<b>65%</b>	minimum collection rate (see Art. 7 of WEEEED); to achieve a high level of separate collection of WEEE (Art. 5 WEEEED)
<b>Waste batteries and accumulators (WBA)</b>	<b>ongoing</b>	<b>45%</b>	minimum collection rate (see Art. 10 WBAD); ensure that appropriate collection schemes are in place for waste portable batteries and accumulators (Art. 8 of the WBAD)
<b>Single-use plastic beverage bottles</b>	<b>2025 / 2029</b>	<b>77% / 90%</b>	separate collection for recycling for beverage bottles with a capacity of up to three litres, including their caps and lids (see Art. 9, Part F, SUPD)

Figure 9 - Source separation targets

Mr. Christian Neubauer then introduced and weighed the importance of different economic instruments and other measures to provide incentives for the application of the EU waste hierarchy. They are:

- Charges and restrictions for the landfilling and incineration of waste which incentivise waste prevention and recycling, whilst keeping landfilling the least preferred waste management option;
- 'Pay-as-you-throw' schemes that charge waste producers on the basis of the actual amount of waste generated and provide incentives for separation at source of recyclable waste and for reduction of mixed waste;
- Fiscal incentives for donation of products, in particular food;
- Extended producer responsibility schemes for various types of waste and measures to increase their effectiveness, cost efficiency and governance;
- Deposit-refund schemes and other measures to encourage efficient collection of used products and materials; and
- Sound planning of investments in waste management infrastructure, including through Union funds.

Mr. Christian Neubauer then moved to the Austrian example. He explained how the collection system, and the collection and treatment obligations, are divided across different stakeholders in Austria. The table below provides a summary:

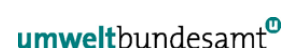
Type of waste	Admin. level	Collection	Treatment	Collection system
Mixed municipal waste (MSW)	Province	M / A	M / A	Pick-up (collection) system
Bulky waste	Province	M / A	M / A	Amenity sites and pick-up collection system (loose)
Biogenic waste	Province	M / A	M / A	Pick-up (collection) system
Waste paper (non- packaging)	Province	M / A	M / A	Packaging and non- packaging mixed, collection and bring system (waste collection points)
Waste paper (packaging)	Federal	B	B	Packaging and non- packaging mixed, collection and bring system (waste collection points)
Waste glass (packaging)	Federal	B	B	Bring system (waste collection points)
Lightweight packaging	Federal	B	B	Door to door collection system (bags) and bring system (waste collection points)
Metal packaging	Federal	B	B	Bring system (waste collection points)
Miscellaneous metal waste	Province	M / A	M / A	Amenity sites
Hazardous household waste	Federal	M / A	M / A	Amenity sites, collection points (fixed or mobile)
WEEE / Batteries	Federal	M / A / B	B	Amenity sites, take-back by commerce

M... Municipalities; A... Waste Management Associations; P...Province; B... Business (Retailers)

Figure 10 - Responsibilities for waste collection and Treatment in Austria



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The system is financed through multiple sources depending on which type of waste is being looked at.

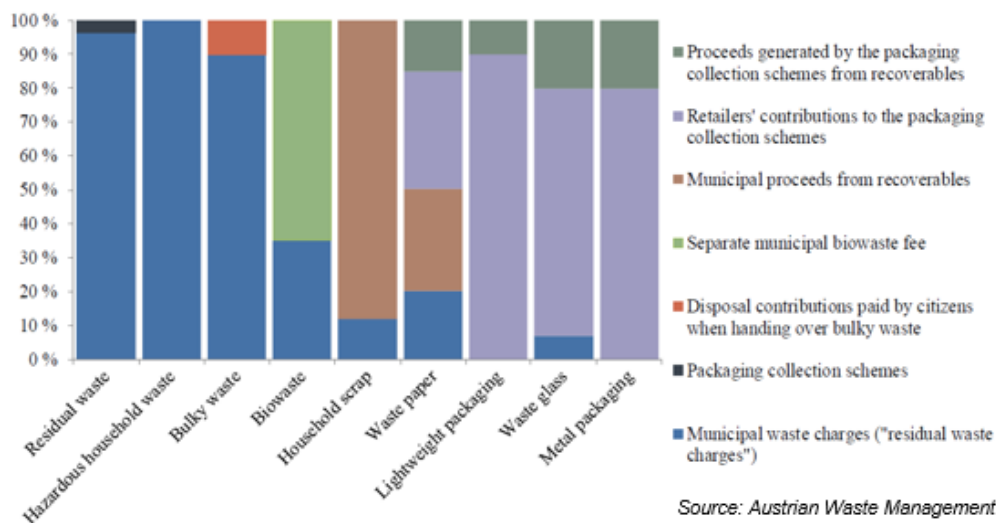


Figure 11 - Financing sources per waste stream

Regarding the EPR schemes, only one EPR for packaging waste was established in Austria until 2014 which had a market monopoly. . The scheme had to contract with all municipalities. In 2014/2015 a shift from s monopoly to an open EPR market was undertaken by establishing the Packaging Coordination Office (VKS) as a non-profit organisation. By 2020, seven collection and recycling systems were approved, all having a contract with VKS, thus creating competition in a market of approx. 180 Mill € per year and 1.2 Mill. tons of packaging waste.

The success of the Austrian approach can be measured from the following figure.

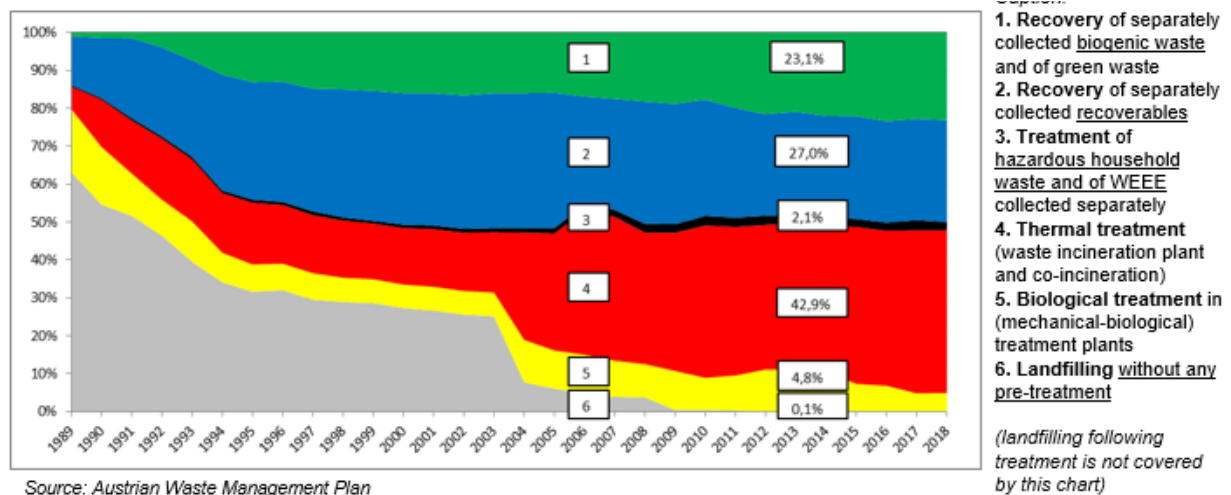


Figure 12 - Municipal waste

Mr. Christian Neubauer concluded his presentation with the key ideas for a system for collection and recycling. The implementation of an appropriate system is strongly related to the framework defined on the specific waste stream, the actors involved in the process chain, and the legislative framework established at European and national level. To achieve the new ambitious targets introduced by the Circular Economy Package, economic instruments and related implementation in practice needs to be enhanced. Deposit refund schemes are highlighted more prominently these days as being an option to



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achieve high collection rates and to fulfil the recycling targets. Political decisions on the appropriate measures need to be taken in order to reduce pressure on the markets.

### **3.7 Session 3.a: Assessing the Implementation of Integrated Solid Waste Management Systems: Performance Assessment Methods and Indicators towards Achieving Waste Policy Objectives**

Ms. Almut Reichel and Mr. Ioannis Bakas presented possible performance assessment methods and indicators towards achieving waste policy objectives.

They listed four main indicators that can be useful for waste management policy makers. The first indicator is about waste generation, both in total amounts and per capita. The indicator assesses developments both at European and country level, and the decoupling of waste generation from economic growth and population growth.

The second indicator assesses progress in waste recycling, and the achievement of recycling targets over time. The third indicator addresses diversion of waste from landfill. It shows landfilling of different waste streams over time and thereby indicates which ones are the driver of change. It also shows countries' progress towards the 2035 landfill target for municipal waste. Finally, the industrial waste in Europe indicator allows the breakdown of waste generated and recovered per industrial sector, and progress over time.

In addition to the indicators above from EEA, Eurostat publishes additional indicators on waste. For instance, the prices for recyclables and recycling rates of e-waste.

The development of indicators is a powerful management tool to inform policy makers of what works over time. Linking indicators to policy allows monitoring performance and judging the effectiveness of measures taken. Another advantage is that numbers can be disaggregated down to regional or municipal level to understand better which measures work where, and how. The indicators are useful, but they rely on good data collection.

The EEA is also preparing to issue an “early warning” report in 2022 for the 2025 targets in cooperation with the Commission. The ‘early warning’ mechanism is mandated in the WFD, Landfill Directive and Packaging and packaging waste Directive for the targets for the recycling of municipal waste and packaging waste, and the landfilling of municipal waste.

Ms. Almut Reichel and Mr. Ioannis Bakas also reflected on the key factors influencing target achievement that countries can focus on. They include legal instruments, economic instruments such as landfill taxes and pay-as-you-throw schemes, separate collection systems, EPR schemes, treatment capacities, and data quality.

The presenters concluded with information about an EEA IPA project, running throughout 2020 and 2021, that will create country profiles on waste prevention policies and assessments on municipal waste management for the Western Balkan countries. They also noted that the region's municipal waste has a high share of bio-waste, which could provide a good actionable point in the short-run.

### **3.8 Session 3.b: The Use of Management Information Systems for Overseeing the Management of Integrated Waste Management Systems: Experiences and Examples from EU Member States**

Ms. Brigitte Karigl gave a presentation on Austrian experience with the use of waste management information systems.

EU legislation on waste imposes a great deal of reporting obligations. EU Member States are then required to collect and systematize information on waste. Austria collects data about companies and installations (to be updated whenever changes occur and it includes geographic location & address, type of installation, economic activity of company, permits and licenses, contact persons, ...), waste data (to



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be reported periodically, it includes input into treatment installations, output from treatment installations, by waste type and treatment operation carried out), and data about relations between companies and between installations (to be reported periodically, and it includes waste received from other companies/installations, waste forwarded to other companies/installations).

In addition to data collection clear, unambiguous, calculation rules are needed to produce the required information from the reported data. Austria implements automated processes for the calculation, to ensure that results can be reproduced, and that uniform calculation rules are applied.

The Austrian waste information system, EDM<sup>1</sup>, is an integrated E-Government application, consisting of internet applications and databases, to support reporting, issuing licenses and permits, documentation, notification of transboundary waste shipment, checks and inspections related to environmental protection. It is also a data repository for permits, licenses, information about installations, waste movement and waste treatment data etc.

It has a stringent legal basis for all obligations and user rights. It is open to a multitude of users within the framework of their access rights. The users are national and province authorities for permitting and inspections, businesses for reporting, the public for environmental information, customs and the police for checks, and the Environment Agency Austria for producing reports and statistics.

The EDM manages its data according to some of the SEIS-principles:

- Managed as close as possible to its source;
- Collected once and shared with others for many purposes;
- Readily available to easily fulfil reporting obligations;
- Easily accessible to all users; and
- Accessible to enable comparisons at the appropriate geographical scale and the participation of citizens.

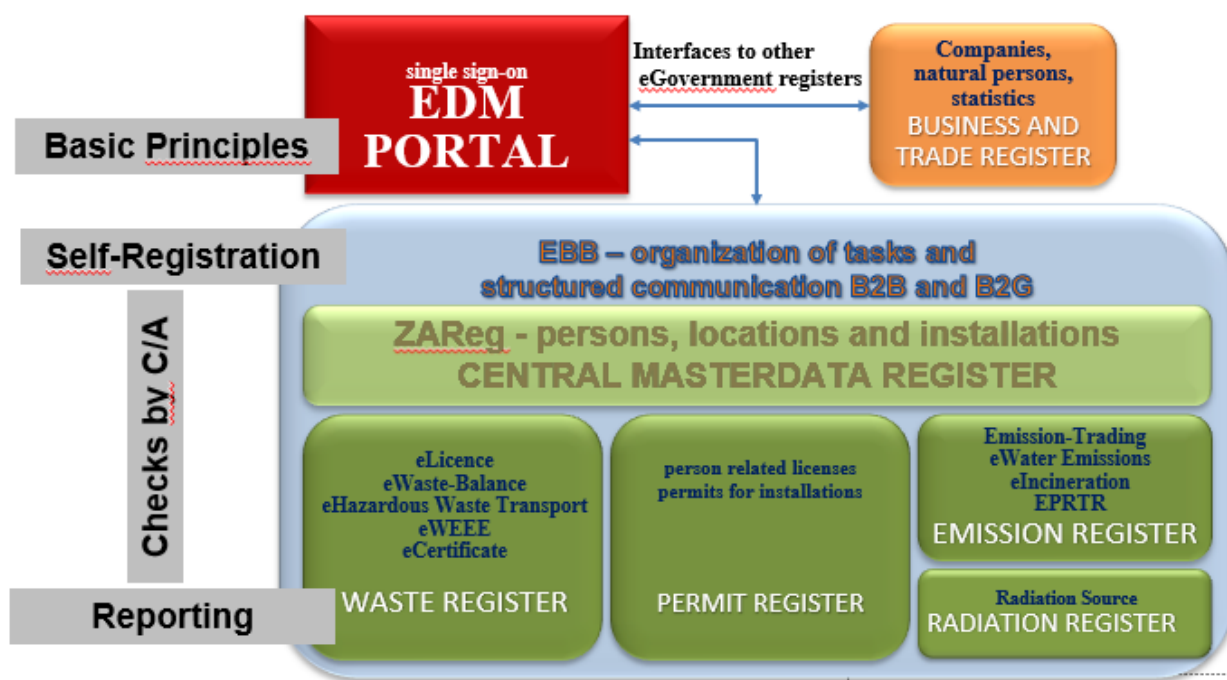


Figure 13 - EDM flowchart

Parties (mainly companies) are obliged to self-register and enter their master data about the company and its installations. Registration is mandatory for:

<sup>1</sup> Edm.gv.at



- Producers of hazardous waste and waste oils;
- Establishments which carry out waste collection or any waste treatment operation (e.g. landfill operators, operators of installations which fall under the scope of the Austrian waste incineration ordinance);
- Persons who intend to export waste, when the notification procedure according to EU-Waste Shipment Regulation is obligatory;
- Various parties under EPR-schemes; and
- IED-installations (not only waste treatment installations).

Any registration or reporting obligation is managed under EDM, thus avoiding data redundancies and inconsistencies of reported data.

Waste collectors and waste processors have to report annual waste balance sheets electronically:

- Waste taken over from other legal entities;
- Waste handed over to other legal entities;
- In-house waste movements and storage; and
- Recovery and disposal operations.

Waste received from initial waste generators is reported as total value per type of waste, broken down by the federal province of origin and by the economic sector of waste generator.

EDM is used as an administrative and enforcement tool. Authorities can perform template queries, implemented within the EDM-application, which meet well-defined requirements of the enforcement authority and other institutions/persons entitled to make queries. EDM is also used as a Waste information system. Data are extracted from EDM, transformed (summarized into aggregates) and stored in a waste information system ("Data Warehouse"). Data are processed further to compile the information required for national and EU reporting obligations and waste statistics.

The Austrian Environment Agency interacts with EDM through its IT department which:

- Does software development, operation and maintenance of the application (administrative system for C/A);
- Is an active member in standardization bodies for environmental data structures and data exchange;
- Develops conceptual solutions for the monitoring of environmental processes, using EDM as an IT-tool; and
- Researches on artificial intelligence methods to support the users in legal compliance.

The Agency's Waste Unit also plays a role:

- It undertakes plausibility and consistency checks of data and information;
- Processes the data for fulfilling national and EU reporting obligations, and maintenance of the waste information system; and
- Prepares reports and waste statistics.

### 3.9 Session 3.c: Discussion: The Key Challenges and Constraints for EPPA beneficiaries in Introducing Effective Waste Monitoring Systems

Mr. Simon Pow moderated a discussion on the beneficiaries current state of play in the establishment of information systems and what steps they see next.

A delegate from Kosovo\* confirmed that data collection and monitoring is a challenge. It affects all levels of governance, from the central government down to the municipalities. The task seems daunting. KEPA is currently developing reporting templates for municipalities in Kosovo\*. The template does not cover private operators, nor recyclers. KEPA must sort and process the data manually.



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Ms. Brigitte Karigl commented that it can be overwhelming to look at the full picture. She recalled that when Austria started its own information management system it focused on landfills which were the predominant waste disposal technique. With relatively minor training and investment, landfill operators could fulfil the reporting obligation drastically increasing data available. Municipalities can also be a good source of information as they usually carry out waste collection. Furthermore, since waste services are connected with financial costs, there is a good chance that most municipalities keep some sort of record of the waste collected. Imports and exports of waste also need to go through proper licensing and procedures, which must mean that there are records available for that waste. Ms. Brigitte Karigl concluded that these pillars of already available information can be the beginning of a cost-effective waste information system. Should an EPR system be established, then that will constitute another stream of data.

As for the lack of automated software, Ms. Brigitte Karigl suggested Kosovo\* to look at the available technologies. The effort to deploy an electronic system will be rewarded because it forces stakeholders to comply with formats and data requirements. That will result in a significant increase in both data quantity and quality.

A representative from North Macedonia informed participants that the country is preparing a reporting software for waste operators, which is expected to be ready for testing by the end of the year. Although there are laws that require reporting, often the entities simply do not do it, or report unreliable data.

Ms. Brigitte Karigl replied that a few years are needed after the introduction of a new system in order to steward an improvement in data quality. Even in Austria, when there is a new reporting obligation, the first 2 to 3 years produce differing data and uncertain reliability.

The delegate from Kosovo\* asked if there is any plan to assist countries in the current crisis. The delegate expressed concern that waste companies and municipalities have lost income, since the payment of waste related fees was suspended. There is a serious risk of bankruptcy.

Ms. Madalina Ivanica responded that the EC has just published a communication on Covid19 response for the Western Balkans. Assistance is being directed to health, social, and economic problems, but there are attempts at formulating an agenda for a green recovery, which would include waste management. Concrete issues should be raised with the EUDs in order to discuss possible solutions and formulate requests for financial aid.

## 4 Conclusions

Implementation of the waste acquis is only at the beginning in the beneficiaries. The lack of financial capacities, human resources, other technical capacities, and, occasionally, political will for the environment sector are major obstacles.

More specifically to waste management, the beneficiaries have to develop fit for purpose legislation, develop their strategies and action plans, create monitoring and reporting mechanisms, allocate the necessary resources for infrastructure construction, and have a solid enforcement and inspection system in place.

Workshops, such as the one, are essential to provide support to the countries in their efforts to achieve the landmarks listed above.

### Workshop Outputs

The workshop's main outputs were:

- Better understanding of integrated solid waste management systems;
- Overview of the challenges for integrated solid waste management systems in the EPPA beneficiaries;



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- Enhanced exchange of experiences and knowledge between the beneficiaries and EU Member states in the several components of an integrated solid waste management systems; and
- Contribution to the development of a regional perspective on waste management.

## 5 Evaluation

The participants were asked to evaluate the workshop by TAIEX using an online survey after the event. The evaluation results are presented below in a summary table.



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Evaluation Type	Question / Expert name / Comment	No. Responses	Expert Score	Yes / Excellent	No / Good	Partially / Satisfactory	Do not know / Poor
Workshop participant - A. Questions	1 1. Was the workshop carried out according to the agenda	13		12 (92%) Yes	No	1 (8%) Partially	Do not know
Workshop participant - A. Questions	2 2. Was the programme well structured?	13		11 (85%) Yes	No	2 (15%) Partially	Do not know
Workshop participant - A. Questions	3 3. Were the key issues related to the topics addressed?	13		9 (69%) Yes	No	4 (31%) Partially	Do not know
Workshop participant - A. Questions	4 4. Did the workshop enable you to improve your knowledge?	13		10 (77%) Yes	No	3 (23%) Partially	Do not know
Workshop participant - A. Questions	5 5. Was enough time allowed for questions and discussions?	13		11 (85%) Yes	No	2 (15%) Partially	Do not know
Workshop participant - A. Questions	7 7. Do you expect any follow-up based on the results of the workshop (new legislation, new administrative approach, etc.)?	13		10 (77%) Yes	No	3 (23%) Partially	Do not know
Workshop participant - A. Questions	8 8. Do you think that further TAIEX assistance is needed (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	13		13 (100%) Yes	No	Partially	Do not know
Workshop participant - B. Expert ratings	Ms. Karigl, Brigitte - Speaker MS	13	90.38 %	8 (62%) Excellent	5 (38%) Good	Satisfactory	Poor
Workshop participant - B. Expert ratings	Mr. Pow, Simon - Speaker MS	13	88.46 %	7 (54%) Excellent	6 (46%) Good	Satisfactory	Poor
Workshop participant - B. Expert ratings	Ms. Radovic Josic, Sanja - Speaker MS	13	86.53 %	6 (46%) Excellent	7 (54%) Good	Satisfactory	Poor
Workshop participant - B. Expert ratings	Mr. Neubauer, Christian - Speaker MS	13	84.61 %	5 (38%) Excellent	8 (62%) Good	Satisfactory	Poor



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Workshop participant - B. Expert ratings					7			
	Ms. Reichel, Almut - Speaker EU	13	82.69 %	5 (38%) Excellent	(54%) Good	1 (8%) Satisfactory	Poor	
Workshop participant - B. Expert ratings					5			
	Mr. Wessman, Peter - Speaker EU	13	82.69 %	6 (46%) Excellent	(38%) Good	2 (15%) Satisfactory	Poor	
Workshop participant - B. Expert ratings					5			
	Mr. Dimovski, Mihail - Speaker MS	12	81.25 %	5 (42%) Excellent	(42%) Good	2 (17%) Satisfactory	Poor	
Workshop participant - B. Expert ratings					3			
	Ms. Ivanica, Madalina - Speaker EU	13	90.38 %	9 (69%) Excellent	(23%) Good	1 (8%) Satisfactory	Poor	
Workshop participant - C. Logistic Ratings	1 1. Conference venue	8		4 (50%) Yes	1 (13%) No	3 (38%) Partially	Do not know	
Workshop participant - C. Logistic Ratings	2 2. Interpretation	5		1 (20%) Yes	1 (20%) No	3 (60%) Partially	Do not know	
Workshop participant - C. Logistic Ratings	3 3. Hotel	3		Yes	2 (67%) No	1 (33%) Partially	Do not know	
Workshop participant - C. Logistic Ratings	4 4. Flight	3		Yes	2 (67%) No	1 (33%) Partially	Do not know	
Workshop participant - C. Logistic Ratings	5 5. Catering	3		Yes	2 (67%) No	1 (33%) Partially	Do not know	
Workshop participant - D. Comments	webex had many failures during the workshop despite a relatively low number of participants for such a platform (35 at the peak); the small breaks scheduled in the agenda were not given; presenters should retool/rethink their presentations (shorter, to the point, clearer structure).							
Workshop participant - D. Comments	Workshop was very useful, therefore it would be very good to see the possibility of organizing this kind of workshops also for the local level officials.							
Workshop participant - D. Comments	The topics discussed were well selected and beneficial for exchange of experience and knowledge among the participants. However, more emphasis should have been given on lessons learned from Croatia during establishing integrated waste management system.							



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Workshop participant - D. Comments	-	I would appreciate to receive all the presentations now and a list of participants with their contacts. There were few very good experts presenting and it would be of a high value to have their presentations & contacts now. Thank you.					
Workshop participant - D. Comments	-	A well-organized workshop, in the circumstances that the moment dictated, The topics were adequate and well summarized. Such workshops would be good to be shorter, it was a bit tedious.					
Workshop speaker - A. Questions	-	1. Did you receive all the information necessary for the preparation of your contribution?	6	6 (100%) Yes	No	Partially	Do not know
Workshop speaker - A. Questions	-	2. Has the overall aim of the workshop been achieved?	6	6 (100%) Yes	No	Partially	Do not know
Workshop speaker - A. Questions	-	3. Was the agenda well structured?	6	6 (100%) Yes	No	Partially	Do not know
Workshop speaker - A. Questions	-	4. Were the participants present throughout the scheduled workshop?	6	4 (67%) Yes	No	2 (33%) Partially	Do not know
Workshop speaker - A. Questions	-	5. Was the beneficiary represented by the appropriate participants?	6	2 (33%) Yes	No	4 (67%) Partially	Do not know
Workshop speaker - A. Questions	-	6. Did the participants actively take part in the discussions?	6	3 (50%) Yes	No	3 (50%) Partially	Do not know
Workshop speaker - A. Questions	-	7. Do you expect that the beneficiary will undertake follow-up based on the results of the workshop (new legislation, new administrative approach etc.)	6	4 (67%) Yes	No	2 (33%) Partially	Do not know
Workshop speaker - A. Questions	-	8. Do you think that the beneficiary needs further TAIEX assistance (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	6	6 (100%) Yes	No	Partially	Do not know
Workshop speaker - A. Questions	-	9. Would you be ready to participate in future TAIEX workshops?	6	6 (100%) Yes	No	Partially	Do not know
Workshop speaker - C. Logistic Ratings	-	1. Conference venue	3	2 (67%) Yes	No	1 (33%) Partially	Do not know



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Workshop speaker - C. Logistic Ratings	2	2. Interpretation	2	2 (100%) Yes	No	Partially	Do not know
Workshop speaker - C. Logistic Ratings	3	3. Hotel	2	1 (50%) Yes	1 (50%) No	Partially	Do not know
Workshop speaker - C. Logistic Ratings	4	4. Flight	2	1 (50%) Yes	1 (50%) No	Partially	Do not know
Workshop speaker - C. Logistic Ratings	5	5. Catering	2	1 (50%) Yes	1 (50%) No	Partially	Do not know
Workshop speaker - D. Comments		Good Workshop, held Online...					
Workshop speaker - D. Comments		Virtual workshop					



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## Endnotes

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\* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



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