RECYCLABLES FROM THE MIXED WASTE

UNLOCKING POTENTIAL FOR MAXIMIZATION OF RECYCLING THROUGH SEPARATION OF MIXED WASTE FRACTIONS

INCREASED RECYCLING

Of packaging waste not separated through existing source separation infrastructure

REDUCED CO_{2e}

From recyclables recovered from mixed waste

REDUCED ETS cost & incineration tax

Related to less amounts of waste incinerated

Despite existing systems and infrastructure for source separation of consumer packaging waste, which the European citizens have access to, substantial amounts of recyclables are not correctly sorted and become part of mixed municipal waste.

With the objective to meet minimum collection targets and reduce climate impact, many entities managing municipal waste, have made an effort to separate recyclables from the mixed waste of the household waste.

The hereby fact sheet presents examples from a few locations in Europe and gives clear indication regarding enormous potential in recruiting additional volumes of valuable recyclables from mixed waste stream.

FEDERATION OF MUNICIPALITIES, SÖRAB, SWEDEN

SÖRAB represents population of 525000 citizens and has responsibility for collection of mixed municipal waste and treatment of waste in environmentally sound manner. In addition to source separation of packaging waste, SÖRAB has built and has been operating a central sorting plant from mixed municipal waste with the objective to increase recycling of materials and reduce climate impact from incineration.

ADDITIONAL RECYCLABLES RECOVERED FROM MIXED WASTE (2022-2023)

TOTAL AMOUNT OF MIXED MUNICIPAL WASTE 198000 t PER ANNUM

RECYCLABLES RECOVERED FROM MIXED WASTE: 18128 t = 9,19%

REDUCED CO_{2e}

from recyclables recovered from mixed waste

29438 ton

(2022-2023)

REDUCED ETS cost*

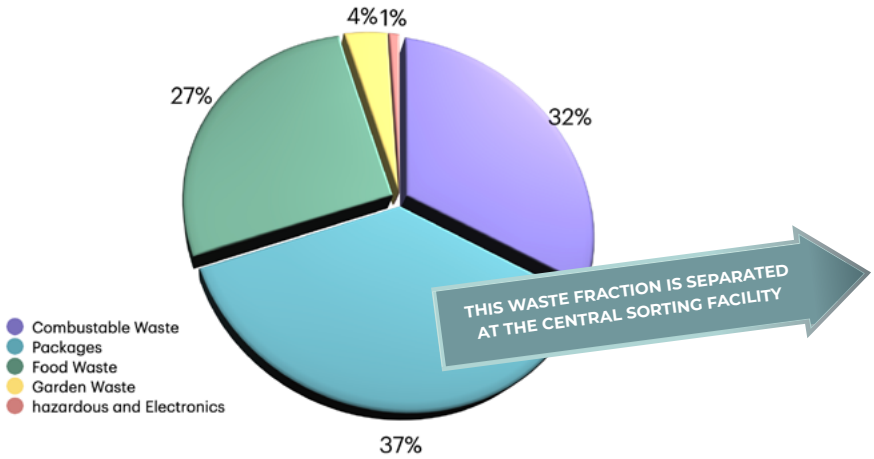
from recyclables recovered from mixed waste

2443354 €

(2022-2023)

HOUSEHOLD WASTE

30% of mixed waste contains unsorted packaging fractions



YEAR	INPUT	RECOVERED PLASTIC	RECOVERED METAL
2022	98000	7425	1739
2023	100000	7294	1670
TOTAL	198000	14719	3409
TOTAL % RECOVERED RECYCLABLES			9.19%

* Estaimation based on the ETS market price: 83 EURO/ tonne, Q2 2024 In addition to savings from ETS, SÖRAB saved 37362 EURO from the incineration tax

THE CITY OF GDAŃSK, POLAND

Total amount of municipal waste: 198162 t per annum (2023)
Total recycling & reuse rate[1]: 37,26%

ADDITIONAL RECYCLABLES RECOVERED FROM MIXED WASTE (2022-2023)

TOTAL AMOUNT OF MIXED MUNICIPAL WASTE AND MIXED RECYCLABLES FROM SOURCE SEPARATION[2]: 160498 t PER ANNUM

RECYCLABLES RECOVERED FROM MIXED WASTE: 16616 t = 10,35%

REDUCED CO_{2e}

from plastic recyclables recovered from mixed waste

15369 ton

(2023)

2023		
INPUT, TOTAL		**160498**
RECYCLABLES RECOVERED	**WASTE CODE**	
OUTPUT	15 01 01 CARDBOARD	4432,323
OUTPUT	15 01 02 TRANSPARENT FILM	204,868
OUTPUT	15 01 02 FILM, MIX	2376,453
OUTPUT	15 01 02 PET, TRANSPATERNT	1126,886
OUTPUT	15 01 02 PET GREEN	94,787
OUTPUT	15 01 02 PET BLUE	919,546
OUTPUT	15 01 02 PET MIX	614,075
OUTPUT	15 01 02 PS	67,348
OUTPUT	15 01 02 PP	1270,035
OUTPUT	15 01 02 HDPE	569,283
OUTPUT	15 01 02 TRAY	440,977
OUTPUT	15 01 04 (ALU) NON FERROUS	474,768
OUTPUT	15 01 04 STEEL	2120,277
OUTPUT	15 01 05 TETRAPACK	517,724
OUTPUT	15 01 07 GLASS FROM 200301	1386,961
OUTPUT	**SUM**	**16616,311**
	% RECOVERY	**10,35%**

[1] Treatment of biodegradable waste included. Source: Waste Management Report available at Oficjalny portal miasta Gdańska (www.gdansk.pl).
[2] The fraction of mixed recyclables includes as a principle plastic and metal packaging. Infomation above has been received from from the city of Gdansk, Department of Waste Management.

THE CITY OF CRACOW, POLAND

Waste management is managed by MPO Krakow enterprise. Infrastructure for source separation of packaging waste located curbside includes bins for paper, glass, mixed plastic and metal packaging.

In order to increase recycling rates, MPO Krakow has been recovering recyclables from mixed waste fractions (black container) since 2024.

ADDITIONAL RECYCLABLES RECOVERED FROM MIXED WASTE (2014-2023)

TOTAL AMOUNT OF RECYCLABLES FROM SOURCE SEPARATION AND FROM MIXED WASTE SORTING AMOUNTS TO 309278 t

REDUCED CO_{2e}

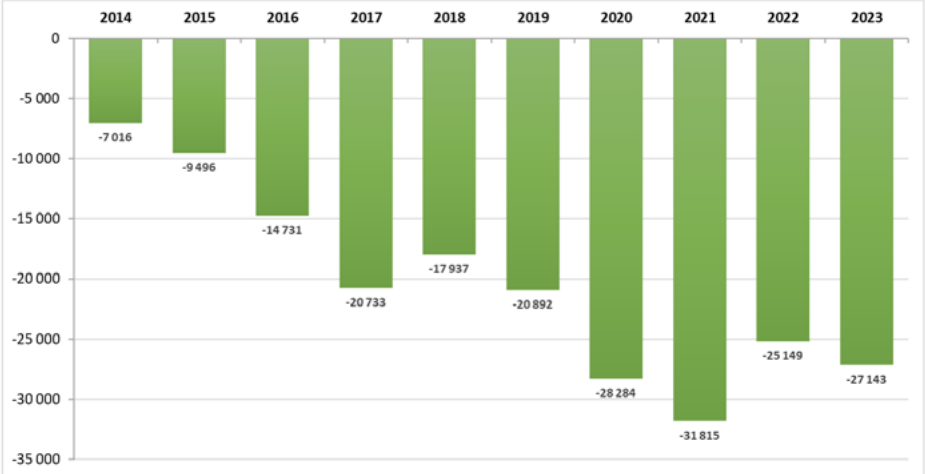
from recyclables recovered from mixed waste

36960 ton

(2014-2023)

RECYCLABLES RECOVERED FROM MIXED WASTE: 53770 t = 21% OF TOTAL AMOUNT OF SECONDARY RAW MATERIALS

REDUCTION OF CO_2 EMISSIONS FROM RECOVERED SECONDARY RAW MATERIALS IN CRACOW, 2014 - 2023 (MG)



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
papier	5 104,37	6 585,13	7 546,64	7 204,65	8 253,65	10 417,11	18 960,99	18 569,67	27 622,24	28 738,99
tworzywa sztuczne	8 825,06	9 372,39	9 198,45	10 214,08	10 614,64	13 373,22	16 013,57	16 698,05	17 852,11	16 617,08
metal	2 939,63	4 155,54	9 673,31	12 919,27	9 832,00	9 643,44	9 152,05	11 161,86	6 637,57	8 446,48
	978,28	1 950,61	1 950,11	5 598,17	5 055,06	7 299,75	12 856,05	14 942,91	7 879,04	8 048,90
zmniejszenie emisji CO_2	- 7 016,24	- 9 495,65	- 14 730,65	- 20 733,11	- 17 936,64	- 20 891,81	- 28 283,60	- 31 815,11	- 25 148,68	- 27 142,55

In Krakow, more than 176,000 tonnes of CO_2 emissions have been reduced by recycling raw materials sorted from all municipal waste since 2014.

CONCLUSIONS

The reference cases described in the hereby document confirm that additional separation of recyclables from the mixed waste fractions is already being implemented with the objective to increase amount of recyclables available for circular systems, increase recycling rates as well as to reduce climate impact of waste disposal.

While the recyclables from additional sorting become a desired input material for recycling, the lack of recognition of the auxiliary separation method through mixed waste sorting, leads to uneven economic level playing field between producers who utilize supplementary resources and municipalities/waste processing entities making effort to separate additional waste.

Because of the predicted growth of plastic packaging, limitations of source separation systems targeting lightweight packaging formats as well as potential to maximize yilds of separated recyclables, central sorting of mixed waste fraction becomes an important source of additional substrates for packaging circularity.