



Project co-funded by  
the European Union



***It is simple. Less hazardous waste means safer and healthier people, and a cleaner environment.***

# *Capital Cities Collaborating on Common Challenges in Hazardous Waste Management*

## *Yerevan, Warsaw, Tirana*



Project co-funded by  
the European Union



## **Baseline Study on Hazardous Waste Management in Yerevan, Warsaw and Tirana**

**Presentation on technical parts**

**Place and date: Yerevan - 17.11.2021, Tirana – 01.12.2021, Warsaw – 08.12.2021**  
**Event: International Conference “Towards cleaner and greener cities”**

**Presenter: Mirjana Stankovic, HHW expert**

**Disclaimer:** This material was produced with the financial support of the European Union. Its contents are the sole responsibility of the “Capital Cities Collaborating on Common Challenges in Hazardous Waste Management - Yerevan, Warsaw, Tirana” Project Team and do not necessarily reflect the views of the European Union.

# EU - Hazardous waste definition and applied classifications

- Basel Convention, international treaty, into force from 1992 by UNEP (Y list, H list)
- EU Framework Directive on waste 2008/98/EC, and EU Directive 2018/851 amending WFD, classified waste by its origin as municipal/household and similar, commercial and industrial, and by characteristics (non-hazardous, inert and hazardous).
- Revised Annex III of WFD-classification criteria on properties of waste which render it hazardous.
- European List of waste, ELW, Decision 2000/532/EC, amended by Decision 2014/955/EU-classification criteria by waste source and type-20 categories.
- HHW: waste chemicals, healthcare waste, CDW, automotive maintenance waste, WEEE, batteries and accumulators, packaging, (edible oil and fat), etc.

# Findings on EU legislation

- **EU legislation:** WFD 2008/98/EC (EUD 2018/851 re waste oils, incl edible oil and fat), Waste Shipment Regulation EC 1013/ 2006, Directive 1999/31/EC on the landfill of waste (EUD 2018/850, Targets for recovery defined in Directive 94/62/EC on packaging and p.waste (EUD 2018/852 and EUD 2019/904), Directive 2000/53/EC on end-of-life vehicles (ELV, Directive 2017/2096/ EC and EUD 2018/849), Directive 2012/19/EC on WEEE (EUD 2018/849), Directive 2006/66/EC on batteries and accumulators (EUD 2013/56 and EUD 2018/849),

# Findings on Armenian national legislation and strategy documents

- **Armenian legislation:** Law on waste, HO-159-N, 2005: no EPR (Strategy for EPR N 14, 2018), no promotion of waste sorting, no HHW separate collection, no definition of waste hierarchy, circular economy, types of recyclables, no targets for recycling (up to 20% 2017-2036 MSWM Strategy N 49, 30% for MSW Yerevan Green City Action Plan 2017), no obligation to develop a national strategy on WM, neither a national, regional and local WMP (2017 CEPA requirements), no obligation for waste operators to report data on collected and disposed waste. Municipalities report rough volume estimations to the Armstat. The List of waste classified by to the level of hazard (1-5), Decree 430-N, 2006, not harmonized with the EU List of waste, the same as the List on Consumption and Production Waste, 2006, 342-N. Household waste category 4: waste collection and disposal operator need license and assessment of Category A by the Law on EIA and Expert examination, HO-110-N, 2014. No breakdown of waste by waste type, the waste listed with 13-digit code. Law on Licensing, HO-139-N, 2001: license without expiration date and requirement for renewal.

# Findings on Polish national legislation and strategy documents

- **Polish legislation:** adopted EU legislation in full, WFD and other Directives incl EU List of Waste and targets for separate collection, recycling and treatment of packaging waste and of HHW. Law on waste 2013: mixing of hazardous waste with non hazardous is forbidden, permits for waste collection and treatment valid up to 10 years, 5 containers waste collection system. Products containing asbestos are prohibited (1997). National WMP 2022, WMP for Mazowieckie Voivodeship 2024 (targets for waste oils, waste batteries and accumulators, WEEE, ELV, waste tyres, packaging and packaging waste, waste containing asbestos).

# Findings on Albanian legislation and strategy documents

- **Albanian legislation:** As EU candidate country: laws in WM aligned with 19 EU Directives & regulations, at acceptable level but the implementation is at low level. Law on IWM 10463/2011 (32/2013, 156/2013, 92/2016-pending approval), DCM 177/2012 on packaging and its waste, DCM 452/2012 on waste landfills, DCM 178/2012 on waste incineration, DCM 866/2012 on waste batteries and accumulators, DCM 957/2012 on WEEE, DCM 765/2012 on waste oils, DCM 705/2012 on ELV, DCM 99/2005 (DCM 579/2014) on catalogue for waste classification, DCM 418/2014 on separate collection of waste at source, DCM 652/2016 on used tires, DCM 765/2012 on waste oils, etc. Included: waste hierarchy, national, regional and local WMPs, targets for separate collection at source of packaging waste and HHW, sorting, recycling, incineration, and disposal, however some of revisions are needed. National IWM Strategy and Action Plan 2018-2033, IWM Strategic Policy Document and National Plan 2020-2035, Tirana Green City Action Plan 2018.

# Findings on Existing Waste Management Sector in Yerevan and Recommendations

- **Yerevan:** Collection of MSW in all 12 urban districts by CA WRSCY from May 2019 equipped with new containers and vehicles. Contracted private company collect the waste from buildings with central pipes. Coverage: 100%. Disposal at non sanitary landfill Nubarashen. CNCO LGEP collect and sell, from end of 2020, packaging waste from 135 collection points equipped with 3 containers (paper& cardboard, plastic and glass). Contracted private company collect CDW on call, also bulky waste. Private companies collect batteries and accumulators, WEEE, packaging waste, waste oil, etc. Informal sector as well. MSWM fee low. Payment collection 80%.
- Critical issues: No weighbridge, no measurement of collected waste. No database on MSW collected, recycled & disposed, HWM operators. No legislation on waste separate collection, transport & treatment. No EPR scheme. No CASs for separate collection of packaging waste, HHW, etc. MSWM fee. No municipal WMP.



# Findings on Existing Waste Management Sector in Yerevan and Recommendations

- Recommendation: To establish separate collection of bulky waste, WEEE, HHW, batteries and accumulators, Al & metal cans, ferrous and non-ferrous metals, wood, green waste, kitchen waste, waste oils, bulky waste, CDW, etc. To close central pipes. To establish stationary & mobile CASs. To construct sanitary landfill, MRF, inert landfill, compost plant & waste recycling plants. To increase collection points for packaging waste to 1200. To establish database on MSW & HW generation, collection, treatment & disposal, HWM operators & MSW recyclers. To increase fee & payment collection. To revise Law on waste and bylaws, to include obligation for development of national, regional and local WMP. To establish one List on waste classification acc EU List on waste. To establish EPR for packaging waste and take back the HHW to the shops/pharmacies (WEEE, batteries, accumulators, mercury thermometers, healthcare waste, etc.). Develop municipal WMP as priority. Awareness.

# Findings on Existing Waste Management Sector in Warsaw and Recommendations

- **Warsaw:** Waste separate collection from households started in 2014. 6 operators, 5 private and 1 public, collect the waste from all districts of Warsaw. As of 2019: 5 containers for separate collection of paper&cardboard, plastic and metals, glass, bio-waste, and mixed waste. Collection points: 109,501. HHW collection only at stationary and mobile CASs. Collection of WEEE in every district by contracted CSO on Sundays. No EPR for packaging waste. The costs for plastic bottles disposal are covered by residents. As of 2015: 2 stationary CASs and 5 mobile CASs (40 locations) for collection of waste from households only: packaging waste, HHW, used tires, CDW, etc. Mixed waste goes to MBT plant. Separately collected waste goes to waste recovery or disposal installations. Non recyclable waste is used to produce RDF alternative fuel in cement or incineration plant. Hazardous waste collected at CASs and Pharmacies goes to disposal installations/incineration plants. Large WEEE goes to waste treatment plants, for disassembling, recovery and disposal.

# Findings on Existing Waste Management Sector in Warsaw and Recommendations

Biodegradable waste goes to compost plant. All plants accepting waste must have a weighbridge. All waste is recorded and kept in BDO waste database. Existing MSW thermal treatment plant of 40,000 T/y in extension phase up to 305,200 T/y (no incineration of industrial and hazardous waste). CDW goes to treatment plant and disposal at inert landfill. MSWM fee may cover the costs. Payment collection: 82.33%.

- Critical issues: Only two CASs. EPR for packaging waste.
- Recommendation: To establish additional stationary (in each district) and mobile CASs in order to increase recycling rate. To establish EPR scheme for packaging waste. To increase payment collection. To construct biogas plant for biowaste fraction treatment. To improve waste segregation at households/awareness.

# Findings on Existing Waste Management Sector in Tirana and Recommendations

- **Tirana:** The City territory is divided in several areas. 7 operators, 6 private and 1 public collects MSW from different areas and dispose at Sharra dumpsite where the MSW incinerator is planned. Collection coverage: 87.9%. Rural areas are not covered. Separate collection of packaging waste: as pilot projects by CSOs and by informal sector. Only 3 companies have permit and perform recycling of HHW (batteries, accumulators, WEEE, etc. Cleaning fee do not cover all costs. Payment collection: 92%.
- Critical issues: No weighbridge, no measurement of collected waste. No data on waste composition. No waste separate collection, transport and treatment, no whole territory covered with MSW collection, no measurement of collected waste. No database on MSW collected, recycled, disposed. No EPR scheme. No CASs for separate collection of packaging waste, HHW, etc. Municipal WMP not developed yet. No database on companies having HWM permits. Low implementation of WM legislation.

# Findings on Existing Waste Management Sector in Tirana and Recommendations

- Recommendation: To establish separate collection of packaging waste, bulky waste, WEEE, HHW, batteries and accumulators, Al and metal cans, ferrous and non-ferrous metals, wood, green waste, kitchen waste, bulky waste, CDW, waste oils, etc. To establish stationary and mobile CASs. To construct sanitary landfill, MRF, inert landfill, compost plant, incinerator and waste recycling plants. To increase collection coverage to 100%, to increase MSW collection points. To establish database on MSW collected, recycled, and disposed, on MSW recyclers and HWM operators. To increase MSWM fee and payment collection. To revise targets in waste legislation and to start implementation. To establish EPR scheme for packaging waste and take back the HHW to the shops/pharmacies (WEEE, batteries, accumulators, mercury thermometers, healthcare waste, etc.). To develop municipal WMP as priority. To perform waste composition analysis. Awareness.

# Vienna – Model City for Benchmark Analysis

- **Legislation:** EU legislation is transposed in Federal Law on waste, 2002, in Vienna WM Act, 1994, Federal WMP, 2017, and Provincial WMP, 2013-2018, in full, incl waste hierarchy, waste holders, producers, collectors, processors, waste data collection. Introducing the concept of waste balance sheets and electronic record-keeping requirements, etc. EU List of waste transposed in the List of Waste Ordinance.
- **WM system:** The formal waste sector is publicly owned and operated, informal sector do not exist. MSWM services financed through household fees and EPR. Collection coverage: 100%. Waste collection by Municipal Department “MA48- Waste management, street cleaning and vehicle fleet”. Separate waste collection from 1980s. Bins for residual waste & waste paper in every apartment building. Scrap metal, glass & plastic bottles-4363 collection points. HHW: brought back to the distributor (batteries, electronic waste), 4 collection points at big markets, or to 17 recycling centers/CASs. Waste operations in place: 4 incinerators (59% of waste), 1 compost plant (9%), 1 biogas plant (2%), 1 sanitary landfill (8%) for residuals and inert from CDW, 17 recycling centers/CASs (22%).

# Vienna – Model City for Benchmark Analysis

- All residual waste treated in Vienna, no waste is exported for treatment. Recyclables partly goes to recycling facilities in other areas of Austria. Recovery rates: paper&cardboard 56% recycled, colored glass 63% recycled, white glass 40% recycled, recycled plastic 10% recycled, scrap metal 77% recycled, wood 79% recycled, garden waste & green kitchen waste 46% composted, food waste 20% energy recovery through anaerobic digestion. Mobile collection of problematic materials: 93 locations. Plus Central collection. EPR scheme for packaging waste included. Manufacturers, distributors and importers take back packaging free of charge and ensure their recovery or reuse. Fee for collection and treatment of packaging waste included in the sales price of a product-consumer pays it in advance when buying the product. Takeover WEEE included. Reuse of the waste items in good condition at CASs-48-shop (48er – Tandler. The Dismantling and Recycling Center with reuse shop is a recycling, reuse and upcycling company for old electrical and electronic devices.

# Benchmark Analysis

	<b>Population 2020</b>	<b>MSW generation T/y</b>	<b>Waste generation T/inh. y</b>	<b>Collection coverage, %</b>	<b>Quantity of HHW, T/y</b>	<b>HHW collection, T/y</b>	<b>Stationary CASs</b>	<b>Mobile CASs</b>
<b>Yerevan</b>	1,084,181	400,000	369	100	1,023	3,700	0	0
<b>Warsaw</b>	1,789,620	778,165	435	100	2,322	243	2	5 vehicles, 40 locations
<b>Tirana</b>	906,166	338,000	373	87.9	507	0	0	0
<b>Vienna</b>	1,929,944	885,464	459	100	5,805	1,454	17 +4 +Central +48er Tandler	93 locations





# Benchmark Analysis

	Sanitary landfill	Incinerator	MBT MRF	Compost plant	CDW plant Inert landfill	Biogas plant	WEEE treatment plant	Waste sorting at source	Waste composition	Fee
<b>Yerevan</b>	No	No	No	No	No	No	No	Pilot	Yes	Low 80%
<b>Warsaw</b>	Yes	Yes extens	Yes	Yes	Yes	No	Yes	Yes	Yes	Changing 82.93%
<b>Tirana</b>	No	No	No	Yes	No	No	No	No	No	Low 92%
<b>Vienna</b>	Yes, 1	Yes, 4	Yes	Yes, 1	Yes, 1	Yes, 1	Yes, 1	Yes	Yes	High/ cover all costs 100%



Project co-funded by  
the European Union



***Thank you***