

8. Waste

Refer to Section 2.8 of the Guidance Note

8A. Present Situation

Please complete the following table providing the most recent data that is available for your city. If city data is not available, please provide a brief explanation and use regional or national data where available. If no data is available, please state this and indicate the reason why.

To ensure a correct interpretation of the concepts used in sections 8A to 8C ('municipal' waste, 'biowaste', 'packaging waste' etc.) it is important to refer to the explanation in the Guidance Note.

Table 1: Benchmarking Data - Waste

Indicator	Type of Data (City/Regional/National)	Unit	Year of Data	
Amount of municipal waste generated per capita	480 (city data)	kg/capita/year	2018	
Percentage of municipal waste that is recycled (including through composting and digestion of biowaste)	36 (city data)	%	2018	
Percentage of municipal biowaste that is recycled (through composting and digestion)	56 (city data)	%	2018	
Percentage of municipal waste sent for energy recovery (R1 code)	4 (city data)	%	2018	
Percentage of municipal waste sent to landfill (or other forms of disposal (D codes))	60 (city data)	%	2018	
Percentage of municipal waste that is collected separately	39 (city data)	%	2018	
Percentage of recycled packaging waste	47 (city data)	%	2018	
Percentage of packaging waste that is collected separately	56 (city data)	%	2018	
Established collection systems for hazardous waste:	Type of Data (City/Regional/National)	Yes/No	Unit	Year of Data
i) WEEE	0.08 city data		kg/capita/year	2018
ii) Batteries	0.07 city data		kg/capita/year	2018
iii) Waste oils	0.05 city data		kg/capita/year	2018
iv) Household chemicals	0.03 city data		kg/capita/year	2018
v) Asbestos	2.5 regional counted data		kg/capita/year	2018
vi) Construction & demolition waste	153 information of the only inert waste landfill of Pécs		kg/capita/year	2018
vii) Unused pharmaceuticals	0.01 city data		kg/capita/year	2018

Describe the present situation in relation to waste production and management by providing details about each of the following areas:

1. Waste management strategies or plans in place;
2. Waste prevention strategies or plans in place including possible specific measures to reduce food waste, plastic waste and other waste materials;
3. Reuse and/or repair initiatives or partnerships currently in the city (include examples describing the types and quantities of materials reused);
4. Current waste collection system including the types of waste collected separately (both covering dry recyclables such as paper, plastics, glass metals and biowaste, as well as hazardous waste) and the extent of roll-out (% coverage) of the systems as well as clean-up initiatives;
5. Sorting, recycling and other treatment of separately collected and residual waste as well as any home/community composting practices;
6. Application of the 'polluter pays' principle and economic instruments, including through differentiated tariffs ('Pay as You Throw' (PAYT) initiatives) and landfill and incineration charges.

(max. 800 words and five graphics, images or tables)

Directive 2008/98/EC of the European Parliament and of the Council (hereinafter: WMD) requires the competent authorities of the Member States to prepare one or more waste management plans. Hungary has fulfilled these conditions by drawing up the **National Waste Management Plan**.

In 2004, Pécs declared the **Eco-City Eco-Region Strategy**, the city's relationship to be maintained with its natural environment. The strategy was updated in 2012. The **settlement development concept** of Pécs was drawn up in 2014 as defined by the strategy, and its overall objectives are to preserve the balance of sustainability.

The specific investments resulting in the development of the urban environment respond to the tasks identified in the strategy. These criteria materialised in the **waste management plan** of the Mecsek-Dráva Waste Management Project.

In the first round, Pécs required its municipally owned public service providers to re-use the materials and equipment they manage, as long and as efficient as possible.

Waste	Method of Recovery	Recovery result in 2018
Non-standard playground equipment	From dismantled public playground equipment, public waste bins are made.	600 new public waste collection bins
Life-threatening 25-storey IMS structured high-rise building	After the demolition of the building, its concrete elements were used in the base course of minor roads and sites.	18,500 tons of recycled concrete
Pavement and paving stones removed during reconstructions of public premises	Stored in the municipal stone bank, the required paving material can be recycled at any time	50m ²
Humus layer	Transported to the municipal land bank, recyclable	1,190m ³

removed before constructions	at any time	
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Table 2: Reused materials and equipment in the urban management of Pécs

In addition to municipal companies, civil organisations also take part in the recycling of special product groups; Pécs helps them through the supply of raw materials and regulatory tools.

Name of Foundation	Waste fraction	Activities
Retextil Foundation	Textile	Recycling of old textiles
Book Rescue Foundation	Books	Selection of 10,000 volumes per day

Table 3: Re-use of waste by civil organisations in Pécs



Figure 1: Products made from recycled materials by civil organisations

The coverage of the urban selective collection in the 60,000 households of Pécs is already 100%. The former urban initiatives and the Mecsek-Dráva Programme created the possibility of kerbside collection in 17,000 households of detached houses, and 816 owner-occupied blocks in housing estates in Pécs received selective containers. In order to reach 100% coverage, a decision on the purchase of 10,000 additional containers was made in 2019.

The containers are emptied at the 160 collector points.

The collection of each fraction is possible on working days in the 3 civic amenity sites of Pécs, and there are kerbside collections of bulky waste in spring and autumn.

	2014	2015	2016	2017	2018
Paper (t)	8,298.0	8,043.7	4,855.4	4,560.4	5,088.5
Plastic (t)	2,241.7	2,374.5	1,423.5	1,558.9	1,632.8
Glass (t)	499.7	1,577.0	1,077.2	1,086.5	602.0
Metal (Fe) (t)	95.4	119.4	29.6	130.8	189.8
Nfe (t)	19.7	38.8	14.6	68.8	129.8
Wood (t)	25.8	29.7	41.2	77.9	154.9
Composite (t)	130.3	234.0	106.8	93.8	51.5
Mixed packaging (t)	0	1058.86	2177.88	2318.96	2665.4
Hazardous (t)	65.8	28.5	25.0	32.2	33.8
Garden waste (t)	4,752.4	5,805.9	8,234.1	7,080.9	7,072.4
Food	720	725	0	0	0
Bulky waste (t)	1,061.8	1,405.9	1,914.5	2,280.3	2,790.4
Other (t)	2,549.6	2,877.4	3,115.4	3,305.6	3,357.4
Total selective (t)	20,460.1	24,318.1	23,115.3	22,594.9	23,768.7

Table 4: Quantities of selective waste collection per fraction in Pécs (2014-2018)

All waste collected in Pécs is placed at a central site on the southern outskirts of the city. The capacity of the Pécs-Kökény Waste Management Centre:

- Mechanical Biological Waste Treatment (MBT) 150,000 t/year max. capacity
- Material recycling facility 30,000 t/year max. capacity
- Green waste compost facility 10,000 t/year max. capacity
- Landfill site 850,000m³ full capacity

With the help of the MBT plant, bio-waste and metal are separated from non-selectively collected waste, and additional fuel (RDF fraction) used for energy recovery is separated and later used in cement factories.

In the areas of the city where there is no separate selective green waste collection, the Municipality has provided compost bins for the households.

In the context of the invitation to the application “Légy Pécs Jövője” (Be the Future of Pécs) launched by the city, institutions may annually apply for equipment and instruments to the implementation of institutional selection.



Figure 2: Construction of the Kökény Waste Management Centre

Pécs used a positive motivational solution for the introduction of selective waste collection. Due to the separation of selective fractions, the extent of unsorted municipal waste in households was reduced, allowing a switch to smaller containers, i.e. the provision of cheaper public services. In parallel with the increase of the service level, the city was able to introduce increasingly stringent regulations in the fields of sanitation and waste collection. The incineration of garden waste has been forbidden in Pécs since 2019.

8B. Past Performance

Describe the measures implemented over the last five to ten years for improving waste management and include details on the following:

1. Past trends in the amount of municipal and packaging waste produced per capita in the city;
2. Past measures which have promoted waste prevention and recycling;
3. Trends in municipal and packaging waste treatment in the city including changes in recycling (including composting and digestion), recovery and disposal rates over the previous 5-10 years;
4. Evolution of separate collection systems in the city;
5. The collection market in terms of how it has developed and the role of municipal (public) authorities and/or private waste companies;
6. Type and scale of infrastructure put in place to treat municipal and packaging waste distinguishing between dry recyclables, biowaste and residual waste, and progress to date;
7. Use of instruments (economic or regulatory) applied in the city to manage municipal and packaging wastes.

(max. 1,000 words and five graphics, images or tables)

In recent years, economic development and creating jobs has been a key issue to the City of Pécs to slow down the steady decrease in the population that has been ongoing for decades. The new investments have made a noticeable increase in the amount of industrial waste.

	2014	2015	2016	2017	2018
Municipal waste (t)	39,308.6	40,908.3	44,353.9	46,310.4	46,484.3
Industrial waste (t)	16,299.6	21,986.2	17,512.9	24,190.1	22,732.1
Total waste (t)	55,608.3	62,894.4	61,866.9	70,500.5	69,216.4
Population (person)	146,581	145,985	145,347	144,675	144,188
Municipal waste (kg/person)	268.2	280.2	305.2	320.1	322.4
Urban waste (kg/person)	379.4	430.8	425.6	487.3	480.0

Table 4: Information on the waste production in Pécs (2014-2018)

According to the 2014 Settlement Development Concept of Pécs, the overall aim of the city is to become a regional centre for sustainable development. For this purpose, the Municipality conducted awareness-raising in addition to physical investments.

In Pécs, the rate of recycling of packaging waste fluctuated around 50% in the last five years. The temporary decline occurring after the state re-regulation of the sector in 2016 has recently stopped, and today there is an increase in the recycled quantity and its rate.

	2014	2015	2016	2017	2018
Packaging in Hungary (t)	1,006,970	1,064,862	1,075,113	1,198,177	1,228,293
Estimated packaging in Pécs (t)	14,943.5	15,773.2	15,895.9	17,692.8	18,111.9
Recycled packaging (t)	8,361.4	10,628.7	8,037.7	8,025.0	8,524.0
Recovery rate (%)	56.0%	67.4%	50.6%	45.4%	47.1%

Table 5: The main indicators of waste generation of packaging material in Pécs on annual basis (2014-2018)

About 70,000 tonnes of waste is generated annually in Pécs, two-thirds of which comes from citizens and one-third from the industry. One-third of the total waste quantity is already collected selectively; a small part of it is

recovered by the city, but most of it is utilised by market participants.

	2014	2015	2016	2017	2018
Collected waste (t)	55,608.3	62,894.4	61,866.9	70,500.5	69,216.4
Selectively collected (t)	20,460.1	24,318.1	23,115.3	22,594.9	23,768.7
Recycled (t)	19,505.2	23,590.0	21,964.6	20,849.9	21,657.3
Energetic exploitation (t)	2,837.9	17,261.5	9,172.6	6,124.4	3,126.8
Total recovery (t)	22,343.1	40,851.4	31,137.2	26,974.4	24,784.0

Table 6: The main indicators of waste recycling in Pécs on annual basis (2014-2018)

In terms of the city's own recovery system, the selectively collected green waste is the most significant. In the framework of the Mecsek-Dráva Programme, a compost facility with a capacity of 10,000 tonnes was built in Pécs to process the collected green waste.

	2014	2015	2016	2017	2018
Bio-waste generated (t)	11,784	13,702	14,849	13,648	13,931
Composted (t)	5,290	6,530	8,234	7,081	7,072
Biostabilised (t)	1,409	6,848	6,326	6,249	6,516
Deposited bio (t)	5,085	324	289	318	342

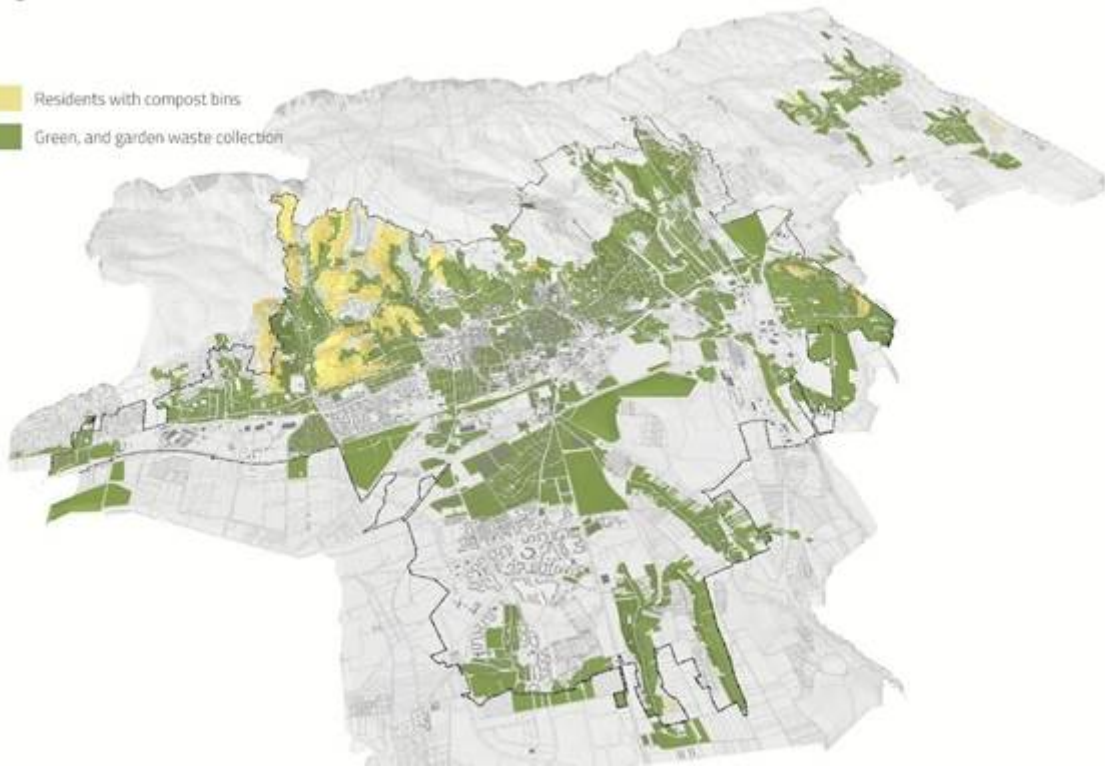
Table 7: The main indicators of green waste utilization in Pécs (2014-2018)

The final product resulting from composting is used by the city of Pécs in its own forest park and urban tree nursery, and the residue is sold.

Pécs was among the first to launch a selective waste collection system in Hungary in 1997. The kerbside collection of waste was nearly doubled from the initial 3,500 households to 5,653 households by 2012. An amenity site was built on the eastern outskirts of the city for special fractions of waste e.g. bulky waste, construction scrap, WEEE, etc. Following the initial growth rate, the Municipality provides selective kerbside collection covering today the whole area of the Pécs.

Organic waste

- Residents with compost bins
- Green, and garden waste collection



Map 1: The organic waste collection system in Pécs

Currently 17,000 households use private selective containers that are 290-litre paper-plastic-metal containers and 80-litre green waste containers in addition to municipal waste containers. In the housing estates of Pécs, 716 selective containers with a capacity of 1,100 litres each are placed complementary to the municipal waste containers. Paper-plastic-metal fraction is collected in these containers. In the areas not covered by kerbside collection, 189 containers provide the possibility of separate waste collection.



Figure 3: Items of separate waste collection infrastructure in Pécs acquired in 2019

In order to create a country-wide strategic public service of the same standard and accounting scheme in Hungary, the waste collection and management sector was restructured in 2016, and the National Coordination of Waste Management and Asset Management Company (NHKV) was established. Legally the restructuring took place in 2017, but the domestic system of solid waste management is expected to be fully transformed by 2020. The main reason for the temporary decline in the selective collection is that the collected waste can be sold exclusively through the state-owned NKHV. The city-owned waste management companies are no longer authorised to sell

waste because of the legislation. It had repercussions mostly on the quantity of collected plastic and paper fractions from 2016 on.

As a result of the transformation, the temporary decline in selective collection has already shown some increase in some waste streams, e.g. packaging material.

Being the regional centre, the role and responsibilities of Pécs extend beyond its own administrative boundaries. Based on the experience of its own waste management company, the city, together with 312 surrounding small communities, have established a **regional waste management and recovery system** for the management of municipal and packaging waste in the southern Transdanubian region.

The **Material Recycling Facility** takes in wastes from residential, public and institutional selective collection, as well as selective wastes from amenity sites.

The **Mechanical-biological Waste Treatment Plant** is suited for the reception of mixed municipal solid waste, bulky waste and other non-hazardous wastes. The incoming waste can be broken down mechanically into several fractions and the material prepared in this way can be recovered differently according to type, and the quantity of residual waste disposed can be minimised.

The **Compost Facility** is destined for the reception and utilisation of selectively collected green waste.

The capacity of each operating unit is in Section 1.5.

Furthermore, 10,000 composting bins were distributed among the inhabitants of the municipalities within the Mecsek-Dráva Programme in order to reduce the environmental load caused by waste transport.



Figure 4: The Mechanical-biological Waste Treatment Plant of Kökény

The establishment of a short supply chain of ingredients for mass caterers, the renovation of the local markets and the market hall by the Municipality, the promotion of tap-water, its consumption in public institutions and its distribution under extreme weather conditions, and the continuous increase of the number of drinking fountains in public premises serve the collective aim of having less packaging waste required for the daily operation of Pécs.

8C. Future Plans

Describe the future plans of the city in terms of progressing towards better waste management and the transition to a circular economy in a wider sense (i.e. maintaining the value of materials and resources within the system for as long as possible and closing material loops through activities such as green public procurement, reuse, repair, refurbishment etc.). Your response should address:

1. How your city is taking account of recently updated EU policy on waste management within the broader

policy framework of the Circular Economy including a description of the short and long term objectives and targets for the future management of waste and measures to ensure these are achieved and monitored;

2. Your city's approach to the future management of plastics (inter alia taking account of the EU Strategy for Plastics in relation to the Circular Economy) and the prevention of food waste;
3. Other specific initiatives to promote the transition to a circular economy in your city.

(max. 800 words and five graphics, images or tables)

The settlement development concept of Pécs has set the objective of sustainable development for the city by 2030. A city with sustainable development is a city capable of developing through internal motivations and sustaining itself; it can create and maintain positive revenue streams, manage external risks, flexibly adapt to changes, and operate essentially independently without the operating aids based on individual decisions, through the efficient exploitation of its internal resources.

The criterion for a settlement having successful circular economy is that its future developments are well-thought and show progress in the aspects of infrastructure, natural environment and economy. In the field of waste management, this will be achieved as follows:

1.) Waste generation

The elementary unit of mitigation of waste generation is the urban citizen with the right knowledge and responsibility. The main task of Pécs is to reach the development of its own citizens. In the field of waste management, this will be achieved through the trinity of understanding, motivation and obligation in order to ensure that Pécs becomes the city producing the most not-generated waste.

(This is the **social factor** of the development.)

2.) Waste collection

The greatest added value of the existing infrastructure system is that the selective collecting machines and superstructures operating in Pécs are locally designed and produced. This character must be preserved, developed and disseminated by bundling the local university and production capacity to facilitate the development of the local economy. This is where Cleantech Cluster can help through bringing together the actors in the field.

(This is the **infrastructural factor** of the development.)

3.) Waste management

Building on the experience of the Mecsek-Dráva Waste Management Programme and using its sample value, the objective is to establish similarly complex solutions, circular systems in the rest of the city management e.g. road management and maintenance, water management, operation of green areas.

(This is the **natural factor** of the future waste management developments.)

4.) Waste recovery

A local partnership network of small social employers and multinational industrial operators of the region is being established for the exploitation of the waste groups resulting from current sorting and selective collection that cannot be recovered by the Municipality.

(This is the **developmental factor** of the **economy** of the settlement.)

The waste management system of Pécs can process the entire range of plastic wastes generated in the city. At the same time, the fact that it's the easiest to manage waste that is not generated also applies to plastic. For this reason, Pécs essentially puts awareness-raising and prevention in the centre of its actions with the following measures:

1.) The suppression of plastics in the field of packaging

In the context of consumer habits, fewer packaging materials are required if local products are brought to the fore. In that sense, Pécs continues to develop the infrastructure of the local farmer markets on the popular squares of the city. The city endeavours to facilitate the access to drinking water in as many places as possible and promotes it in returnable bottled packaging sold at the catering places in Pécs, introduced on a pilot basis. With its own business properties, the city wishes to facilitate the already operating packaging-free businesses in Pécs to develop into a network.

2.) Omitting the use of disposable plastics in public services.

All municipally owned public service providers have introduced an electronic invoicing and administrative system facilitating significant savings in paper and plastic use. The development of an electronic ticketing system in the urban public transport is currently under preparation.

3.) Strategy as curriculum

The guidelines of the strategy adopted in 2018 have become an integral part of the education and awareness-raising activities of the green institutional network established with the help of the Municipality, on which independent programmes are built.

Using the relevant experience of the Mecsek-Dráva Waste Management Programme, Pécs has started the development of a similar system in three other areas of the city management.

- 1.) In water management (collection and utilisation of rainwater)
- 2.) In road maintenance (recycling of waste materials of road maintenance)
- 3.) In treatment of green areas (local utilisation of grass clippings)

Pécs aims to have an ecological footprint that equals that of a small town through using the potential of cutting back the significant amount of waste generated in the three areas.

Further steps are needed in the energy recovery of the generated otherwise non-recoverable wastes. The fact that two cement factories and a thermal power plant using solely renewable fuel operate within 35 km of Pécs provides for it good conditions. These customers with different raw material demand, using waste for their balanced energy purposes mean a long-term, stable market which has great potential for the recovery of certain waste fractions.

8D. References

List supporting documentation, adding links where possible. Further detail may be requested during the pre-selection phase. Documentation should not be forwarded at this stage.

(max. 400 words)

1. <https://www.pvfzrt.hu/hu/tanulmany/15/pecs-mjv-varosfejlesztési-koncepcio-2014-2030>
2. <http://www.okovaros-okoregio.hu/index.php/hu/letolt/category/2-rendeletek>
3. <http://www.okovaros-okoregio.hu/letoltes/%C3%96kov%C3%A1ros-%C3%96kor%C3%A9gi%C3%B3%20Program%202012.pdf>
4. <http://mecsekdrava.hu>
5. <https://new.delkom.hu/mecsek-drava-hulladegzaldalkodasi-program/>

6. <http://www.okovaros-okoregio.hu/index.php/hu/palyazatokuj>
7. <https://www.pecsma.hu/pecs-aktual/kedvezmenyesen-juthatnak-konyvekhez-pecsiek/>
8. <https://adjukossze.hu/szervezet/retextil-alapitvany-5241>
9. <https://eionet.kormany.hu/download/f/16/71000/Orszagos%20Hulladekgazdalkodasi%20Terv%202014-2020.pdf>
10. https://www.pvfzrt.hu/userfiles/dokumentumok/Kornyezetvedelmi_program_2011.pdf
11. <https://www.biokom.hu/lakossagi-hulladekudvarok-es-atrako-allomasok/>

Word Count Check

Please complete the below word count check for Indicator 8: Waste, Sections 8A, 8B and 8C.

As per the Guidance Note (Annex 2 of the Rules of Contest), the word count includes text in graphics/tables and the body of text. The word count excludes text in the original application form, captions and text in Table 1: Benchmarking Data - Waste.

Section	Number of words in graphics/tables	Number of words in body of text	Total number of words in graphics/tables and body of text	Max. words
8A	273	519	792	800
8B	182	804	986	1,000
8C		783	783	800