In partnership with:

Analysis of the composition of household waste and selectively collected organic waste in Wallonia Year 2017-2018

Synthesis

May 2019

Warning*: The** *purpose of this report is to present the results of the analysis of the composition of raw household waste and organic waste collected selectively* ***in Wallonia*. The data presented in this report may under no circumstances be used to determine the composition of waste at the level of municipalities or intermunicipal associations.*

RDC Environment SA

Av Gustave Demey 57
B-1160 Brussels (Belgium)

Tel. +32 (0)2 420 28 28 23
Fax: +32 (0)2 428 78 78 78Email

web: www.rdcenvironment.be
: rdc@rdcenvironment.be

I. Introduction

The new Walloon Waste-Resource Plan (PWD-R) adopted by the Walloon Government on 22 March 2018 constitutes both the prevention/reuse programme and the waste management plan covered by the revised EU Waste Framework Directive 2018/851 and the Walloon Waste Decree.

The expected results of the recurrent analyses of the composition of waste therefore contribute to the achievement of several objectives indicated in the PWD-R, whether in terms of monitoring and evaluation of the actions undertaken, prevention (awareness, education, etc.) or waste management (verification of sorting obligations, justification and development of new reuse or recovery channels, etc.).

This synthesis presents the results of the analysis of the composition of raw household waste and organic waste selectively collected in Wallonia over the period 2017-2018. The waste that has been analysed is:

- raw household waste (OMB);
- selectively collected organic waste (CS org).

Household waste from the tertiary sector (schools, offices, small businesses, liberal professions, etc.) is excluded from the scope of the study.

A new sampling plan has been defined compared to previous studies (2003, 2005 and 2010). The sample is composed of 35 municipalities divided into 22 strata.

Four measurement campaigns were carried out to determine the composition of raw household waste and organic waste collected selectively in Wallonia.

The total amount of waste collected during the various campaigns is more or less constant. In total, approximately 71.5 tonnes of OMB and 5 tonnes of CS orga were sorted:

- The coarse fraction (grain size greater than 100 mm) of the OMBs has been fully sorted;
- The average fraction (between 20 and 100 mm) of the OMBs was partially sorted, a quartage having been carried out in order to take 1/8th of the volume of this fraction for sorting. The remaining 7/8ths have not been sorted;
- Selectively collected organic waste has been fully sorted.

II. Composition of OMB waste for the whole of Wallonia

The table below shows the composition of the OMBs resulting from the results of the **extrapolation of the sample results to the scale of Wallonia, using the margin calibration method.**

Table II-1. Composition of OMBs (rounded value)

Waste categories (%)	Parameter		
	%	CV[1]	kg/inhab.
Organic compostable	41,0	15,0	56,8
Plastics	12,8	10,6	17,7
Sanitary textiles	8,6	27,1	11,9
Inert[2]	8,4	10,8	11,6
Paper & Cardboard	7,5	3,1	10,4
Fine (< 20 mm)	4,6	64,1	6,4
Textiles	3,8	18,1	5,3
Glass	3,6	6,2	5,0
Complexes[3]	3,0	5,8	4,2
Miscellaneous[4]	2,9	11,0	4,0
Metal	1,9	1,3	2,6
Special waste[5]	0,7	31,4	1,0
Non-compostable organic	0,7	40,8	1,0
Wood	0,3	16,3	0,4
Waste electrical and electronic equipment (WEEE) under the responsibility of RECUPEL	0,3	13,4	0,4

[1] coefficient of variation (%)

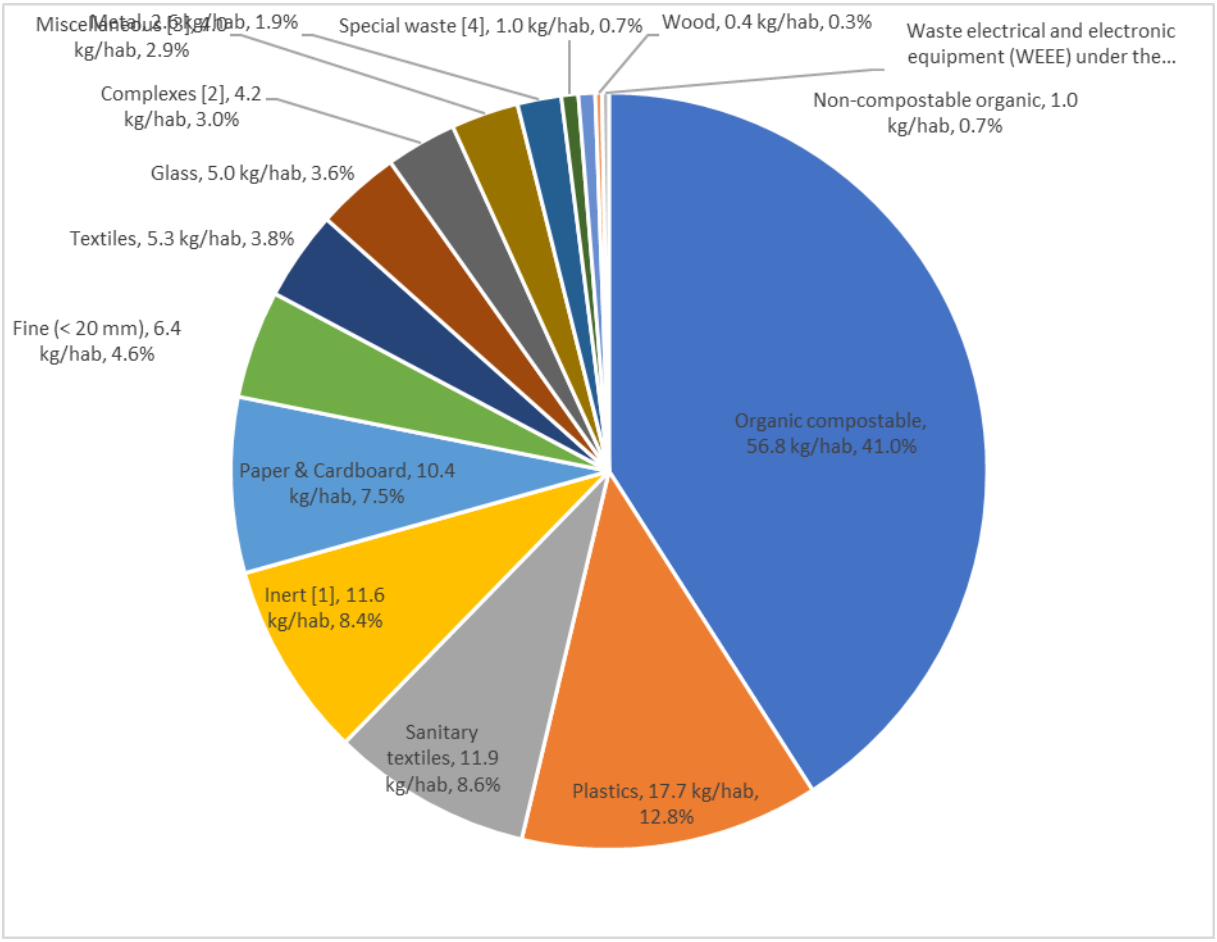
[2] Examples: small pet...

[3] Examples: beverage, chip packs

[4] Examples: vacuum cleaner

[5] Examples: medicines pesticide, oils and frying fats....

Figure II-1: Composition of OMBs



The main categories of waste that make up the OMBs in Wallonia are:

- Organic waste (41.7% of which 41.0% is compostable organic waste and 0.7% is non-compostable organic waste);
- Plastics (12.8%);
- Sanitary textiles (8.6%);
- Inert materials (8.4%) and more specifically pet bedding (7.6%).

Organic waste systematically represents the highest fraction over all measurement campaigns. Although variations between the results of the measurement campaigns are observed, it is difficult to conclude that there is a seasonal effect of the behaviour of Walloon households on the composition of OMBs.

II.1. Focus on organic waste

II.1.1. Compostable organic waste in OMBs

For the OMB deposit, non-consumable kitchen waste and non-consumable food products respectively contribute the most to the category of compostable organic waste.

In the category "non-consumed food products", we find mainly bread and packaged food products whose expiry date has passed (delicatessen, meat, yoghurts...).

Figure II-2: Details of the composition of compostable organic waste

	OMB	
	Composition (%)	Waste collection (kg/inhab.)
Unconsumed food products (a)	11,1	15,4
Consumable kitchen waste (b)	0,0	0,01
Non-consumable kitchen waste (c)	27,5	38,1
Garden waste (d)	2,4	3,3
Compostable packaging (e)	0,0	0,0
Total compostable organics - a+b+c+d+d+e	**41,0**	**56,8**
Food waste - a+b+c	**38,6**	**53,5**
Food waste - a+b	**11,1**	**15,4**

Compared to 2009-2010, the proportion of compostable organic waste has decreased by more than 6%. Within compostable organic waste, the non-consumed food products decreased about 6% while the proportion of kitchen waste increased by 8% in absolute terms.

II.1.2. Selectively collected organic waste in Wallonia

Selectively collected organic waste samples were collected and sorted like OMBs, but the analysis of their composition is not commented on in detail, since the sample was designed to be primarily representative of OMBs.

It is nevertheless interesting to note that the main categories of waste that make up organic waste collected selectively in Wallonia are:

- Organic waste;
- Sanitary textiles;
- Inerts, which mainly contain pet litter.

II.2. Focus on sanitary textiles

Depending on the groups of municipalities selected, childrens diapers represent between 41% and 66% by weight of the sanitary textiles present in the OMBs. This variation is explained in particular by the fact that some of them organise the selective collection of organic waste (including children's nappies) and others do not.

In terms of selectively collected organic waste, children's diapers represent almost all of the sanitary textiles collected (97%).

In 2009-2010, diapers accounted for 6.6% of the total composition of OMBs, or about 10.0 kg/inhabitant. Today, they represent 5.9%, or 8.2 kg/inhabitant per year.

II.3. Focus on some selectively collected waste still present in OMBs[6]

II.3.1. The packaging

The share of packaging waste found in OMBs (23.8%) is 32.9 kg/inhab. year, broken down as follows for the main subcategories:

- Hard plastic plastic packaging other than bottles and flasks (4.9% or 6.7 kg/inhab. year);
- Glass packaging (3.4% or 4.7 kg/inhab. year);
  - Transparent (2.9% or 4.0 kg/inhab. year) ;
  - Coloured (0.5% or 0.7 kg/inhab. year);
- Packaging in recyclable cardboard boxes (2.4% or 3.3 kg/inhab. year);
- Metal packaging (1.5% or 2.1 kg/inhab. year);
- Complex packaging (2.9% or 4.0 kg/inhab. year).

Between 2009-2010 and 2017-2018, the total share of PMC packaging remained relatively constant.

II.3.2. Paper and cardboard

The paper-cardboard fraction represents the fifth largest residual fraction of gross household waste (7.5%, or 10.4 kg/inhab/year). Of this fraction, 61% corresponds to packaging (6.3 kg/inhab.year) and 39% corresponds to non-packaging (4 kg/inhab.year).

[6] More specifically, this refers to waste collected selectively at the time of the study and waste that will soon be collected selectively door-to-door (P+MC). At the time of the study, plastic packaging other than vials was not accepted in the blue bag.

The affixing of a "Stop Pub" sticker is a way of avoiding the disposal of this type of waste by simply not bringing it into the household. As the presence/absence of a sticker was noted during the sample collection operations, this information was used as an additional explanatory variable in the multivariate analysis. Although the correlations are low, **the residual amount of paper and cardboard in OMBs tends to decrease with the presence of a Stop Pub sticker**.

II.4. Focus on reusable waste

The fraction of reusable products represents 5.5% of the total composition of OMBs, or 7.6 kg/inhab/year. The estimation of the value of "reusable" objects in OMBs is based on the weight of the objects and does not take into account the fact that some objects do not find buyers.

II.5. Focus on waste electrical and electronic equipment (WEEE) under RECUPEL's responsibility

the share of WEEE that is the responsibility of RECUPEL represents about two thirds (64%) of all WEEE found in the waste bin coming from Walloon households. This category of WEEE represents 0.3% of the total composition of WEEE, or 0.4 kg/capita, and includes :

- lamps (with and without bulbs)
- mobile phones ;
- toys
- calculators
- batteries
- headphones;
- deodorisers / foggers

The remaining third (which is not the responsibility of RECUPEL) being composed mainly of used incandescent lamps, of parts of electrical and electronic objects and garlands/electric cords

III. Comparison of results with the 2009-2010 study

Table III-1: Comparison of OMB 2017-2018 results with those of the 2009-2010 study

Type of waste	Average composition 2009-2010		Average composition 2017-2018		Absolute difference between 2009 and 2018		Change in the proportion between 2010 and 2017 (%)
	kg/inhab.year	%	kg/inhab.year	%	kg/inhab. year	%	
Compostable organics	60,9	40,2	56,8	41,0	-4,1	0,8	-6,7
Plastics	19,5	12,9	17,7	12,8	-1,8	-0,1	-9,3
Inert	17,7	11,7	11,6	8,4	-6,1	-3,3	-34,4
Sanitary textiles	11,8	7,8	11,9	8,6	0,2	0,8	1,3
Paper / cardboard	19,0	12,6	10,4	7,5	-8,6	-5,1	-45,4
Fine	2,3	1,5	6,4	4,6	4,0	3,1	173,5
Glass	4,7	3,1	5,0	3,6	0,3	0,5	6,7
Textiles	4,5	3,0	5,3	3,8	0,7	0,8	15,8
Miscellaneous and reusable objects	1,3	0,8	4,0	2,9	2,8	2,1	220,5
Complexes	2,4	1,6	4,2	3,0	1,8	1,4	74,5
Metal	3,1	2,1	2,6	1,9	-0,5	-0,2	-15,3
Non-compostable organic materials	2,4	1,6	1,0	0,7	-1,4	-0,9	-59,1
Specials	0,8	0,5	1,0	0,7	0,1	0,2	16,4
Wood	0,6	0,4	0,4	0,3	-0,2	-0,1	-34,3
WEEE (under the responsibility of RECUPEL for 2017)	0,4	0,3	0,4	0,3	0,0	0,0	-1,4
TOTAL	**151,5**	**1,0**	**138,5**	**100**	**-13.0**	**-**	**-8,6**

The amount of waste collected (OMB) per capita decreased by 13 kg, from 151.5 kg/inhab. in 2010 to 138.5 kg/inhab. in 2017[7].

Relative variations that may be significant between the results of the two studies can be explained by, among other things,:

- The extension of selective organic waste collection, which is linked to the fact that citizens probably prefer to deposit their organic waste in front of their homes rather than making a (more restrictive) compost or depositing it elsewhere;

[7] Source: http://environnement.wallonie.be/

- Changes in household behaviour, particularly in terms of prevention and compliance with sorting instructions.

IV. Methodological recommendations and perspectives

On the basis of the experience acquired during (*i*) the collection and sorting of samples and (*ii*) the processing and analysis of data, various recommendations can be made in order to best prepare the next analysis of the composition of OMBs and organic waste selectively collected in Wallonia.

The main recommendations[8] to remember are:

- Set a target sample weight to be achieved for selectively collected organic waste, as has been done for OMBs. This proposal should make it possible to extrapolate the results obtained and thus ensure a better representation of the composition of the OMBs and selectively collected organic waste.
- To focus sorting on the most relevant waste fractions, in order to reduce the number of sorting categories, and at the same time the biases and sorting errors at the beginning of the study.
- Sort the waste bag by bag (or container by container) for each stratum of the sample, in order to calculate the variability of the results within the strata, and thus improve the extrapolation and representativeness of the results.
- To study the effects of contamination of the different waste categories by organic waste, with a view in particular to applying corrective factors to each waste category if necessary.

[8] other recommendations are made in the report