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VIENNA – MODEL CITY FOR BENCHMARK ANALYSIS

1. Overview of legislation and institutional responsibilities for WM in Austria and Vienna

The overview of legislation and institutional responsibilities regarding WM and especially HWM are presented for national and provincial levels and are provided in detail in the Baseline Study.

2. Waste management system

MSW Generation in Vienna is 1,024,407 tons per year - 549kg per capita per year (2017). Waste sector is publicly owned and operated, MSW management services are financed through household fees as well as through Extended Producer Responsibility. Vienna has full coverage with differentiated separate collection schemes, no co-mingled collection of waste streams is in place, 100% of the waste is formally collected and treated. The residuals of waste incineration are landfilled.

Separate collection of hazardous household waste started in Vienna as early as 1985. To date, collection volumes have increased almost ten times. Approximately 5805 t of hazardous waste was collected in 2016 from households and commerce. Collection of hazardous waste is carried out both via the Civic Amenity Sites and via the problematic materials collection sites (stationary and mobile). Retailers also play a major role in the collection of problematic materials:

- Large electrical appliances, refrigerators, display screen equipment, small electrical appliances and gas discharge lamps are taken back free of charge step by step (buy new appliance, hand in old appliance)
- Batteries (exact designation: used appliance batteries) are also taken back by the trade.
- Expired medicines can be handed in at pharmacies free of charge

1460 t of hazardous household waste (*0.8 kg per inhabitant*) was collected separately in Vienna in 2015. HHW collection network is comprised of:

- Civic Amenity Sites – 17
- Mobile Civic Amenity Sites – 93 locations
- Stationary problematic material collection points - 4

The Central Problematic Materials Collection Point (Z-Prosa) serves as a storage and transfer point for problematic materials and hazardous waste from commercial deliveries. After being collected at the waste disposal sites and the hazardous waste collection points, hazardous waste is delivered to Z-Prosa.

Examples of WM and HWM good practices in Vienna are presented in detail in the Baseline Study and relate mostly to the innovative approach in implementing 5R principles as well as circular economy models.

48-er Tandler is a second-hand market with added value aiming to Reuse and protect the environment with a track record of selling the attractive junk goods being estimated to save around 300 tons of waste each year. The "**48-Tandler-Box**" variant is available on every CAS.

The Dismantling and Recycling Center is a recycling, reuse and upcycling company for old electrical devices. Preparations for reutilization is performed in line with the EU Waste Directive 2008/98. Approx. 1,500 tons of this ends up in the Dismantling and Recycling Center every year. In the dismantling department of the Dismantling and Recycling Center, old electrical and electronic equipment that can no longer be reused is sorted and manually dismantled. There is also a Re-use shop in the Dismantling and Recycling Center where mainly used hi-fi equipment, computers and, to a lesser extent, household appliances in large numbers are being sold. In the trash design manufactory of the Dismantling and Recycling Center, great upcycling products are made from electrical and electronic scrap.

3. Methods and tools applied to inform and involve citizens in WM and HWM

Information presented in the website of the Federal Ministry of the Republic of Austria on Climate Action, Environment, Energy, Mobility, Innovation and Technology:

- Multilingual collection tips – presented as short instruction leaflets for separate collection of waste fractions with pictograms and explanations
- Info for schools - Children can be taught about environmental protection and the proper use of the resources at an early age.

The "naturally less waste" initiative promotes and supports exemplary projects and activities that contribute to the conservation of valuable resources. The website provides easily accessible information to the citizens (including foreigners, tourists) of Vienna and provides a variety of advices and guidance on subjects related to waste management

Every year, the waste consulting department of MA 48 organizes the waste championship for elementary schools. Misttelefon (waste-phone) is the central service and information point for the population for opening hours, to disposal problems, to waste prevention issues, etc. The service number is also the first point of contact for information on new campaigns and activities by the Waste Management, Street Cleaning and Vehicle Fleet Department (MA 48).

4. Benchmark analysis

Benchmark analysis was performed based on the available data for Vienna as model benchmark city and for Partner Cities of Yerevan, Warsaw and Tirana. The Baseline Study provides a detailed analysis in textual and/or tabular presentation, depending on the subject and the data. The analysis is provided to reflect the following:

General waste information – Population of Vienna and Partner Cities is compared in tables and their respective Quantities of MSW, MSW collection rates, Quantities of HHW, Quantities of separated collected HHW. It should be noted that due to the missing data estimates with the available information were made to compensate this in order to have approximate figures to compare.

Hazardous waste management system – Regarding the current state of HHW infrastructure for Vienna and Partner Cities, based on the data presented in the Baseline Study, it could be concluded that Vienna has the most developed

infrastructure. Vienna covers less area (414 km² compared to Warsaw's 517 km²) but has two times more mobile CAS location and nine times more stationary CAS, while Tirana and Yerevan currently have no such infrastructure capacities and are yet to be developed in the future. CAS and mobile CAS comparison is also presented in the Baseline Study and it was concluded that the only difference between Vienna's and Warsaw's CAS facilities is asbestos waste which is not accepted in Warsaw.

Effectiveness, efficiency, innovativeness of systems for HW management - The essential difference between Vienna and Warsaw is in the number and spatial coverage of cities with infrastructure, i.e. the number of mobile and stationary CAS, which directly affects the effectiveness of the system and less accessibility of the plant to citizens. In Warsaw, there are stationary CASs at two ends of the city, on different sides of the river. Practice in Vienna shows that with a sufficiently educated population and awareness-raising campaigns, the HHW collection system is functioning satisfactorily.

Contributions of selected HW management practices to GDP growth - For this part of the analysis the good practices of waste and hazardous waste management, mostly in Austria and Vienna, was set as an example for the possible solutions to impact the GDP with innovative technologies and/or smart services, most notably by reuse and recycling, or even upcycling practices, in line with circular economy principles. The following examples were provided for Vienna, and elaborated in the Study - **Lead extraction from waste batteries and accumulators, ÖkoKauf Wien (Eco purchasing), Oeko Business Vienna, The Dismantling and Recycling Centre – Demontage und Recycling Zentrum DRZ, 48-er Tandler**. Considering that Partner Cities are in different stages of development when it comes to MWM and HWM practices and infrastructure, especially comparing to the selected model city Vienna, implementation possibilities were considered accordingly for Yerevan, Warsaw and Tirana.

Democracy and decentralization in MWM and HWM - One of the key aspects in improving the effectiveness of waste management system and its infrastructure is efficient and easily accessible participatory mechanisms and tools, and also awareness raising actions for citizens using it. This part of the analysis is given in text for Vienna and other cities, Yerevan, Warsaw and Tirana and it mainly reflects the findings of Chapter 5 - Methods and tools applied to inform and involve citizens in hazardous waste management, which are used to compare the levels of the three Partner Cities in comparison to Vienna as the Model city.

Legislation and Governance in MWM/HWM - MWM/HWM are critical public policies and need to be designed and implemented in the light of good governance principles. For the Study, the 12 Principles of the Strategy on Innovation and Good Governance at local level, endorsed by a decision of the Committee of Ministers of the Council of Europe in 2008, have been considered highly relevant. Principles of good governance in three Partner Cities and Benchmark City with relation to municipal waste management – expert assessment of principles application are presented and commented in the table in the Baseline Study.