



Event Report

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

2 June 2020

Live video conference



This Project is funded
by the European Union

NIRAS umweltbundesamt^U

The project implemented by the Consortium
of NIRAS (lead) and Umweltbundesamt
GmbH

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1 Introduction

The sub-regional workshop

The sub-regional workshop on “Integrated Waste Management Systems” took place on 2 June 2020 via live video conference for the project beneficiaries: Bosnia Herzegovina, Montenegro, Serbia, and Turkey. 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 Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, the Federal Ministry of Environment and Tourism of the Federation of BiH, the Ministry of Spatial Planning, Civil Engineering and Ecology of the Republic of Srpska, the Ministry of Sustainable Development and Tourism of Montenegro, the Agency for Nature and Environment Protection of Montenegro, Ministry of Environmental Protection of Serbia, and the Ministry of Environment and Urbanization of Turkey. 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). In addition, there were two speakers from the European Environment Agency. Details are available in the agenda. The agenda foresaw the participation of a Croatian expert from the Ministry of Environment and Energy to discuss lessons learnt in Croatia regarding the establishment of an integrated waste management system and its funding schemes. However, the expert could not participate due to last minute health reasons.

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, 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.



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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;
- 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

Mr. Simon Pow, the event chairman, started by introducing the context in which the workshop takes place. The EPPA project performed national consultations in all beneficiaries in late 2019 and early 2020 to identify the priorities to move forward with a sustainable waste management system. He remarked it is essential to move away from a linear waste management model, the workshop being 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. He noted the last-minute absence of the Croatian expert due to health reasons. Croatia’s experience in creating such systems is of great of value and interest to the beneficiaries. However, the remaining agenda would still offer insight into waste policy, regulatory framework, financial sustainability, and the monitoring of best practices.

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. She encouraged the beneficiaries to express their challenges as the EU is seeking to find ways to work together towards better governance.

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. Following that, the revision of the legislative waste framework set clear targets for reduction of waste, thus providing an ambitious long-term platform for waste management. The key elements are the 65% target for recycling of municipal waste by 2025, and a maximum 10% going to landfill by 2035. Separate collection obligations were extended to hazardous household waste. EPR has also been established. The EC also adopted a communication on improving recycling and adopted a monitoring framework to measure progress against a set of circular economy indicators.



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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. There are two important proposals on the table. The first was already adopted: the SUP directive. The second is a proposed regulation on the minimum requirements for water use seeking to boost the efficiency of using wastewater for irrigation purposes. 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 that the workshop agenda 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 to the benefit of the beneficiaries. He noted that waste management is an important sector under EPPA activities. The national consultations and the training needs assessment performed tried to identify the main priorities in the beneficiaries. He further informed the audience on upcoming work including circular economy workshops and a high-level meeting. He also presented the speakers and the relevance of their experience. Mr. Mihail Dimovski called for active engagement in the workshop in order to use the opportunity of the EC's and expert presence to discuss ways forward, which can be used for future programming efforts.

Ms. Renata Abduzaimovic (EUD BiH) briefly introduced the EU's cooperation in waste management. She encouraged Bosnia and Herzegovina to improve waste legislation implementation and progress towards a circular economy, including with the adoption of EPR. The planning for IPA 2020 seeks to build on previous assistance and to encourage the adoption of the principles of a circular economy.

Mr. Antoine Avignon (EUD Serbia) noted waste management is progressing slowly in Serbia. Although the policy framework is established, there is a lag in its implementation. There are difficulties in articulating and cooperating with the waste stakeholders, especially at municipal level, and a lack of incentives from the central government. He noted that behavioural changes are also needed from consumers and producers to move forward with a circular economy, especially in terms of recycling. Finally, Serbia needs incentives to decarbonize its economy, where coal plants are a source of unmanaged waste. He sees the need for further investment and technical assistance.

Ms. Elif Ceyda Özden (EUD Turkey) mentioned Turkey's progress, including legislation on landfills, waste streams, and elements of the WFD. There is still work to be done regarding the EU 2018 waste package. Implementation is lagging at municipal level, but there are success stories. Turkey launched a Zero Waste Initiative in 2019 seeking to increase recycling, which the EU hopes to support.

The welcoming session ended with a round of introduction of all participants.

3.2 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



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finally disposal. The hierarchy is legally mandatory, and it has to be absorbed by national institutions and reflected in investments and waste plans etc.

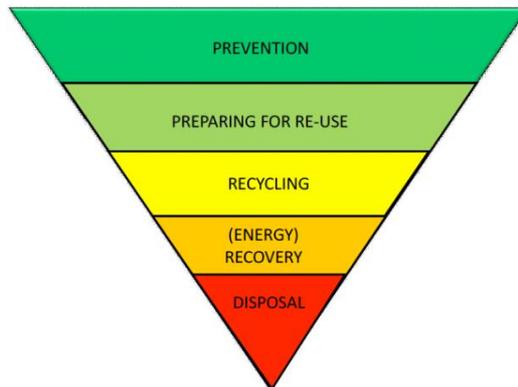


Figure 1 - The EU's waste hierarchy

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.

Following the presentation, Mr. Simon Pow inquired if there is any one legal instrument that should take priority to establish the foundations for a circular economy. Mr. Peter Wessman stated it is important to develop separate waste collection systems, to raise awareness in municipalities, and to find the best, workable options for each circumstance. Separate collection is essential to pave the way for recycling, increasing both its quantities and yields. In addition, compliance with the landfill directive is essential, as it goes hand in hand with efforts to increase recycling rates.

In light of the presentation, Mr. Simon Pow engaged participants in a discussion about the status quo of waste management in the beneficiaries.

Discussion on Bosnia and Herzegovina's status quo

Mr. Denis Žiško remarked the waste hierarchy in Bosnia and Herzegovina is the opposite of the EU approach. In this regard, he called for EU funds to have conditionality attached in order to counter that situation. He currently sees Bosnia and Herzegovina's official priority as landfill development which does not solve the problem of waste management. By having such conditionality, he expects the country to be more willing to adopt the EU's approach.

Ms. Renata Abduzaimovic mentioned that earlier EU assistance had a focus in the bottom of the waste hierarchy, but she agreed that it must be inverted. The EU supported landfilling as part of an approach that did not materialize as planned and considered that landfilling is still part of waste management. As a result of that experience, no further such assistance was provided. IPA 2020 will be focused on circular economy principles, based on proposals from the authorities and their recognition to go up the waste hierarchy. She was hopeful that the new assistance will have positive outcomes, whilst noting that the willingness of authorities to enforce and materialize the assistance is pivotal. She further noted that the



environment was not eligible for IPA support in 2014-2018 due to the country's lack of an environmental strategy. The sector is being supported again with waste management a key sector within it.

Mr. Denis Žiško further commented that the environmental strategy adopted is not fit for purpose causing implementation bottlenecks. He further added that he sees energy recovery in the pyramid as a simple proxy for waste incineration.

Mr. Simon Pow intervened to point out that there are positive signs in Bosnia and Herzegovina. He mentioned a project in Sarajevo that is piloting separate waste collection in some districts with equipment, capacity building, and awareness raising. He added energy recovery is another tool within waste management and, as such, should not be summarily dismissed. There might indeed be a conflict when waste high in calorific value is also the most desirable for recycling, e.g. plastics. The conflict needs to be managed within an integrated approach guided by circular economy goals, where landfill also has its role.

Mr. Denis Žiško expressed his view that Bosnia and Herzegovina does not have an integrated approach and as long as landfilling and incineration are the main tools, there will be no incentive to move towards recycling. He also highlighted the lack of planning for maintaining waste management facilities once the first donor funding is spent. In his view, Bosnia and Herzegovina's decision makers are approaching the EU without understanding that they need to negotiate implementation dates and not the content of the acquis.

Mr. Mihail Dimovski was confident that Bosnia and Herzegovina will set a clear way forward as approximation to the EU continues. He did note however that financing must also come from the state budget. Exclusive reliance on donor funds is not sustainable. For this, any planning should take into account the initial investments but also the maintenance costs.

Ms. Sabina Sijarić intervened with information regarding the status quo in Bosnia and Herzegovina. Although the predominant method for waste disposal is landfilling, separate collection has been systematically introduced in both entities in recent years. Extended producer responsibility is introduced for two waste streams: WEEE and Packaging waste. In the process of programming IPA 2020, BiH proposed two interventions regarding circular economy principles: further harmonisation of the existing legislation with EU Waste package, promoting reuse and recycling, and establishment of a reporting system for all environmental subsectors.

Furthermore, Bosnia and Herzegovina has a Law on Waste in both the Federation of BiH and the Republika Srpska Entity. It also has bylaws on packaging and electronic waste since 2012 and applies all these legal acts, but, as in other countries, there is a problem of financing for the complete closure of landfills. Not all waste goes to the landfill, but a large part is exported in accordance with the regulations for recycling and further processing. In accordance with the legal goals, in the period 2014-2018, 126 664.06 t of packaging waste was handed over for recycling. In the period from 2013 to 2018, 10 924 904.7 kg of electronic and electronic waste was collected and disposed of.

In addition, a total of 64 municipalities have prepared a Waste Management Adaptation Plan for their landfills in accordance with applicable regulations. The situation at more than 40 municipal landfills has improved. From the Budget of the Government of the Federation of BiH, in the period 2011-2018, 10 420 000 KM were allocated for these purposes. The Environmental Protection Fund of the Federation of BiH is the holder of activities on the establishment, organization, and management of the waste management information system in the Federation of BiH. Activities are underway to pass regulations for waste tyres, batteries and accumulators, waste oils, waste cars, PCB waste and titanium dioxide.



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Discussion on Serbia's status quo

Ms. Valentina Di Sebastiano (EUD Serbia) mentioned that EU assistance in Serbia also had an early focus on landfilling (IPA 2012). However, as of IPA 2017, the focus shifted to recycling and recognizing the importance of prevention. The shift in focus is coordinated amongst the donor community and she can see the results in programming. She noted that the two major problems are governments and financing. When it comes to government, she questioned whether institutional structures are able to absorb the proposed interventions. The problem is further enhanced at regional and local levels, where authorities are expected to plan, implement, and manage such interventions. Regarding funding, it is essential to have blended financial schemes where donor funding is complemented by countries' resources and facilities revenues to ensure long term sustainability. In this regard, local ownership is needed. Political will is also needed to place solid waste management as an important policy.

Ms. Milka Gvozdenovic noted that the political willingness in Serbia is not clear. She gave the example of a large number of municipalities abolishing their green funds or using them for non-environmental investments. She concluded that, whilst there are financial resources available, they are simply not spent appropriately. She agreed with the fact that there is no ownership of waste management. Without deep change, it will not be possible to establish a self-sustaining system. She also referred to the lack of credible data on waste as an obstacle to consequential planning and implementation. Finally, she noted waste production is increasing in Serbia due to industrial and consumption growth.

Discussion on Turkey's status quo

Ms. Sadiye Bilgic Karabulut provided information about waste management in Turkey. Its waste management plan dates from 2016 (and is currently being updated). One of the goals was to increase recycling from 13% to 35% by 2023. A zero-waste programme was launched in 2017 to help meet that goal. It provides technical and financial support to municipalities, schools, and commercial buildings to improve separate collection prioritisation based on population/user sizes. The programme has produced guidelines to establish zero waste systems, with recommendations on prevention and waste separation. The Ministry has also supported municipalities financially to build biological treatment facilities since 2018. A recycling fee is payable by producers under EPR policies, a process started this year. She also noted the current work to introduce a DRS scheme in 2021. Ms. Sadiye Bilgic Karabulut concluded with the positive remark that the use of plastic bags in Turkey was reduced by 80% since the introduction of a consumer fee.

3.3 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 Glas 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 2 - Recycling targets

Source separation	Year*	Collection target	Description
Hazardous waste fractions produced by households	by 1 January 2025	-	set up separate collection for hazardous waste fractions produced by households (see Article 20 WFD)
Waste oils	ongoing	-	set up separate collection for waste oils , unless separate collection is not technically feasible taking into account good practices (see Art. 21 WFD)
Bio-waste	by 31 December 2023	-	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)
Waste electrical and electronic equipment (WEEE)	ongoing	65%	minimum collection rate (see Art. 7 of WEEED); to achieve a high level of separate collection of WEEE (Art. 5 WEEED)
Waste batteries and accumulators (WBA)	ongoing	45%	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)
Single-use plastic beverage bottles	2025 / 2029	77% / 90%	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 3 - 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 incentivises 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 the 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:



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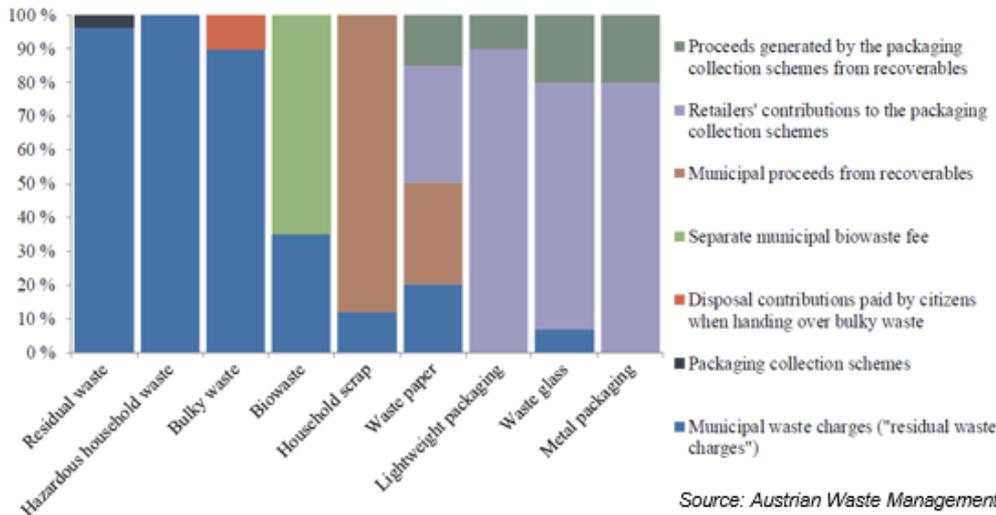
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Type of waste	Admin. level	Collection	Treatment	Collection system
Mixed municipal waste (MSW)	Province	M / A	M / A	Pick-up (collection) system
Bulky waste	Province	M / A	M / A	Amenity sites and pick-up collection system (loose)
Biogenic waste	Province	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 4 - Responsibilities for waste collection and Treatment in Austria

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



Source: Austrian Waste Management Plan

Figure 5 - Financing sources per waste stream

Regarding 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 a 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.

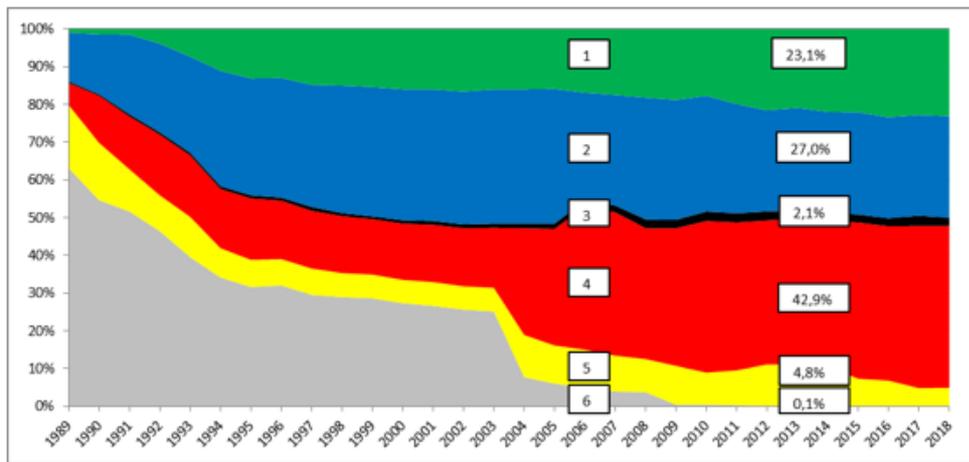
The success of the Austrian approach can be measured from the following figure.



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Source: Austrian Waste Management Plan

1. Recovery of separately collected biogenic waste and of green waste
 2. Recovery of separately collected recoverables
 3. Treatment of hazardous household waste and of WEEE collected separately
 4. Thermal treatment (waste incineration plant and co-incineration)
 5. Biological treatment in (mechanical-biological) treatment plants
 6. Landfilling without any pre-treatment
 (landfilling following treatment is not covered by this chart)

Figure 6 - 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 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.

In the discussion that followed, Mr. Denis Žiško mentioned a visit he made to Vienna incinerators where he was told citizens were asked to stop separating plastic because the system needed high calorific waste to run the incinerators. He asked if Austria will be able to fulfil its recycling targets if they continue to incinerate plastic, and how sustainable will the incinerators be in the long run. Ms. Brigitte Karigl was surprised to hear that there was an initiative to convince citizens not to separate plastic as the Vienna's incinerators are already operating at the upper limit of calorific value. Austria's separate collection of bio-waste from municipal sources, which consists of around 40% of total municipal waste, leaves only the inert fraction, also subject to other waste separation which has sufficient calorific value. Considering there is a 10% cap on landfilling, it is necessary to consider incineration from the perspective of integrated waste management. There is 35% of waste municipal that is not recyclable (residues from pre-treatment) and cannot be entirely landfilled. From this perspective, incinerators are sustainable in the long-term.

Ms. Elif Ceyda Özden inquired about Austria's strategy to collect bio-waste. Mr. Christian Neubauer replied that Austria has a decentralized approach with more than 400 facilities in the country. The bio-waste is collected separately in a specific bin and transported over short distances to the closest facility.

Ms. Brigitte Karigl added that it is a legal obligation for municipalities to have separate collection of bio-waste from households. In addition, Austria has good implementation and enforcement which makes the system run efficiently. In addition, composting is one of the least costly waste treatment methods, which provides an enforcement incentive for municipalities to invest in the system. The composting product is quality controlled and then used by citizens, agriculture, and the municipalities themselves.



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3.4 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.

3.5 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 in the use of waste management information systems.



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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 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, EDM¹, 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.

¹ Edm.gv.at





Figure 7 - 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:

- 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.

After the presentation Ms. Milka Gvozdenovic noted the difficulties of CSOs in Serbia to access waste management information. SEPA, which gathers waste information, is improving the country’s monitoring, but challenges remain. For example, in 2018 and 2019, 50 out 170 municipalities did not answer SEPA questionnaires about illegal landfills, probably due to the lack of capacities. On the industrial side, information is not public leaving open the question as to just what the impact of industrial growth on waste management is in practice. Ms. Milka Gvozdenovic was concerned that the lack of data hampers policy development and implementation, as well as the public’s right to information.

Mr. Simon Pow asked Ms. Brigitte Karigl what EPPA beneficiaries can do to develop information management systems. Ms. Brigitte Karigl recommended that systems are designed to reflect existing management practices and sources of information. For instance, municipalities must have some tracking system. In addition, data can be found in unexpected places. If a link is established between suspected contaminated sites and landfills, it might be possible to identify areas where there is illegal landfilling. Integrating existing data streams is a first good step to develop a solid information system. Austria addressed its data gaps with estimations, alternative data sources, or direct follow up with operators. The inter-institutional coordination of all waste stakeholders, especially between the authorities at different levels, provides a good tool to collect data and ensure its quality.

3.6 Session 4: Closing Remarks

Ms. Madalina Ivanica expressed her gratitude to the speakers, participants, and organizations involved in the preparation and delivery of the workshop. She noted that there is knowledge available that can be used by the beneficiaries to progress in aligning with the waste acquis. The main challenges remain: proper legislation and strategic planning, proper data, reporting and monitoring, proper infrastructure, proper enforcement and inspection. Ms. Madalina Ivanica stated the need to work together to progress with the implementation in this sector.

4 Conclusions

Implementation of the waste acquis is only at the beginning in the beneficiaries. The main challenges remain: proper legislation and strategic planning, proper data, reporting and monitoring, proper



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infrastructure, proper enforcement and inspection. The lack of financial capacities, human resources, other technical capacities, and, occasionally, political will for the environment sector are major obstacles.

It was also noted that the beneficiaries need to increase their ownership of waste management. Political will is needed to make solid waste management important policy. That should be reflected in better inter-institutional coordination at all levels and a drive to increase capacities to better absorb assistance.

Beneficiaries also need to show their commitment by engaging in blending financial schemes, where donor funding is complemented by countries' resources and facilities' revenue to ensure long term sustainability of operations.

Some beneficiaries are still operating at the bottom of the EU waste hierarchy. CSOs requested EU financial support to introduce conditionality in future assistance to invert this trend. The current IPA 2020 programming, for multiple beneficiaries, already seeks to encourage the adoption of circular economy principles as the way forward. The end goal is to create integrated waste management systems that meet the acquis requirements. Emphasis should be placed on separate collection and recycling with complimentary landfilling and incineration where needed.

Finally, the beneficiaries need better waste management information systems to guide policy and linkage with civil society to raise awareness and provide better public information.

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;
- 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. Was the workshop carried out according to the agenda	9		4 (44%) Yes	No	5 (56%) Partially	Do not know
Workshop - participant - A. Questions	2. Was the programme well structured?	9		9 (100%) Yes	No	Partially	Do not know
Workshop - participant - A. Questions	3. Were the key issues related to the topics addressed?	9		8 (89%) Yes	No	1 (11%) Partially	Do not know
Workshop - participant - A. Questions	4. Did the workshop enable you to improve your knowledge?	9		7 (78%) Yes	No	2 (22%) Partially	Do not know
Workshop - participant - A. Questions	5. Was enough time allowed for questions and discussions?	9		9 (100%) Yes	No	Partially	Do not know
Workshop - participant - A. Questions	7. Do you expect any follow-up based on the results of the workshop (new legislation, new administrative approach, etc.)?	9		5 (56%) Yes	4 (44%) No	Partially	Do not know
Workshop - participant - A. Questions	8. Do you think that further TAIEX assistance is needed (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	9		7 (78%) Yes	2 (22%) No	Partially	Do not know
Workshop - participant - C. Logistic Ratings	1. Conference venue	6		3 (50%) Yes	1 (17%) No	2 (33%) Partially	Do not know
Workshop - participant - C. Logistic Ratings	2. Interpretation	5		2 (40%) Yes	2 (40%) No	1 (20%) Partially	Do not know
Workshop - participant - C. Logistic Ratings	3. Hotel	2		Yes	2 (100%) No	Partially	Do not know
Workshop - participant - C. Logistic Ratings	4. Flight	2		Yes	2 (100%) No	Partially	Do not know
Workshop - participant - C. Logistic Ratings	5. Catering	2		Yes	2 (100%) No	Partially	Do not know



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Workshop - speaker - A. Questions	1. Did you receive all the information necessary for the preparation of your contribution?	3		3 (100%) Yes	No	Partially	Do not know
Workshop - speaker - A. Questions	2. Has the overall aim of the workshop been achieved?	3		3 (100%) Yes	No	Partially	Do not know
Workshop - speaker - A. Questions	3. Was the agenda well structured?	3		3 (100%) Yes	No	Partially	Do not know
Workshop - speaker - A. Questions	4. Were the participants present throughout the scheduled workshop?	3		2 (67%) Yes	No	1 (33%) Partially	Do not know
Workshop - speaker - A. Questions	5. Was the beneficiary represented by the appropriate participants?	3		1 (33%) Yes	No	2 (67%) Partially	Do not know
Workshop - speaker - A. Questions	6. Did the participants actively take part in the discussions?	3		3 (100%) Yes	No	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.)	3		1 (33%) Yes	No	Partially	2 (67%) 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?	3		3 (100%) Yes	No	Partially	Do not know
Workshop - speaker - A. Questions	9. Would you be ready to participate in future TAIEX workshops?	3		3 (100%) Yes	No	Partially	Do not know
Workshop - speaker - D. Comments	Online Webinar						
Workshop - participant - B. Expert ratings	Ms. Karigl, Brigitte - Speaker MS	9	91.66%	6 (67%) Excellent	3 (33%) Good	Satisfactory	Poor
Workshop - participant - B. Expert ratings	Ms. Reichel, Almut - Speaker EU	9	94.44%	7 (78%) Excellent	2 (22%) Good	Satisfactory	Poor
Workshop - participant - B. Expert ratings	Mr. Bakas, Ioannis - Speaker EU	9	94.44%	7 (78%) Excellent	2 (22%) Good	Satisfactory	Poor
Workshop - participant - B. Expert ratings	Mr. Pow, Simon - Speaker MS	9	88.88%	5 (56%) Excellent	4 (44%) Good	Satisfactory	Poor
Workshop - participant - B. Expert ratings	Mr. Neubauer, Christian - Speaker MS	9	100%	9 (100%) Excellent	Good	Satisfactory	Poor
Workshop - participant - B. Expert ratings	Mr. Wessman, Peter - Speaker EU	9	94.44%	7 (78%) Excellent	2 (22%) Good	Satisfactory	Poor



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Workshop - participant - B. Expert ratings	Mr. Dimovski, Mihail - Speaker MS	9	83.33%	4 (44%) Excellent	4 (44%) Good	1 (11%) Satisfactory	Poor
Workshop - participant - B. Expert ratings	Ms. Ivanica, Madalina - Speaker EU	9	80.55%	4 (44%) Excellent	4 (44%) Good	Satisfactory	1 (11%) Poor



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