WASTE CHARACTERIZATION STUDY AND EVALUATION OF MOLDOVA'S PROSPECTS FOR WASTE-TO-ENERGY PRODUCTION

FINAL REPORT ON ONE-YEAR WASTE COMPOSITION SURVEY

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Final Report

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ACRONYMS

ASTM	American Society for Testing and Materials
EP$_{MSW}$	Energy Potential
EPP$_{MSW}$	Electrical Power Potential
HHV	Higher Heating Value
LPA	Local Public Administration
MESA	Moldova Energy Security Activity
MSW	Municipal solid waste
VM	Volatile matter
WMR	Waste Management Region
WtE	Waste to Energy

INTRODUCTION

The present assignment was awarded to Policy and Management Consulting Group (PMCG), following the RfP issued by Tetra Tech ES, Inc., which is the implementing agency of the Moldova Energy Security Activity (MESA), funded by USAID.

The objective of the assignment is to assess the opportunities of the Republic of Moldova to promote WtE technologies.

As the critical need for assessing WtE opportunities, is to know the energy content of waste, a Waste Composition Survey was performed to determine the heating values, based on:

- Physical composition of waste;
- Proximate analysis;
- Elemental analysis.

The present report constitutes the Final Report of the Waste Composition Survey and presents the following:

- The activities performed during the entire Waste Composition Survey;
- The methodology applied;
- Results and statistical analysis of the results;
- Conclusions.

I. THE WASTE COMPOSITION SURVEY

The Waste Composition Survey was performed within one calendar year. It consisted of four campaigns, covering the four seasons, to capture any seasonal variations, as follows:

TABLE 1: SCHEDULE OF MW SURVEYS	
1st campaign	May 2023, March 2024
2nd campaign	June - August 2023
3rd campaign	September - October 2023
4th campaign	December 2023, February 2024

A total 176 samples were collected during the entire survey. The samples were distributed between Chisinau and Balti municipalities, representative district centres and villages from WMRs 4 and 7.

TABLE 2: DISTRIBUTION OF SAMPLES BETWEEN TARGET REGIONS AND MUNICIPALIT						
	WMR4		WMR7		VILLAGES FROM WMR 4 AND 7	GRAND TOTAL
INDICATORS	CHISINAU	DISTRICT CENTERS FROM WMR4	BALTI	DISTRICT CENTERS FROM WMR7		
Number of containers	10	2	6	2	2	22
Number of samples per container	2	2	2	2	2	10
Total number of samples per season	20	4	12	4	4	44
Total number of samples (all seasons)	**80**	**16**	**48**	**16**	**16**	**176**

The characteristics of the containers are shown in the following table:

TABLE 3: CONTAINERS WITHIN THE WASTE COMPOSITION SURVEY						
WMR	NAME	TYPE OF AREA	CONTAINER NO	LOCATION	DESCRIPTION OF LOCATION	TYPE OF CONTAINER
WMR4	Chisinau	Urban	1	Str. Radauteanu	Residential, new buildings	Paper
WMR4	Chisinau	Urban	2	Str. Radauteanu	Residential, new buildings	Glass
WMR4	Chisinau	Urban	3	Str. Radauteanu	Residential, new buildings	Plastic
WMR4	Chisinau	Urban	4	Str. Radauteanu	Residential, new buildings	Mixed
WMR4	Chisinau	Urban	5	Str. Alecu Ruso	Residential, old buildings	Plastic
WMR4	Chisinau	Urban	6	Str. Alecu Ruso	Residential, old buildings	Paper
WMR4	Chisinau	Urban	7	Str. Alecu Ruso	Residential, old buildings	Mixed

TABLE 3: CONTAINERS WITHIN THE WASTE COMPOSITION SURVEY

WMR	NAME	TYPE OF AREA	CONTAINER NO	LOCATION	DESCRIPTION OF LOCATION	TYPE OF CONTAINER
WMR4	Chisinau	Urban	8	Str. Alecu Ruso	Residential, old buildings	Mixed
WMR4	Chisinau	Urban	9	Mall PanCom	Commercial	Mixed
WMR4	Chisinau	Urban	10	Mall PanCom	Commercial	Mixed
WMR4	Straseni	Urban	1	Str. Mihai Sadoveanu 38	Residential	Mixed
WMR4	Ialoveni	Urban	1	Str. Basarabia 1	Residential	Mixed
WMR4	Sireti	Village	1		Residential	Mixed
WMR7	Balti	Urban	1	str. Bulgara 120	Residential	Mixed
WMR7	Balti	Urban	2	Str. Salticova	Residential	Mixed
WMR7	Balti	Urban	3	Str. Bulgara 120/A	Residential	Mixed
WMR7	Balti	Urban	4	str. Bulgara 120	Residential	PET plastic
WMR7	Balti	Urban	5	Str. Gonciarova	Residential	Mixed
WMR7	Balti	Urban	6	Str. Bulgara 120/A	Residential	Mixed
WMR7	Rîșcani	Urban	1	str. Eternitatii	Residential	Mixed
WMR7	Florești	Urban	1	Str. Stefan cel Mare	Residential	Mixed
WMR7	Corlăteni	Village	1		Residential	Mixed

Figure 1: Sampling locations

The fractions (% per weight) of the waste are determined, according to the following categories:

TABLE 4: FRACTIONS OF WASTE			
PRIMARY CATEGORY	PRIM. CAT. CODE	SECONDARY CATEGORY	SEC. CAT. CODE
Organic	OR1	Biodegradable Kitchen/Canteen Waste	OR1 01
		Biodegradable Garden/Park Waste	OR1 02
		Other Biodegradable Waste	OR1 03
Wood	W2	Untreated Wood	W2 01
		Treated Wood	W2 02
Paper and cardboard	PC3	High gloss paper/card and wallpapers	PC3 01
		Paper/card - packaging	PC3 02
		Newspapers	PC3 03
		Other Paper/card- non packaging	PC3 04
Plastic	PL4	Plastic Film - packaging	PL4 01
		Plastic Film - non packaging	PL4 02
		Dense Plastic Bottles/Jars (P)	PL4 03
		Dense Plastic - other packaging	PL4 04
		Dense Plastic -non packaging	PL4 05
Glass	G5	Glass Container Packaging Clear	G5 01
		Glass Container Packaging Brown	G5 02
		Glass Container Packaging Other	G5 03
		Miscellaneous Non-Packaging Glass	G5 04
Textile	T6	Clothes	T6 01
		Non-clothing textiles	T6 02
Metals	M7	Ferrous Packaging	M7 01
		Non-ferrous Packaging	M7 02
		Miscellaneous Ferrous	M7 03
		Miscellaneous Non-ferrous	M7 04
Hazardous waste	H8	Batteries/Accumulators	H8 01
		Miscellaneous hazardous waste	H8 02
Complex products	C9	Composite/Complex Packaging	C9 01
		Composite/Complex Non-packaging	C9 02
		Mixed WEEE	C9 03
Inert	IN10	Soil and Stones	IN10 01
		Miscellaneous inert	IN 10 02
Others	U11	Nappies	U11 01
		Health Care/Biological Wastes	U11 02
		Miscellaneous Categories	U11 03
Fines	F12	10mm sieved fraction	F12 01

The samples were analysed in the ECOIND Laboratory in Romania. The ECOIND Laboratory is accredited in SR EN ISO/IEC standards. The standards that will be followed are similar to the standards of American Society for Testing and Materials (ASTM). TABLE 5 bellow shows measuring indicators, analytical technique and relevant test standards which were used during sample testing.

TABLE 5: MEASURING INDICATORS AND TEST STANDARDS

INDICATOR	ANALYTICAL TECHNIQUE	TEST STANDARD
Humidity	Gravimetric	CEN/TS 15414 - 2
Superior Calorific Value	Calorimetric bomb method	SR EN 15400
Carbon		
Hydrogen	Combustion GC-TCD	SR EN 15407
Nitrogen		
Loss on combustion organic matter	Gravimetric	SR EN 15935
Ash	Gravimetric	SR EN 15403
Sulphur	Calorimetric bomb method Spectrophotometric	SR EN 15408
Chlorine	Calorimetric bomb method Volumetric	SR EN 15408
Oxygen	Calculation by difference	SR EN ISO 16993
Metals	Mass spectrometry	SR EN 16171:2017 SR EN ISO 54321:2021

Above mentioned tests with relevant standards fully cover project requirements and anticipated WTE analyses.

II. WASTE COMPOSITION SURVEY CAMPAIGN

2.1. METHODOLOGY AND PROCEDURES

2.1.1. SAMPLING

For each season sampling was executed in two periods (hereafter referred to as 1st part and 2nd part), as presented in the following table. It is noted that, due to the time of the assignment's commencement (March 2023) and the inception / mobilization period, only the first part of the spring campaign was performed in May 2023. The second part of the spring campaign was performed in March 2024.

TABLE 6: SAMPLING PERIODS				
Location	Spring	Summer	Autumn	Winter
Chisinau	— May 18, 2023 — March 13, 2024	— June 22, 2023 — July 25, 2023	— September 13, 2023 — October 26, 2023	— December 21, 2023, — February 14, 2024
Straseni	— May 17, 2023 — March 7, 2024	— June 13, 2023 — July 20, 2023	— September 12, 2023 — October 20, 2023	— December 20, 2023, — February 16, 2024
Ialoveni	— May 25, 2023 — March 6, 2024	— June 14, 2023 — July 24, 2023	— September 6, 2023 — October 19, 2023	— December 4, 2023 — February 8 2024
Sireti	— May 17, 2023 — March 7, 2024	— June 26, 2023 — July 21, 2023	— September 6, 2023 — October 25, 2023	— December 20, 2023 — February 15, 2024
Balti	— May 16, 2023 — March 12, 2023	— July 13, 2023 — August 8, 2023	— September 26, 2023 — October 24, 2023	— December 19, 2023, — February 23, 2024
Riscani	— May 23, 2023 — March 5, 2023	— June 12, 2023 — July 18, 2023	— September 5, 2023 — October 17, 2023	— December 5, 2023 — February 12, 2024
Floresti	— May 23, 2023 — March 6, 2024	— June 12, 2023 — July 19, 2023	— September 7, 2023 — October 18, 2023	— December 9, 2023 — February 12, 2024
Corlateni	— May 23, 2023 — March 11, 2024	— June 19, 2023 — July 18, 2023	— September 11, 2023 — October 23, 2023	— December 5, 2023 — February 12, 2024

Procedures & protocols

The procedures during selection of sites for sampling and sampling itself are described in the following paragraphs.

In the beginning, the stratification was done according to the following criteria:

- Residential structure (urban, rural);

- Seasonal variations;

- Bin size;

- Holiday periods;

- Type of collection system (separate collection or mixed collection);

- Type of family, in case of villages;

- Proximity to commercial activities (markets, malls).

The following waste collection platforms and containers (1m³ per each container, sampling site) were selected:

1) Chisinau – 4 containers from residential area (new buildings) with separate collection, 4 containers from residential area (old buildings) with separate collection containers, 2 containers from commercial unit (mall);

2) Balti – 3 containers from residential area with separate collection, 2 containers from residential area (private), 1 container from commercial unit;

3) Straseni – 1 container from residential area without separate collection;

4) Ialoveni – 1 container from residential area without separate collection;

5) Sireti - 4 containers (240 l each) from residential area without separate collection;

6) Riscani - 1 container from residential area without separate collection;

7) Floresti - 1 container from residential area without separate collection;

8) Corlateni - 4 containers (240 l each) from residential area without separate collection.

The samples were taken outside the household/business. Each sample collected was documented in a special form. The following minimum data were recorded for each individual sample by the waste sample collection team at the time of collection:

- Date;

- Sample address;

- Date of collection;

- Type of containers;

- Visual estimation of % filling level of waste containers collected;

- Weight of each stream;

- Additional notes.

Each sampling unit was weighed, and the weight was documented. Each sampling unit was sorted separately. The sampling unit were sorted into the categories according to a developed 'Sorting Catalogue', according to the SWA Tool. The 'Sorting Catalogue' contains 13 compulsory primary categories and 35 recommended secondary waste categories. The catalogue also provides indicative examples for each secondary category for a wide range of items commonly encountered in the municipal waste stream as a guide to their appropriate classification. In addition, it was also possible to designate further tertiary or third level categories that may provide additional waste composition details according to their local waste information requirements.
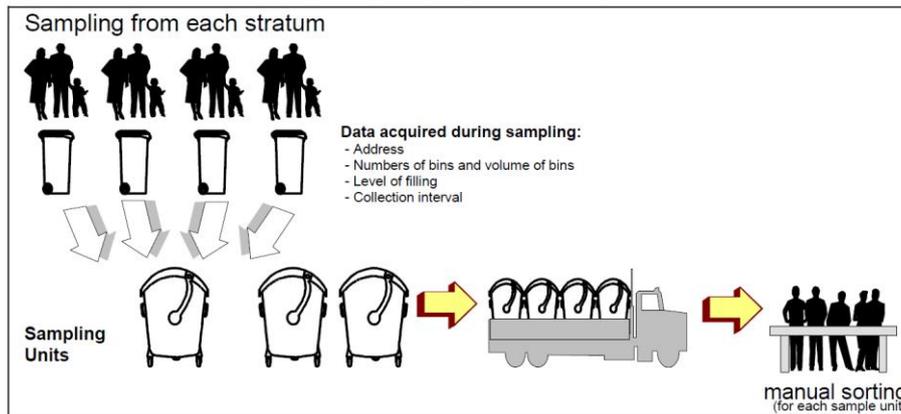
Figure 2: Example of sampling (sampling unit is 1 m³)

The sampling units can be separated into two initial fractions: above 50 mm and below 50 mm, by screening with a 50 mm mesh screen (trommel). The above 50 mm fraction was sorted into one of 12 compulsory primary waste categories excluding the 'Fines' category as specified by the SWA Tool 'Sorting Catalogue'. The weight of each category was recorded for the sampling unit. The 'below 50 mm' fraction was further screened with a 12 mm mesh screen into two fractions: 'below 12 mm' fraction and 'a 12-50 mm' fraction. The 'below 22' mm fraction is weighed to an accuracy of +/- 0.1 kg and this weight recorded as the primary category 'Fines' according to the SWA-Tool 'Sorting Catalogue'. The '12-50 mm' fraction is weighed, too. By coning and quartering a representative sub sample was generated and sorted according to the recommended primary waste categories specified in the 'Sorting Catalogue'. The observed composition of the sub-sample was then applied to the total weight of the 12-50 mm fraction. The resulting weights were recorded and allocated to the corresponding primary waste categories.
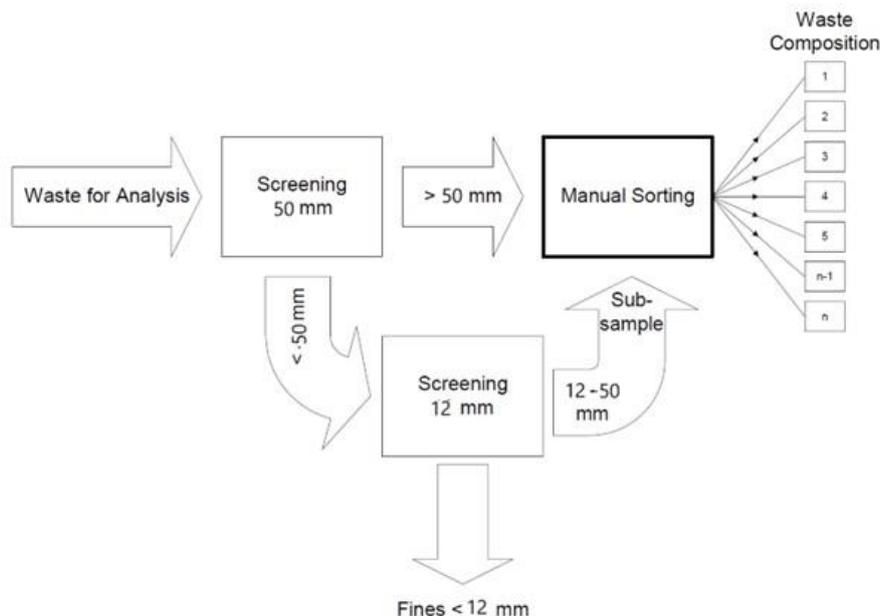
Figure 3: Sorting procedure

Staff and equipment

The sampling was performed by consultants of the 'Pro-Mediu' Experts Association.

The equipment used include heavy duty bags, other small bags, gloves, shovels, sieve (screen), pens/markers, bacterial hand and face wash, box file, labels/data forms, calculator, mobile phone.

Health &safety measures

The waste collection service workers assisted the waste selection process. The minimum safety equipment and clothing for the sampling and sorting personnel included:

- Hi-visibility jackets;
- First aid kit;
- Fire extinguisher;
- Overalls (splash proof and sharp proof);
- Sharp proof gloves;
- Face mask;
- Full face goggles/eye protection;
- Safety helmet;
- Anti-bacterial hand/face wash;
- Enzyme based deodorisers;
- Portable telephone;
- Moist, disposable towelettes.

2.1.2. SAMPLE PREPARATION FOR LABORATORY

During the waste survey, samples from Chisinau and Balti were sent to the ECOIND Laboratory in Romania for chemicals analyses. According to the laboratory recommendation, the samples were collected in glass jars – 200 gr per sample for 28 recommended secondary waste categories, according to the SWA-Tool Waste Catalogues, with exception of hazardous and infectious types of waste, which are not accepted by the laboratory. The jars were closed with an airtight lid, preserved in the refrigerator, and transported to the laboratory in the next day early in the morning.

2.1.3. CHEMICAL ANALYSIS PROCEDURES

The chemical analyses were performed by the ECOIND Laboratory in Romania, certified with *SR EN ISO/IEC 17025:2018 General requirements for the competence of testing and calibration laboratories,* which is the international reference for testing and calibration laboratories wishing to demonstrate their ability to provide reliable results.

Six people were involved in the work team, five people with higher education in charge of analytical determinations such as: C, H, N, Sulphur, superior calorific value, metals and chlorine, and one person with secondary education in charge of preparing the samples and mix, and also of determining the indicators: moisture, loss on ignition and ash.

The equipment used is the following:

- Sample grinding – RETSCH Vibratory Disc Mills RS 300, RETSCH RS 200 and RETSCH ZM 200
- Weighing of samples – RADWAG – Analytical Balances – Balances and Scales;

- C, H, N – Thermo Scientific FlashSmart CHN;

- Sulphur – CHS Analysers CS-580A;

- Superior calorific value – Calorimeter (heat pump) multi standard IKA C 6000;

- Metals – Inductively Coupled Plasma – Mass Spectrometry (ICP-MS), Agilent.

All the necessary health and safety measures were followed during chemical analyses, such as wearing gloves when handling samples, protecting the face and eyes, and protecting the body sufficiently to guard against any explosion of the vials.

The procedure of sample preparation is summarized as follows:

- For Organic, Wood, Plastic, Paper and Cardboard, Clothes, Inert, 10 mm sieved fraction:

  1. After receiving the samples in the lab, the first step was to dry them at room temperature;
  2. The second step was to grind them through a 10 mm sieve using the RETSCH 300 milling machine;
  3. The third step was sub-sampling.

Sub-sampling is used in case of a large amount of laboratory samples and if the sample is sufficiently dry. This operation is not used if the sample contains particles, which cannot be divided, when losses of volatile compounds may occur, at room temperature and for sludge and liquids.

The procedure consists of the following operations: spread the sample on a flat surface covered with an inert foil in a circular shape and mix with a shovel or a spoon and make a cone, which is then cut and divide the sample into four slices, remove two opposite slices, and mix the remaining part of the sample thoroughly (Quarter Method) This sequence is repeated until the required amount of sub-sample is reached.

Preparation of laboratory samples involves a sequence of operations such as: homogenization, phase separation, drying, particle size reduction, sub-sampling. The last step is grinding through 4 mm, 1 mm and 0.8 mm sieves with RESTCH ZM 200.

- For glass, a RETSCH RS 200 mill was used. RETSCH's Vibratory Disc Mill RS 200 is ideally suited for fast and reproducible pulverization of hard, brittle and fibrous sample materials to analytical fineness;

- For non-metals the samples were crushed;

- Complex products are cut with a pair of board scissors and grinded through a 0.8 mm sieve with RESTCH ZM 200.

After preparing the samples individually, adequate mixes were prepared, according to the percentages indicated in TABLE 7. The number of samples subject to chemical analysis is shown in TABLE 8:

TABLE 7: MIXES PREPARED FOR THE CHEMICAL ANALYSES												
	Chisinau – Spring		Chisinau – Summer		Balti – Summer		Chisinau – Autumn		Balti – Autumn		Chisinau – Winter	
	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory
Biodegradable Kitchen/Canteen Waste		58,66		34.16		54.56		97.83		32.62		84.38
Biodegradable Garden/Park Waste		21,81		16.41		45.44		1.98		65.80		15.00
Other Biodegradable Waste		19,53		49.43		0.00		0.19		1.58		0.62
subtotal	41.46	100,00	33.78	100.00	46.03	100.00	59.63	100.00	77.49	100.00	45.83	100.00
Untreated Wood		80,00		32.50		70.59		66.67		56.25		33.33
Treated Wood		20,00		67.50		29.41		33.33		43.75		66.67
subtotal	0.23	100,00	1.26	100.00	0.89	100.00	0.11	100.00	0.33	100.00	0.71	100.00
High gloss paper/card and wallpapers		0,00		10.90		21.29		0.00		5.32		0.00
Paper/card - packaging		57,59		54.19		33.11		76.02		49.90		47.35
Newspapers		1,13		1.19		7.26		0.73		9.70		19.52
Other Paper/card-non packaging		41,69		33.72		38.35		23.25		35.08		33.12
subtotal	12.99	100,41	17.33	100.00	15.24	100.00	10.48	100.00	4.86	100.00	15.01	100.00
Plastic Film -packaging		45,38		42.80		28.76		25.62		19.52		22.59
Plastic Film - non packaging		3,53		9.05		35.96		30.60		20.79		20.31
Dense Plastic Bottles/Jars (P)		27,78		24.33		23.44		33.76		41.64		43.10
Dense Plastic - other packaging		6,43		14.88		10.11		8.36		3.41		12.82
Dense Plastic -non packaging		16,88		8.94		1.73		1.67		14.64		1.17
subtotal	16.79	100,00	23.11	100.00	21.15	100.00	11.32	100.00	6.55	100.00	14.58	100.00
Glass Container Packaging Clear		44,79		80.40		65.09		54.17		57.34		69.75
Glass Container Packaging Brown		42,77		7.39		12.26		7.74		12.59		20.17
Glass Container Packaging Other		12,43		4.88		12.26		34.52		2.10		3.36
Miscellaneous Non-Packaging Glass		0,00		7.33		10.38		3.57		27.97		6.72
subtotal	9.9	100,00	8.44	100.00	5.53	100.00	6.35	100.00	2.98	100.00	5.65	100.00
Clothes		75,00		45.83		40.00		68.75		4.62		81.46
Non-clothing textiles		25,00		54.17		60.00		31.25		95.38		18.54
subtotal	1.66	100,00	2.29	100.00	0.26	100.00	1.21	100.00	1.35	100.00	9.73	100.00
Ferrous Packaging		44,32		57.60		41.88		69.70		31.58		82.35
Non-ferrous Packaging		44,03		28.18		58.12		21.21		52.63		17.65
Miscellaneous Ferrous		0,00		4.66		0.00		6.06		15.79		0.00
Miscellaneous Non-ferrous		11,65		9.56		0.00		3.03		0.00		0.00
subtotal	1.80	100,00	1.11	100.00	1.00	100.00	1.25	100.00	0.40	100.00	0.81	100.00
Batteries/Accumulators		0,00		44.54		100.00		96.43		40.78		40.78
Miscellaneous hazardous waste		0,00		55.46		0.00		3.57		59.22		59.22
subtotal	0.00		6.60	100.00	0.83	100.00	1.06	100.00	1.07	100.00	4.13	100.00
Composite/Complex Packaging		66,24		0.00		83.33		2.63		42.86		
Composite/Complex Non-packaging		33,76				16.67		97.37		57.14		100.00

TABLE 7: MIXES PREPARED FOR THE CHEMICAL ANALYSES

	Chisinau – Spring		Chisinau – Summer		Balti – Summer		Chisinau – Autumn		Balti – Autumn		Chisinau – Winter	
	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory	average of the mix	% within the subcategory
Mixed WEEE		0,00	0.00	0.00	0.94	100.00	2.87	100.00	0.29	100.00	1.14	100.00
subtotal	3.73	100,00										
Soil and Stones		50,00										
Miscellaneous inert		50,00										
subtotal	0.00	100,00										
12 mm sieved fraction	11.55		6.08		8.14		5.71		4.68		2.42	
	100		100		100		100		100		100	

TABLE 8: NUMBER OF SAMPLES ANALYESED IN THE INTEGRAM WASTE COMPOSITION SURVEY

Primary category	Secondary category	Chisinau – Spring	Chisinau – Summer	Balti – Summer	Chisinau – Autumn	Balti – Autumn	Chisinau – Winter
Organic	OR101 Biodegradable Kitchen/Canteen Waste		✓			✓	✓
	OR102 Biodegradable Garden/Park Waste		✓			✓	✓
	OR 103 Other Biodegradable Waste		✓			✓	✓
	Mix organic	✓	✓	✓	✓	✓	✓
Wood	W 201 Untreated Wood		✓			✓	✓
	W 202 Treated Wood		✓			✓	✓
	Mix wood	✓	✓	✓	✓	✓	✓
Paper and cardboard	PC 301 High gloss paper/card and wallpapers	✓		✓	✓		
	PC 302 Paper/card - packaging	✓		✓	✓		
	PC 303 Newspapers	✓		✓	✓		
	PC 304 Other Paper/card- non packaging	✓		✓	✓		
	Mix paper & cardboard	✓	✓	✓	✓	✓	✓
Plastics	PL403-1 (simple PET bottle)	✓		✓	✓		
	PL403-2 (PET bottle from shampoo)	✓		✓	✓		
	PL403-3 (cap PET bottle from shampoo)	✓		✓	✓		
	PL403-4 (PET bottle from detergent)	✓		✓	✓		
	PL403-5 (cap PET bottle from detergent)	✓		✓	✓		

Primary category	Secondary category	Chisinau – Spring	Chisinau – Summer	Balti – Summer	Chisinau – Autumn	Balti – Autumn	Chisinau – Winter
	Mix plastic	✓	✓	✓	✓	✓	✓
Glass	G 501 Glass Container Packaging Clear	✓		✓	✓		
	G 502 Glass Container Packaging Brown	✓		✓	✓		
	G 503 Glass Container Packaging Other	✓		✓	✓		
	G 504 Miscellaneous Non-Packaging Glass	✓		✓	✓		
	Mix glass	✓	✓	✓	✓	✓	✓
Textile	T 601 Clothes		✓			✓	✓
	T 602 non-clothing textiles		✓			✓	✓
	Mix textiles	✓	✓	✓	✓	✓	✓
Metals	M 701 Ferrous Packaging		✓			✓	✓
	M 702 Non-ferrous Packaging		✓			✓	✓
	M 703 Miscellaneous Ferrous		✓			✓	*
	M 704 Miscellaneous Non-ferrous		✓				*
	Mix metals	✓	✓	✓	✓	✓	✓
Complex products	C 901 Composite/Complex Packaging		✓	✓		✓	✓
	C 902 Composite/Complex Non-packaging		✓			✓	✓
	C 903 Mixed WEEE						
	Mix composite	✓	✓		✓	✓	✓
Inert	IN 1001 Soil and Stones					✓	*
	IN 1002 Miscellaneous inert					✓	✓
	Mix inert	✓		✓	✓	✓	*
Others	U 1101 Nappies						
	U 1102 Health Care/Biological Wastes						
	U 1103 Miscellaneous Categories						
Fines	F 1201 10mm sieved fraction	✓	✓	✓	✓	✓	✓
	Mix total	✓	✓	✓	✓	✓	✓
TOTAL SAMPLES		**24**	**23**	**24**	**24**	**25**	**22**

TABLE 8: NUMBER OF SAMPLES ANALYESED IN THE INTEGRAM WASTE COMPOSITION SURVEY

2.2. RESULTS AND STATISTICAL ANALYSIS

The following sub-sections present the summary of the results obtained during the waste composition survey.

The results refer to:

- Fractions per weight (%), according to the primary categories;

- Proximate analysis results;

- Elemental analysis results;

- Heating value results.

2.2.1. FRACTIONS PER WEIGHT

The fractions per weight in the integral waste composition survey are shown in TABLE 9 and Figure 4. The dominant fraction of the waste is the organic one, accounting for about 53% in total and varying from 48% in the rayons to 64% in Balti. Plastic and paper represent an 8% and 10% respectively, while the recyclable material (paper & cardboard, glass, metals, and plastic) add up to 26%. Hazardous waste and wood are found at very small percentages.

TABLE 9: FRACTIONS PER WEIGHT FOR THE INTEGRAL SURVEY – RESIDENTIAL SECTOR					
	Balti	Chisinau	Rayons	Villages	Total
Organic	63.70	52.46	47.94	53.20	52.94
Wood	0.13	0.34	0.00	0.01	0.19
Paper & Cardboard	4.55	10.13	8.35	5.93	8.40
Plastic	6.89	11.42	9.69	8.87	10.10
Glass	4.19	5.60	6.09	4.80	5.40
Textile	1.54	3.86	2.73	2.64	3.15
Metals	0.73	2.23	2.68	3.33	2.33
Haz waste	0.06	0.06	0.02	0.32	0.09
Complex products	1.44	2.77	2.20	2.17	2.40
Inert	5.22	1.13	10.69	6.77	4.57
Others	7.60	6.28	4.82	5.45	5.99
12 mm sieved fraction	3.96	3.71	4.79	6.51	4.43
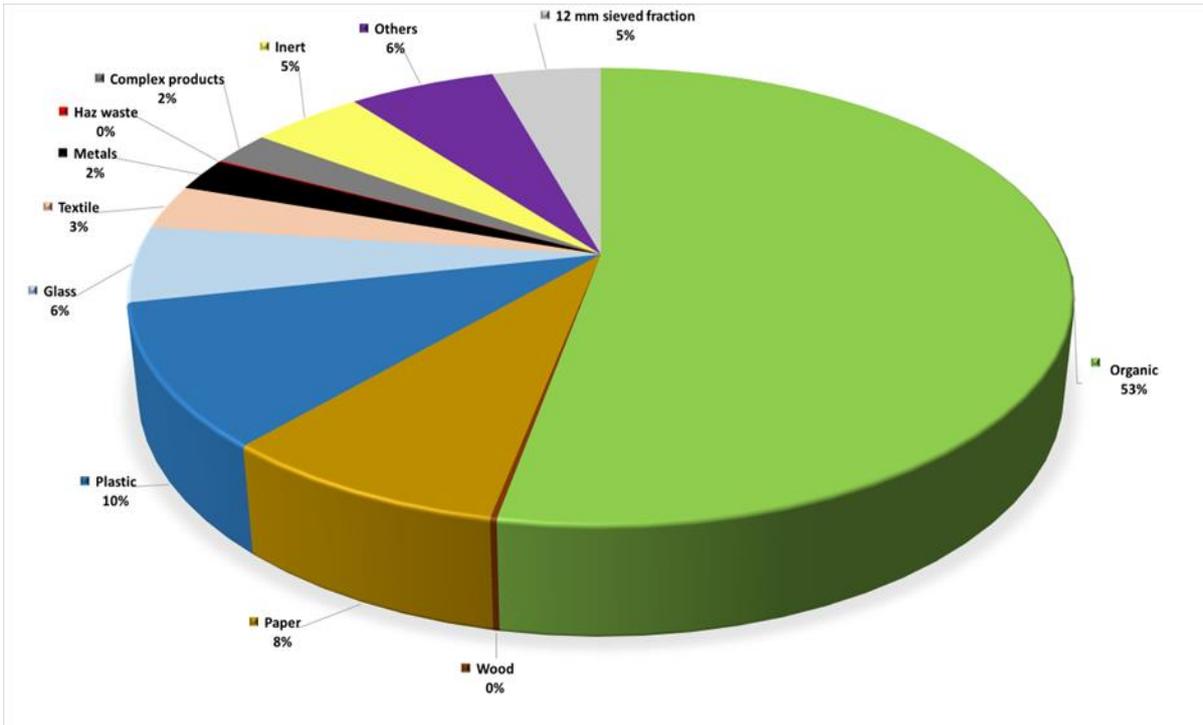
Figure 4: Fractions per weight – residential sector
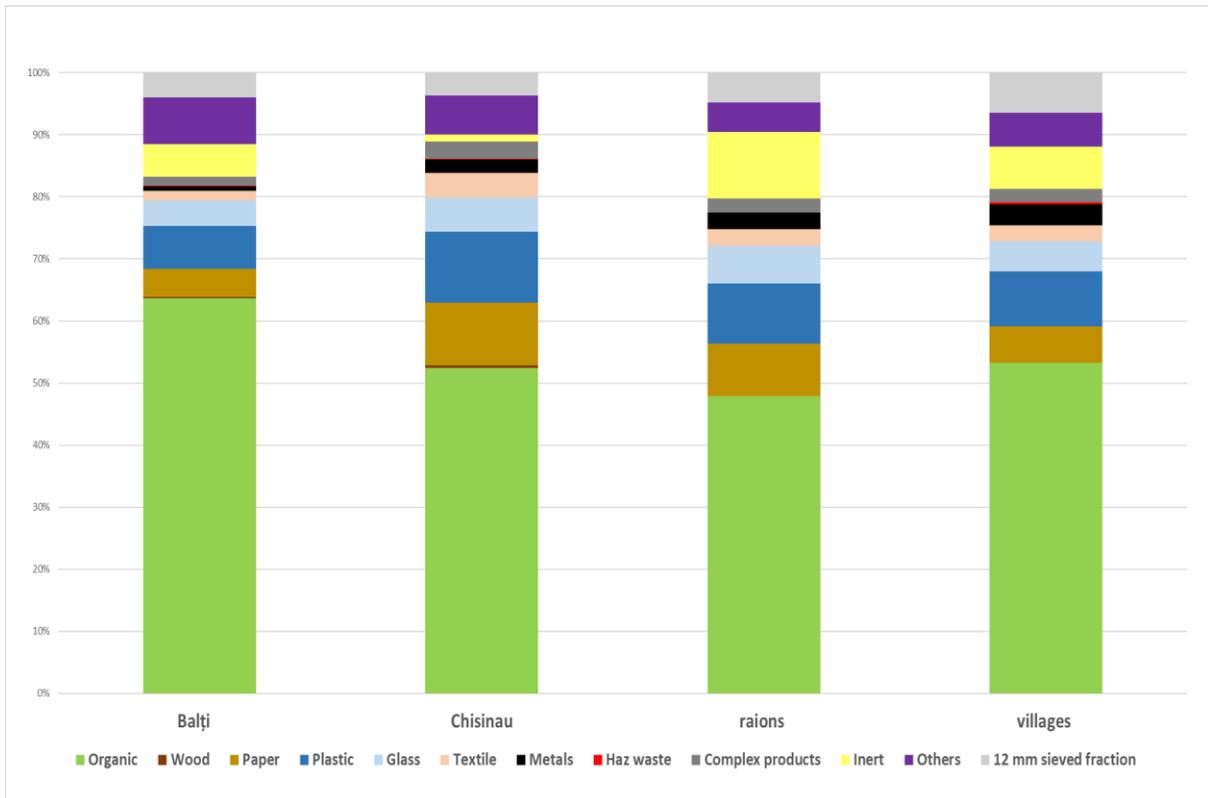
Figure 5: Comparison of waste fractions among sampling locations in the residential sector – integral survey

The results of the waste composition study per seasonal campaign in the residential sector are summarised in the following graphs.
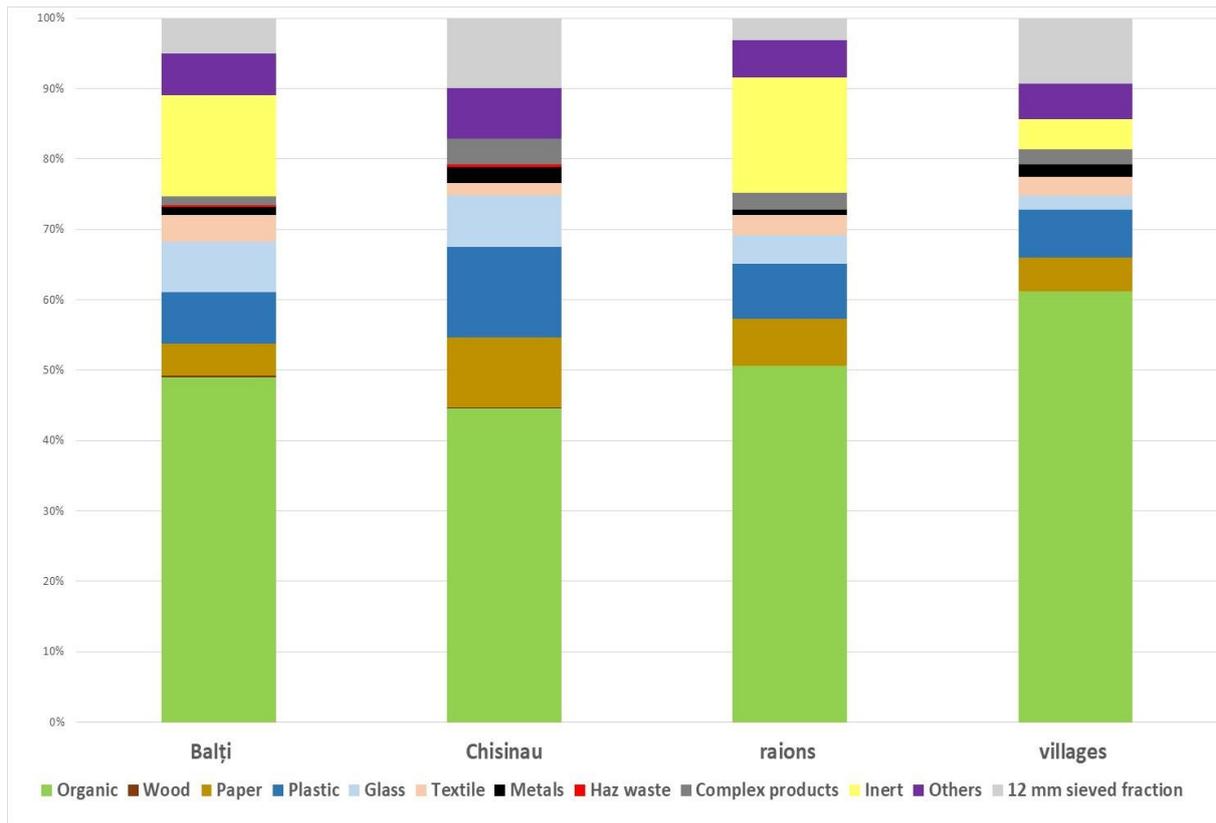
Figure 6: Comparison of fractions per weight among sampling location in the residential sector – 1st spring campaign
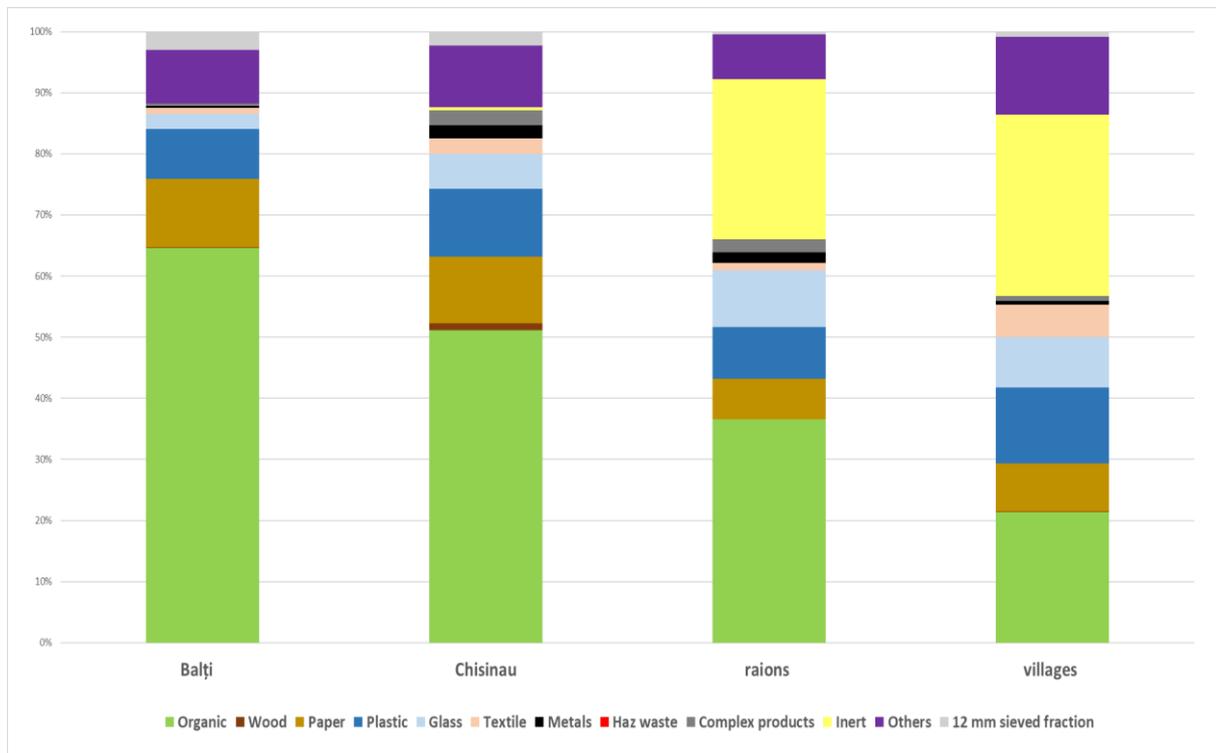
Figure 7: Comparison of fractions per weight among sampling location in the residential sector – 2nd spring campaign
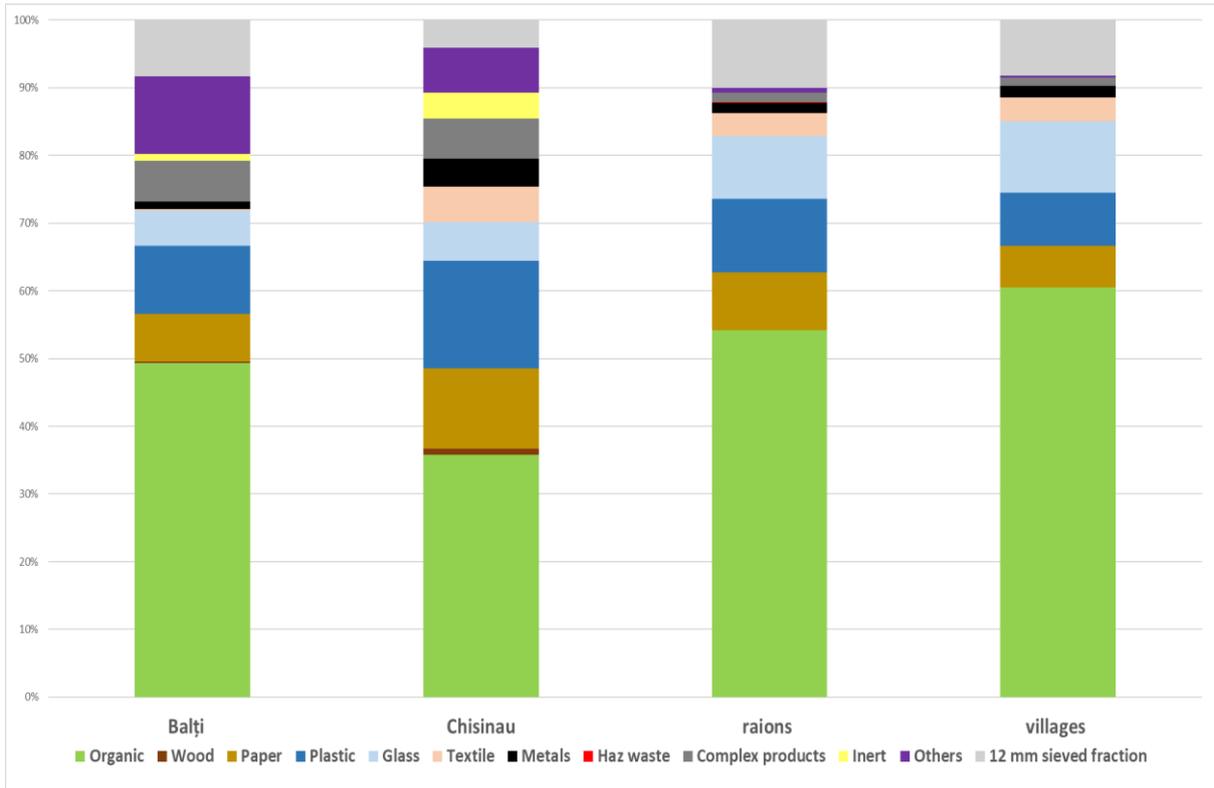
Figure 8: Comparison of fractions per weight among sampling location in the residential sector – 1st summer campaign
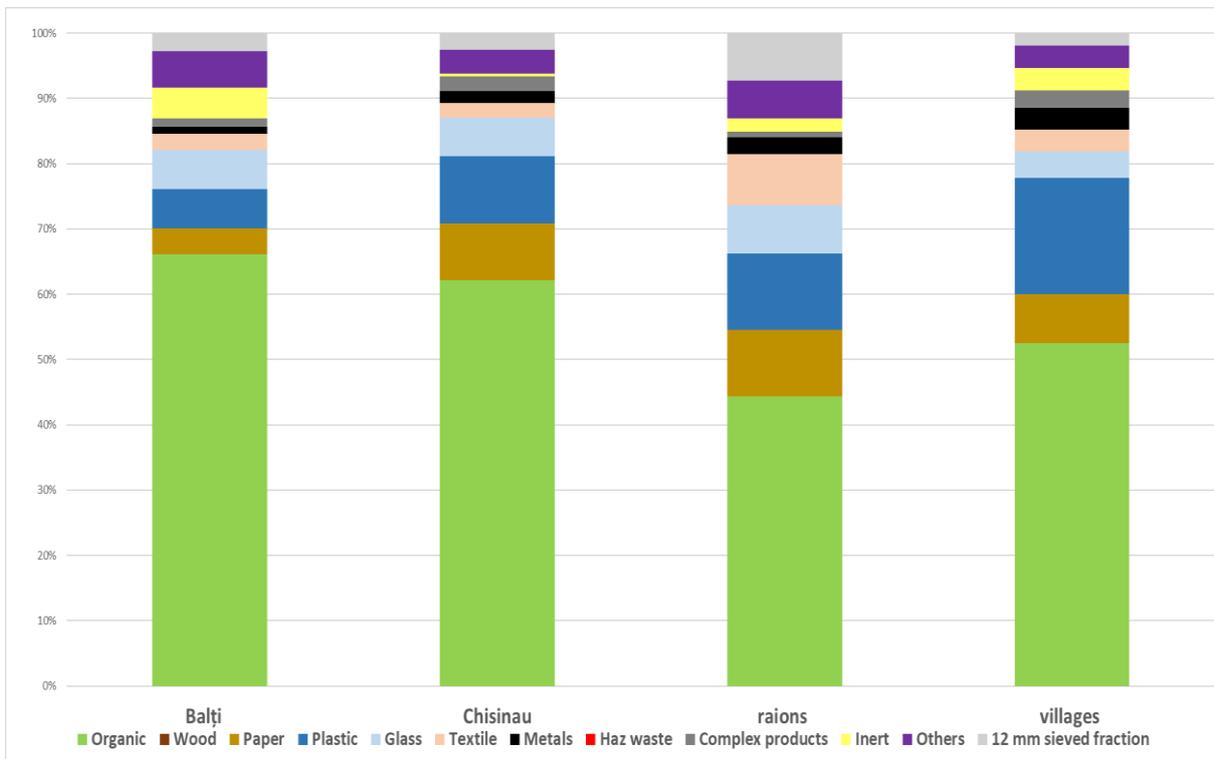
Figure 9: Comparison of fractions per weight among sampling location in the residential sector – 2nd summer campaign
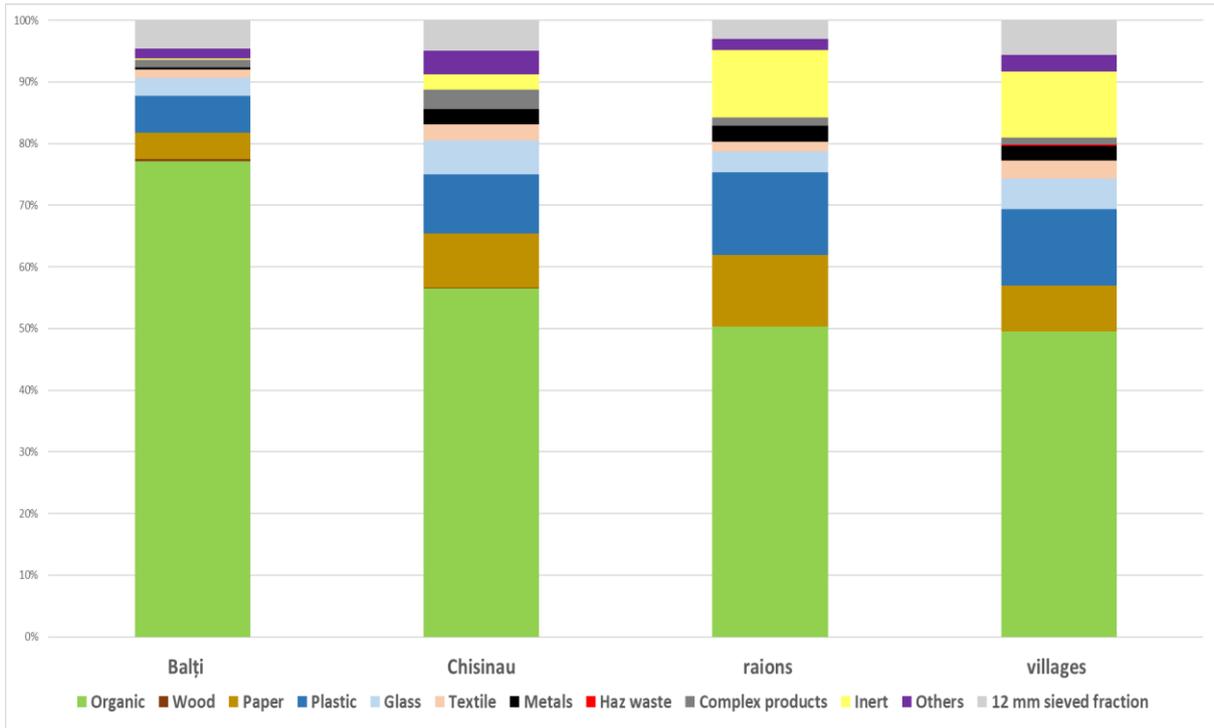
Figure 10: Comparison of fractions per weight among sampling location in the residential sector – 1st autumn campaign
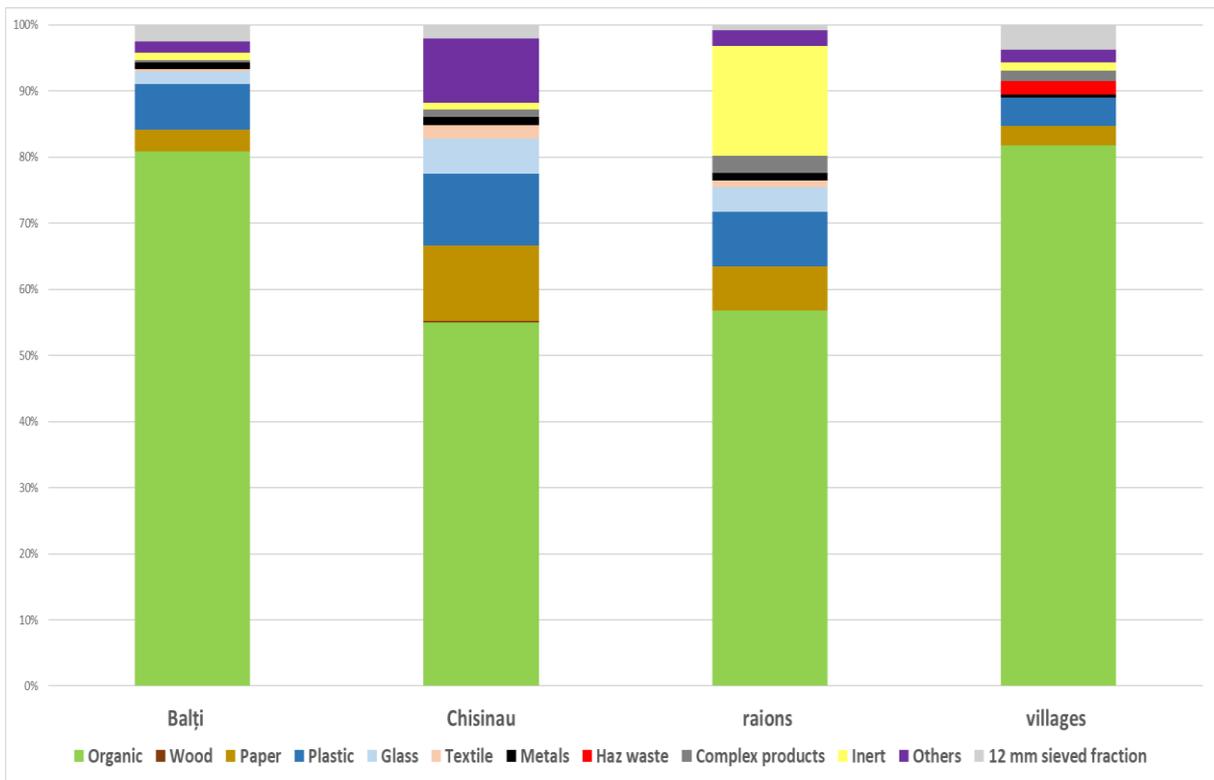
Figure 11: Comparison of fractions per weight among sampling location in the residential sector – 2nd autumn campaign
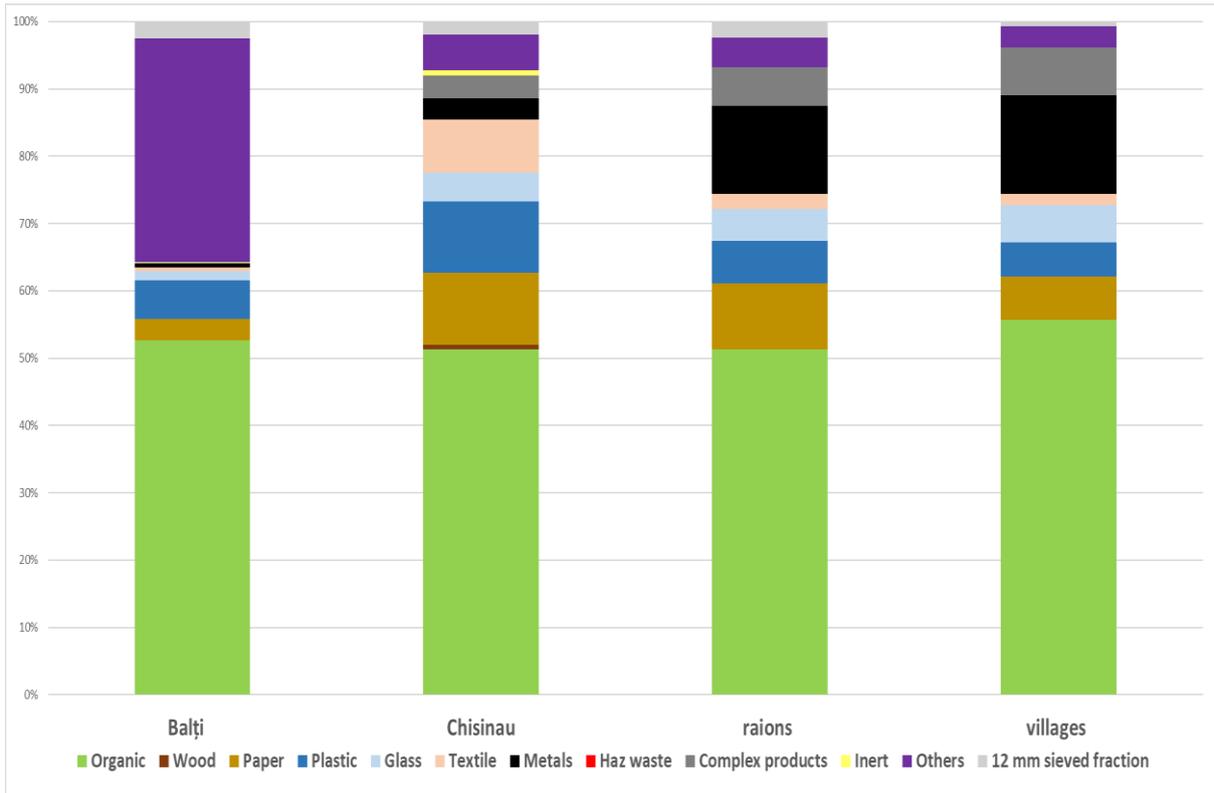
Figure 12: Comparison of fractions per weight among sampling location in the residential sector – 1st winter campaign
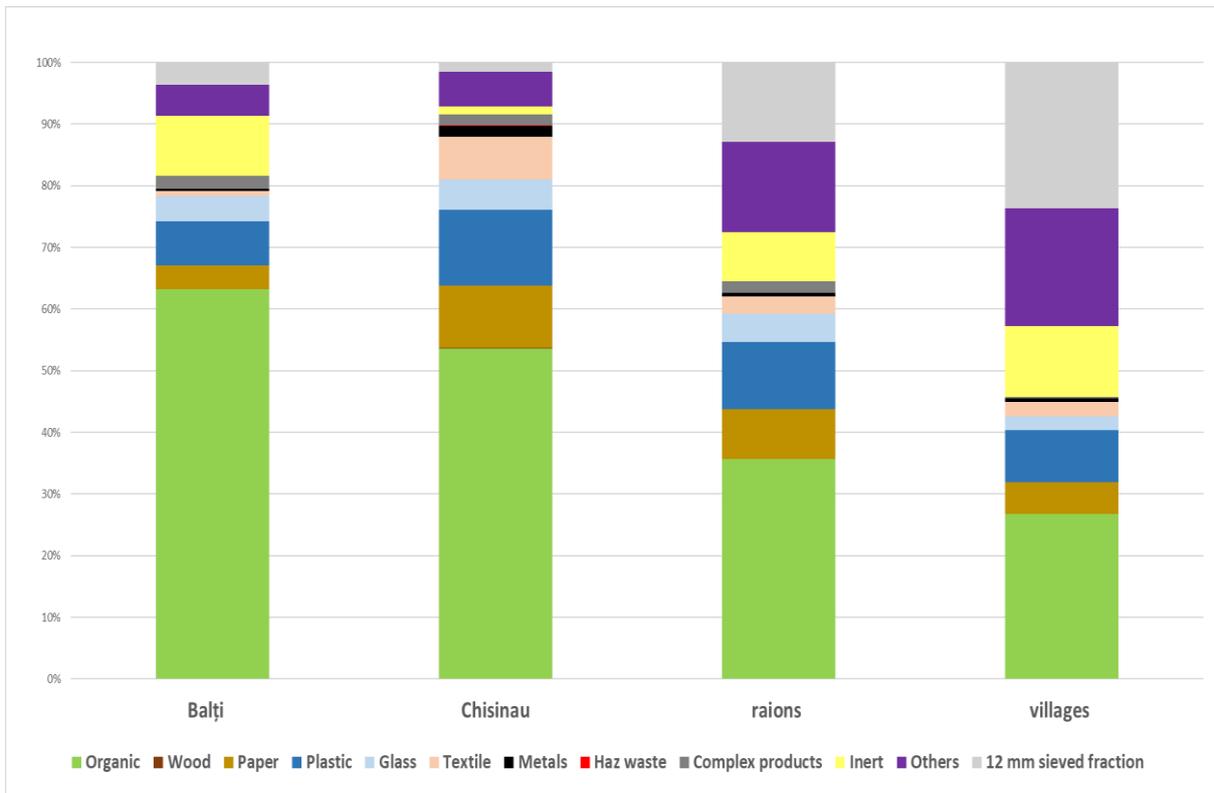
Figure 13: Comparison of fractions per weight among sampling location in the residential sector – 2nd winter campaign
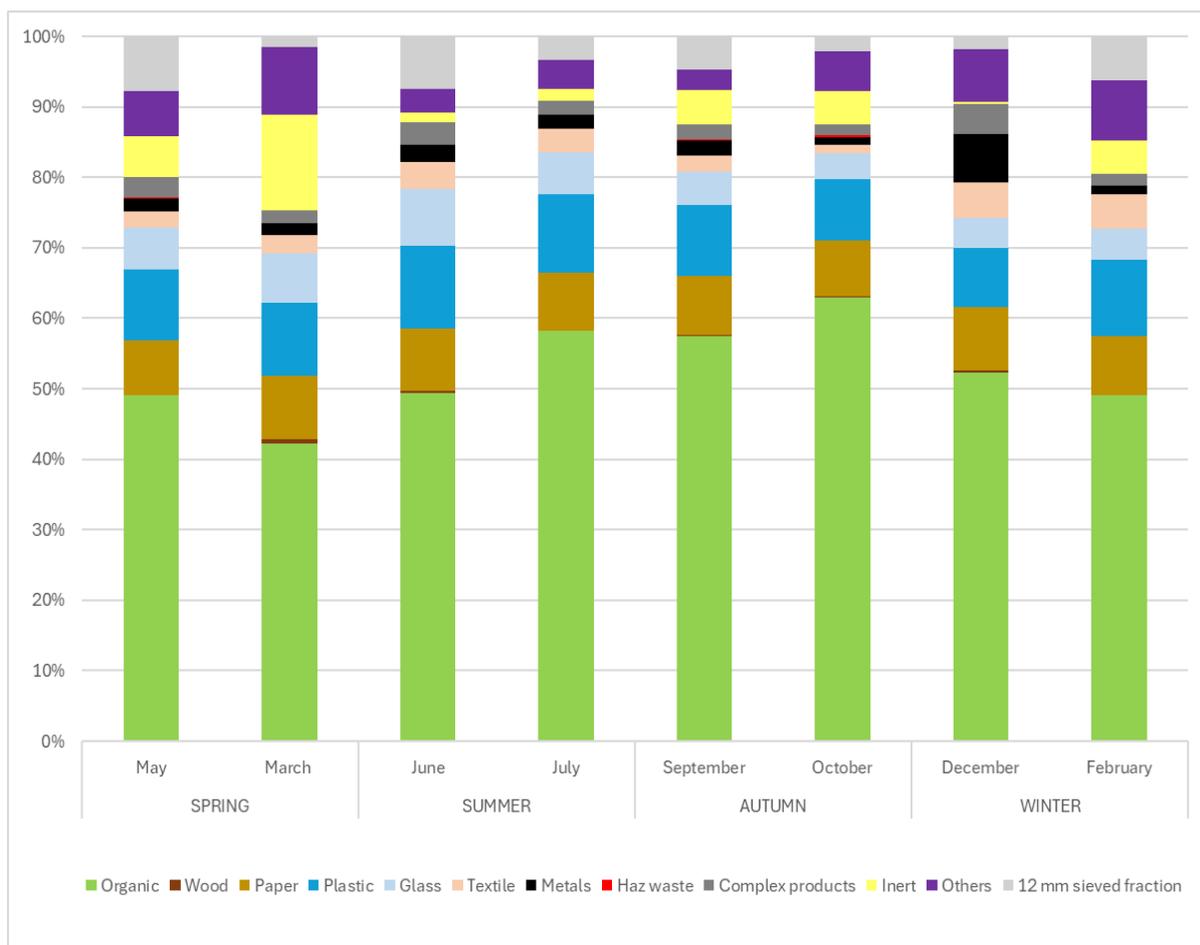
Figure 14: Comparison of fractions per weight among the different seasons

The Figure 14 shows that, even though the organic fraction is the dominant one, there is a clear increase in the organic fraction in the autumn season, while the other fractions are more or less in the same range along the seasons.

Regarding commercial sector, the organic fraction is again the dominant fraction, having a share of 60%, followed by plastic and paper. The recyclable material (paper & cardboard, plastic, glass and metals) adds up to 36%.

TABLE 10: FRACTIONS PER WEIGHT – COMMERCIAL SECTOR	
Organic	59.54
Wood	0.29
Paper	16.47
Plastic	16.89
Glass	1.93
Textile	1.49
Metals	0.26
Haz waste	0.00
Complex products	0.68
Inert	0.01
Others	2.27
12 mm sieved fraction	0.16
	100.00
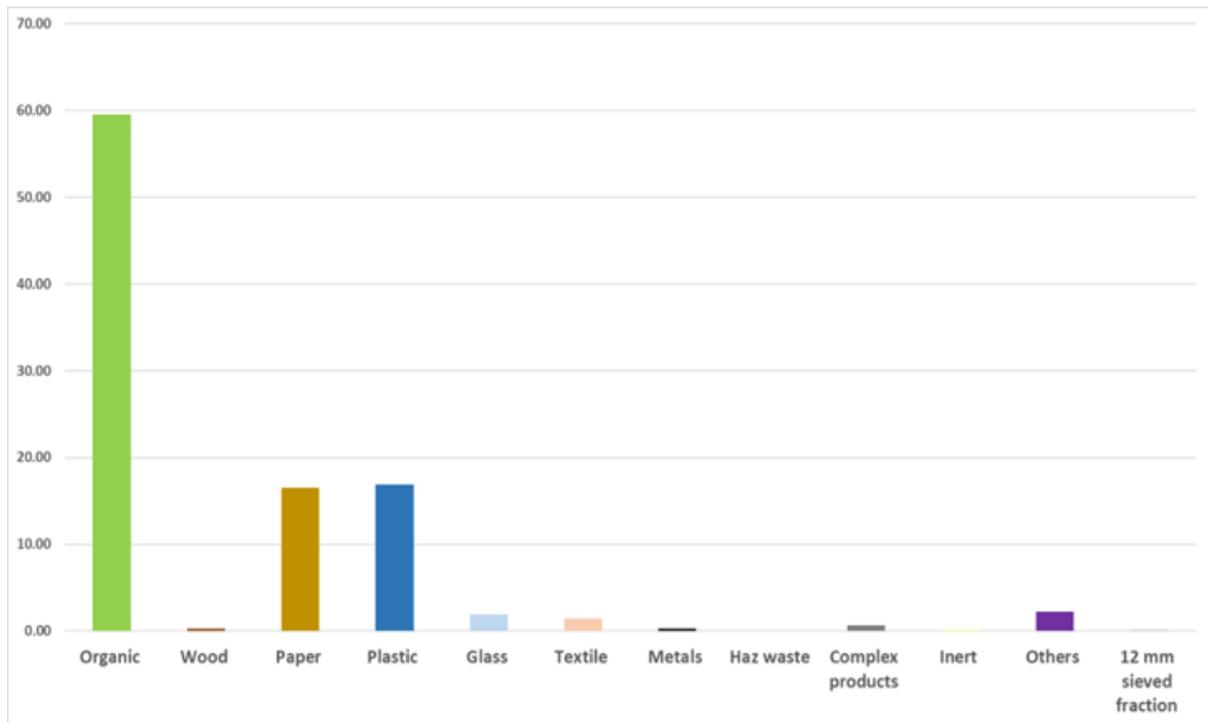
Figure 15: Fractions per weight – commercial sector

A statistical analysis of the fractions per sampling site and container was performed. The following were calculated:

1) Mean;

2) Median;

3) Standard deviation;

4) Variation coefficient;

5) Confidence interval.

The results for Balti and Chisinau are summarised in the following table. The detailed results are annexed to the present report.

TABLE 11: STATISTICAL ANALYSIS OF WASTE FRACTIONS		MEAN	MEDIAN	SDT	VAR COEFF	CONFIDENCE INT.
Chisinau						
OR1	Organic	52.02	52.63	9.55	0.18	3.82
W2	Wood	0.45	0.00	0.78	1.73	0.31
PC3	Paper & Cardboard	11.94	12.17	3.42	0.29	1.37
PL4	Plastic	13.02	12.20	3.83	0.29	1.53
G5	Glass	6.13	5.93	2.53	0.41	1.01
T6	Textile	2.65	1.57	3.14	1.18	1.25
M7	Metals	1.05	0.94	0.53	0.50	0.21
H8	Hazardous	0.00	0.00	0.02	4.90	0.01
C9	Complex products	2.00	1.43	1.72	0.86	0.69
IN10	Inert	1.11	0.00	2.21	1.98	0.88
U11	Others	5.76	5.23	4.01	0.70	1.60
Fines	10 mm sieved fraction	3.88	3.22	3.60	0.93	1.44
Balti						

TABLE 11: STATISTICAL ANALYSIS OF WASTE FRACTIONS		MEAN	MEDIAN	SDT	VAR COEFF	CONFIDENCE INT.
OR1	Organic	56.56	60.00	19.97	0.35	6.35
W2	Wood	0.37	0.00	0.98	2.63	0.31
PC3	Paper & Cardboard	7.33	5.15	7.69	1.05	2.44
PL4	Plastic	11.81	8.21	11.67	0.99	3.71
G5	Glass	5.22	3.73	5.27	1.01	1.68
T6	Textile	1.54	0.63	2.74	1.78	0.87
M7	Metals	0.76	0.56	0.65	0.86	0.21
H8	Hazardous	0.05	0.00	0.24	5.05	0.08
C9	Complex products	2.05	0.65	3.93	1.92	1.25
IN10	Inert	2.82	0.00	6.64	2.36	2.11
U11	Others	8.34	4.28	10.84	1.30	3.45
Fines	10 mm sieved fraction	3.17	2.80	2.87	0.91	0.91

2.2.2. PROXIMATE ANALYSIS RESULTS

Proximate analysis indicates the composition of the waste regarding the moisture content, volatile matters, ash content, and fixed carbon. Glass, metal and inert waste fractions are not subject to proximate analysis.

The proximate analysis results are summarized in the following tables.

TABLE 12: PROXIMATE ANALYSIS RESULTS – CHISINAU (MEAN VALUES)		Moisture	Ad	Vd	FCd
OR1 01	Biodegradable Kitchen/Canteen Waste	65.05%	11.07%	88.52%	0.42%
OR1 02	Biodegradable Garden/Park Waste	61.50%	6.78%	92.64%	0.58%
OR1 03	Other Biodegradable Waste	44.45%	35.19%	63.02%	1.79%
	Mix organic	5.33%	15.72%	81.71%	2.57%
W2 01	Untreated Wood	8.85%	1.56%	98.16%	0.28%
W2 02	Treated Wood	10.15%	1.38%	98.44%	0.19%
	Mix wood	4.16%	2.01%	97.69%	0.30%
PC3 01	High gloss paper/card and wallpapers	6.85%	19.09%	72.31%	8.61%
PC3 02	Paper/card - packaging	19.05%	11.37%	84.92%	3.72%
PC3 03	Newspapers	22.15%	7.75%	88.43%	3.82%
PC3 04	Other Paper/card- non packaging	6.40%	9.65%	87.16%	3.20%
	Mix paper and cardboard - PC 301 ÷ PC 304	5.48%	11.58%	85.12%	3.30%
PL4 01	Plastic Film - packaging	3.20%	1.42%	98.25%	0.33%
PL4 02	Plastic Film - non packaging	2.65%	3.29%	94.48%	2.24%
PL4 03	Dense Plastic Bottles/Jars (P)	1.40%	0.94%	98.74%	0.33%
PL4 04	Dense Plastic - other packaging	5.90%	4.21%	94.50%	1.30%
PL4 05	Dense Plastic -non packaging	7.85%	2.41%	94.17%	3.43%
	Mix plastic PL401 ÷ PL405	0.98%	3.73%	95.61%	0.67%
T6 01	Clothes	5.45%	4.99%	94.55%	0.47%
T6 02	Non-clothing textiles	3.75%	3.79%	95.55%	0.67%
	Mix textiles	4.40%	3.52%	96.16%	0.33%
C9 01	Composite/Complex Packaging	9.85%	13.54%	85.49%	0.97%
C9 02	Composite/Complex Non-packaging	5.90%	13.53%	83.48%	2.99%
	Mix composite C901 ÷C902	4.33%	10.31%	84.95%	4.74%
F12 01	10mm sieved fraction	49.88%	34.22%	62.00%	3.78%
	FINAL MIX	**3.15%**	**22.75%**	**76.04%**	**1.21%**

TABLE 13: PROXIMATE ANALYSIS RESULTS – BALTI (MEAN VALUES)		Moisture	Ad	Vd	FCd
OR1 01	Biodegradable Kitchen/Canteen Waste	91.40%	5.66%	92.88%	1.46%
OR1 02	Biodegradable Garden/Park Waste	82.00%	6.38%	92.27%	1.35%
OR1 03	Other Biodegradable Waste	65.80%	40.75%	58.09%	1.16%
	Mix organic	4.60%	7.65%	90.44%	1.92%
W2 01	Untreated Wood	11.10%	3.20%	96.32%	0.48%
W2 02	Treated Wood	9.60%	1.07%	98.77%	0.16%

TABLE 13: PROXIMATE ANALYSIS RESULTS – BALTI (MEAN VALUES)		Moisture	Ad	Vd	FCd
	Mix wood	6.60%	3.23%	96.42%	0.36%
PC3 01	High gloss paper/card and wallpapers	22.00%	14.79%	85.14%	0.07%
PC3 02	Paper/card - packaging	18.20%	15.93%	79.28%	4.79%
PC3 03	Newspapers	23.10%	12.16%	82.40%	5.44%
PC3 04	Other Paper/card- non packaging	35.20%	11.44%	82.81%	5.75%
	Mix paper and cardboard - PC 301 ÷ PC 304	4.40%	12.49%	82.66%	4.85%
PL4 01	Plastic Film - packaging	14.90%	3.72%	95.80%	0.48%
PL4 02	Plastic Film - non packaging	15.20%	6.11%	92.56%	1.33%
PL4 03	Dense Plastic Bottles/Jars (P)	8.40%	1.13%	98.67%	0.20%
PL4 04	Dense Plastic - other packaging	2.00%	1.74%	97.98%	0.28%
PL4 05	Dense Plastic -non packaging	1.50%	8.65%	89.39%	1.96%
	Mix plastic PL401 ÷ PL405	1.15%	3.47%	95.47%	1.06%
T6 01	Clothes	8.90%	2.94%	96.79%	0.27%
T6 02	Non-clothing textiles	9.10%	4.04%	95.37%	0.59%
	Mix textiles	2.45%	4.46%	94.53%	1.02%
C9 01	Composite/Complex Packaging	17.20%	9.13%	89.81%	1.06%
C9 02	Composite/Complex Non-packaging	7.00%	11.89%	83.00%	5.11%
	Mix composite C901 ÷C902	3.50%	10.83%	86.14%	3.03%
F12 01	10mm sieved fraction	50.75%	51.85%	39.13%	9.03%
	FINAL MIX	**3.65%**	**20.70%**	**77.54%**	**1.77%**

2.2.3.   ELEMENTAL ANALYSIS RESULTS

Elemental analysis of waste examines the contents of carbon (C), hydrogen (H), nitrogen (N), sulphur (S) and oxygen (O). In the present assignment, the content of chlorine (Cl) was also determined.

The results are presented in the following table. As in the case of proximate analysis, glass, metal and inert waste fractions are not subject to elemental analysis.

TABLE 14: RESULTS OF ELEMENTAL ANALYSIS (% WEIGHT d.m.) - CHISINAU		Mean %					
Primary category	**Secondary category**	**C**	**H**	**N**	**S**	**Cl**	**O**
Organic	OR101 Biodegradable Kitchen/Canteen Waste	42.51	5.89	1.63	0.18	0.56	38.18
	OR102 Biodegradable Garden/Park Waste	43.99	5.83	1.91	0.21	0.62	40.67
	OR 103 Other Biodegradable Waste	34.02	4.98	6.11	0.27	0.33	19.11
	Mix organic	40.51	5.60	2.58	0.24	0.51	34.85
Wood	W 201 Untreated Wood	49.34	5.96	1.97	0.04	0.07	41.07
	W 202 Treated Wood	48.99	5.95	2.14	0.02	0.10	41.43
	Mix wood	49.78	5.81	0.75	0.03	0.02	41.59
Paper and cardboard	PC 301 High gloss paper/card and wallpapers	38.21	4.44	0.12	0.05	0.01	38.10
	PC 302 Paper/card - packaging	47.96	4.74	0.16	0.08	0.03	35.68
	PC 303 Newspapers	46.32	5.12	0.13	0.06	0.06	40.59
	PC 304 Other Paper/card- non packaging	42.19	5.32	0.09	0.04	0.11	42.58
	Mix paper & cardboard	42.17	5.33	0.17	0.06	0.10	40.59
Plastics	PL403-1 (simple PET bottle)	71.10	8.71	0.24	0.01	0.58	17.94
	PL403-2 (PET bottle from shampoo)	81.41	12.94	0.07	0.03	0.05	2.20
	PL403-3 (cap PET bottle from shampoo)	80.28	12.41	0.08	0.02	0.04	6.22
	PL403-4 (PET bottle from detergent)	76.98	11.81	0.21	0.06	0.49	6.23
	PL403-5 (cap PET bottle from detergent)	78.29	11.06	1.08	0.02	0.41	6.74
	Mix plastic	74.47	10.79	0.38	0.04	0.52	10.08
Textile	T 601 Clothes	47.20	5.82	0.26	0.14	0.16	41.44
	T 602 non-clothing textiles	54.81	5.02	1.32	0.09	0.20	34.78
	Mix textiles	53.96	5.70	3.12	0.12	0.18	33.41
Complex products	C 901 Composite/Complex Packaging	50.52	5.87	0.20	0.07	0.18	29.64
	C 902 Composite/Complex Non-packaging	51.43	6.10	4.27	0.52	1.09	23.07
	Mix composite	52.39	6.44	1.02	0.31	0.65	28.87
Fines	F 1201 10mm sieved fraction	32.09	4.20	1.69	0.54	0.46	26.81
	MIX TOTAL	**41.59**	**5.56**	**1.38**	**0.17**	**0.63**	**27.92**

Furthermore, the content of metals was determined in the samples of plastics, glass, and metal, as well as in mixed composites and final mix. The metals examined are:

- Lead (Pb);

- Aluminum (Al);

- Arsenic (As);

- Chromium (Cr Total);

- Tin (Sn).

TABLE 15: METAL CONTENT (mg/kg d.m.) – CHISINAU						
Primary category	Secondary category	MEAN				
		Pb	Al	As	Cr	Sn
Plastics	PL403-1 (simple PET bottle)	<0.9		<0.5	4.81	0.57
	PL403-2 (PET bottle from shampoo)	6.28		<0.5	<0.5	1.71
	PL403-3 (cap PET bottle from shampoo)	9.25		<0.5	5.36	1.02
	PL403-4 (PET bottle from detergent)	21.10		<0.5	5.22	0.95
	PL403-5 (cap PET bottle from detergent)	2.42		<0.5	9.45	0.40
	Mix plastic	6.91		<0.5	7.95	1.53
Glass	G 501 Glass Container Packaging Clear	<0.9				
	G 502 Glass Container Packaging Brown	1.60				
	G 503 Glass Container Packaging Other	6.94				
	G 504 Miscellaneous Non-Packaging Glass	16.75				
	Mix glass	7.78				
Metals	M 701 Ferrous Packaging		558.00			
	M 702 Non-ferrous Packaging		882641.00			
	M 703 Miscellaneous Ferrous		11970.00			
	M 704 Miscellaneous Non-ferrous		949406.00			
	Mix metals		340921.50			
Complex products	C 901 Composite/Complex Packaging	11.86		<0.5	2.31	1.81
	C 902 Composite/Complex Non-packaging	199.25		<0.5	6.97	30.11
	Mix composite	129.50		<0.5	28.59	28.93
	MIX TOTAL	20.16	6098.75	0.81	69.68	10.41

TABLE 16: METAL CONTENT (mg/kg d.m.) – BALTI						
Primary category	Secondary category	MEAN				
		Pb	Al	As	Cr	Sn
Plastics	PL403-1 (simple PET bottle)	<0.9		<0.5	5.92	3.40
	PL403-2 (PET bottle from shampoo)	<0.9		<0.5	2.72	3.16
	PL403-3 (cap PET bottle from shampoo)	<0.9		<0.5	1.97	3.21
	PL403-4 (PET bottle from detergent)	<0.9		<0.5	2.37	8.33
	PL403-5 (cap PET bottle from detergent)	<0.9		<0.5	9.59	53.80
	Mix plastic	<0.9		<0.5	2.41	4.22
Glass	G 501 Glass Container Packaging Clear	<0.9				
	G 502 Glass Container Packaging Brown	1.11				
	G 503 Glass Container Packaging Other	3.50				
	G 504 Miscellaneous Non-Packaging Glass	7.50				
	Mix glass	2.25				
Metals	M 701 Ferrous Packaging		472,524.00			
	M 702 Non-ferrous Packaging		478,352.00			
	M 703 Miscellaneous Ferrous		475,768.00			
	M 704 Miscellaneous Non-ferrous					
	Mix metals		479,973.50			
Complex products	C 901 Composite/Complex Packaging	<0.9		<0.5	5.02	10.99
	C 902 Composite/Complex Non-packaging	<0.9		<0.5	2.45	5.52
	Mix composite	<0.9		<0.5	2.48	5.48
	MIX TOTAL	1.99		<0.5	14.07	36.60

2.2.4. HEATING VALUE

The laboratory results regarding heating value for Chisinau and Balti are shown in the following figures (FIGURE 16 and FIGURE 17) and tables (TABLE 17 and TABLE 18).
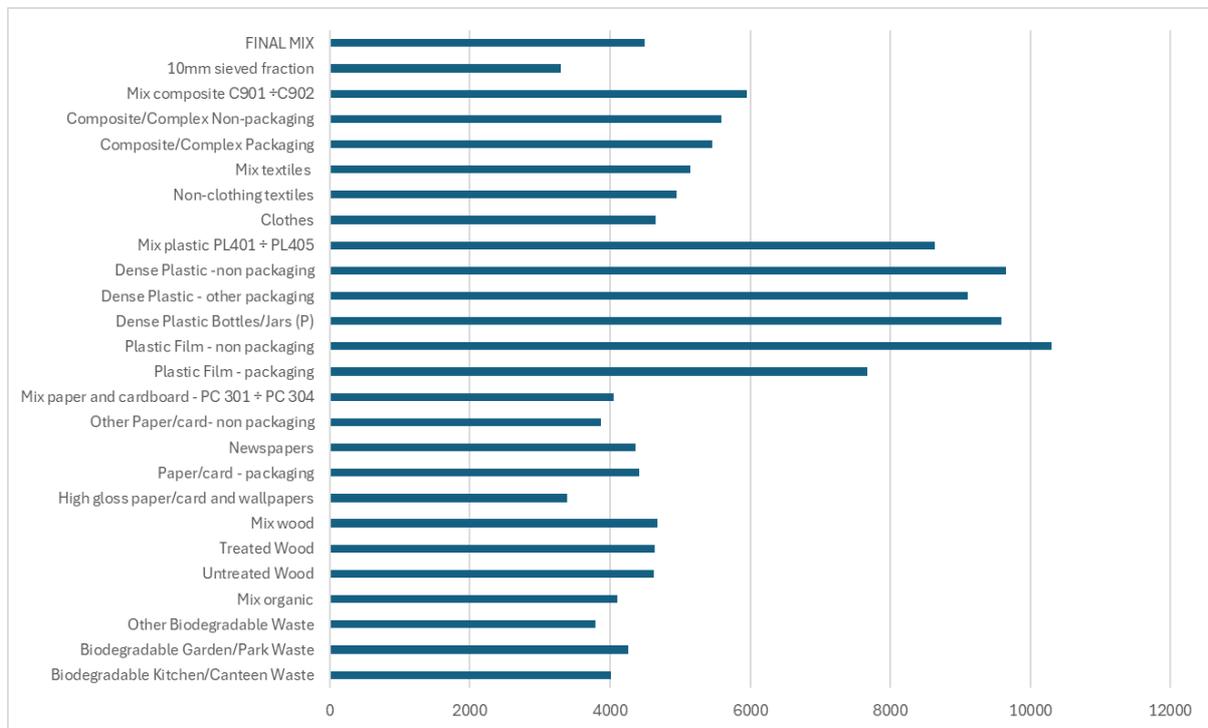
Figure 16: Heating value of waste – Chisinau
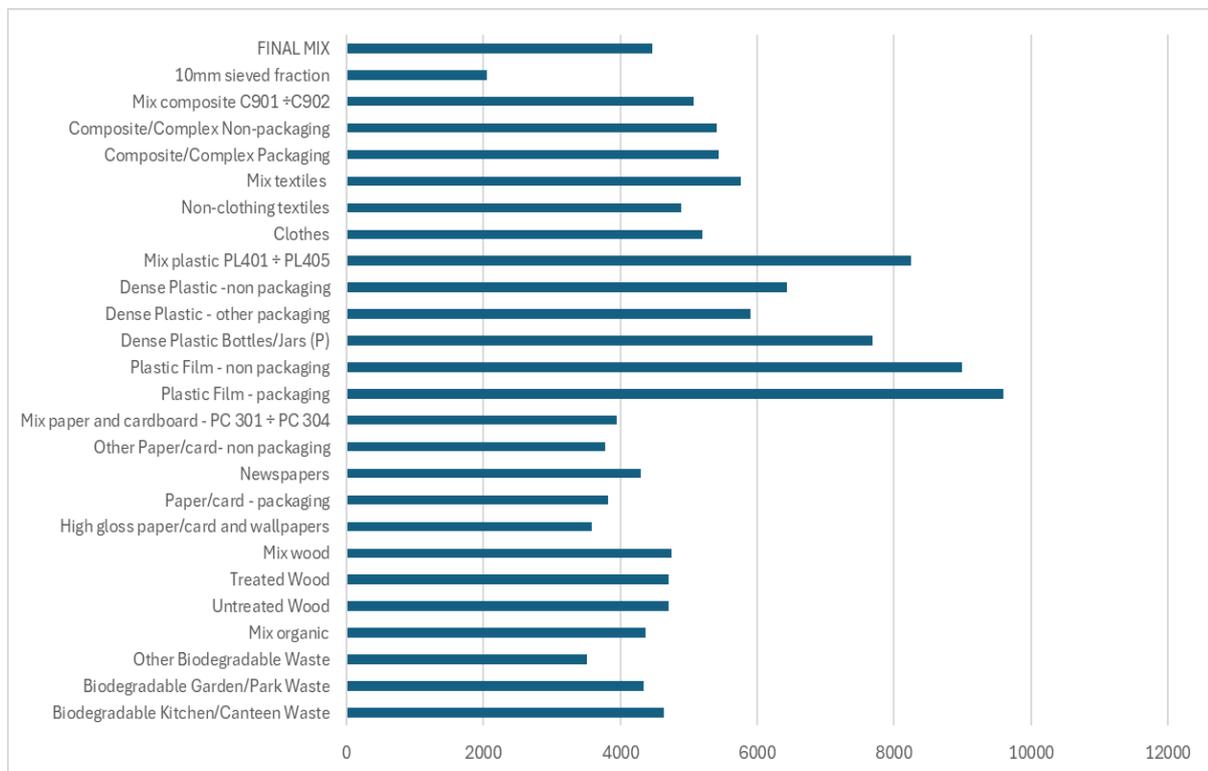
Figure 17: Heating value of waste – Balti

TABLE 17: HEATING VALUE RESULTS - CHISINAU

		Spring	Summer	Autumn	Winter	Sample size	Mean	Median	STD	Variation coefficient	Confidence interval
OR1 01	Biodegradable Kitchen/Canteen Waste		3549		4490	2	4020	4020	665	0.17	922.16
OR1 02	Biodegradable Garden/Park Waste		4250		4259	2	4255	4255	6	0.00	8.82
OR1 03	Other Biodegradable Waste		3876		3715	2	3796	3796	114	0.03	157.78
	Mix organic	**3570**	**3761**	**4605**	**4457**	**4**	**4098**	**4109**	**509**	**0.12**	**499.14**
W2 01	Untreated Wood		4673		4586	2	4630	4630	62	0.01	85.26
W2 02	Treated Wood		4548		4733	2	4641	4641	131	0.03	181.30
	Mix wood	**4681**	**4656**	**4784**	**4579**	**4**	**4675**	**4669**	**85**	**0.02**	**82.95**
PC3 01	High gloss paper/card and wallpapers	3452		3337		2	3395	3395	81	0.02	112.70
PC3 02	Paper/card - packaging	4773		4050		2	4412	4412	511	0.12	708.53
PC3 03	Newspapers	4614		4109		2	4362	4362	357	0.08	494.89
PC3 04	Other Paper/card- non packaging	3738		4015		2	3877	3877	196	0.05	271.46
	Mix P&C - PC 301 ÷ PC 304	**4187**	**3937**	**4013**	**4073**	**4**	**4053**	**4043**	**106**	**0.03**	**103.42**
PL4 01	Plastic Film - packaging	9696		5646		2	7671	7671	2864	0.37	3968.93
PL4 02	Plastic Film - non packaging	9460		11152		2	10306	10306	1196	0.12	1658.13
PL4 03	Dense Plastic Bottles/Jars (P)	8368		10807		2	9588	9588	1725	0.18	2390.18
PL4 04	Dense Plastic - other packaging	8523		9701		2	9112	9112	833	0.09	1154.42
PL4 05	Dense Plastic -non packaging	8605		10714		2	9660	9660	1491	0.15	2066.78
	Mix plastic PL401 ÷ PL405	**9020**	**8773**	**8382**	**8384**	**4**	**8640**	**8579**	**313**	**0.04**	**306.88**
T6 01	Clothes		4762		4547	2	4655	4655	152	0.03	210.70
T6 02	Non-clothing textiles		5334		4578	2	4956	4956	535	0.11	740.87
	Mix textiles	**5548**	**5102**	**5407**	**4534**	**4**	**5148**	**5255**	**450**	**0.09**	**440.52**
C9 01	Composite/Complex Packaging		5618		5306	2	5462	5462	221	0.04	305.75
C9 02	Composite/Complex Non-packaging		5474		5703	2	5589	5589	162	0.03	224.42
	Mix composite C901 ÷C902	**5678**	**5573**	**6258**	**6322**	**4**	**5958**	**5968**	**387**	**0.06**	**379.17**
F12 01	10mm sieved fraction	3079	3043	3363	3725	4	3303	3221	316	0.10	309.62
	FINAL MIX	**4488**	**4651**	**4303**	**4548**	**4**	**4498**	**4518**	**146**	**0.03**	**143.17**

		Summer	Autumn	Mean	Median	Sample size	STD	Variation coefficient	Confidence interval
	TABLE 18: HEATING VALUE RESULTS - BALTI								
OR1 01	Biodegradable Kitchen/Canteen Waste		4640	4640.00	4640.00	1			
OR1 02	Biodegradable Garden/Park Waste		4350	4350.00	4350.00	1			
OR1 03	Other Biodegradable Waste		3515	3515.00	3515.00	1			
	Mix organic	**4307**	**4431**	**4369.00**	**4369.00**	**2**	**87.68**	**0.02**	**121.52**
W2 01	Untreated Wood		4711	4711.00	4711.00	1			
W2 02	Treated Wood		4706	4706.00	4706.00	1			
	Mix wood	**4765**	**4730**	**4747.50**	**4747.50**	**2**	**24.75**	**0.01**	**34.30**
PC3 01	High gloss paper/card and wallpapers	3582		3582.00	3582.00	1			
PC3 02	Paper/card - packaging	3824		3824.00	3824.00	1			
PC3 03	Newspapers	4295		4295.00	4295.00	1			
PC3 04	Other Paper/card- non packaging	3786		3786.00	3786.00	1			
	Mix P&C - PC 301 ÷ PC 304	**3802**	**4085**	**3943.50**	**3943.50**	**2**	**200.11**	**0.05**	**277.33**
PL4 01	Plastic Film - packaging	9593		9593.00	9593.00	1			
PL4 02	Plastic Film - non packaging	8992		8992.00	8992.00	1			
PL4 03	Dense Plastic Bottles/Jars (P)	7681		7681.00	7681.00	1			
PL4 04	Dense Plastic - other packaging	5908		5908.00	5908.00	1			
PL4 05	Dense Plastic -non packaging	6436		6436.00	6436.00	1			
	Mix plastic PL401 ÷ PL405	**8484**	**8013**	**8248.50**	**8248.50**	**2**	**333.05**	**0.04**	**461.57**
T6 01	Clothes		5204	5204.00	5204.00	1			
T6 02	Non-clothing textiles		4890	4890.00	4890.00	1			
	Mix textiles	**6580**	**4939**	**5759.50**	**5759.50**	**2**	**1160.36**	**0.20**	**1608.15**
C9 01	Composite/Complex Packaging	6134	4742	5438.00	5438.00	2	984.29	0.18	1364.13
C9 02	Composite/Complex Non-packaging		5410	5410.00	5410.00	1			
	Mix composite C901 ÷C902		**5076**	**5076.00**	**5076.00**	**1**			
F12 01	10mm sieved fraction	2210	1896	2053.00	2053.00	2	222.03	0.11	307.71
	FINAL MIX	**4524**	**4423**	**4473.50**	**4473.50**	**2**	**71.42**	**0.02**	**98.98**

III.   WASTE GENERATION FORECAST

A waste projection was performed for the WMR4 and WMR7 for the period 2024-2030. The projection covered the following topics:

- Current and projected populations (until 2030) of the municipalities and districts of the target WMRs;

- Projected MSW production/generation in the target WMRs, taking into consideration various scenarios; and

- Analysis of separately collected waste and relevant projections.

The methodology for the waste generation forecast was presented in detail in the Deliverable 4 (Report on MSW Production Projections in WMR4 and WMR 7). The main findings, which are used for the estimation of energy potential) are presented in the following tables.

TABLE 19: POPULATION FORECAST – WMR4								
	Area	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Mun. Chisinau	Urban	609,913	614,016	618,148	622,307	626,495	630,710	634,954
	Rural	66,896	66,663	66,430	66,198	65,966	65,736	65,506
	Total	676,809	680,679	684,578	688,505	692,461	696,446	700,460
Anenii noi	Urban	6,691	6,624	6,557	6,491	6,426	6,362	6,298
	Rural	52,448	51,331	50,239	49,169	48,122	47,098	46,095
	Total	59,139	57,955	56,796	55,661	54,548	53,459	52,393
Criuleni	Urban	4,306	4,220	4,135	4,053	3,972	3,892	3,814
	Rural	51,312	50,385	49,475	48,581	47,703	46,841	45,995
	Total	55,618	54,605	53,610	52,633	51,675	50,733	49,809
Dubasari	Urban							
	Rural	24,245	23,903	23,567	23,235	22,907	22,585	22,267
	Total	24,245	23,903	23,567	23,235	22,907	22,585	22,267
Hincesti	Urban	10,223	10,073	9,925	9,780	9,637	9,495	9,356
	Rural	61,050	59,340	57,678	56,063	54,493	52,967	51,483
	Total	71,273	69,413	67,604	65,843	64,129	62,462	60,839
Ialoveni	Urban	11,867	12,015	12,165	12,316	12,470	12,625	12,783
	Rural	60,108	58,843	57,606	56,394	55,208	54,047	52,910
	Total	71,975	70,858	69,770	68,710	67,678	66,672	65,692
Straseni	Urban	14,724	14,477	14,235	13,996	13,761	13,531	13,304
	Rural	47,851	46,891	45,949	45,027	44,123	43,238	42,370
	Total	62,575	61,368	60,184	59,023	57,885	56,768	55,674
Total	Urban	657,724	661,425	665,165	668,944	672,760	676,615	680,509
	Rural	363,910	357,356	350,943	344,666	338,523	332,511	326,626
	Total	1,021,633	1,018,782	1,016,108	1,013,610	1,011,283	1,009,126	1,007,135

TABLE 20: POPULATION FORECAST – WMR7								
	Area	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Balti	Urban	89,847	89,195	88,547	87,905	87,267	86,633	86,004
	Rural	4,016	3,979	3,942	3,905	3,869	3,834	3,798
	Total	93,863	93,173	92,489	91,810	91,136	90,467	89,803
Drochia	Urban	10,877	10,708	10,541	10,377	10,216	10,057	9,900
	Rural	48,705	47,838	46,986	46,149	*45,327*	44,520	43,727
	Total	59,582	58,545	57,527	56,526	55,543	54,576	53,627
Falesti	Urban	9,596	9,468	9,341	9,215	9,091	8,969	8,849
	Rural	54,425	53,528	52,646	51,778	50,925	50,085	49,260

TABLE 20: POPULATION FORECAST – WMR7								
	Area	2024	2025	2026	2027	2028	2029	2030
	Total	64,021	62,996	61,986	60,993	60,016	59,055	58,109
Floresti	Urban	12,821	12,670	12,521	12,374	12,228	12,084	11,942
	Rural	48,195	47,230	46,285	45,358	44,450	43,560	42,688
	Total	61,017	59,901	58,806	57,732	56,678	55,644	54,630
Glodeni	Urban	7,194	7,110	7,027	6,946	6,865	6,785	6,706
	Rural	34,175	33,541	32,918	32,307	31,708	31,120	30,542
	Total	41,369	40,651	39,946	39,253	38,573	37,904	37,248
Riscani	Urban	8,216	7,998	7,787	7,581	7,380	7,185	6,995
	Rural	40,989	40,484	39,986	39,494	39,008	38,527	38,053
	Total	49,205	48,483	47,773	47,075	46,388	45,712	45,048
Singerei	Urban	12,193	12,051	11,911	11,773	11,636	11,501	11,367
	Rural	51,843	50,874	49,923	48,990	48,074	47,175	46,294
	Total	64,035	62,925	61,834	60,762	59,710	58,676	57,661
Soroca	Urban	18,860	18,626	18,395	18,167	17,941	17,719	17,499
	Rural	44,061	43,281	42,515	41,762	41,023	40,297	39,583
	Total	62,921	61,907	60,910	59,929	58,964	58,016	57,082
Total	Urban	79,757	78,631	77,523	76,432	75,357	74,299	73,257
	Rural	322,393	316,776	311,258	305,838	300,514	295,284	290,147
	Total	402,150	395,407	388,781	382,270	375,871	369,583	363,404

The waste generation is based on the calculation of Waste Generation Indices (WGIs) of urban and rural areas were estimated for every district and municipality of WMR 4 and WMR 7. The WGIs show the amount of waste generated per person, per day (kg/day/person). After estimating the current WGIs, considering expected economic development, projected WGIs were established for negative, low-growth, and high-growth scenarios up until 2030. Based on the projected WGIs and populations, waste generation levels were estimated for each district and municipality in WMR 4 and WMR 7.

The results are shown in the following tables (waste quantities in tons):

TABLE 21: WASTE GENERATION PROJECTION – WMR4								
Area	Rate	2024	2025	2026	2027	2028	2029	2030
WMR 4 - Urban	Negative	225,349	225,509	225,674	225,844	226,020	226,201	226,387
	Low	228,746	232,359	236,035	239,774	243,578	247,448	251,385
	High	231,011	236,983	243,115	249,412	255,877	262,516	269,334
WMR 4 - Rural	Negative	79,298	77,480	75,709	73,984	72,302	70,662	69,065
	Low	80,493	79,834	79,185	78,547	77,918	77,300	76,691
	High	80,954	81,089	81,230	81,376	81,528	81,685	81,847
WMR 4 - Total	Negative	304,647	302,989	301,383	299,828	298,321	296,863	295,451
	Low	309,239	312,193	315,220	318,321	321,496	324,748	328,076
	High	311,965	318,072	324,345	330,788	337,405	344,201	351,181

TABLE 22: WASTE GENERATION PROJECTION – WMR7								
Area	Rate	2024	2025	2026	2027	2028	2029	2030
WMR 7 - Urban	Negative	55,643	54,795	53,961	53,141	52,334	51,541	50,760
	Low	56,482	56,460	56,439	56,418	56,400	56,382	56,365
	High	57,058	57,600	58,149	58,703	59,265	59,832	60,407
WMR 7 - Rural	Negative	71,126	69,544	67,998	66,487	65,010	63,566	62,154
	Low	72,198	71,657	71,120	70,588	70,060	69,537	69,018
	High	72,913	73,083	73,254	73,425	73,598	73,771	73,945
WMR 7 - Total	Negative	126,769	124,340	121,960	119,628	117,344	115,106	112,914
	Low	128,680	128,117	127,559	127,007	126,460	125,919	125,383
	High	129,971	130,683	131,402	132,129	132,863	133,604	134,352

Furthermore, the deduction of recyclables has been estimated. Moldova has adopted EPR regulations that impose upon private sector actors an obligation to recycle certain amounts of different waste streams. The most important targets for EPR are set for packaging, specifically for plastic, paper, glass, and metal waste.

The following different separate collection scenarios based on the EPR targets:

- Optimistic Scenario for Urban Areas – Equal to the original EPR targets;
- Moderate Scenario for Urban Areas – 50% of the original EPR targets;
- Pessimistic Scenario for Urban Areas – 25% of the original EPR targets;
- Optimistic Scenario for Rural Areas – 50% of the original EPR targets;
- Moderate Scenario for Rural Areas – 50% of the Optimistic Scenario in Rural Areas; and
- Pessimistic Scenario for Rural Areas – 25% of Optimistic Scenario in Rural Areas

Based on the above different scenarios for separate collection for urban and rural areas, the amount of recyclables was calculated under different growth projections for waste generation.

The following figures show trends for different separate waste collection scenarios at different waste generation growth rates.
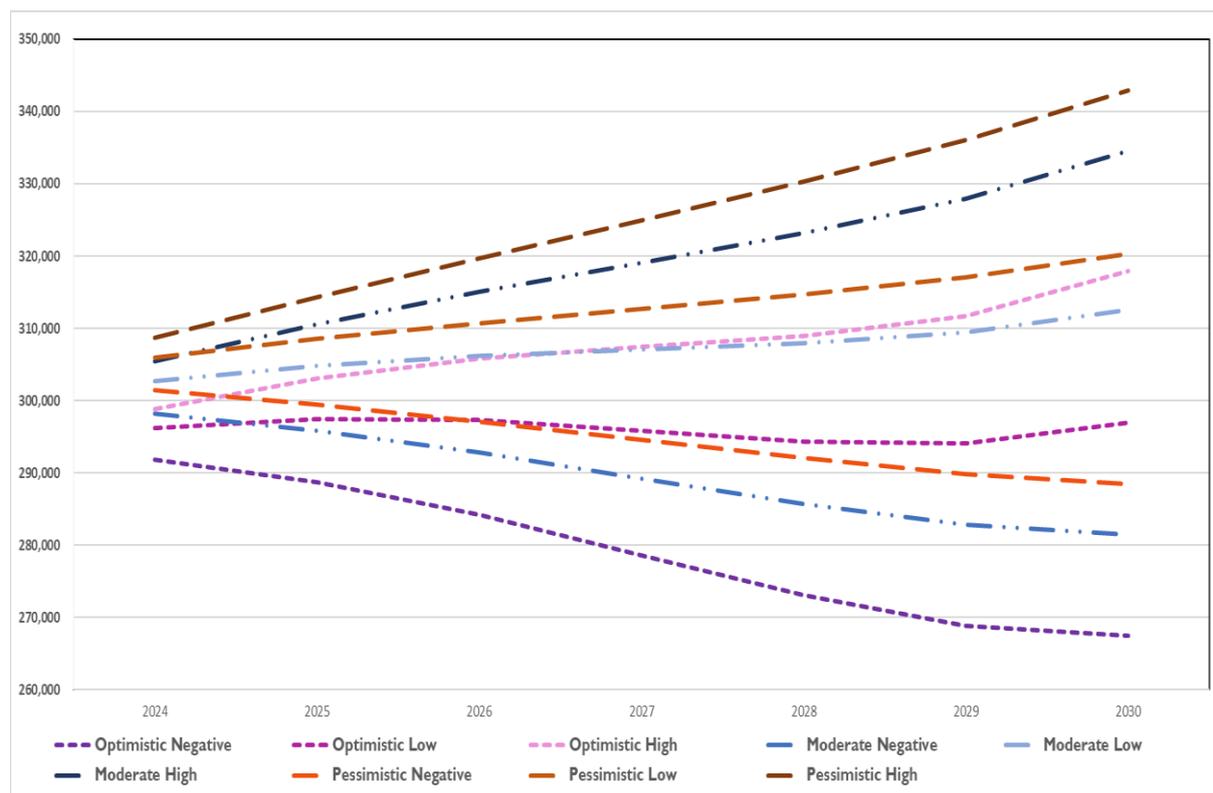
Figure 18: Trends for separate waste collection scenarios at different waste generation growth rates in WMR 4
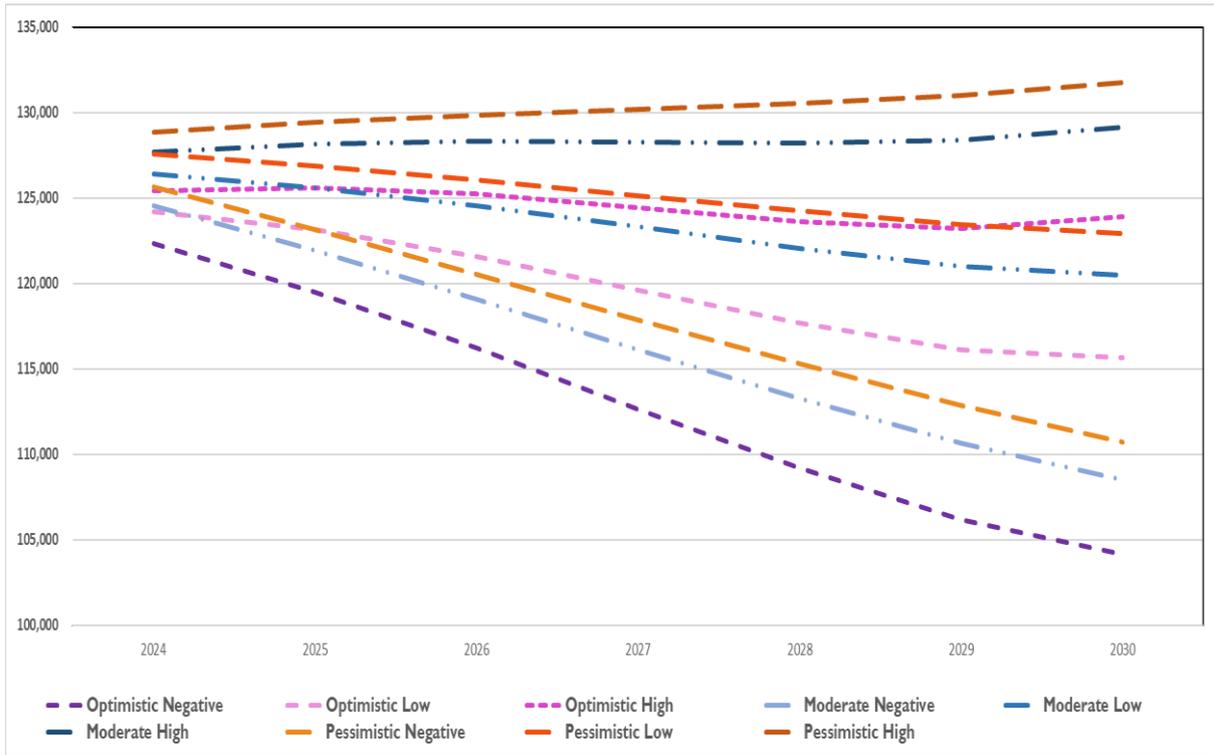
Figure 19: Trends of separate waste collection scenarios at different waste generation growth rates in WMR 7

The scenarios for the separate collection will be used for the development of WtE scenarios in the framework of the next deliverable (selection of technology for WTE production).

IV. ESTIMATION OF ENERGY AND ELECTRICITY POTENTIAL

The energy potential (EP_{MSW}) and electrical power potential (EPP_{MSW}) respectively for the year 2030 were estimated for the two waste management regions (WMR 4 and WMR 7) based on the following:

- The projections regarding waste generation for the two WMRs for the 'negative', 'low' and 'high' WGIs;

- The fractions per waste subcategory as resulted by the survey and sampling location. For the settlements where no sampling and waste composition analysis was performed, the fractions per waste category of the most similar in terms of population settlement were used;

- The moisture values per subcategory as resulted by the laboratory analyses;

- Heating values per waste subcategories, as resulted by the laboratory analyses;

- Coefficient for conversion efficiency EP_{MSW} to EPP_{MSW}: 0.35;

- Annual operation of plant is assumed 6,840 hours (285 days and 24 h/day).

The results of the EP_{MSW} and EPP_{MSW} estimation are summarised in the following tables per WMR. The detailed calculations are annexed to this report.

As shown in the tables, according to the estimations for the WMR 4 a plant of an average capacity of 46 MW would be possible, while for the WMR 7 the average capacity is about 11-12 MW.

TABLE 23: EP_{MSW} AND EPP_{MSW} FOR WMR 4								
				EP (MWh)			EPP (MWh)		
				Negative	Low	High	Negative	Low	High
Organic	OR1 01	Biodegradable Kitchen/Canteen Waste		201,859	224,149	239,999	70,651	78,452	84,000
	OR1 02	Biodegradable Garden/Park Waste		39,487	43,847	46,929	13,820	15,346	16,425
	OR1 03	Other Biodegradable Waste		5,827	6,470	6,929	2,039	2,265	2,425
Wood	W2 01	Untreated Wood		2,299	2,553	2,735	805	893	957
	W2 02	Treated Wood		1,467	1,629	1,746	514	570	611
Paper and cardboard	PC3 01	High gloss paper/card and wallpapers		6,477	7,192	7,696	2,267	2,517	2,694
	PC3 02	Paper/card - packaging		71,053	78,898	84,453	24,868	27,614	29,559
	PC3 03	Newspapers		4,312	4,788	5,128	1,509	1,676	1,795
	PC3 04	Other Paper/card- non packaging		37,676	41,837	44,792	13,187	14,643	15,677
Plastic	PL4 01	Plastic Film -packaging		73,639	81,771	87,572	25,774	28,620	30,650
	PL4 02	Plastic Film - non packaging		71,733	79,654	85,281	25,107	27,879	29,848
	PL4 03	Dense Plastic Bottles/Jars (P)		108,341	120,304	128,815	37,919	42,106	45,085
	PL4 04	Dense Plastic - other packaging		48,880	54,278	58,086	17,108	18,997	20,330
	PL4 05	Dense Plastic -non packaging		29,537	32,799	35,066	10,338	11,480	12,273
Textile	T6 01	Clothes		32,430	36,011	38,563	11,350	12,604	13,497
	T6 02	Non-clothing textiles		21,999	24,428	26,152	7,700	8,550	9,153
Complex products	C9 01	Composite/Complex Packaging		26,980	29,959	32,076	9,443	10,486	11,227
	C9 02	Composite/Complex Non-packaging		16,498	18,319	19,611	5,774	6,412	6,864
Fines	F12 01	10mm sieved fraction		21,583	23,966	25,653	7,554	8,388	8,979
Total				822,077	912,852	977,281	287,727	319,498	342,048
			Plant Capacity (MW)				42.1	46.7	50.0

TABLE 24: EP$_{MSW}$ AND EPP$_{MSW}$ FOR WMR 7								
			EP (MWh)			**EPP (MWh)**		
			Negative	**Low**	**High**	**Negative**	**Low**	**High**
Organic	OR1 01	Biodegradable Kitchen/Canteen Waste	18,172	20,178	21,622	6,360	7,062	7,568
	OR1 02	Biodegradable Garden/Park Waste	17,273	19,180	20,550	6,045	6,713	7,193
	OR1 03	Other Biodegradable Waste	2,996	3,327	3,565	1,049	1,165	1,248
Wood	W2 01	Untreated Wood	108	120	128	38	42	45
	W2 02	Treated Wood	81	90	97	28	32	34
Paper and cardboard	PC3 01	High gloss paper/card and wallpapers	1,763	1,957	2,097	617	685	734
	PC3 02	Paper/card - packaging	18,197	20,206	21,653	6,369	7,072	7,578
	PC3 03	Newspapers	1,120	1,244	1,333	392	435	466
	PC3 04	Other Paper/card- non packaging	13,948	15,488	16,596	4,882	5,421	5,809
Plastic	PL4 01	Plastic Film -packaging	23,562	26,163	28,035	8,247	9,157	9,812
	PL4 02	Plastic Film - non packaging	27,920	31,002	33,221	9,772	10,851	11,627
	PL4 03	Dense Plastic Bottles/Jars (P)	31,726	35,229	37,750	11,104	12,330	13,213
	PL4 04	Dense Plastic - other packaging	10,224	11,353	12,166	3,578	3,974	4,258
	PL4 05	Dense Plastic -non packaging	7,932	8,808	9,439	2,776	3,083	3,304
Textile	T6 01	Clothes	12,223	13,573	14,545	4,278	4,751	5,091
	T6 02	Non-clothing textiles	10,889	12,092	12,957	3,811	4,232	4,535
Complex products	C9 01	Composite/Complex Packaging	2,275	2,526	2,707	796	884	947
	C9 02	Composite/Complex Non-packaging	3,581	3,977	4,261	1,253	1,392	1,491
Fines	F12 01	10mm sieved fraction	6,379	7,084	7,590	2,233	2,479	2,657
Total			**210,369**	**233,598**	**250,313**	**73,629**	**81,759**	**87,609**
			Plant Capacity (MW)			**10.8**	**12.0**	**12.8**

V. CONCLUSIONS

The composition study of municipal waste provides valuable insights into the types and quantities of materials that make up the waste generated. Such studies are essential for effective waste management and environmental sustainability.

The present report shows the results of the entire waste composition survey. The findings of the campaign can be summarized as follows:

- The results have revealed that the dominant waste fraction in all campaigns and sampling locations is organic waste, generated in larger quantities than other wastes. This can indicate a great potential for waste to energy as well as composting and organic waste diversion programs.

- The organic fraction of municipal waste holds significant potential for energy recovery through various waste-to-energy (WtE) technologies.

- The organic fraction, primarily consisting of food waste and yard waste, has a high energy content. This makes it a valuable feedstock for waste-to-energy processes, as the organic materials can be converted into biogas, biofuels, or used in anaerobic digestion.

- Composting, while not directly producing energy, is an environmentally friendly approach to managing the organic fraction. The resulting compost can be used to enrich soil, promoting sustainable agricultural practices, and reducing the need for chemical fertilizers.

- The dominant fraction of the waste is the organic one, accounting for about 53% in total in the residential sector and varying from 48% in the rayons to 64% in Balti. It should be noted that kitchen/canteen waste are more than twice higher than the garden/park biodegradable waste.

- The high percentages of recyclables (paper, plastics, glass and metals) suggest that reuse and recycling is still poorly practiced.

- Plastic waste has a significant portion of the waste stream, underscoring the urgent need for effective recycling and waste reduction strategies. Initiatives focused on reducing single-use plastics, improving recycling infrastructure, and encouraging responsible consumer behaviour could play a pivotal role in mitigating the environmental impact of plastic waste. The study also highlights the potential for resource recovery from certain waste streams, such as plastic, glass, metals, and paper.

- Diverting recyclables from the general waste flow is a crucial aspect of sustainable waste management. Implementing robust recycling programs for these materials could lead to economic benefits through the creation of jobs in the recycling industry and the conservation of valuable resources.

- Overall, recyclable materials factions (paper & cardboard, plastics, glass, and metals) represent in average 26% in the residential sector and 36% in the commercial sector.

- Hazardous waste materials have very low percentages in all campaigns.

- The category 'Others' is on average 6% in the residential sector and 2% in the commercial sector and includes 'Nappies' and 'Other Miscellaneous'. Complex products, which include composite packaging and non-packaging account for 2.4% and 0.7% in the residential and commercial sector respectively.

- Waste fractions that could be considered for WtE (organics, paper & cardboard, textiles, plastics, and fines) represent on average 76% of the waste of the residential sector.
- The heating value for all fractions is in the range of approximately 4000-5500 kcal/kg d.m with the exception of the fraction of plastics that has a much higher heating value of an average 8000-9000 kcal/kg d.m.

An estimation of the energy and electricity potential has been performed, concluding that for the WMR 4 a plant of an average capacity of 46 MW would be possible, while for the WMR 7 the capacity is about 11-12 MW.

However, it is noted that the estimated energy and electricity potential are the maximum ones, since in this estimation the recycling rates are assumed to be the same as in the present context and no further recycling has been considered.

This means that if an increase recycling of recyclable fractions is considered, and, most importantly, if plastics are not included, the energy and electricity potential will be lower.

During the scenario development in the framework of technology selection, recycling targets and scenarios will be taken into account and the estimation of energy and electricity potential will be reassessed accordingly.

In conclusion, this municipal waste composition study provides valuable insights into the nature of waste generated within the communities.

The findings underscore the importance of adopting a holistic approach to waste management that incorporates strategies for waste reduction, recycling, composting, energy recovery and responsible disposal of hazardous and leftover materials.

ANNEX I. STATISTICAL ANALYSIS

WMR 4 - Chisinau

	SPRING - 1			SPRING - 2			SUMMER -1			SUMMER -2			AUTUMN - 1			AUTUMN - 2			WINTER -1			WINTER -2			MEAN	MEDIAN	SDT	VAR COEFF	CONFIDENCE INTERVAL
	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8	Cont 4	Cont 7	Cont 8					
ORI	55.55	42.94	41.48	52.91	52.77	49.41	37.94	30.26	52.50	76.49	49.78	59.98	50.74	56.44	62.93	61.01	45.82	53.83	46.52	62.58	46.96	44.67	56.68	58.32	52.02	52.63	9.55	0.18	3.82
W2	0.65	0.00	0.00	0.00	2.70	0.29	0.02	1.14	2.54	0.00	0.00	0.00	0.43	0.00	0.00	0.15	1.16	0.00	0.00	1.18	0.00	0.54	0.00	0.00	0.45	0.00	0.78	1.73	0.31
PC3	9.31	8.77	12.77	11.81	10.12	14.69	12.92	16.07	12.53	4.21	16.87	8.12	14.93	11.47	6.23	13.70	16.20	7.90	11.74	17.89	12.91	13.91	11.49	9.99	11.94	12.17	3.42	0.29	1.37
PL4	12.14	11.23	16.38	8.58	14.49	12.36	16.16	27.75	11.58	9.37	12.84	11.69	12.65	11.78	8.81	11.43	8.82	11.73	14.85	12.24	12.16	16.05	13.55	13.83	13.02	12.20	3.83	0.29	1.53
G5	5.34	7.46	9.69	10.38	4.37	0.87	4.86	9.69	6.36	3.31	7.11	9.08	9.56	2.95	5.87	5.31	9.12	3.92	5.38	2.59	6.81	6.00	5.99	5.12	6.13	5.93	2.53	0.41	1.01
T6	0.00	3.18	0.30	4.45	1.54	0.00	1.62	2.28	1.59	0.80	2.61	1.19	1.28	1.24	1.07	0.29	8.00	0.87	9.56	0.00	12.38	2.57	3.62	3.09	2.65	1.57	3.14	1.18	1.25
M7	1.18	1.23	1.78	1.21	0.77	0.29	0.90	0.85	0.83	0.47	0.95	0.97	2.85	0.93	0.50	1.13	0.58	0.84	1.67	0.71	1.24	1.07	1.45	0.69	1.05	0.94	0.53	0.50	0.21
H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.02	4.90	0.01
C9	6.01	1.69	1.78	0.94	3.21	0.58	7.03	3.13	4.13	0.99	3.20	1.19	1.57	0.93	0.93	0.59	1.16	0.17	1.91	2.35	0.62	1.28	0.52	2.03	2.00	1.43	1.72	0.86	0.69
IN10	0.00	0.00	0.00	1.21	0.00	0.00	8.83	0.00	0.00	0.00	1.19	0.00	0.29	6.36	2.36	0.20	0.00	2.35	0.00	0.00	0.00	1.07	0.00	2.88	1.11	0.00	2.21	1.98	0.88
U11	3.23	6.90	9.20	5.66	9.13	16.28	5.58	5.98	0.00	1.89	3.56	3.89	4.99	3.26	3.00	5.21	5.24	16.21	4.78	0.00	6.19	8.35	6.20	3.41	5.76	5.23	4.01	0.70	1.60
Fines	6.60	16.59	6.63	2.83	0.90	5.23	4.14	2.85	7.95	2.46	1.90	3.89	0.71	4.65	8.30	0.98	3.88	2.18	3.58	0.47	0.74	4.50	0.52	0.53	3.88	3.22	3.60	0.93	1.44
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00				

WMR 4 - Straseni

	SPRING - 1	SPRING - 2	SUMMER -1	SUMMER -2	AUTUMN - 1	AUTUMN - 2	WINTER -1	WINTER -2	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1					
ORI	68.66	16.74	69.93	45.59	47.19	77.14	50.67	18.54	49.31	48.93	22.68	0.46	15.72
W2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
PC3	4.81	7.21	4.01	15.41	6.38	5.32	4.03	6.11	6.66	5.71	3.71	0.56	2.57
PL4	5.04	16.46	5.49	11.61	10.45	7.45	4.29	7.73	8.56	7.59	4.09	0.48	2.84
G5	2.68	10.95	12.04	2.88	3.39	0.00	4.61	1.78	4.79	3.14	4.35	0.91	3.02
T6	2.68	0.00	1.47	3.01	3.10	0.00	2.08	3.24	1.95	2.38	1.34	0.69	0.93
M7	0.24	0.47	1.27	2.88	1.45	1.11	20.36	0.02	3.48	1.19	6.88	1.98	4.77
H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
C9	3.31	1.00	0.41	0.92	1.50	3.25	9.48	0.24	2.51	1.25	3.05	1.21	2.11
IN10	7.71	31.45	0.00	7.34	19.08	2.74	0.00	15.87	10.52	7.53	10.95	1.04	7.59
U11	0.79	15.50	0.51	7.08	3.39	2.40	4.48	25.82	7.49	3.94	8.83	1.18	6.12
Fines	4.09	0.23	4.88	3.28	4.07	0.60	0.00	20.64	4.72	3.67	6.72	1.42	4.65
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00				

WMR 4 - Ialoveni

	SPRING - 1	SPRING - 2	SUMMER -1	SUMMER -2	AUTUMN - 1	AUTUMN - 2	WINTER -1	WINTER -2	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1					
ORI	25.61	33.04	42.10	52.15	27.56	38.66	61.26	47.06	40.93	40.38	12.30	0.30	8.52
W2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
PC3	5.67	5.77	12.12	6.09	24.02	6.92	12.41	7.76	10.10	7.34	6.25	0.62	4.33
PL4	10.11	3.09	16.33	10.29	18.66	5.02	6.77	16.79	10.88	10.20	5.83	0.54	4.04
G5	4.93	8.80	4.58	8.85	3.88	1.90	13.53	3.87	6.29	4.76	3.80	0.60	2.63
T6	0.50	0.45	5.32	5.17	1.60	2.51	0.00	3.55	2.39	2.05	2.12	0.89	1.47
M7	1.01	0.52	1.61	2.02	1.94	0.53	1.13	2.90	1.46	1.37	0.82	0.56	0.57
H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
C9	3.22	2.10	3.96	1.05	2.51	1.06	0.38	2.26	2.07	2.18	1.20	0.58	0.83
IN10	41.89	42.60	0.00	0.00	16.88	40.36	0.00	0.00	17.72	8.44	20.61	1.16	14.28
U11	5.44	3.06	1.86	3.59	2.51	2.74	1.13	8.39	3.59	2.90	2.32	0.65	1.61
Fines	1.61	0.57	12.13	10.78	0.46	0.30	3.38	7.42	4.58	2.50	4.86	1.06	3.37
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00				

WMR 4 - Sireti

	SPRING - 1				SPRING - 2				SUMMER -1				SUMMER -2				AUTUMN - 1				AUTUMN - 2				WINTER -1				WINTER -2			
	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4
ORI	28.53	66.64	64.13	97.87	63.28	3.89	69.85	19.12	79.74	15.36	48.30	63.73	77.76	79.84	52.82	86.75	66.33	100.00	79.68	17.13	67.63	98.14	75.52	67.12	53.88	72.58	12.78	83.68	67.70	46.69	75.31	77.99
W2	0.00	0.00	0.00	0.00	3.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC3	9.30	3.44	1.04	0.64	6.71	11.67	12.60	7.35	0.39	3.20	2.48	25.74	3.87	4.25	3.56	7.23	8.08	0.00	1.75	7.59	2.33	1.86	7.83	8.21	14.86	6.84	20.88	7.21	0.83	27.24	11.06	3.14
PL4	20.33	8.11	6.94	1.49	13.52	3.89	11.37	13.24	10.59	20.49	10.53	9.31	10.40	4.44	26.41	6.02	10.77	0.00	5.47	7.17	6.13	0.00	14.13	10.65	11.76	9.11	15.69	6.57	8.21	19.46	8.09	6.92
G5	0.00	0.00	6.12	0.00	4.66	0.00	2.47	0.00	0.00	23.69	19.81	0.00	2.10	4.89	7.72	0.00	2.36	0.00	7.44	3.59	3.26	0.00	0.00	4.27	18.40	6.81	0.00	0.00	2.58	0.00	2.97	3.77
T6	0.00	0.00	0.00	0.00	0.00	0.00	1.23	52.94	0.00	1.92	0.00	1.23	0.00	0.56	1.78	0.00	0.00	0.00	1.20	16.85	0.00	0.00	7.32	0.00	0.00	49.35	0.00	0.00	0.74	5.19	0.00	7.55
M7	1.15	1.87	0.00	0.00	3.23	2.59	0.00	1.47	2.75	0.13	0.93	0.00	1.44	0.38	0.59	0.00	3.03	0.00	0.59	1.99	3.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	0.13	0.05	0.00
H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	0.00	0.00	1.36	0.00	0.72	0.00	1.23	2.94	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.00	0.00	0.84	0.61	0.05	2.38	0.00	0.00	0.00	1.30	0.49	0.63
IN10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.48	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	61.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.97	0.00	0.00	0.00
U11	37.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72	2.48	0.00	0.00	2.26	7.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	0.74	1.98	0.00
Fines	3.45	19.94	20.41	0.00	4.30	0.00	1.23	2.94	3.92	20.49	0.00	0.00	3.49	3.38	0.00	0.00	7.74	0.00	5.09	0.00	0.54	0.00	1.68	1.83	1.05	2.27	1.30	1.27	0.74	0.05	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	22.05	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
OR1	61.87	67.38	25.88	0.42	8.97
W2	0.11	0.00	0.63	5.66	0.22
PC3	7.29	6.78	6.88	0.94	2.38
PL4	9.91	9.21	5.95	0.60	2.06
G5	3.97	2.41	6.01	1.52	2.08
T6	4.62	0.00	12.69	2.75	4.40
M7	0.85	0.13	1.12	1.32	0.39
H8	0.00	0.00	0.00		
C9	0.53	0.00	0.85	1.61	0.29
IN10	2.96	0.00	11.38	3.84	3.94
U11	2.12	0.00	7.02	3.31	2.43
Fines	3.35	1.25	5.84	1.74	2.02
TOTAL	97.56				

WMR 7 – Balti

	SPRING - 1					SPRING - 2					SUMMER -1					SUMMER -2					AUTUMN - 1					AUTUMN - 2					WINTER -1					WINTER -2				
	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6	Cont 1	Cont 2	Cont 3	Cont 5	Cont 6
OR1	24.93	53.85	26.90	79.51	21.13	60.14	73.44	0.00	0.00	47.64	29.56	69.09	61.71	51.34	56.53	52.29	62.58	42.72	75.45	68.96	64.64	80.53	38.54	85.90	59.11	70.62	88.08	50.95	87.16	76.23	38.68	65.19	65.44	64.69	42.94	42.22	71.08	59.86		39.64
W2	0.78	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.00	3.37	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	4.83	0.71	0.00	0.10	0.00	0.26	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.28	0.00	0.00		0.00
PC3	4.38	3.35	1.56	1.74	11.11	14.15	10.42	28.35	0.00	10.70	9.46	5.36	8.42	6.47	5.73	4.08	5.37	33.38	2.14	4.47	6.02	5.06	31.13	2.17	4.73	6.47	1.19	5.65	1.06	5.03	3.95	1.72	10.45	2.02	4.83	6.06	3.24	1.76		5.24
PL4	11.84	7.10	19.32	4.14	6.99	9.98	6.52	70.08	0.00	10.46	9.07	11.22	23.00	8.37	13.76	7.54	6.25	15.98	6.25	3.82	14.59	3.65	17.49	1.46	14.44	7.16	8.04	8.64	5.33	6.76	5.88	5.48	19.54	3.38	7.58	15.45	4.43	34.51		13.19
G5	13.84	2.19	20.44	2.30	12.11	3.52	1.03	0.00	0.00	5.20	2.34	4.23	1.96	3.79	12.85	11.62	4.19	2.26	3.67	7.66	6.56	0.00	4.15	3.81	5.87	3.29	0.50	16.70	0.79	3.85	0.83	0.35	1.36	0.19	4.06	12.75	0.80	2.46		14.69
T6	1.74	14.53	0.79	0.77	1.70	0.00	0.67	0.00	0.00	2.60	0.39	0.33	0.56	0.00	0.00	7.66	0.88	2.83	0.52	2.89	0.88	1.05	1.48	0.45	5.50	0.70	0.00	0.34	0.00	0.55	0.08	0.59	0.00	0.58	1.01	1.26	0.06	0.00		5.18
M7	2.28	0.92	0.61	0.09	1.30	0.35	0.31	0.00	0.00	0.24	0.78	2.61	0.42	1.17	0.16	0.31	1.36	1.56	1.66	0.58	1.39	0.00	0.89	0.52	0.00	0.61	1.49	0.43	1.49	0.55	1.66	0.12	0.93	0.21	0.15	0.42	0.19	0.35		0.00
H8	0.00	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
C9	1.31	0.00	2.69	0.73	3.50	0.64	0.21	1.57	0.00	0.47	19.47	0.65	0.56	0.87	1.61	0.16	2.82	0.28	1.31	0.22	1.13	0.05	1.48	2.00	2.11	0.40	0.40	11.90	0.20	0.14	0.28	0.00	0.45	0.00	0.43	5.18	1.06	0.00		11.41
IN10	28.12	9.88	0.00	0.00	26.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.19	0.80	9.89	6.82	0.85	2.79	0.00	0.00	0.40	0.00	0.39	0.00	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.70	13.01	0.00		0.00
U11	7.77	0.16	21.26	4.09	12.71	8.97	4.32	0.00	0.00	18.68	23.08	1.63	0.00	11.22	4.28	6.44	4.87	0.14	3.58	9.10	2.27	1.25	0.00	0.65	4.22	0.90	0.30	4.28	0.99	5.51	47.82	24.21	0.00	23.10	36.39	11.06	3.34	0.00		8.30
Fines	3.01	6.55	6.43	6.63	3.00	1.60	3.09	0.00	0.00	4.02	5.84	4.89	0.00	13.85	4.28	0.00	4.87	0.00	2.62	2.31	1.89	8.01	0.00	1.94	3.67	5.28	0.00	0.86	2.98	1.38	0.83	2.35	0.00	5.82	2.17	4.62	3.76	0.00		1.73
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00

	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
OR1	56.56	60.00	19.97	0.35	6.35
W2	0.37	0.00	0.98	2.63	0.31
PC3	7.33	5.15	7.69	1.05	2.44
PL4	11.81	8.21	11.67	0.99	3.71
G5	5.22	3.73	5.27	1.01	1.68
T6	1.54	0.63	2.74	1.78	0.87
M7	0.76	0.56	0.65	0.86	0.21
H8	0.05	0.00	0.24	5.05	0.08
C9	2.05	0.65	3.93	1.92	1.25
IN10	2.82	0.00	6.64	2.36	2.11
U11	8.34	4.28	10.84	1.30	3.45
Fines	3.17	2.80	2.87	0.91	0.91
TOTAL	100.00				

WMR 7 – Riscani

	SPRING - 1 Cont 1	SPRING - 2 Cont 1	SUMMER -1 Cont 1	SUMMER -2 Cont 1	AUTUMN - 1 Cont 1	AUTUMN - 2 Cont 1	WINTER -1 Cont 1	WINTER -2 Cont 1	SAMPLE SIZE	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
OR1	75.47	86.43	37.45	5.71	79.76	60.45	48.71	59.90	8.00	56.74	60.18	26.26	0.46	18.19
W2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00		
PC3	10.59	2.17	11.34	26.43	4.14	7.33	1.89	6.12	8.00	8.75	6.73	7.96	0.91	5.51
PL4	4.56	5.63	13.08	22.86	7.57	15.06	3.77	11.40	8.00	10.49	9.48	6.48	0.62	4.49
G5	0.00	0.00	3.80	35.71	0.00	9.58	0.00	5.91	8.00	6.88	1.90	12.18	1.77	8.44
T6	0.00	1.04	6.01	2.86	0.48	0.77	5.00	2.95	8.00	2.39	1.95	2.21	0.93	1.53
M7	0.26	0.71	1.90	3.57	1.44	3.25	8.75	0.42	8.00	2.54	1.67	2.80	1.10	1.94
H8	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	8.00	0.08	0.00	0.22	2.83	0.16
C9	0.00	0.74	3.96	2.86	0.24	1.08	0.00	4.85	8.00	1.72	0.91	1.91	1.11	1.32
IN10	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.04	0.00	0.12	2.83	0.08
U11	8.35	2.42	0.95	0.00	0.00	0.00	9.38	1.05	8.00	2.77	1.00	3.86	1.39	2.67
Fines	0.77	0.52	20.89	0.00	6.38	2.47	22.50	7.38	8.00	7.61	4.43	9.11	1.20	6.31
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		100.00				

WMR 7 – Floresti

	SPRING - 1	SPRING - 2	SUMMER -1	SUMMER -2	AUTUMN - 1	AUTUMN - 2	WINTER -1	WINTER -2	SAMPLE SIZE	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1	Cont 1						
OR1	34.66	40.10	44.30	37.87	58.18	53.92	49.11	49.22	8.00	45.92	46.71	8.14	0.18	5.64
W2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00		
PC3	10.40	11.23	12.46	7.66	10.47	7.67	25.70	15.86	8.00	12.68	10.85	5.88	0.46	4.07
PL4	13.00	8.26	15.18	11.97	16.48	9.02	11.91	15.41	8.00	12.66	12.49	2.98	0.24	2.07
G5	9.24	14.86	10.99	4.01	6.34	8.09	2.35	11.21	8.00	8.39	8.66	4.09	0.49	2.84
T6	10.65	5.79	3.81	18.87	0.00	0.27	3.19	1.12	8.00	5.46	3.50	6.44	1.18	4.46
M7	2.10	8.02	1.82	2.97	7.01	0.00	0.84	0.67	8.00	2.93	1.96	2.99	1.02	2.07
H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00		
C9	0.00	5.50	0.00	0.00	0.17	5.93	0.00	2.69	8.00	1.79	0.08	2.60	1.45	1.80
IN10	0.00	0.00	0.00	0.00	0.00	11.05	0.00	0.00	8.00	1.38	0.00	3.91	2.83	2.71
U11	14.49	5.79	0.00	9.21	0.00	3.38	4.20	2.91	8.00	5.00	3.79	4.87	0.97	3.38
Fines	5.46	0.45	11.44	7.43	1.34	0.67	2.69	0.90	8.00	3.80	2.01	3.98	1.05	2.76
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		100.00				

WMR 7 – Cortaleni

	SPRING - 1				SPRING - 2				SUMMER -1				SUMMER -2				AUTUMN - 1				AUTUMN - 2				WINTER -1				WINTER -2			
	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4	Cont 1	Cont 2	Cont 3	Cont 4
OR1	39.40	27.31	54.38	83.67	33.46	35.04	38.16	9.38	22.31	26.01	33.33	54.62	60.75	78.02	23.66	53.45	36.16	44.61	71.00	72.16	89.79	100.00	84.54	49.42	38.24	39.81	89.77	62.95	90.00	7.95	82.96	43.84
W2	0.00	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PC3	8.45	13.01	0.12	0.04	0.50	8.03	0.00	64.06	34.53	20.06	3.00	6.30	2.31	1.29	0.00	0.00	12.26	9.84	3.61	11.95	2.22	0.00	0.00	1.74	29.41	13.89	0.61	13.07	0.00	0.07	1.48	16.44
PL4	14.32	19.38	4.39	0.53	2.19	7.30	2.63	1.56	10.40	20.06	8.89	19.96	12.08	12.07	51.15	33.62	27.31	16.30	4.94	4.05	2.22	0.00	0.00	3.49	7.35	6.48	2.95	12.16	10.00	7.64	6.67	19.86
G5	0.00	7.71	0.00	0.00	0.00	8.76	0.00	0.00	8.62	1.63	5.51	18.91	6.42	6.03	9.16	0.00	6.80	11.56	3.56	0.00	0.00	0.00	0.00	0.00	6.62	36.11	0.00	3.18	0.00	6.06	0.00	6.85
T6	0.40	16.07	0.00	0.00	9.46	10.22	56.58	21.88	3.45	10.61	13.24	0.21	7.54	0.00	5.34	0.00	3.40	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.93	2.00	0.00	0.00	0.51	0.00	12.33
M7	8.83	0.32	2.63	0.00	0.68	1.46	0.00	3.13	0.00	5.71	2.57	0.00	1.68	2.59	10.69	3.88	5.34	2.72	4.00	0.00	0.00	0.00	0.00	0.00	6.62	2.78	1.00	4.09	0.00	0.00	0.00	0.00
H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78	0.00	0.00	0.00	15.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.22	0.77	0.66	0.00	0.00	1.46	0.00	0.00	0.00	0.00	8.09	0.00	4.75	0.00	0.00	9.05	0.97	1.02	0.00	0.00	0.00	0.00	0.00	0.00	11.03	0.00	0.00	0.91	0.00	0.00	1.48	0.68
IN10	0.00	0.00	0.00	0.00	49.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U11	0.30	0.00	33.55	0.00	0.00	27.74	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	0.00	1.94	2.04	0.00	0.00	0.00	0.00	0.00	10.47	0.00	0.00	0.67	0.00	0.00	2.02	7.41	0.00
Fines	27.08	15.42	4.28	15.76	4.39	0.00	0.00	0.00	20.69	15.92	25.37	0.00	1.96	0.00	0.00	0.00	5.83	7.82	8.00	11.84	5.77	0.00	0.00	34.88	0.00	0.00	3.00	3.64	0.00	75.76	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	MEAN	MEDIAN	SDT	VAR COEF	CONFIDENCE INTERVAL
OR1	52.38	47.02	25.43	0.49	8.81
W2	0.08	0.00	0.47	5.66	0.16
PC3	8.70	2.66	13.38	1.54	4.64
PL4	11.00	7.50	10.99	1.00	3.81
G5	4.80	2.41	7.32	1.53	2.54
T6	5.23	0.57	10.89	2.08	3.77
M7	2.61	1.57	3.27	1.25	1.13
H8	0.54	0.00	2.74	5.09	0.95
C9	1.32	0.00	2.82	2.14	0.98
IN10	1.58	0.00	8.72	5.53	3.02
U11	2.79	0.00	7.68	2.75	2.66
Fines	8.98	3.32	15.36	1.71	5.32
TOTAL	100.00				

ANNEX II. WASTE GENERATION FORECAST

WMR4 Waste Generation Projection (tons)

Area	Rate	2024	2025	2026	2027	2028	2029	2030
Chisinau - Urban	Negative	210,590	210,947	211,304	211,662	212,021	212,381	212,741
	Low	213,764	217,355	221,006	224,718	228,492	232,330	236,232
	High	215,881	221,680	227,635	233,750	240,030	246,478	253,099
Chisinau - Rural	Negative	14,577	14,454	14,331	14,210	14,089	13,970	13,851
	Low	14,797	14,893	14,989	15,086	15,184	15,282	15,381
	High	14,943	15,189	15,439	15,692	15,950	16,212	16,479
Chisinau - Total	Negative	225,167	225,400	225,635	225,872	226,110	226,350	226,592
	Low	228,561	232,247	235,994	239,803	243,675	247,611	251,613
	High	230,824	236,869	243,074	249,443	255,980	262,690	269,578
Anenii Noi - Urban	Negative	2,066	2,035	2,004	1,974	1,944	1,915	1,886
	Low	2,097	2,096	2,096	2,096	2,095	2,095	2,095
	High	2,117	2,138	2,159	2,180	2,201	2,223	2,244
Anenii Noi - Rural	Negative	11,429	11,129	10,838	10,554	10,278	10,009	9,747
	Low	11,601	11,468	11,336	11,205	11,076	10,949	10,823
	High	11,716	11,696	11,676	11,656	11,636	11,616	11,596
Anenii Noi - Total	Negative	13,494	13,164	12,842	12,528	12,222	11,924	11,633
	Low	13,698	13,564	13,432	13,301	13,172	13,044	12,918
	High	13,833	13,834	13,835	13,836	13,837	13,838	13,840
Criuleni - Urban	Negative	1,329	1,296	1,264	1,232	1,202	1,172	1,143
	Low	1,349	1,336	1,322	1,308	1,295	1,282	1,269
	High	1,363	1,362	1,362	1,361	1,360	1,360	1,359
Criuleni - Rural	Negative	11,181	10,924	10,673	10,428	10,188	9,954	9,726
	Low	11,350	11,256	11,163	11,071	10,980	10,889	10,800
	High	11,462	11,480	11,498	11,516	11,534	11,552	11,571
Criuleni - Total	Negative	12,510	12,220	11,937	11,660	11,390	11,126	10,868
	Low	12,699	12,592	12,485	12,380	12,275	12,171	12,068
	High	12,825	12,842	12,860	12,877	12,895	12,912	12,930
Dubasari - Urban	Negative	-	-	-	-	-	-	-
	Low	-	-	-	-	-	-	-
	High	-	-	-	-	-	-	-
Dubasari - Rural	Negative	5,283	5,183	5,084	4,987	4,893	4,800	4,708
	Low	5,363	5,340	5,317	5,295	5,273	5,250	5,228
	High	5,416	5,446	5,477	5,508	5,539	5,570	5,601
	Negative	5,283	5,183	5,084	4,987	4,893	4,800	4,708

Area	Rate	2024	2025	2026	2027	2028	2029	2030
Dubasari - Total	Low	5,363	5,340	5,317	5,295	5,273	5,250	5,228
	High	5,416	5,446	5,477	5,508	5,539	5,570	5,601
Hincesti - Urban	Negative	3,156	3,094	3,033	2,974	2,916	2,859	2,803
	Low	3,203	3,188	3,173	3,157	3,142	3,127	3,112
	High	3,235	3,251	3,268	3,284	3,301	3,318	3,334
Hincesti - Rural	Negative	13,303	12,866	12,443	12,034	11,639	11,256	10,886
	Low	13,504	13,257	13,014	12,776	12,543	12,313	12,088
	High	13,301	13,187	13,074	12,962	12,851	12,741	12,632
Hincesti - Total	Negative	16,459	15,960	15,476	15,008	14,554	14,115	13,689
	Low	16,707	16,445	16,187	15,934	15,685	15,440	15,200
	High	16,536	16,439	16,342	16,247	16,152	16,059	15,966
Ialoveni - Urban	Negative	3,663	3,690	3,718	3,745	3,773	3,801	3,829
	Low	3,719	3,803	3,888	3,976	4,066	4,158	4,252
	High	3,755	3,878	4,005	4,136	4,271	4,411	4,555
Ialoveni - Rural	Negative	13,098	12,758	12,427	12,105	11,791	11,486	11,188
	Low	13,295	13,146	12,998	12,852	12,707	12,564	12,423
	High	13,427	13,407	13,388	13,368	13,349	13,329	13,310
Ialoveni - Total	Negative	16,761	16,449	16,145	15,850	15,564	15,286	15,017
	Low	17,014	16,948	16,886	16,828	16,773	16,722	16,675
	High	17,182	17,286	17,393	17,504	17,620	17,741	17,866
Straseni - Urban	Negative	4,545	4,447	4,350	4,256	4,164	4,074	3,985
	Low	4,614	4,582	4,550	4,519	4,487	4,456	4,425
	High	4,659	4,673	4,687	4,700	4,714	4,727	4,741
Straseni - Rural	Negative	10,427	10,167	9,913	9,665	9,424	9,189	8,959
	Low	10,584	10,475	10,368	10,261	10,156	10,052	9,948
	High	10,689	10,684	10,679	10,674	10,669	10,664	10,659
Straseni - Total	Negative	14,972	14,613	14,263	13,921	13,588	13,262	12,944
	Low	15,198	15,057	14,918	14,780	14,643	14,508	14,374
	High	15,348	15,357	15,365	15,374	15,383	15,391	15,400

WMR 7 Waste Generation Projection (tons)

Area	Rate	2024	2025	2026	2027	2028	2029	2030
Balti - Urban	Negative	31,022	30,643	30,269	29,899	29,533	29,172	28,816
	Low	31,490	31,574	31,658	31,743	31,827	31,912	31,998
	High	31,802	32,202	32,608	33,019	33,435	33,856	34,282
Balti - Rural	Negative	875	863	850	838	826	815	803
	Low	888	889	889	890	891	891	892
	High	897	907	916	926	936	946	956
Balti - Total	Negative	31,897	31,506	31,119	30,737	30,360	29,987	29,619
	Low	32,378	32,463	32,548	32,633	32,718	32,804	32,889
	High	32,699	33,109	33,524	33,944	34,370	34,801	35,238
Drochia - Urban	Negative	3,358	3,289	3,222	3,156	3,091	3,028	2,966
	Low	3,408	3,389	3,369	3,350	3,331	3,312	3,293
	High	3,459	3,473	3,488	3,502	3,516	3,531	3,545
Drochia - Rural	Negative	10,613	10,372	10,136	9,906	9,681	9,461	9,246
	Low	10,773	10,687	10,602	10,517	10,433	10,350	10,267
	High	10,880	10,900	10,920	10,940	10,960	10,980	11,000
Drochia - Total	Negative	13,971	13,661	13,358	13,062	12,772	12,489	12,212
	Low	14,181	14,076	13,971	13,867	13,764	13,662	13,560
	High	14,339	14,373	14,407	14,442	14,476	14,511	14,546
Falesti - Urban	Negative	2,962	2,908	2,855	2,802	2,751	2,700	2,651
	Low	3,007	2,996	2,986	2,975	2,964	2,954	2,943
	High	3,037	3,056	3,075	3,095	3,114	3,134	3,154
Falesti - Rural	Negative	11,859	11,606	11,357	11,114	10,876	10,644	10,416
	Low	12,038	11,958	11,879	11,800	11,721	11,643	11,566
	High	12,157	12,196	12,235	12,274	12,313	12,352	12,392
Falesti - Total	Negative	14,822	14,514	14,212	13,917	13,627	13,344	13,067
	Low	15,045	14,955	14,864	14,775	14,686	14,597	14,509
	High	15,194	15,252	15,310	15,369	15,427	15,486	15,545
Floresti - Urban	Negative	3,958	3,892	3,827	3,763	3,700	3,638	3,577
	Low	4,018	4,010	4,002	3,995	3,987	3,980	3,972
	High	4,057	4,090	4,122	4,155	4,189	4,222	4,256
Floresti - Rural	Negative	10,502	10,240	9,985	9,736	9,494	9,257	9,026
	Low	10,660	10,551	10,443	10,337	10,231	10,126	10,023
	High	10,766	10,761	10,757	10,752	10,748	10,743	10,739
Floresti - Total	Negative	14,460	14,132	13,812	13,499	13,193	12,895	12,603
	Low	14,678	14,561	14,446	14,332	14,218	14,106	13,995
	High	14,823	14,851	14,879	14,908	14,936	14,965	14,994

Area	Rate	2024	2025	2026	2027	2028	2029	2030
Glodeni - Urban	Negative	2,221	2,184	2,148	2,112	2,077	2,043	2,009
	Low	2,254	2,250	2,246	2,242	2,238	2,234	2,230
	High	2,277	2,295	2,314	2,333	2,351	2,371	2,390
Glodeni - Rural	Negative	7,447	7,272	7,102	6,935	6,772	6,613	6,458
	Low	7,559	7,493	7,428	7,363	7,298	7,234	7,171
	High	7,634	7,642	7,650	7,659	7,667	7,675	7,683
Glodeni - Total	Negative	9,668	9,456	9,249	9,047	8,849	8,656	8,467
	Low	9,813	9,743	9,674	9,605	9,537	9,469	9,402
	High	9,911	9,937	9,964	9,991	10,018	10,046	10,073
Riscani - Urban	Negative	2,536	2,457	2,380	2,305	2,233	2,163	2,095
	Low	2,574	2,531	2,489	2,447	2,406	2,366	2,327
	High	2,600	2,582	2,564	2,546	2,528	2,510	2,493
Riscani - Rural	Negative	8,932	8,778	8,626	8,477	8,331	8,188	8,046
	Low	9,066	9,044	9,022	9,000	8,978	8,957	8,935
	High	9,156	9,224	9,293	9,362	9,432	9,502	9,573
Riscani - Total	Negative	11,468	11,234	11,006	10,783	10,564	10,351	10,142
	Low	11,641	11,576	11,511	11,448	11,385	11,323	11,261
	High	11,756	11,806	11,857	11,908	11,960	12,012	12,066
Singerei - Urban	Negative	3,764	3,702	3,640	3,580	3,521	3,462	3,405
	Low	3,821	3,814	3,807	3,801	3,794	3,788	3,781
	High	3,858	3,890	3,922	3,954	3,986	4,018	4,051
Singerei - Rural	Negative	11,297	11,030	10,770	10,516	10,268	10,025	9,789
	Low	11,467	11,365	11,264	11,164	11,065	10,967	10,870
	High	11,581	11,591	11,602	11,613	11,624	11,635	11,646
Singerei - Total	Negative	15,061	14,732	14,410	14,096	13,788	13,488	13,194
	Low	15,288	15,179	15,072	14,965	14,859	14,755	14,651
	High	15,439	15,481	15,524	15,567	15,610	15,653	15,697
Soroca - Urban	Negative	5,822	5,721	5,622	5,524	5,429	5,334	5,242
	Low	5,910	5,895	5,880	5,865	5,850	5,835	5,821
	High	5,968	6,012	6,056	6,101	6,146	6,191	6,236
Soroca - Rural	Negative	9,601	9,384	9,172	8,964	8,762	8,564	8,370
	Low	9,746	9,669	9,593	9,517	9,442	9,368	9,294
	High	9,842	9,861	9,881	9,900	9,919	9,938	9,958
Soroca - Total	Negative	15,423	15,105	14,794	14,489	14,190	13,898	13,612
	Low	15,656	15,564	15,473	15,382	15,293	15,203	15,115
	High	15,811	15,874	15,937	16,001	16,065	16,129	16,194

ANNEX III. ESTIMATION OF EP$_{MSW}$ AND EPP$_{MSW}$

Estimation of EP$_{MSW}$ and EPP$_{MSW}$ – WMR 4

		CHISINAU					IALOVENI					ANENII		
		SURVEY RESULTS		FUTURE GENERATION			SURVEY RESULTS		FUTURE GENERATION			FUTURE GENERATION		
		kg	%	N	L	H	kg	%	N	L	H	N	L	H
OR1	Biodegradable Kitchen/Canteen Waste	970.62	46.14%	104542	116085	124374	215.72	29.64%	4,450	4,942	5,295	3448	3828	4102
	Biodegradable Garden/Park Waste	118.39	5.63%	12751	14159	15170	58.38	8.02%	1,204	1,337	1,433	933	1036	1110
	Other Biodegradable Waste	14.65	0.70%	1578	1752	1877	2.60	0.36%	54	60	64	42	46	49
	subtotal	1103.66	52.46%	118870	131996	141421	276.69	38.01%	5,708	6,339	6,791	4422	4910	5261
W2	Untreated Wood	4.35	0.21%	469	520	557	0.00	0.00%	0	0	0	0	0	0
	Treated Wood	2.81	0.13%	303	336	360	0.00	0.00%	0	0	0	0	0	0
	subtotal	7.16	0.34%	771	856	917	0.00	0.00%	0	0	0	0	0	0
PC3	High gloss paper/card and wallpapers	12.20	0.58%	1314	1459	1563	5.78	0.79%	119	132	142	92	103	110
	Paper/card - packaging	124.04	5.90%	13359	14835	15894	42.91	5.90%	885	983	1,053	686	762	816
	Newspapers	8.86	0.42%	955	1060	1136	1.59	0.22%	33	36	39	25	28	30
	Other Paper/card- non packaging	67.99	3.23%	7322	8131	8712	17.01	2.34%	351	390	418	272	302	324
	subtotal	213.08	10.13%	22950	25485	27304	67.29	9.24%	1,388	1,542	1,652	1075	1194	1280
PL4	Plastic Film -packaging	70.74	3.36%	7619	8460	9064	9.79	1.34%	202	224	240	156	174	186
	Plastic Film - non packaging	44.73	2.13%	4818	5350	5732	11.83	1.63%	244	271	290	189	210	225
	Dense Plastic Bottles/Jars (P)	77.51	3.68%	8348	9270	9931	16.33	2.24%	337	374	401	261	290	311
	Dense Plastic - other packaging	33.92	1.61%	3654	4057	4347	15.33	2.11%	316	351	376	245	272	292
	Dense Plastic -non packaging	13.43	0.64%	1446	1606	1720	16.51	2.27%	341	378	405	264	293	314
	subtotal	240.32	11.42%	25884	28743	30795	69.79	9.59%	1,440	1,599	1,713	1115	1239	1327
G5	Glass Container Packaging Clear	77.98	3.71%	8399	9326	9992	22.70	3.12%	468	520	557	363	403	432
	Glass Container Packaging Brown	26.90	1.28%	2897	3217	3447	10.30	1.42%	212	236	253	165	183	196
	Glass Container Packaging Other	11.68	0.56%	1258	1397	1497	10.20	1.40%	210	234	250	163	181	194
	Miscellaneous Non-Packaging Glass	1.20	0.06%	129	144	154	0.00	0.00%	0	0	0	0	0	0
	subtotal	117.76	5.60%	12683	14084	15090	43.20	5.93%	891	990	1,060	690	767	821
T6	Clothes	51.61	2.45%	5559	6173	6613	8.60	1.18%	177	197	211	137	153	164
	Non-clothing textiles	29.57	1.41%	3185	3537	3789	8.60	1.18%	177	197	211	137	153	164
	subtotal	81.18	3.86%	8744	9709	10402	17.20	2.36%	355	394	422	275	305	327
M7	Ferrous Packaging	29.76	1.41%	3205	3559	3813	4.60	0.63%	95	105	113	74	82	87
	Non-ferrous Packaging	14.10	0.67%	1518	1686	1806	2.31	0.32%	48	53	57	37	41	44
	Miscellaneous Ferrous	2.55	0.12%	275	305	327	0.80	0.11%	17	18	20	13	14	15
	Miscellaneous Non-ferrous	0.60	0.03%	65	72	77	1.30	0.18%	27	30	32	21	23	25
	subtotal	47.01	2.23%	5063	5622	6023	9.01	1.24%	186	206	221	144	160	171
H8	Batteries/Accumulators	0.10	0.00%	11	12	13	0.00	0.00%	0	0	0	0	0	0
H9	Miscellaneous hazardous waste	1.10	0.05%	118	132	141	0.00	0.00%	0	0	0	0	0	0
	subtotal	1.20	0.06%	129	144	154	0.00	0.00%	0	0	0	0	0	0
C9	Composite/Complex Packaging	36.88	1.75%	3972	4411	4726	8.80	1.21%	182	202	216	141	156	167
	Composite/Complex Non-packaging	19.90	0.95%	2143	2380	2550	6.00	0.82%	124	137	147	96	106	114
	Mixed WEEE	1.60	0.08%	172	191	205	0.50	0.07%	10	11	12	8	9	10
	subtotal	58.38	2.77%	6288	6982	7481	15.30	2.10%	316	351	376	245	272	291
IN10	Soil and Stones	4.80	0.23%	517	574	615	106.80	14.67%	2,203	2,447	2,621	1707	1895	2031
	Miscellaneous inert	19.00	0.90%	2046	2272	2435	69.50	9.55%	1,434	1,592	1,706	1111	1233	1321

| | | CHISINAU | | | | | IALOVENI | | | | | ANENII | | |
| | | SURVEY RESULTS | | FUTURE GENERATION | | | SURVEY RESULTS | | FUTURE GENERATION | | | FUTURE GENERATION | | |
		kg	%	N	L	H	kg	%	N	L	H	N	L	H
	subtotal	23.80	1.13%	2563	2846	3050	176.30	24.22%	3,637	4,039	4,327	2818	3129	3352
U11	Nappies	102.40	4.87%	11029	12247	13121	20.80	2.86%	429	476	511	332	369	395
	Health Care/Biological Wastes	5.00	0.24%	539	598	641	2.10	0.29%	43	48	52	34	37	40
	Miscellaneous Categories	24.75	1.18%	2666	2960	3171	1.60	0.22%	33	37	39	26	28	30
	subtotal	132.15	6.28%	14233	15805	16933	24.50	3.37%	505	561	601	392	435	466
F12	10mm sieved fraction	78.10	3.71%	8412	9341	10008	28.60	3.93%	590	655	702	457	508	544
		2103.80	100.00%	226592	251613	269578	728	100.00%	15,017	16,675	17,866	11633	12918	13840

Estimation of EP$_{MSW}$ and EPP$_{MSW}$ – WMR 4 (cont.)

| | | CRIULENI | | | DUBASARI | | | HINCESTI | | | STRASENI | | | | |
| | | FUTURE GENERATION | | | FUTURE GENERATION | | | FUTURE GENERATION | | | SURVEY RESULTS | | FUTURE GENERATION | | |
		N	L	H	N	L	H	N	L	H	kg	%	N	L	H
ORI	Biodegradable Kitchen/Canteen Waste	3,221	3,577	3,832	1,395	1,549	1,660	4,057	4,505	4,732	196.01	19.07%	2,469	2,742	2,937
	Biodegradable Garden/Park Waste	872	968	1,037	378	419	449	1,098	1,219	1,281	277.674	27.02%	3,498	3,884	4,161
	Other Biodegradable Waste	39	43	46	17	19	20	49	54	57	47.57	4.63%	599	665	713
	subtotal	4,131	4,588	4,915	1,790	1,987	2,129	5,204	5,778	6,069	521.254	50.72%	6,566	7,291	7,812
W2	Untreated Wood	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
	Treated Wood	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
	subtotal	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
PC3	High gloss paper/card and wallpapers	86	96	103	37	41	44	109	121	127	0.314	0.03%	4	4	5
	Paper/card - packaging	641	712	762	278	308	330	807	896	941	36.19667	3.52%	456	506	542
	Newspapers	24	26	28	10	11	12	30	33	35	1.250667	0.12%	16	17	19
	Other Paper/card- non packaging	254	282	302	110	122	131	320	355	373	23.89667	2.33%	301	334	358
	subtotal	1,005	1,116	1,195	435	483	518	1,266	1,405	1,476	61.658	6.00%	777	862	924
PL4	Plastic Film -packaging	146	162	174	63	70	75	184	204	215	12.6092	1.23%	159	176	189
	Plastic Film - non packaging	177	196	210	77	85	91	223	247	260	33.5092	3.26%	422	469	502
	Dense Plastic Bottles/Jars (P)	244	271	290	106	117	126	307	341	358	20.1817	1.96%	254	282	302
	Dense Plastic - other packaging	229	254	272	99	110	118	288	320	336	5.6627	0.55%	71	79	85
	Dense Plastic -non packaging	246	274	293	107	119	127	310	345	362	11.0952	1.08%	140	155	166
	subtotal	1,042	1,157	1,240	451	501	537	1,313	1,457	1,531	83.058	8.08%	1,046	1,162	1,245
G5	Glass Container Packaging Clear	339	376	403	147	163	175	427	474	498	33.2	3.23%	418	464	498
	Glass Container Packaging Brown	154	171	183	67	74	79	194	215	226	15.2	1.48%	191	213	228
	Glass Container Packaging Other	152	169	181	66	73	78	192	213	224	7.9	0.77%	100	110	118
	Miscellaneous Non-Packaging Glass	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
	subtotal	645	716	767	279	310	332	812	902	948	56.3	5.48%	709	787	844
T6	Clothes	128	143	153	56	62	66	162	180	189	9.4	0.91%	118	131	141
	Non-clothing textiles	128	143	153	56	62	66	162	180	189	9.6	0.93%	121	134	144
	subtotal	257	285	306	111	124	132	323	359	377	19	1.85%	239	266	285
M7	Ferrous Packaging	69	76	82	30	33	35	87	96	101	4.22	0.41%	53	59	63
	Non-ferrous Packaging	34	38	41	15	17	18	43	48	51	1.94	0.19%	24	27	29
	Miscellaneous Ferrous	12	13	14	5	6	6	15	17	18	31.8	3.09%	401	445	477
	Miscellaneous Non-ferrous	19	22	23	8	9	10	24	27	29	1.84	0.18%	23	26	28

		CRIULENI			DUBASARI			HINCESTI			STRASENI				
		FUTURE GENERATION			FUTURE GENERATION			FUTURE GENERATION			SURVEY RESULTS		FUTURE GENERATION		
		N	L	H	N	L	H	N	L	H	kg	%	N	L	H
	subtotal	135	149	160	58	65	69	169	188	198	39.8	3.87%	501	557	596
H8	Batteries/Accumulators	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
H9	Miscellaneous hazardous waste	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
	subtotal	0	0	0	0	0	0	0	0	0	0	0.00%	0	0	0
C9	Composite/Complex Packaging	131	146	156	57	63	68	165	184	193	5.1	0.50%	64	71	76
	Composite/Complex Non-packaging	90	99	107	39	43	46	113	125	132	7.45	0.72%	94	104	112
	Mixed WEEE	7	8	9	3	4	4	9	10	11	14.7	1.43%	185	206	220
	subtotal	228	254	272	99	110	118	288	320	336	27.25	2.65%	343	381	408
IN10	Soil and Stones	1,595	1,771	1,897	691	767	822	2,008	2,230	2,343	79	7.69%	995	1,105	1,184
	Miscellaneous inert	1,038	1,152	1,235	450	499	535	1,307	1,451	1,524	19.7	1.92%	248	276	295
	subtotal	2,632	2,923	3,132	1,140	1,266	1,357	3,316	3,682	3,867	98.7	9.60%	1,243	1,381	1,479
U11	Nappies	311	345	369	135	149	160	391	434	456	21.4	2.08%	270	299	321
	Health Care/Biological Wastes	31	35	37	14	15	16	39	44	46	0.2	0.02%	3	3	3
	Miscellaneous Categories	24	27	28	10	11	12	30	33	35	51	4.96%	642	713	764
	subtotal	366	406	435	158	176	189	461	512	537	72.6	7.06%	914	1,015	1,088
F12	10mm sieved fraction	427	474	508	185	205	220	538	597	627	48	4.67%	605	671	719
		10,868	12,068	12,930	4,708	5,228	5,601	13,689	15,200	15,966	1027.62	100.00%	12944	14374	15400

		Moisture	HHV	TOTAL			TOTAL DRY			EP (MWH)			EPP (MWH)		
				N	L	H	N	L	H	N	L	H	N	L	H
	Biodegradable Kitchen/Canteen Waste	0.65	4019.5	123,582	137,228	146,931	43,192	47,961	51,352	201,859	224,149	239,999	70,651	78,452	84,000
	Biodegradable Garden/Park Waste	0.62	4254.5	20,733	23,022	24,641	7,982	8,864	9,487	39,487	43,847	46,929	13,820	15,346	16,425
OR1	Other Biodegradable Waste	0.44	3795.5	2,377	2,639	2,827	1,320	1,466	1,570	5,827	6,470	6,929	2,039	2,265	2,425
	subtotal			146,691	162,889	174,398									
	Untreated Wood	0.09	4629.5	469	520	557	427	474	508	2,299	2,553	2,735	805	893	957
W2	Treated Wood	0.10	4640.5	303	336	360	272	302	324	1,467	1,629	1,746	514	570	611
	subtotal			771	856	917									
	High gloss paper/card and wallpapers	0.07	3394.5	1,762	1,956	2,093	1,641	1,822	1,950	6,477	7,192	7,696	2,267	2,517	2,694
	Paper/card - packaging	0.19	4411.5	17,112	19,002	20,339	13,852	15,382	16,465	71,053	78,898	84,453	24,868	27,614	29,559
	Newspapers	0.22	4361.5	1,092	1,213	1,299	850	944	1,011	4,312	4,788	5,128	1,509	1,676	1,795
PC3	Other Paper/card- non packaging	0.06	3876.5	8,931	9,917	10,617	8,359	9,282	9,938	37,676	41,837	44,792	13,187	14,643	15,677
	subtotal			28,896	32,087	34,349									
	Plastic Film -packaging	0.03	7671	8,529	9,471	10,143	8,256	9,168	9,818	73,639	81,771	87,572	25,774	28,620	30,650
	Plastic Film - non packaging	0.03	10306	6,149	6,828	7,311	5,986	6,647	7,117	71,733	79,654	85,281	25,107	27,879	29,848
	Dense Plastic Bottles/Jars (P)	0.01	9587.5	9,857	10,945	11,719	9,719	10,792	11,555	108,341	120,304	128,815	37,919	42,106	45,085
	Dense Plastic - other packaging	0.06	9112	4,903	5,444	5,826	4,614	5,123	5,483	48,880	54,278	58,086	17,108	18,997	20,330
PL4	Dense Plastic -non packaging	0.08	9659.5	2,854	3,169	3,388	2,630	2,920	3,122	29,537	32,799	35,066	10,338	11,480	12,273
	subtotal			32,292	35,858	38,387									
G5	Glass Container Packaging Clear			10,561	11,727	12,554				0	0	0	0	0	0
	Glass Container Packaging Brown			3,880	4,308	4,612				0	0	0	0	0	0
	Glass Container Packaging Other			2,141	2,377	2,543				0	0	0	0	0	0
	Miscellaneous Non-Packaging Glass			129	144	154				0	0	0	0	0	0
	subtotal			16,711	18,556	19,862				0	0	0	0	0	0
	Clothes	0.05	4654.5	6,338	7,038	7,536	5,992	6,654	7,126	32,430	36,011	38,563	11,350	12,604	13,497
T6	Non-clothing textiles	0.04	4956	3,966	4,404	4,715	3,818	4,239	4,538	21,999	24,428	26,152	7,700	8,550	9,153
	subtotal			10,304	11,442	12,251									
M7	Ferrous Packaging			3,612	4,011	4,295									
	Non-ferrous Packaging			1,720	1,910	2,045									
	Miscellaneous Ferrous			737	818	876									
	Miscellaneous Non-ferrous			188	208	223									
	subtotal			6,256	6,947	7,439									
H8	Batteries/Accumulators			11	12	13									
H9	Miscellaneous hazardous waste			118	132	141									
	subtotal			129	144	154									
	Composite/Complex Packaging	0.10	5462	4,712	5,233	5,603	4,248	4,717	5,051	26,980	29,959	32,076	9,443	10,486	11,227
	Composite/Complex Non-packaging	0.06	5588.5	2,698	2,996	3,207	2,539	2,819	3,018	16,498	18,319	19,611	5,774	6,412	6,864
C9	Mixed WEEE			396	440	471	396	440	471	0	0	0	0	0	0
	subtotal			7,806	8,668	9,281				0	0	0	0	0	0
IN10	Soil and Stones			9,716	10,789	11,513				0	0	0	0	0	0
	Miscellaneous inert			7,633	8,476	9,051				0	0	0	0	0	0
	subtotal			17,350	19,266	20,564				0	0	0	0	0	0
U11	Nappies			12,896	14,321	15,334				0	0	0	0	0	0
	Health Care/Biological Wastes			702	780	835				0	0	0	0	0	0
	Miscellaneous Categories			3,431	3,810	4,081				0	0	0	0	0	0
	subtotal			17,030	18,910	20,250				0	0	0	0	0	0
F12	10mm sieved fraction	0.50	3302.5	11,213	12,452	13,328	5,621	6,241	6,681	21,583	23,966	25,653	7,554	8,388	8,979
										822,077	912,852	977,281	287,727	319,498	342,048

Estimation of EP$_{MSW}$ and EPP$_{MSW}$ – WMR 7

		BALTI					FLORESTI					FALESTI			GLODENI		
		SURVEY RESULTS		FUTURE GENERATION			SURVEY RESULTS		FUTURE GENERATION			FUTURE GENERATION			FUTURE GENERATION		
		kg	%	N	L	H	kg	%	N	L	H	N	L	H	N	L	H
	Biodegradable Kitchen/Canteen Waste	797.66	27.64%	8186	9090	9739	212.27	40.01%	5,043	5,600	5,999	5228	5805	6220	2,319	2,575	2,759
	Biodegradable Garden/Park Waste	931.00	32.26%	9554	10609	11367	31.52	5.94%	749	832	891	776	862	924	2,536	2,817	3,018
OR1	Other Biodegradable Waste	109.80	3.80%	1127	1251	1341	0.00	0.00%	0	0	0	0	0	0	463	514	551
	subtotal	1838.46	0.64	18867.12	20950.46	22446.32	243.79	0.46	5791.59	6431.11	6890.29	6004.42	6667.45	7143.50	5318.44	5905.71	6327.38
	Untreated Wood	2.16	0.07%	22	25	26	0.00	0.00%	0	0	0	0	0	0	0	0	0
W2	Treated Wood	1.60	0.06%	16	18	20	0.00	0.00%	0	0	0	0	0	0	0	0	0
	subtotal	3.76	0.00	38.59	42.85	45.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High gloss paper/card and wallpapers	14.06	0.49%	144	160	172	2.67	0.50%	64	71	76	66	73	78	33	37	39
	Paper/card - packaging	56.74	1.97%	582	647	693	31.61	5.96%	751	834	893	779	865	926	258	286	307
	Newspapers	7.25	0.25%	74	83	88	1.38	0.26%	33	37	39	34	38	41	22	25	26
PC3	Other Paper/card- non packaging	53.39	1.85%	548	608	652	30.04	5.66%	714	792	849	740	822	880	309	343	368
	subtotal	131.43	0.05	1348.80	1497.74	1604.67	65.71	0.12	1560.99	1733.36	1857.12	1618.36	1797.06	1925.37	621.70	690.35	739.64
	Plastic Film -packaging	53.58	1.86%	550	611	654	12.64	2.38%	300	333	357	311	346	370	178	198	212
	Plastic Film - non packaging	49.97	1.73%	513	569	610	17.68	3.33%	420	466	500	435	484	518	219	243	260
	Dense Plastic Bottles/Jars (P)	62.03	2.15%	637	707	757	21.64	4.08%	514	571	612	533	592	634	274	305	326
	Dense Plastic - other packaging	12.41	0.43%	127	141	152	8.70	1.64%	207	230	246	214	238	255	150	167	179
PL4	Dense Plastic -non packaging	20.95	0.73%	215	239	256	6.38	1.20%	152	168	180	157	174	187	38	42	45
	subtotal	198.96	0.07	2041.77	2267.23	2429.11	67.05	0.13	1592.83	1768.71	1894.99	1651.36	1833.71	1964.63	858.78	953.60	1021.69
G5	Glass Container Packaging Clear	60.70	2.10%	623	692	741	17.10	3.22%	406	451	483	421	468	501	174	193	207
	Glass Container Packaging Brown	17.70	0.61%	182	202	216	7.20	1.36%	171	190	203	177	197	211	51	57	61
	Glass Container Packaging Other	14.29	0.50%	147	163	174	21.10	3.98%	501	557	596	520	577	618	156	173	185
	Miscellaneous Non Packaging Glass	28.26	0.98%	290	322	345	0.00	0.00%	0	0	0	0	0	0	0	0	0
	subtotal	120.95	0.04	1241.25	1378.31	1476.72	45.40	0.09	1078.56	1197.66	1283.17	1118.20	1241.67	1330.33	380.80	422.85	453.04
T6	Clothes	7.91	0.27%	81	90	97	14.80	2.79%	352	390	418	365	405	434	151	168	180
	Non-clothing textiles	36.42	1.26%	374	415	445	13.67	2.58%	325	361	386	337	374	401	30	34	36
	subtotal	44.33	0.02	454.94	505.17	541.24	28.47	0.05	676.36	751.04	804.67	701.21	778.64	834.24	181.11	201.11	215.47
M7	Ferrous Packaging	11.22	0.39%	115	128	137	4.40	0.83%	105	116	124	108	120	129	72	80	86
	Non-ferrous Packaging	4.90	0.17%	50	56	60	1.70	0.32%	40	45	48	42	46	50	32	35	38
	Miscellaneous Ferrous	4.25	0.15%	44	48	52	7.90	1.49%	188	208	223	195	216	231	33	36	39
	Miscellaneous Non-ferrous	0.71	0.02%	7	8	9	1.40	0.26%	33	37	40	34	38	41	22	24	26
	subtotal	21.07	0.01	216.27	240.15	257.30	15.40	0.03	365.86	406.25	435.26	379.30	421.18	451.26	158.13	175.59	188.12
H8	Batteries/Accumulators	0.00	0.00%	0	0	0	0.00	0.00%	0	0	0	0	0	0	9	10	11
H9	Miscellaneous hazardous waste	1.70	0.06%	17	19	21	0.00	0.00%	0	0	0	0	0	0	0	0	0
	subtotal	1.70	0.00	17.45	19.37	20.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.29	10.31	11.05
C9	Composite/Complex Packaging	10.25	0.36%	105	117	125	1.60	0.30%	38	42	45	39	44	47	61	68	73
	Composite/Complex Non-packaging	17.05	0.59%	175	194	208	2.10	0.40%	50	55	59	52	57	62	82	92	98
	Mixed WEEE	14.16	0.49%	145	161	173	5.70	1.07%	135	150	161	140	156	167	7	8	8
	subtotal	41.46	0.01	425.48	472.47	506.20	9.40	0.02	223.31	247.97	265.68	231.52	257.09	275.44	150.46	167.08	179.01
IN10	Soil and Stones	53.80	1.86%	552	613	657	0.00	0.00%	0	0	0	0	0	0	0	0	0
	Miscellaneous inert	96.80	3.35%	993	1103	1182	8.20	1.55%	195	216	232	202	224	240	5	5	6
	subtotal	150.60	0.05	1545.53	1716.19	1838.73	8.20	0.02	194.81	216.32	231.76	201.97	224.27	240.28	4.64	5.16	5.52
U11	Nappies	139.10	4.82%	1428	1585	1698	21.70	4.09%	516	572	613	534	593	636	132	147	157
	Health Care/Biological Wastes	0.60	0.02%	6	7	7	0.01	0.00%	0	0	0	0	0	0	15	17	18
	Miscellaneous Categories	79.51	2.75%	816	906	971	1.60	0.30%	38	42	45	39	44	47	21	23	25
	subtotal	219.21	0.08	2249.64	2498.05	2676.41	23.31	0.04	553.77	614.92	658.83	574.12	637.52	683.04	168.11	186.67	200.00
F12	10mm sieved fraction	114.20	3.96%	1172	1301	1394	23.80	4.49%	565	628	673	586	651	697	615	683	732
		2886.12	100.00%	29619	32889	35238	530.52	100.00%	12,603	13,995	14,994	13067	14509	15545	8467	9402	10073

| | | SINGEREI | | | SOROCA | | | RISCANI | | | | | DROCIA | | |
| | | FUTURE GENERATION | | | FUTURE GENERATION | | | SURVEY RESULTS | | FUTURE GENERATION | | | FUTURE GENERATION | | |
		N	L	H	N	L	H	kg	%	N	L	H	N	L	H
	Biodegradable Kitchen/Canteen Waste	5,279	5,862	6,280	5,446	6,048	6,479	99.885	27.39%	2,778	3,085	3,305	4,886	5,425	5,820
	Biodegradable Garden/Park Waste	784	870	933	809	898	962	109.237	29.96%	3,038	3,374	3,615	726	806	864
OR1	Other Biodegradable Waste	0	0	0	0	0	0	19.928	5.47%	554	615	659	0	0	0
	subtotal	6062.83	6732.30	7212.98	6254.89	6945.57	7441.49	229.05	0.63	6370.49	7073.93	7579.00	5611.52	6231.15	6684.00
	Untreated Wood	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0
W2	Treated Wood	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0
	subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High gloss paper/card and wallpapers	66	74	79	69	76	82	1.4185	0.39%	39	44	47	62	68	73
	Paper/card - packaging	786	873	935	811	901	965	11.1015	3.04%	309	343	367	728	808	867
	Newspapers	34	38	41	36	39	42	0.9505	0.26%	26	29	31	32	35	38
PC3	Other Paper/card- non packaging	747	830	889	771	856	917	13.3045	3.65%	370	411	440	691	768	824
	subtotal	1634.10	1814.54	1944.10	1685.87	1872.02	2005.68	26.78	0.07	744.68	826.91	885.95	1512.46	1679.47	1801.52
	Plastic Film -packaging	314	349	374	324	360	386	7.66095	2.10%	213	237	253	291	323	347
	Plastic Film - non packaging	440	488	523	454	504	540	9.41095	2.58%	262	291	311	407	452	485
	Dense Plastic Bottles/Jars (P)	538	598	640	555	617	661	11.81095	3.24%	328	365	391	498	553	593
	Dense Plastic - other packaging	216	240	257	223	248	266	6.46995	1.77%	180	200	214	200	222	239
PL4	Dense Plastic -non packaging	159	176	189	164	182	195	1.6322	0.45%	45	50	54	147	163	175
	subtotal	1667.42	1851.54	1983.74	1720.25	1910.20	2046.59	36.99	0.10	1028.65	1142.24	1223.79	1543.30	1713.72	1838.26
G5	Glass Container Packaging Clear	425	472	506	439	487	522	7.5	2.06%	209	232	248	394	437	469
	Glass Container Packaging Brown	179	199	213	185	205	220	2.2	0.60%	61	68	73	166	184	197
	Glass Container Packaging Other	525	583	624	541	601	644	6.7	1.84%	186	207	222	486	539	579
	Miscellaneous Non Packaging Glass	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0
	subtotal	1129.07	1253.75	1343.27	1164.84	1293.47	1385.82	16.40	0.04	456.13	506.49	542.66	1045.03	1160.42	1244.75
T6	Clothes	368	409	438	380	422	452	6.5	1.78%	181	201	215	341	378	406
	Non-clothing textiles	340	378	404	351	389	417	1.3	0.36%	36	40	43	315	349	375
	subtotal	708.03	786.22	842.35	730.46	811.12	869.04	7.80	0.02	216.94	240.89	258.09	655.33	727.69	780.58
M7	Ferrous Packaging	109	122	130	113	125	134	3.1	0.85%	86	96	103	101	112	121
	Non-ferrous Packaging	42	47	50	44	48	52	1.36	0.37%	38	42	45	39	43	47
	Miscellaneous Ferrous	196	218	234	203	225	241	1.4	0.38%	39	43	46	182	202	217
	Miscellaneous Non-ferrous	35	39	41	36	40	43	0.95	0.26%	26	29	31	32	36	38
	subtotal	382.99	425.28	455.65	395.12	438.75	470.08	6.81	0.02	189.40	210.32	225.34	354.48	393.62	422.23
H8	Batteries/Accumulators	0	0	0	0	0	0	0.4	0.11%	11	12	13	0	0	0
H9	Miscellaneous hazardous waste	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0
	subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	11.13	12.35	13.24	0.00	0.00	0.00
C9	Composite/Complex Packaging	40	44	47	41	46	49	2.63	0.72%	73	81	87	37	41	44
	Composite/Complex Non-packaging	52	58	62	54	60	64	3.55	0.97%	99	110	117	48	54	58
	Mixed WEEE	142	157	169	146	162	174	0.3	0.08%	8	9	10	131	146	156
	subtotal	233.77	259.59	278.12	241.18	267.81	286.93	6.48	0.02	180.23	200.13	214.42	216.37	240.26	257.72
IN10	Soil and Stones	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0
	Miscellaneous inert	204	226	243	210	234	250	0.2	0.05%	6	6	7	189	210	225
	subtotal	203.93	226.45	242.62	210.39	233.62	250.30	0.20	0.00	5.56	6.18	6.62	188.75	209.59	224.82
U11	Nappies	540	599	642	557	618	662	5.7	1.56%	159	176	189	499	555	595
	Health Care/Biological Wastes	0	0	0	0	0	0	0.64	0.18%	18	20	21	0	0	0
	Miscellaneous Categories	40	44	47	41	46	49	0.9	0.25%	25	28	30	37	41	44
	subtotal	579.71	643.72	689.68	598.07	664.11	711.53	7.24	0.02	201.36	223.60	239.56	536.55	595.80	639.10
F12	10mm sieved fraction	592	657	704	611	678	726	26.5	7.27%	737	818	877	548	608	653
		13,194	14,651	15,697	13,612	15,115	16,194	364.64	100.00%	10142	11261	12066	12212	13560	14546

		Moisture	HHV	TOTAL			TOTAL DRY			EP (MWH)			EPP (MWH)		
				N	L	H	N	L	H	N	L	H	N	L	H
OR1	Biodegradable Kitchen/Canteen Waste	91.40%	4640	39,165	43,490	46,602	3,368	3,740	4,008	18,172	20,178	21,622	6,360	7,062	7,568
	Biodegradable Garden/Park Waste	82.00%	4350	18,972	21,067	22,573	3,415	3,792	4,063	17,273	19,180	20,550	6,045	6,713	7,193
	Other Biodegradable Waste	65.80%	3515	2,144	2,381	2,550	733	814	872	2,996	3,327	3,565	1,049	1,165	1,248
	subtotal			60281.30	66937.68	71724.97	7516.40	8346.38	8943.09						
W2	Untreated Wood	11.10%	4711	22	25	26	20	22	23	108	120	128	38	42	45
	Treated Wood	9.60%	4706	16	18	20	15	16	18	81	90	97	28	32	34
	subtotal			38.59	42.85	45.91	34.55	38.37	41.10						
PC3	High gloss paper/card and wallpapers	22.00%	3582	543	603	646	423	470	504	1,763	1,957	2,097	617	685	734
	Paper/card - packaging	18.20%	3824	5,003	5,556	5,953	4,093	4,545	4,870	18,197	20,206	21,653	6,369	7,072	7,578
	Newspapers	23.10%	4295	292	324	347	224	249	267	1,120	1,244	1,333	392	435	466
	Other Paper/card- non packaging	35.20%	3786	4,890	5,429	5,818	3,168	3,518	3,770	13,948	15,488	16,596	4,882	5,421	5,809
	subtotal			10726.96	11911.45	12764.07	7908.52	8781.79	9410.39						
PL4	Plastic Film -packaging	14.90%	9593	2,482	2,756	2,954	2,112	2,346	2,513	23,562	26,163	28,035	8,247	9,157	9,812
	Plastic Film - non packaging	15.20%	8992	3,149	3,497	3,747	2,670	2,965	3,177	27,920	31,002	33,221	9,772	10,851	11,627
	Dense Plastic Bottles/Jars (P)	8.40%	7681	3,878	4,306	4,615	3,552	3,945	4,227	31,726	35,229	37,750	11,104	12,330	13,213
	Dense Plastic - other packaging	2.00%	5908	1,519	1,686	1,807	1,488	1,653	1,771	10,224	11,353	12,166	3,578	3,974	4,258
	Dense Plastic -non packaging	1.50%	6436	1,076	1,195	1,281	1,060	1,177	1,261	7,932	8,808	9,439	2,776	3,083	3,304
	subtotal			12104.36	13440.94	14402.81	10883.56	12085.35	12950.21						
G5	Glass Container Packaging Clear			3,091	3,432	3,678				0	0	0	0	G 0	0
	Glass Container Packaging Brown			1,172	1,301	1,394				0	0	0	0	0	0
	Glass Container Packaging Other			3,061	3,399	3,643				0	0	0	0	0	0
	Miscellaneous Non-Packaging Glass			290	322	345				0	0	0	0	0	0
	subtotal			7613.88	8454.62	9059.76	0.00	0.00	0.00	0	0	0	0	0	0
T6	Clothes	8.90%	5204	2,217	2,462	2,639	2,020	2,243	2,404	12,223	13,573	14,545	4,278	4,751	5,091
	Non-clothing textiles	9.10%	4890	2,107	2,340	2,507	1,915	2,127	2,279	10,889	12,092	12,957	3,811	4,232	4,535
	subtotal			4324.38	4801.89	5145.67	3935.30	4369.84	4682.69						
M7	Ferrous Packaging			810	899	964									
	Non-ferrous Packaging			327	363	389									
	Miscellaneous Ferrous			1,078	1,197	1,283									
	Miscellaneous Non-ferrous			226	251	269									
	subtotal			2441.55	2711.15	2905.23	0.00	0.00	0.00						
H8	Batteries/Accumulators			20	23	24									
H9	Miscellaneous hazardous waste			17	19	21									
	subtotal			37.86	42.04	45.04	0.00	0.00	0.00						
C9	Composite/Complex Packaging	17.20%	5438	434	482	517	360	400	428	2,275	2,526	2,707	796	884	947
	Composite/Complex Non-packaging	7.00%	5410	612	680	728	569	632	677	3,581	3,977	4,261	1,253	1,392	1,491
	Mixed WEEE			856	950	1,018	856	950	1,018	0	0	0	0	0	0
	subtotal			1902.33	2112.39	2263.52	1784.76	1981.84	2123.64	0	0	0	0	0	0
IN10	Soil and Stones			552	613	657				0	0	0	0	0	0
	Miscellaneous inert			2,003	2,225	2,384				0	0	0	0	0	0
	subtotal			2555.58	2837.77	3040.65	0.00	0.00	0.00	0	0	0	0	0	0
U11	Nappies			4,364	4,846	5,193				0	0	0	0	0	0
	Health Care/Biological Wastes			40	44	48				0	0	0	0	0	0
	Miscellaneous Categories			1,057	1,174	1,258				0	0	0	0	0	0
	subtotal			5461.34	6064.39	6498.15	0.00	0.00	0.00	0	0	0	0	0	0
F12	10mm sieved fraction	50.75%	2053	5,426	6,025	6,456	2,672	2,968	3,180	6,379	7,084	7,590	2,233	2,479	2,657
				112914	125383	134352	34736	38571	41331	210,369	233,598	250,313	73,629	81,759	87,609