

Capital factsheet on separate collection

Note: This ‘Capital factsheet’ has been prepared within the EC study “**Assessment of separate collection schemes in the 28 capitals of the EU**”. The document represents the status-quo of the EU Member States capitals in May2015. The information included in this document has been elaborated for all 28 EU-capitals based on expert interviews with various stakeholders on capital level, e.g. capital administrations, waste management operators, associations etc. as well as further publically available reports, statistics and websites. All information is cited in the factsheet and a complete list of information sources including the interviews held can be found at the end of this document.

Ljubljana	Slovenia
<p>SUMMARY: From 2011 on Ljubljana has invested in the modernisation of the waste management infrastructure leading to the separate collection rate of 60% on total municipal waste generation and a coverage of almost 100%. The separate collection system is effective for paper and glass, however improvement in the collection of plastic and metal could be achieved. Plastic and metal is collected door-to-door collection co-mingled whereas paper is collected in a separate bin. The capital uses a PAYT charge that is included in residual waste collection fees as source of funding.</p>	
1 Capital general data	
City population (inhabitants)	309 261 [8]
City population (inhabitants) covered by the collection scheme for municipal waste	307 446 (99 %) [5]
City area (km ²)	275 km ² [5]
City density (persons/km ²)	1125 inhabitants /km ² [5]
City climate (mediterranean, continental, oceanic, nordic; relevant for bio-waste collection)	Continental [2]
2. Capital waste data	
Total (municipal) waste generation (t in indicated year)	98 410 t (2014) [6]
Total (municipal) waste generation (kg/cap)	320 kg /cap (2014) [6]
Total separate collection (kg/cap) & (% of generation)	190 kg /cap & 60 %
Percentage breakdown of total collection for separate collection by fraction	29,4 % paper, glass, packaging ¹ (28 957 t) <ul style="list-style-type: none"> • 42 % packaging (12 178 t) • 40,9 % paper (11 839 t) • 17,1 % glass (4 940 t) 22,8 % bio-waste (22 441 t) 47,8 % other (rest of waste, hazardous waste, bulky waste)
3. Description of overall separate collection systems operating in capital	
<p>Public company Snaga (Snaga, d. o. o.; www.snaga.si; www.mojiodpadki.si; www.ponovnauporaba.si) is the biggest waste management company in Slovenia and it is responsible for waste collection in Ljubljana and nine surrounding municipalities. Packaging, paper and glass packaging as well as bio-waste are collected door-to-door and/or from bring points. There are dedicated black containers/bins for residual waste (mixed municipal waste) covered by door-to-door collection. Hazardous household waste, WEEE and bulky waste can be disposed free of charge at bring points or civic amenity centres. [1] [5]</p> <p>Paper and cardboard [1] [5]</p>	

¹ Packaging includes: beverage bottles and food, bottle cleaners and detergents, beverage cans, AL-FE cans, composite packaging for milk, juice, etc., plastic bags and pots, cosmetic products plastic packaging, packaging for CDs and DVDs, plastic and aluminium foil, which are wrapped products, packaging Styrofoam from bins at households and at ecological collection sites (eco islands).

- Separate door-to-door collection for waste paper (newspapers, magazines, stationary) and cardboard from individual households and buildings in bins with blue lid: 16 728 240 litre containers and 546 1 100 litre containers;
- Bring points (eco-islands): 2 628 bring points around the city consisting of three colour-coded 1 100-litre containers for paper, glass and packaging for separate collection
- Since 2008 Ljubljana initiated replacing containers in the city centre with underground collection points and thus rationalise waste management and improving city appearance: 51 collection points (29 further planned)
- Civic amenity centres: two of these centres (recycling yards) in Ljubljana

Glass [1] [5]

- Separate door-to-door collection for glass packaging from individual households in bins with green lid;
- Bring points (eco-islands): 2 628 collection points around the city, consisting of three colour-coded 1 100-litre containers for all paper, glass and packaging for separate collection
- Since 2008 Ljubljana initiated replacing containers in the city centre with underground collection points and thus rationalise waste management and improving city appearance: 51 collection points (29 further planned)
- Civic amenity centres: two of these centres (recycling yards) in Ljubljana

Packaging [1] [5]

- Separate door-to-door co-mingled collection: 28 503 bins with yellow lid at 25 942 pick-up points
- Bring points (eco-islands): 2 628 collection points around the city, consisting of three colour-coded 1 100-litre containers for all paper, glass and packaging for separate collection
- Since 2008 Ljubljana initiated replacing containers in the city centre with underground collection points and thus rationalise waste management and improving city appearance: 51 collection points (29 further planned)
- Civic amenity centres: two of these centres (recycling yards) in Ljubljana

Bio-waste [1] [5]

- Separate door-to-door collection for bio-waste: waste is collected in 19 936 brown containers at 15 000 pick-up points collection centres
- Civic amenity centres: two of these centres (recycling yards) in Ljubljana

Annual Running Costs [5] [6]:

- 8 860 000 € (door-to-door system including residual waste and waste from bring points)
- 98.4 €/t (door-to-door system including residual waste and waste from bring points):
 - 64.8 €/t residual waste
 - 200.3 €/t packaging waste
 - 171.3 €/t paper

Setup costs [5] [6]:

- 421 291 € (door-to-door system including residual waste and waste from bring points)
- 6.11 €/t (door to door system including residual waste and waste from bring points)
- 1 362 €/cap

Coverage:

- 82 % of households with door-to-door separate collection for bio-waste [5]
- 99 % of households with door-to-door collection for residual municipal waste (one black bin/container) and packaging (container with yellow lid) [5]
- collection of glass and paper is ensured by bring points (eco-islands) on public, municipal ground –intended for all users who wish to deposit separately collected waste, not only those living in the vicinity [5]

4. Elements of the collection system	
MUNICIPALITIES OR THEIR CONTRACTORS	
 Door-to-door collection of source separated waste	
Fractions collected	Bio-waste, Paper and cardboard
Collection frequency	<p>Bio-waste: Weekly (high-rise housing area and individual housing area) Bi-weekly (individual housing areas) from December to February Daily: underground collection units for bio-waste in the city centre</p> <p>Paper and cardboard: Weekly (high-rise housing area and bring points in those areas) Every three weeks (individual housing areas and bring points in those areas)</p>
Coverage of collection	<p>Bio-waste: 82% of households covered with door-to-door separate collection [5] 18 % of households compost their bio waste [5]</p> <p>Paper and cardboard: Door-to-door collection & bring points: 100 % of households [5]</p>
Annual collected quantities	<p>Bio-waste: 22 441 t [5] [6] 73 kg/cap [5] [6]</p> <p>Paper and cardboard: 11 839 t [5] 38 kg/cap [5]</p>
Setup costs	<p>Bio-waste: 76 091 € [5] 3.27 €/t [5] 0.246 €/cap (all inhabitants) [5]</p> <p>Paper and cardboard: 184 500 € (bring points: packaging waste + paper + glass) [5] 6.98 €/t (bring points: packaging waste + paper + glass) [5]</p>
Running costs	<p>Bio-waste: 1 899 913 € [5] [6] 81.6 €/t [5] [6]</p> <p>Paper and cardboard: 171.3 €/t [5]</p>
Source of funding	<p>Bio-waste: Pay as you throw charge (PAYT)</p> <p>Paper and cardboard: PAYT charge is included in residual waste collection fees [5]</p>
Cost to consumer	<p>Bio-waste: Payments of bio waste treatment depend on the size of containers for bio waste (80L container 0.68 €; 120L container 1.02 €; 240L container 2.03 €) multiplied with the monthly average frequency of emptying of the container. [5] [6]:</p>

	<p>Meanwhile fee for depositing bio-waste in underground collection units is charged by card (one disposal costs 0.085 €) [5] [6]</p> <p>Paper and cardboard:</p> <p>Fees for separate waste collection are included in residual waste collection fees therefore customers do not pay additional or specific fees for collection of paper, packaging or glass [5]</p>
 Door-to-door collection of co-mingled recyclables	
Fractions collected together in one bin	Packaging waste (plastic and metal fractions) [5]
Collection frequency	Weekly (high-rise housing area and bring points in those areas) Every three weeks (individual housing areas and bring points in those areas)
Coverage of collection	99 % of all residents of Ljubljana (households + businesses) [5]
Annual collected quantities	All (plastic and metallic) packaging (without glass, paper): 12 178 t & 39.6 kg/cap [5]
Setup costs	421 291 € (door-to-door system including residual waste and waste from bring points, without glass) [5] 6.11 €/t [5] 6.98 €/t (packaging waste+paper+glass)/t [5]
Running costs	8 550 000 € (door-to-door system including residual waste and waste from bring points) [5] [6] 200.3 €/t packaging waste [5] [6]
Source of funding	Pay as you throw charge that is included in residual waste collection fees [5] Fees for separate waste collection are included in residual waste collection fees therefore customers do not pay additional or specific fees for collection of paper, packaging or glass [5]
Cost to consumer (annual)	Total cost to consumer for waste collection system: 7 347 860 €; 1.98 €/cap Total cost to consumer for waste collection system: 2 896 000 €/business 7.9 €/household or business/month 2.98 €/cap/month (treatment and disposal included) [5] [6]
 Bring points	
Fractions collected	Paper, glass, packaging (plastic and metal)
Number of collection points	<ul style="list-style-type: none"> • 2 628 bring points (eco-islands) with 7 875 containers for separate collection - consisting of three colour-coded 1 100-litre containers for paper and cardboard, glass and packaging [5] • Single bring point serves 117 inhabitants [5] • 855 (per 100 000 inhabitants) [5]
Collected quantities ²	Paper: 11 839 t & 38,5 kg/cap [5]
	Glass: 4 940 t & 16,06 kg/cap [5]
	Packaging: 12 178 t & 39,6 kg/cap [5]
Setup costs	1 000 €/bring point; 55 €/cap (the costs are approximate) [5] [6]

² Collected quantities of separately collected waste include quantities from door to door system and quantities from ecological collection sites as Snaga doesn't register waste from those two systems separately.

Running costs	Glass fraction ³ : 308 949 €; 69 €/t; 112 €/year/bring point; 4.3 €/collection point; 1.05 €/year/cap [5]
Source of funding	Snaga provides appropriate infrastructure; costumer's payment of waste disposal at bring points is included in residual waste collection fees i.e. monthly payment of Snaga's invoices [5]
Cost to consumer	Snaga does not have separate statistics for bring points as the quantities and also costs are included in door-to-door system [5]
 Bring-in Civic Amenity sites – Collection centres	
Fractions collected	Paper, Glass, Packaging, hazardous waste, WEEE, bulky waste, scrap metals, textiles [5]
Number of sites	2 bring-in civic amenity sites (collection centres) in Ljubljana – Collection centre Barje and Collection centre Povšetova (Snaga overall has 8 bring-in civic amenity sites in 10 municipalities) [5] 0.65 (per 100 000 inhabitants) [5]
Collected quantities	Paper: 837 t & 2,72kg/cap [5]
	Glass: 147 t & 0,48 kg/cap [5]
	Plastic: 299 t & 0,98 kg/cap [5]
	Metal: 642 t & 2,1 kg/cap [5]
	Bio-waste: 1 215 t & 3.95 kg/cap (garden waste) [5]
Setup costs	12 200 €; 6 100 €/civic amenity site [5]
Running costs	1 031 258 €; 515 629 €/civic amenity site; 3.33 €/cap [5]
Source of funding	Costumer's payment of waste disposal in collection centres is included in residual waste collection fees i.e. monthly payment of Snaga's invoices [5]
Cost to consumer	1 043 458 € [5]
PRODUCERS OR THEIR AGENTS	
 EPR scheme for packaging waste	
Products covered	Packaging waste (paper, plastic and metal) [7] Returnable glass packaging - voluntary system by retailers [5] [5] And also: <ul style="list-style-type: none"> • car tires (collected at civic amenity sites without payment or refund) • waste candles (collected at civic amenity sites without payment or refund) • phytopharmaceutical products (collected at civic amenity sites without payment or refund) • WEEE (collected at civic amenity without payment or refund) • batteries (collected at civic amenity sites without payment or refund) • vehicles (completely separate system)
Quantity covered by system (in t)	2011: 172 644 t ⁴ [7] <ul style="list-style-type: none"> • paper and cardboard: 82 226 t • plastic: 44 729 t • glass: 31 146 t • metals: 15 043 t

³ [5] Costs for packaging and paper are included in door-to-door system

⁴ Deducted from data available in [7]

Quantity collected by system (in t)	Collected through Snaga system in Ljubljana: 18 700 t (plastic, paper and glass packaging) [5]
Funding mechanism	Customers pay for waste collection: separate waste door-to-door collection for packaging waste is included in fees for residual waste collection; Producers fee covers the processing of collected waste [5]
Consumer cost	Not available

BARRIERS TO IMPLEMENT SEPARATE COLLECTION

- Need for further optimisation of waste collection to ensure achievement of environmental objectives on separate collection of waste set by legislation – from October 2011 until end of 2013 Snaga implemented a project aiming to align its collection operations to the new amended ordinance defining municipal waste collection [4]
- Need to increase customer satisfaction and thus participation in the waste management collection system. [4]
- Further infrastructure development and modernisation of collection infrastructure e.g. underground collection points requires additional funds that will need to be ensured.
- Upgrade of the Regional Centre for Waste Management Ljubljana (RCERO Ljubljana) will contribute to improvement of Ljubljana waste collection operations from the standpoint of the possibility of discarding several fractions at the same location, mainly by optimizing and adjusting the transportation vehicles also leading to decreasing of running costs.

ADDITIONAL FINDINGS

- Ljubljana as an example of good practice: Ljubljana is investing in modern waste management infrastructure - from 2011 51 underground collection points replacing bins (from households and from ecological collection sites) were set up including investment of €4 806 024; for completion of this project 75 additional locations are planned with the investment expected to be additional €7 972 000 [1]
- Mobile collection points for household and commercial sector (producer, trade and service activities) created in 2012: household hazardous waste, WEEE, waste batteries, edible oils at 18 locations collecting waste according to a predetermined timetable and bringing waste to civic amenity sites (collection centres) collected almost 140 t of hazardous household waste [3]
- Ljubljana public waste management company Snaga d.o.o. has very proactive approach towards improvements in their waste data collection and processing system. They will be looking forward to final findings of this project and are opened to align their waste data management system with EU common practices [5]

5. Materials, Quantities and costs

SUMMARY OF COLLECTION SYSTEMS IN PLACE

Collected waste in 2014 (t) [1]	Paper	Glass	Plastic	Metal	Bio-waste	City Coverage
Door-to-door + bring points	11 839 t				22 441 t	100% of total households collects paper (bins and bring points) 82% of total households collects bio-waste with bins
Door-to-door co-mingled + bring points			12 178 t			99% of total households
Bring points		4 940 t				2 628 855 per 100 000 inhabitants
Civic amenities	837 t	147 t	299 t	642 t	1215 t	2 in Ljubljana (8 all together)

						0.65 per 100 000 inhabitants
Total	12 676 t	5 087 t	13 119 t		23 656 t	
Producer / Retailer take-back						

SUMMARY OF COSTS FOR SEPARATE COLLECTION SYSTEMS IN PLACE (setup costs should be total, running costs annual)

Costs (€) [5] [6]	Authorities / waste management companies		Consumer costs	
	Setup (€)	Running (€/year)	Funding type	Amount (€)
Door-to-door	323 000	5 932 000	PAYT charge	Not available
Co-mingled	184 000	2 619 000	PAYT charge	Not available
Bring points (only glass)	Included in door to door	2 336 969	Not available	Not available
Civic amenities	12 200	1 031 000	Not available	Not available
Total	512 000	9 891 000	Customers payment for services	10 410 200
Producer / Retailer take-back	Not available	Not available	Not available	Not available

6. Recycling and losses

RECYCLING OF THE COLLECTED WASTE⁵

Recycled (t) [5] [1]	Paper	Glass	Plastic + Metal	Bio-waste	Total
Generated [5]	15 062	5 812	25 374	32 624	78 872
Collected [1]	12 676 t	5 087 t	13 119 t	23 656 t	12 676 t
Recycled nationally	Not available. We assume that 99 % of paper, metal and bio waste is recycled nationally meanwhile 50 % of glass and plastic is recycled in Slovenia. [5] Paper and bio-waste is recycled in Slovenia, glass and packaging partially in Slovenia and partially abroad. [5]				
Exported for recycling	We do not have data required. We assume that 50 % of glass and plastic is recycled in abroad. [5] Paper and bio-waste is recycled in Slovenia, glass and packaging partially in Slovenia partially abroad. [5]				
Rejected	Not available	Not available	Not available	Not available	Not available

⁵ Data of waste generation per waste stream have been calculated on the basis of residual waste sorting analysis if data was not directly available. Based on the composition of residual waste (% of each waste fraction) and its total weight amounts per waste fraction can be calculated.

References

- [1] ACR +Ljubljana Factsheet v3, September 2014, unpublished
- [2] Government Communication Office, Official gateway to the information on Slovenia, <http://www.slovenia.si/si/slovenia/country/climate/facts-about-climate/>, accessed March 2015
- [3] Ljubljana public waste management company Snaga d.o.o. website, <http://www.snaga.si/>, accessed in March 2015
- [4] Ljubljana public waste management company Snaga Annual reports, <http://www.snaga.si/o-druzbi/letno-porocilo>, accessed March 2015
- [5] Ljubljana public waste management company Snaga d.o.o., additional information Snaga's internal statistics for 2014, data verification and clarification received from Mr. Igor Petek, Deputy director, email exchange and telephone calls, April 2015
- [6] Ljubljana public waste management company Snaga d.o.o., provided up-to-date data from unpublished Snaga's municipal waste management programme for 2015 (Program ravnanja s komunalnimi odpadki 2015), received from Mr. Igor Petek, Deputy director, email exchange and telephone calls, April 2015
- [7] Slovenian Environment Agency packaging waste annual report for 2011, http://kazalci.arso.gov.si/?data=indicator&ind_id=581, accessed April 2015
- [8] Ministry of the Interior of the Republic of Slovenia, 2014 Report on Migration, international protection and integration, http://www.mnz.gov.si/fileadmin/mnz.gov.si/pageuploads/DUNZMN_2013/DUNZMN_2014/DUNZMN_2015/Statisticno_porocilo_-_ANG_2014.pdf, accessed April 2015