

ROMÂNIA
CONSILIUL JUDEȚEAN VÂLCEA

HOTĂRÂRE

PRIVIND: aprobarea aplicației de finanțare și a documentelor suport pentru proiectul „Sistem de management integrat al deșeurilor solide în județul Vâlcea”

Consiliul Județean Vâlcea, întrunit în ședința din data de 3 iunie 2013, la care participă un număr de 27 consilieri județeni din totalul de 32 în funcție;

Având în vedere Expunerea de motive a Președintelui Consiliului Județean Vâlcea înregistrată sub nr. 6751 / 31.05.2013;

Luând în considerare Raportul de specialitate al Direcției Programe și Relații Externe înregistrat la nr. 6752 / 31.05.2013;

În conformitate cu prevederile art. 91 alin. (1) literele “a”, “b” și “d” din Legea *administrației publice locale* nr. 215/2001, republicată, cu modificările și completările ulterioare, ale art. 8, alin. (1) și (2), lit. a din Legea nr. 51/2006 *a serviciilor comunitare de utilități publice*, republicată, precum și ale Hotărârii Guvernului nr. 1183/2010 *privind aprobarea listei cuprinzând proiectele finanțate în cadrul Programului operațional sectorial “Mediu” pentru care se aplică prevederile art. 52 alin. (9) lit. b) din Legea nr. 500/2002 privind finanțele publice și ale art. 54 alin. (9¹) lit. b) din Legea nr. 273/2006 privind finanțele publice locale;*

Având în vedere **Ghidul Solicitantului** pentru Axa prioritară 2 a **Programului Operațional Sectorial de Mediu**, dispozițiile Legii nr. 211/2011 privind regimul deșeurilor și ale Hotărârii Guvernului nr. 1470/2004 privind aprobarea Strategiei naționale de gestionare a deșeurilor și a Planului național de gestionare a deșeurilor, Hotărârea Asociației de Dezvoltare Intercomunitară pentru Serviciul de Salubritate al Localităților din Județul Vâlcea nr.1/31.05.2013 privind avizarea documentației tehnico-economice, faza studiu de fezabilitate, pentru obiectivul de investiții „**Sistem de management integrat al deșeurilor solide în județul Vâlcea**”, precum și avizul nr 2/2013 al Consiliului Tehnico-Economic al Consiliului Județean Vâlcea pentru aceeași documentație;

Având în vedere adresa Direcției Generale AM POS Mediu din cadrul Ministerului Mediului și Schimbărilor Climatice înregistrată la Consiliul Județean Vâlcea sub nr. 5301/26.04.2013;

În temeiul prevederilor art. 97 din Legea administrației publice locale nr. 215/2001, republicată, cu modificările și completările ulterioare;

HOTĂRĂȘTE:

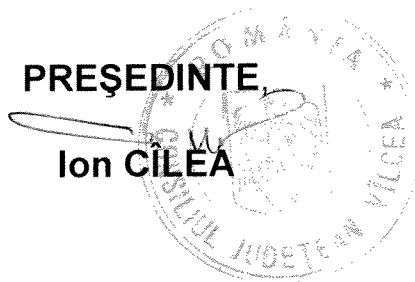
Art. 1 – Se aprobă aplicația de finanțare și a documentelor suport pentru proiectul „**Sistem de management integrat al deșeurilor solide în județul Vâlcea**”, prevăzute în anexa care face parte integrantă din prezenta hotărâre.

Art. 2 – Secretarul Județului Vâlcea, prin Compartimentul Cancelarie, va comunica prezenta hotărâre direcțiilor din aparatul de specialitate al Consiliului Județean Vâlcea, precum și Asociației de Dezvoltare Intercomunitară pentru Serviciul de Salubritate al Localităților din Județul Vâlcea, pentru a aduce la îndeplinire prevederile ei, și va asigura publicarea acesteia pe site-ul Consiliului Județean Vâlcea, precum și în Monitorul Oficial al județului Vâlcea.

Prezenta hotărâre a fost adoptată cu respectarea prevederilor art. 45 alin. (2) lit. d) coroborate cu cele ale art. 98 din Legea administrației publice locale nr. 215/2001, republicată, cu modificările și completările ulterioare, cu un număr de 28 voturi pentru, 0 voturi împotriva și 0 abțineri.

PREȘEDINTE,

Ion CILEA



**CONTRASEMNEAZĂ,
SECRETAR AL JUDEȚULUI,
Constantin DIRINEA**

A handwritten signature in black ink, appearing to read 'Dirinea', is written over the printed name of the Secretary of the County Council.

Râmnicu Vâlcea,

Nr. 91 / 03.06.2013

VLM, /VLM /4ex.

ANNEX XXI
MAJOR PROJECT
REQUEST FOR CONFIRMATION OF ASSISTANCE UNDER ARTICLES 39 TO 41
OF REGULATION (EC) NO 1083/2006
EUROPEAN REGIONAL DEVELOPMENT FUND / COHESION FUND
INTEGRATED SOLID WASTE MANAGEMENT SYSTEM
IN VALCEA COUNTY

CCI No [.....]

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A. ADDRESSES AND REFERENCES

A.1. Authority responsible for the application (i.e., managing authority or intermediate body)

- A.1.1. Name: *Ministry of Environment and Climate Change*
- A.1.2. Address: *Calea Serban Voda, no 30-32, Sector 4, Bucharest*
- A.1.3. Contact: *Florian Burnar – Director*
- A.1.4. Telephone: *+40-21-300.62.50*
- A.1.5. Telex/Fax: *+40-21-316.67.78*
- A.1.6. E-mail: *florian.burnar@posmediu.ro*

A.2. Organisation responsible for project implementation (beneficiary)

- A.2.1. Name: *Valcea County Council*
- A.2.2. Address: *1 General Praporgescu Street, , Rm. Vâlcea, Vâlcea County*
- A.2.3. Contact: *Ion Cîlea, County Council President*
- A.2.4. Telephone: *0250-732901*
- A.2.5. Telex/Fax: *0250-735617*
- A.2.6. E-mail: *ion.cilea@cjvalcea.ro*

B. PROJECT DETAILS

B.1. Title of project / project phase:

Integrated solid waste management system in Valcea County

B.2. Categorisation of project activity¹

	<i>Code</i>	<i>Percentage</i>
B.2.1. Code for the priority theme dimension	44	100%
B.2.2. Code for the form of finance dimension	01	100%
B.2.3. Code for the territorial dimension	01	48,6%
	05	51,4%
B.2.4. Code for the economic activity dimension ²	21	100%
B.2.4.1. NACE Code ³	E38	
B.2.5. Code for the location dimension (NUTS/LAU) ⁴	RO413	100%

B.3. Compatibility and coherence with the Operational Programme

B.3.1. Title of the related Operational Programme:

Sectoral Operational Programme for Environment 2007-2013

B.3.2. Common Code for Identification (CCI) No of Operational Programme

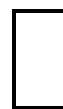
2007 RO 161 PO 004

B.3.3. Fund

ERDF



Cohesion
Fund



B.3.4. Title of the priority axis

Priority Axis 2 – Development of integrated waste management systems and rehabilitation of historically contaminated sites

B.4. Project description

B.4.1. Project (or project phase) description:

a) Description of the project (or project phase).

¹ Annex II to Regulation (EC) No 1828/2006 unless otherwise specified.

² Where a project involves more than one economic activity, multiple codes may be indicated. In that case the percentage share for each code should be indicated with the total not exceeding 100%.

³ NACE-Rev.2, 4 digit code: Regulation (EC) No 1893/2006 of the European Parliament and of the Council (OJ L 393, 30.12.2006, p.1).

⁴ Regulation (EC) No 1059/2003 of the European Parliament and of the Council (OJ L 154, 21.6.2003, p. 1). Use the most detailed and relevant NUTS code. Where a project affect multiple individual NUTS/LAU 2 level areas, consider encoding the NUTS/LAU1 or higher codes.

The project refers to the development of an integrated waste management system in Valcea County which is located in the South – Western Region of Romania.

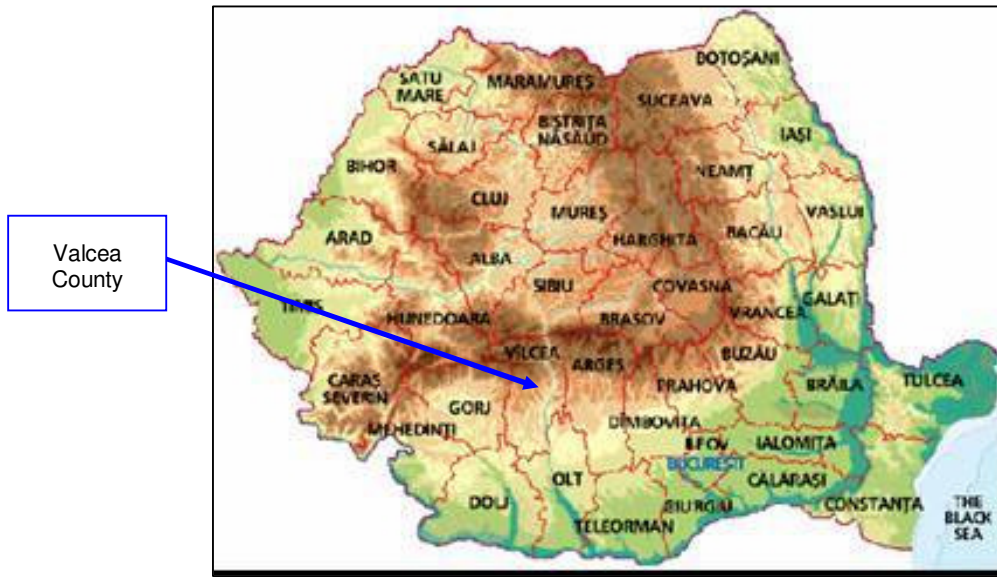


Figure B-1: Location of Valcea County in Romania

In 2009 the population in Valcea County was 408.518 inhabitants. 45.4% of the inhabitants live in urban areas, while the rest remain at the rural parts of the county. The population presents a decrease, that varies from 0,4% to 0,7% per year for the period of 2009-2016 and 0,9% to 1,22% per year for the period of 2024 to 2040. The total decrease in the period 2009 – 2013 is expected to be 2,2% while the decrease for the period 2009 – 2040 is expected to be 24,7%. *(The above projections was made according to statistical data from NATIONAL INSTITUTE OF STATISTICS, Romania, Statistical Yearbook 2008-2009 and concerning each locality of the county for the above years)*

The following map (also included in Annex A & chap.1 of FS), for better visualization) presents the division in zones where the waste management infrastructures, existed & to be developed in Valcea County, namely the central waste management facility in Roesti (Zone 2), consisting of 1 sorting station, 1 biodegradable waste treatment plant and 1 landfill, plus 2 new sorting stations in Brezoi (Z1) and Raureni (Z3) respectively. The existed facilities are 1 composting plant in Raureni, 1 landfill in Feteni, 5 transfer stations in Brezoi, Firtatesti, Balcesti, Galicea, Ionesti & 1 sorting station in Dragasani

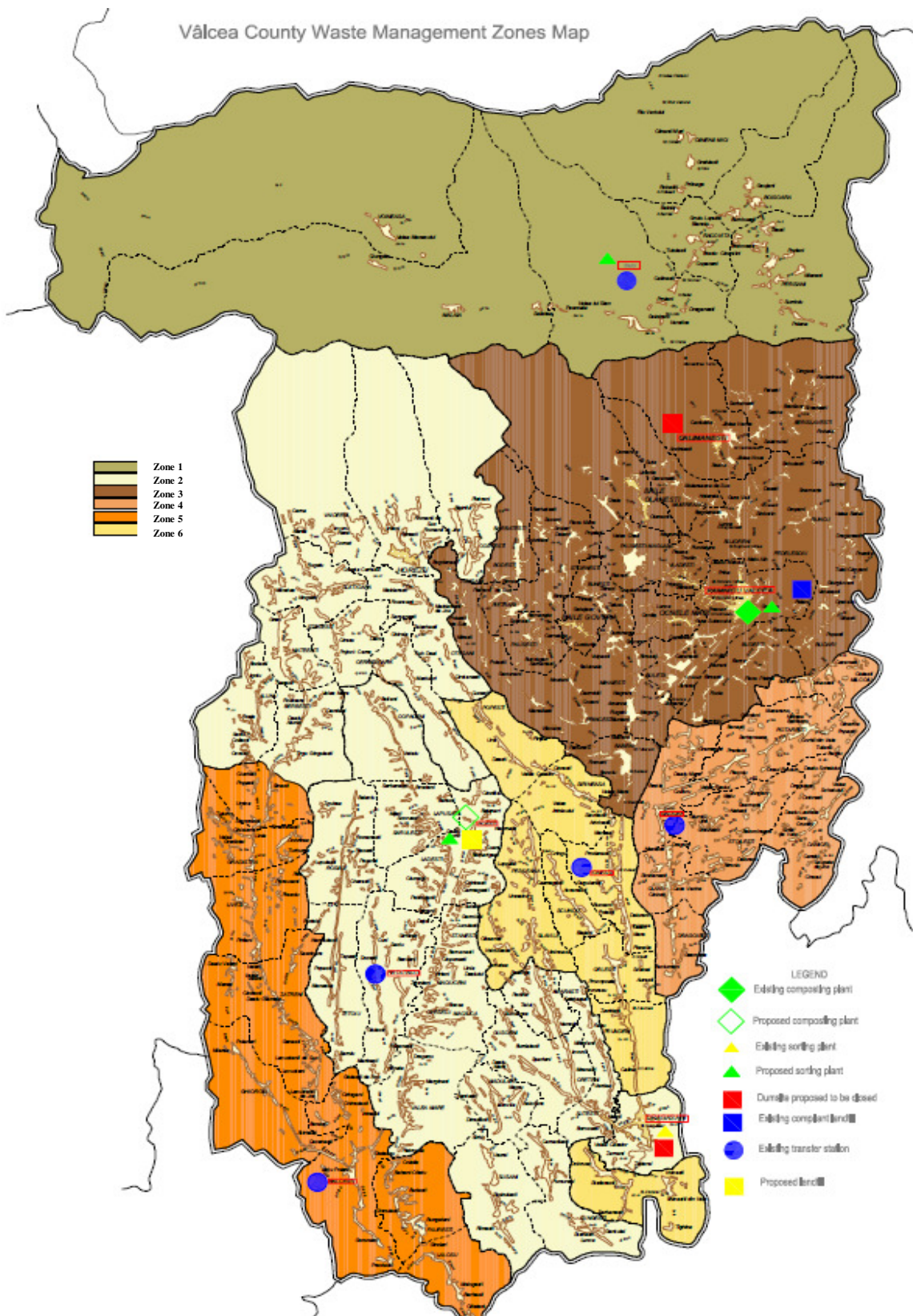


Figure B-2: Zoning for the main waste management infrastructures, existed & to be developed in Valcea County

The current municipal waste management system in Valcea County mainly consists of collection, some recovery and disposal of waste.

A great majority of the quantity of collected municipal waste is disposed of in the existing compliant landfill in Feteri of Ramnicu Valcea and serves only the population of this municipality. For the major part of the County, the existing waste management practices do not comply with the EU legislation and national waste management policy. In this case, severe risks create for the environment and public health. The current waste management system is unsustainable in all its components as indicated below:

- Waste collection:
 - Approximately 142851 tn of wastes are collected in 2011 (34400 in rural and 108451 in urban areas)
 - Level of connection is approx. 100% in urban areas and 90% in rural ones for 2011. It is noted that for the very few communes that do not have contracts with operators, the waste is collected and transported to the existing landfills by using their own equipment
 - Collection in several cases is performed by non authorised operators
 - Selective collection is implemented only in some localities of the county under Phare and ISPA programs but without covering the entire population of the zone that each locality belongs (Rm Valcea, Brezoi, Firtatesti, Galicea, Ionesti, Balcesti)
 - Existing equipment are in some cases old and insufficient for covering the entire population, especially in relation to selective collection
 - Waste collection logistics should be improved considering that only one non compliant landfill exists and the waste should be transported to the central waste management facilities in the most cost-efficient manner (via a network of transfer stations).
 - The existed transfer stations are located in Brezoi (5.803 tn/y), Firtatesti (6.565 tn/y), Balcesti (6.602 tn/y), Galicea (3.125 tn/y), Ionesti (3.945 tn/y).

In relation to the waste collection the effort should be focused on the expansion of selective collection system, on the improvement of waste collection logistics as well as on the acquisition of the necessary equipment to cover the waste collection needs of the whole county.

- Biological treatment of waste:
 - There is only one composting facility in the county located in Raureni (current operation about 14000 tn/year) for waste treatment
 - The treatment of biodegradable waste presents inability to reach the targets imposed by legislation
- Waste recycling:
 - There is one sorting facility in Dragasani for collection and separation of recyclables. The capacity needs estimated for 3756 tn/yr and will produce 2.047 tn/year of recyclables and almost 1.708 tn/year of residues
 - The percent of population connected to separate collection services in total is 30%
 - The existed recycling situation shows inability to reach the targets imposed by legislation

The lack of adequate biodegradable waste treatment as well as no sorting of waste streams, generated significant environmental and public health threats, since this waste ends up untreated in landfills. Also, the very strict targets that need to be fulfilled in relation to the diversion of biodegradable waste from disposal as well as the recycling may never be accomplished under the current waste management practices.

- Waste disposal:
 - Wastes are disposed in existing landfill in Rm Valcea (Feteni with current disposal of 31500 tn/year, capacity of 1,000,000 m³ and life duration of 25 years) and covers only the population of this municipality
 - For the major part of the County the disposal took or takes place in the non compliant landfills of Calimanesti (cessation of activity date 2009, capacity 300.000 m³) Dragasani (cessation of activity date 2009, capacity 400.000 m³), Brezoi (cessation of activity date 2009, capacity 70.000 m³), Babeni (cessation of activity date 2009, capacity 30.000 m³), Balcesti (cessation of activity date 2009, capacity 30.000 m³), Maldaresti (cessation of activity date 2017, capacity 90.000 m³), Baile Govora (cessation of activity date 2009, capacity 300.000 m³). The non compliant landfills in Babeni, Balcesti and Brezoi have already been closed. The non compliant landfills in Calimanesti and Dragasani will be closed through this project and the one in Maldaresti will be closed after it ceases its operation (year of cease of operation is 2017)
 - The present disposal includes mixed waste and not treated residues and therefore production of significant quantities of biogas and heavily polluted leachate

The disposal of untreated waste is considered to be the most important environmental problem related to waste management. Also the fact that some communes are not connected to organized collection services is also an issue that needs to be addressed. The uncontrolled disposal of untreated waste generates extremely severe environmental threats for the atmosphere, the soil and the waters. According to the EC and national legislation such disposal practices cannot be continued and the total amount of generated waste must be collected and treated and only treated residues should be disposed in the already existing landfill in Feteni and the proposed one in Roesti.

The proposed project seeks to resolve the significant environmental and operational problems related to waste generation and management and develop an integrated waste management system in the County that will improve the living conditions of its citizens and support Romania in achieving the waste management targets imposed by the Accession Treaty. The system as such, will be in full compliance with the EU and national environmental principles and legislation and will address all elements of waste management namely from waste prevention and waste collection to disposal of residues. The proposed system is tailored to the needs of the County and it was identified as being the most cost-effective and affordable for the citizens of the County.

In this respect the project seeks to develop the necessary infrastructure in order for Valcea County to be able to fulfil its obligations as they derive from the Accession Treaty and the relevant national legislation. The main quantified targets and deadlines are in the following table.

Table B-1: Main waste management targets

Waste management stage	Quantified target
Waste collection and transport	Connection rate to sanitation services in urban and rural areas of 100% in 2013 corresponding to 399515 inhabitants
Waste recovery	Recovery and recycling for packaging waste of in 2013: <ul style="list-style-type: none"> • 5207 tn/year paper and cardboard • 2399 tn/year plastic • 4809 tn/year glass • 1655 tn/year metal • 662 tn/year of wood • 20224 tn/year recycling • 22062 tn/year recovery in 2016: <ul style="list-style-type: none"> • 5800 tn/year paper and cardboard • 2673 tn/year plastic; • 5358 tn/year glass • 1843 tn/year metal • 737 tn/year of wood • 22530 tn/year recycling • 24578 tn/year recovery
Biodegradable Waste treatment & disposal	In the baseline year of 1995 the total biodegradable waste generated in the County was 92311 tn. <ul style="list-style-type: none"> • 16334 tn of biodegradable waste in 2010 had to be diverted from landfills (difference between the total biodegradable waste generated for this year and the 75% of the biodegradable waste generated in 1995 that is allowed to be landfilled), • 38851 tn in 2013 has to be diverted from landfills (difference between the total biodegradable waste generated for this year and the 50% of the biodegradable waste generated in 1995 that is allowed to be landfilled) and • 52484 tn in 2016 has to be diverted from landfills (difference between the total biodegradable waste generated for this year and the 35% of the biodegradable waste generated in 1995 that is allowed to be landfilled) • Maximum quantity of municipal biodegradable waste which may be landfilled (year-tons) <ul style="list-style-type: none"> ○ 2010-69.233 ○ 2013-46.156 ○ 2016-32.309
Compliant landfills establishment	1 new landfill in Roesti, 1 existing in Feteni
Non – compliant landfills environmental closure	Closure of 2 urban non compliant landfills in Calimanesti and Dragasani (total surface about 5,2 ha)

The waste quantity generation in the County will be approximately 149743 (or 151913 tn/year including hazardous and Bulky) referring to the design year 2016.

This waste will be collected in four fractions (paper/cardboard, glass, rest recyclables and residual). The collected waste will be transported directly or via the transfer stations into the central waste management facilities in Roesti and in the facilities of Rm Valcea respectively, in order for the recyclables to be recovered (approximately 28974 tn/year) and part of the residual fraction to be treated in order to produce compost and compost like output (approximately 20.466 tn/year from Raureni for both compost and CLO) or a compost like output (CLO) (approximately 10903 tn/year from Roesti). The waste to be disposed will be approximately 65506 tn/year in total for the two landfills (of which 27.000 tn/year refer to waste residues from the treatment facilities, 35000 tn/yr of mixed waste and the rest to street residues).

With respect to the existing waste management system, as already mentioned this refers mainly to waste collection and disposal. The existing landfill will be incorporated in the new integrated system. Also utilization of the existing waste collection equipment will be made.

As already mentioned the proposed project addresses all elements of an integrated waste management system:

- Waste generation prevention
 - Promotion of home composting
 - Raising of public awareness campaigns
 - Imposition of tariffs to big waste generators (institutions, commercial infrastructures, etc.)
- Waste collection:
 - Extension (and maintenance) of selective collection
 - Upgrade of waste collection equipment
- Waste recovery / recycling:
 - Introduction of selective collection
 - Development of sorting stations
- Waste treatment
 - Development of an MBT plant for treatment of residual fraction of waste including market and garden waste. The treatment will include mechanical pre-treatment (shredding, recovery of ferrous metals and screening), biostabilization of the humid fraction, refining and maturation
 - Extension of existing composting plant in Raureni
- Waste disposal
 - Use of the existing county compliant landfill in Feteni and development of a new one in Roesti to cover the remaining population of the county
 - Closure of two non-compliant landfills

The following table presents the project components as well as the budget allocated for each component.

Table B-2: Project components

Component	Waste management stage	Objective	Set of works involved	Budget (Euro) of construction / purchase to be funded by ERDF (excl connection to utilities and designs) - constant prices	Budget (Euro) of construction / purchase not to be funded by ERDF – constant prices
Component 1	Waste collection	Expansion of selective collection Improvement of waste collection logistics Promotion of homecomposting	Purchase of 14623 bins of various capacities (trucks are not funded under the ERDF and will be provided by the operator) Purchase of 20200 home composters Purchase of 16 containers for special waste	Bins: 1.357.250 Homecomposters: 404.000 Containers for special (bulky) waste: 17.500 Total: 1.778.750	Containers for special (Hazardous) waste: 18.000 Total: 18.000
Component 2	Waste treatment	Recovery / recycling of recyclables Treatment of residual fraction/biodegradable waste	Construction of 3 sorting plants (Roesti-10.180 tn/yr, Raureni-27.871 tn/yr, Brezoi-2.992 tn/yr) Construction of 1 MBT / biostabilization plant (Roesti-34070 tn/year)	Sorting plants: 9.800.275 MBT plant: 5.123.170 Extension of composting plant: 1.290.000 Total: 16.213.445	Access roads: 495.000 Utilities: 253.000 Total: 748.000
Component 3	Waste disposal	Safe waste disposal Minimization of environmental impacts due to the existing non compliant landfills which have ceased their operation	Construction of 1 sanitary landfill (Roesti-19610 tn/yr) Closing of 2 urban non-compliant landfills (Calimanesti, Dragasani)	1 landfill: 4.935.257 2 Urban non-compliant landfills: 3.160.264 Total: 8.095.521	
Component 4	Technical assistance and public awareness	Raising of public awareness Capacity building Supervision of works Project management training	Implementation of public awareness campaigns Technical assistance for project management Works supervision	Public awareness: 300.000 Technical assistance: 291.708 Supervision: 777.887 Total: 1.369.595	
Grand total				27.457.311	766.000

The following table presents the list with the facilities and the mass balances associated with the proposed integrated waste management system for 2016.

Table B-3: Mass balances for Valcea County (2016)

Waste generation (tn/yr)	149743
Homecomposting	
Expected capacity (tn/y)	4668
Transfer stations (existed)	
Brezoi Capacity (tn/yr)	5803
Galicea Capacity (tn/yr)	3125
Firtatesti Capacity (tn/yr)	6565
Ionesti Capacity (tn/yr)	3945
Balcesti Capacity (tn/yr)	6602
Sorting station Brezoi (proposed)	
Capacity (tn/year)	2.992
Recovered recyclables (tn/year)	1600
Residues to landfill (tn/year)	1392
Sorting Station Roesti (proposed)	
Capacity (tn/year)	10180
Recovered recyclables (tn/year)	4709
Residues (tn/year)	5471
Sorting Station Raureni (proposed)	
Capacity (tn/year)	27871
Recovered recyclables (tn/year)	14872
Residues to landfill (tn/year)	12.999
Sorting Station Dragasani (existed)	
Capacity (tn/year)	3756
Recovered recyclables (tn/year)	2047
Residues to landfill (tn/year)	1708
MBT/biostabilization Plant Roesti (proposed)	
Capacity (tn/year)	34070
CLO produced (tn/year)	10903
Metals (tn/year)	307
Residues to landfill (tn/year)	17750
Composting Plant Raureni (existed*)	
Capacity (tn/year)	40933 *
Compost produced (tn/year)	20466
Metals (tn/year)	-
Residues to landfill (tn/year)	6140
Landfill Roesti (proposed)	
Capacity (tn/y)	19610
Landfill Feteni (existed)	
Capacity (tn/y)	45896

*Approximately 14000 tn/year in current operation plus 26993 additional needs

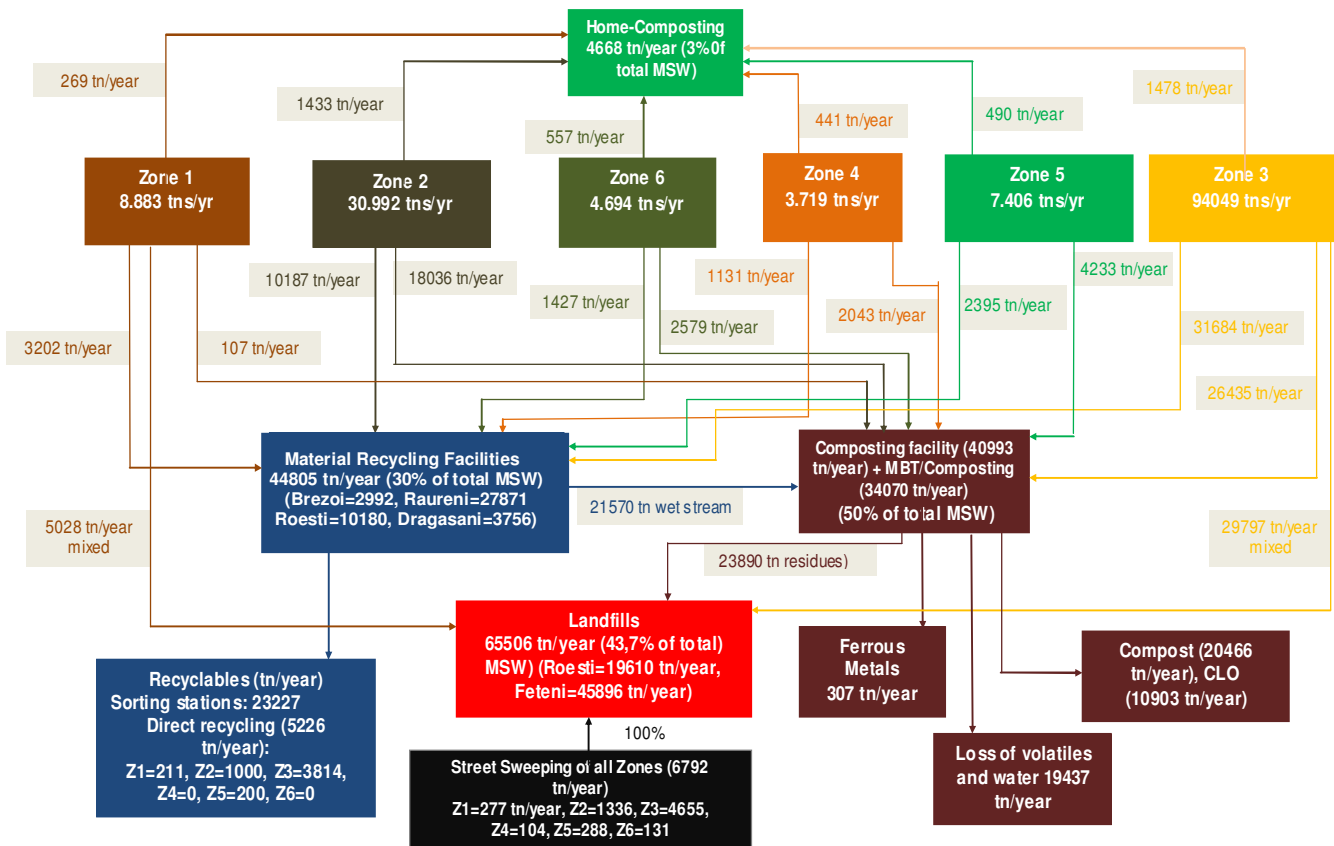


Figure B-4: Flow diagram for IWMS in Valcea County (2016)

The project is in full compliance with the National Waste Management Plan as well as the Regional Waste Management Plan for region 4. Also the project is the result of the County Waste Management Plan and Long Term Investment Plan for Valcea County. The project refers to the priorities identified in these strategic documents, which concern the development of the necessary infrastructure and capacities in order to achieve the targets set into the Accession treaty until 2016. This infrastructure will be funded under the SOP. Where the project is a phase of an overall project, provide a description of the proposed stages of implementation (explaining whether they are technically and financially independent).

N/A

b) What criteria have been used to determine the division of the project into phases?

N/A

B.4.2. Technical description of the investment in infrastructure

a) Describe the proposed infrastructure and the work for which assistance is being proposed specifying its main characteristics and component elements.

The project consists of the following components:

- **Component 1- Waste collection:** includes the following elements:
 - Separation of Valcea county in 6 waste management zones (see Annex A)

- Implementation of selective collection: The selective collection refers to the separation of waste in four fractions (paper/cardboard, glass, rest recyclables and residual fraction) for the whole county. For the selective collection of waste the necessary bins will be purchased. It will be implemented in all urban areas and rural areas in all zones. The already developed systems of selective collection (in Rm Vlcea etc) will be maintained. **It is noted that the trucks to be used for the implementation of the system is not included in the application for funding from the ERDF and it will be provided by the future operator according to the tenders that will be published**
- Promotion of home composting in rural areas
- Selective collection of special waste streams, namely the bulky waste, the hazardous municipal waste and waste electric and electronic equipment (WEEE)
- The selective collection will be in line with Government Decision nr. 621/2005 regarding packaging and waste packing (published in Monitorul Oficial al Romaniei, Partea I, nr. 639 in 20 July 2005) modified by GD 247/2011.

The main targets of waste collection and sanitation include:

- Connection rate to sanitation services in urban and rural areas of 100 % in 2013. The connection rate is 100% in urban areas and 90% in rural ones (for 2011).
- Extend the selective collection system to the whole county
- Upgrade and modernize existing waste collection and transportation equipment (vehicles, bins, etc.)

The municipal solid waste generated in Valcea county and need to be collected is approximately 149743 tn/year.

Initially and during the framework of the approved master plan (see chap. 5 of the approved master plan for Valcea County 10/2010) the county divided in 7 waste management zones. After suggestions and consultation from the authorities of this project, the division of the county resulted in 6 zones (zone 3 & 4 joined), and the analysis resulted in the proposal of the following system for Valcea county:

Waste Management Zone 1

This zone covers the north part of the county (Greater area of Brezoi town). The total waste generation in zone 1 is estimated at approximately 8883 tn/year (an amount of 2558 tn/year is related with seasonal population and is estimated that comes from 4794 inhabitants) for 2016. The area of Brezoi will be served by the existed transfer station and the new proposed sorting station in Brezoi, the existed landfill in Feteni and the existed composting plant in Raureni (for the residual waste stream of the area).

EXISTED FACILITIES: 1 transfer station in Brezoi

PROPOSED FACILITIES: 1 sorting station

Waste Management Zone 2

This zone covers the center - west part of the county (Firtatesti-Roesti area). The total waste generation in zone 2 is estimated at approximately 31518 tn/year. This zone will be served by the new central waste management facilities in Roesti, the existed transfer station in Firtatesti and the existed sorting plant in Dragasani. The sorting plant in Dragasani will continue to accept the quantities from the town and the exit streams from the facility (residues) plus the residual waste stream, will transferred in the new landfill and in the proposed treatment plant of Roesti, respectively

EXISTED FACILITIES: 1 sorting facility in Dragasani, 1 transfer station in Firtatesti

PROPOSED FACILITIES: New Integrated waste management facilities in Roesti, (landfill, MBT-biostabilization plant, sorting facility)

Waste Management Zone 3 (joining of previous zones 3&4)

This zone came from the assembly of zone 3 & 4 (see chap. 5 of the approved master plan for Valcea County 10/2010) and covers the area between Ramnicu Valcea, Calimanesti, Baile Govora and Frincesti. The total waste generation in zone 3 is estimated at approximately 95297 tn/year for 2016. This zone will be served by the existed waste management facilities in Feteni (landfill), the composting plant under ISPA in Raureni and a new proposed sorting station in the area of Raureni. (The total capacity of the existed landfill is about 1,000,000 m³ and the estimated operating lifetime is 25 years)

EXISTED FACILITIES: Waste management facilities (1 landfill site in Feteni with 1 composting plant - in Raureni under ISPA)

PROPOSED FACILITIES: A sorting plant in the area of Raureni

Waste Management Zone 4

This zone covers the east part of the county (Galicea-Stoilesti). Zone 4 is totally covered by rural areas. The total waste generation in zone 4 for 2013 is estimated at approximately 3.789 tn/year. This zone will be served by the existed transfer station in the area of Galicea and the new facilities in Roesti

EXISTED FACILITIES: 1 transfer station in Galicea

PROPOSED FACILITIES: none

Waste Management Zone 5

This zone covers the west part of the county (Gradistea-Balcesti). The total waste generation in zone 5 is estimated at approximately 7536 tn/year. This zone will be served by the existed transfer station in Balcesti and by the new central waste management facilities in Roesti.

EXISTED FACILITIES: 1 transfer station in Balcesti

PROPOSED FACILITIES: none

Waste Management Zone 6

This part of the county (the area around Ionesti-Prundeni), is totally covered by rural areas. The total waste generation in zone 6 is estimated at approximately 4.783 tn/year. This zone will be served by the existed transfer station in Ionesti and the central facilities in Roesti.

EXISTED FACILITIES: 1 transfer station in Ionesti

The selection of the specific areas, as well as the localities, which will be covered by each facility were discussed and agreed with the local beneficiaries

The waste collection will be carried out as follows:

Collection in 4 bin system: the system involves selective collection in the following fractions: paper/cardboard, glass, rest recyclables and residual waste fraction. It will be implemented in both urban and the rural areas of the waste management zones that is not present. All the existing systems collection systems will be maintained and expanded to include separate collection of paper and glass.

More specific:

- Considering the above it is proposed that until 2013, the existing systems to be maintained and be expanded in the areas not already covered and also be expanded in relation to the requirements of the new legislation for selective of recyclables in at least 3 fractions. In the rural areas of the county 2-3 bins for the separate collection of glass will be used in each commune (at the central points of the communes, schools etc).
- Where selective collection systems are already in place, via PHARE or ISPA projects, the transition to the new selective collection scheme may take place until 2015, at the latest.

- With respect to the similar to household waste from institutions and commerce, the separated collection as implemented by the institutions will continue, otherwise they will be incorporated in the collection scheme of household waste
- The logistic planning of the system will be the responsibility of the operator of each zone. The local authorities will delegate this responsibility to the future sanitation operators
- In the rural areas home-composting is also promoted.

It is noted that the collection equipment (trucks, which will be provided by the operator) for the implementation of the collection system is not included in the application for funding from the ERDF. However for the completeness of the relevant information the following tables presents the current situation, the demand in equipment to reach the targets and equipment that will be purchased from national and/or local resources.

Table B-5: Waste collection needs (Equipment)

Type of investment	Total demand	Existing capacity	Additional capacity needed	Total cost
Waste collection bins	10.272 m ³ (23117 bins)	4122 m ³ (7763 bins), 702 m ³ for residual waste and 3420 m ³ for recyclables fractions (3 fractions)	6225 m ³ (14623 bins), About 1164 m ³ for urban residual waste, 720 for rural residual waste, 732 for glass and around 3608 m ³ for recyclables fractions	1.357.250,00
Waste press containers (24 m ³ or equivalent) for transfer station	5	5	-	-
Home composting bins (homecomposters)	4668 tn (No.20200 bins)	-	4668 tn (No.20200 bins)	404.000,00
Hauling trucks	5	5	-	-
Waste trucks	2000 m ³	1060 m ³	940 m ³	To be provided by the operators
WEEE (containers)	210 m ³	-	210 m ³	To be provided by the EEE producers
Hazardous municipal waste (containers)	93 m ³	39 m ³	54 m ³	18.000,00
Bulky waste (Containers)	105 m ³	-	105 m ³	17.500,00

The following table presents an indicative distribution of the bins per locality. The actual distribution will be decided between the beneficiary and the relevant operators

Table B-6: Indicative allocation of bins per locality

Localities	120 lt	240 lt	1,1m ³	1,5 m ³
Zone 1				
Brezoi		195	95	21
Boisoara	56		23	2
Caineni	99		40	2
Malaia	74		31	2
Perisani	94		39	2
Racovita	73		30	2
Titesti	44		18	2
Voineasa	65		27	2

Localities	120 lt	240 lt	1,1m ³	1,5 m ³
Zone 2				
Dragasani		663	88	25
Berbesti		187	26	7
Horezu		221	29	8
Alunu	138		20	3
Amarasti	60		9	2
Cernisoara	120		17	3
Copaceni	90		13	3
Creteni	78		11	2
Fartatesti	132		19	3
Gusoeni	52		7	2
Ladesti	61		9	2
Lapusata	73		10	2
Lungesti	106		15	2
Maciuca	60		8	2
Madulari	49		7	2
Maldaresti	61		9	2
Mateesti	98		14	2
Mitrofani	38		5	2
Roesti	70		10	2
Rosiile	86		12	2
Slatioara	106		15	2
Stanesti	44		6	2
Stroesti	93		13	2
Susani	110		16	2
Sutesti	65		9	2
Tetoiu	85		12	2
Vaideeni	126		18	3
Valea Mare	95		14	2
Zone 3				
Municipiul Rm. Valcea		1074	532	85
Babeni		770	195	61
Baile Govora		231	59	18
Baile Olanesti		360	91	29
Calimanesti		692	176	55
Ocnele Mari		275	70	22
Barbatesti	113		75	2
Berislavesti	90		60	2
Budesti	176		117	3
Bujoreni	131		87	3
Bunesti	82		54	2
Costesti	104		69	2
Daesti	90		60	2
Francesti	171		114	3
Golesti (Draganesti)	82		54	2
Mihaesti	198		132	3
Muereasca	82		54	2
Otesani	87		58	2
Pausesti	87		58	2
Pausesti-Maglasi	121		81	3
Pietrari	97		64	2
Runcu	33		22	2
Salatrucel	63		43	2
Stoenesti	115		76	2
Tomsani	122		81	3
Vladesti	83		55	2

Localities	120 lt	240 lt	1,1m ³	1,5 m ³
Zone 4				
Danicei	64			1
Dragoesti	62			1
Galicea	113			2
Milcoiu	38			1
Nicolae Balcescu	101			2
Olanu	93			1
Stoilesti	117			1
Zone 5				
Balcesti		185		9
Diculesti	61			1
Fauresti	46			1
Ghioroiu	56			1
Gradistea	86			2
Lacusteni	44			1
Lalosu	76			1
Livezi	73			1
Popesti	92			2
Sinesti	74			1
Zatreni	77			1
Zone 6				
Glavile				1
Ionesti				2
Orlesti				1
Pesceana				1
Prundeni				2
Scundu				1
Sirineasa				1
Stefanesti				2
Voicesti				1

The total cost of the bins is estimated at 1.357.250 Euro (the trucks will be provided by the operator, according to the tender that will be published).

With respect to homecomposting:

- 20% of the organic content of biodegradable waste generated in the rural area will be home composted. This results in an annual quantity of about **4668 tn/year organic wastes**
- It is assumed that the households that will be provided with composting bins will compost approximately 70% of the biodegradable waste they generate.
- In order to compost 4668 tn/year of organic wastes we need to compost approx (4668/365) ~12,75 tn/d, which may be composted by almost **20200 households**
- The bin number is **20200** of 220 lt each and the estimated time for the biodegradation is about 6 weeks.

The cost for homecomposters will be approximately 404.000 € and is proposed to be covered by the ERDF.

With respect to the special waste streams and particularly the Waste Electrical and Electronic Equipment (WEEE), the bulky waste and the hazardous municipal waste, the collection of which is the responsibility of the local authorities, these will be collected according to the needs and be concentrated in the areas that serve the big cities. In the new waste management facilities of Roesti and Rm Valcea, as well as in the transfer stations in Brezoi and Balcesti (or nearby area) a specially allocated area will be provided for the installation of the necessary containers for the collection of these waste streams. The collected waste, will

then either be transported to the landfill (e.g. part of the bulky waste after shredding) or to recycling facility. It is noted that the management of these waste streams and especially, WEEE, batteries and other hazardous material fall under the producer responsibility and they have to provide the necessary infrastructure for their management. Finally, it is noted that prior to the implementation of any separate collection scheme for the hazardous waste, a final destination has to be developed (e.g. hazardous landfill, treatment facilities, etc). In terms of transportation of the waste streams to the collection facilities, the WEEE (the containers for WEEE will be provided by importers / manufacturers) will be brought to the collection points by the citizens and producers, while the bulky and hazardous household waste will be collected by the local authorities, according to the collection needs and using the existing collection equipment. With respect to the collection of special waste streams, namely the bulky waste, the hazardous municipal waste and WEEE, four collection points will be developed equipped with the necessary containers (the containers for WEEE will be provided by the producers of EEE). **The cost for the bulky waste collection is 17.500 € and it is proposed to be covered by the ERDF. Concerning the hazardous municipal waste the cost for the containers is 18.000 euro and will be covered by the County Resources**

- **Component 2- Waste treatment:** includes the following elements:
 - 3 sorting plants for the separation of recyclable fractions into different products (metals, glass, plastics and paper)
 - 1 MBT/ biostabilization plant for the treatment of the residual fraction of the 2,4,5,6 zones including the market and garden waste

The project foresees the construction and operation of 3 new sorting plants, in which the content of the recyclable waste bins, as mentioned above, will be treated as well as the construction and operation of an MBT / biostabilization plant in which the content of the residual waste bins, as mentioned above, and the market and garden waste will be treated. Both investments are proposed to be financed by the ERDF.

Sorting plants

Additionally to the existing one in Dragasani three new sorting stations is proposed to function in Roesti, Raureni & Brezoi. The recyclables from Zones 2,4,5,6, will be transferred to the central sorting station in Roesti, consisting of lines of handpicking and magnets for ferrous metals. Raureni will serve the quantities from Z3 and Brezoi will serve the quantities from Z1. The sorting plants are in connection collection system, as already presented. Recyclable materials shall be collected separately from the rest Municipal Solid Waste (MSW). This way an adequate level of purity shall be succeeded. The quantity of separately collected recyclables expected to driven in the sorting plants (3 proposed plus the existing one in Dragasani) for the design year (2016) is approximately 44.800 tn. The total quantity of recyclables from the sorting facilities will be approximately 23227 tn/year. The residual waste stream (residuals) from the sorting plants (21.570 tn/year residues) will be sent to the MBT plant in Roesti and Raureni respectively (from Roesti & Dragasani to Roesti and from Raureni and Brezoi to the existing one in Raureni)

Sorting Plant in Roesti

The quantity of separately collected recyclables expected for the design year (2016) is approximately 10180 tons.

The expected quality of the incoming stream is presented on the following Table.

Table B-7 Quality characteristics of incoming stream

Material	Percentage	Tonnage(tn/year)
paper and cardboard	20,50%	2.087
plastic	19,92%	2.028
metal	6,52%	664
glass	9,99%	1.017
non-recyclables	43,07%	4.384
TOTAL	100,00%	10180

This separately collected stream shall consist of the following main fractions:

- paper (cardboards, printed paper, mixed paper),
- plastics (foils, PE, PVC, rest plastics),
- glass (white, colored),
- metals (ferrous, non-ferrous) and
- non recyclable materials

The Material Recycling Facility shall be situated as a standalone facility. It shall incorporate auxiliary works like gate, weigh-bridge, fencing, internal road, external lighting, fire-fighting works etc. An area of approximately 4.500 m² area shall be needed

According to the market needs the following fractions of materials shall be sorted through the plant's process:

- A. Paper
 - I. Cardboard
 - II. Printed paper
 - III. Rest paper
- B. Plastics
 - IV. Foils (LDPE)
 - V. HDPE
 - VI. PET
 - VII. PVC
 - VIII. Rest plastics
- C. Glass
 - IX. White
 - X. Brown (mixed color glass)
- D. Metals
 - XI. Ferrous
 - XII. Non ferrous

Based on the above the following hand-sorting sections shall be needed:

- Cardboard: one section with 1 worker, total 4 hand-sorting positions.
- Printed-paper: one section with 1 worker, total 4 hand-sorting positions.
- Rest paper: one section with 2 workers, total 4 hand-sorting positions.
- PET: one section with 1 workers, total 4 hand-sorting positions.
- HDPE: one section with 1 workers, total 4 hand-sorting positions.
- PVC: one section with 1 workers, total 4 hand-sorting positions.
- LDPE: one section with 3 workers, total 4 hand-sorting positions.
- Rest plastics: one section with 2 workers, total 4 hand-sorting positions.

- Non ferrous metals: one section with 1 worker, total 4 hand-sorting positions.
- White glass: one section with 1 worker, total 4 hand-sorting positions.
- Colored glass: one section with 2 workers, total 4 hand-sorting positions.

The total number of hand-sorting personnel is 16 (excluding additional workers to cover vacations or illnesses), while the maximum positions available are 44.

The total cost of the sorting plant is estimated at 3.607.000 Euro.

Sorting station in RAURENI

The quantity of separately collected recyclables expected for the design year (2016) is approximately 27871 tons.

The expected quality of the incoming stream is presented on the following Table.

Table B-8 Quality characteristics of incoming stream

Material	Percentage	Tonnage (tn/year)
paper and cardboard	25,75%	7.177
plastic	19,41%	5.411
metal	7,25%	2.021
glass	13,00%	3.622
non-recyclables	34,59%	9.640
TOTAL	100,00%	27.871

The design of the facility will be semi-automatic. This happens due to:

1. A full automated facility requires more belts with the adequate supporting equipment & mechanisms. In this respect designed a semiautomatic solution, because it was the only way to fit in such limited surface like the one available in Raureni (5000 m²)
2. Another issue identified is the needed extension of the composting plant in Raureni. With the proposed and approved (by the authorities of the county) option (scenario 3), the extension needs are minimized but they are necessary in order to reach the 2016 targets. This extension will require additional land which is currently not available.
3. A full automated facility requires large capital costs. The proposed design has reduced costs (Both capital & functional) in comparison with a full automated facility"

This separately collected stream shall consist of the following main fractions:

- paper (cardboards, printed paper, mixed paper),
- plastics (foils, PE, PVC, rest plastics),
- glass (white, colored),
- metals (ferrous, non-ferrous) and
- non recyclable materials

According to the market needs the following fractions of materials shall be sorted through the plant's process:

- A. Paper
 - I. Cardboard
 - II. Printed paper
 - III. Rest paper
- B. Plastics

- IV. Foils (LDPE)
- V. HDPE
- VI. PET
- VII. PVC
- VIII. Rest plastics
- C. Glass
 - IX. White
 - X. Brown (mixed color glass)
- D. Metals
 - XI. Ferrous
 - XII. Non ferrous

Cardboard shall be separated at the reception area and stored at a designated area for that purpose. Metals (ferrous and non ferrous) shall be separated mechanically by means of magnetic and eddy-current separators, respectively. The rest of the recyclables shall be separated through hand-sorting.

Based on the above the following hand-sorting sections shall be needed:

- Printed-paper: one section with 2 workers, total 4 hand-sorting positions.
- Rest paper: one section with 3 workers, total 4 hand-sorting positions.
- PET: one section with 2 workers, total 4 hand-sorting positions.
- HDPE: one section with 2 workers, total 4 hand-sorting positions.
- PVC: one section with 1 workers, total 4 hand-sorting positions.
- LDPE: two sections with 4 workers, total 4 hand-sorting positions.
- Rest plastics: one section with 2 workers, total 4 hand-sorting positions.
- White glass: one section with 2 workers, total 4 hand-sorting positions.
- Colored glass: one section with 4 workers, total 4 hand-sorting positions.

The total number of hand-sorting personnel for each shift is 22 (excluding additional workers to cover vacations or illnesses), while the maximum positions available are 36. 44 workers shall be needed for covering the two shifts of the daily operation.

Two additional workers will be needed per shift in order to collect cardboard at the reception area.

The total cost of the sorting plant is estimated at 3.977.275 Euro.

Sorting station in BREZOI

The quantity of separately collected recyclables expected for the design year (2016) is approximately 2.992 tons.

The expected quality of the incoming stream is presented on the following Table.

Table B-9 Quality characteristics of incoming stream

Material	Percentage	Tonnage (tn/year)
paper and cardboard	25,43%	761
plastic	19,77%	592
metal	7,06%	211
glass	13,45%	402
non-recyclables	34,29%	1.026
TOTAL	100,00%	2.992

This sorting station proposed with an account of the following:

- The region is popular with tourists with an extended high season (the facility's design was oversized in order to cover a situation like this)
- The seasonal population gathering are made in places (hotels, group accommodations) where selective collection of recyclables is easier and more effective
- Assumed that seasonal population have an urban behavior and thus a similar waste production rate (an amount of 2558 tn/year is related with seasonal population and is estimated that comes from 4794 inhabitants)

This separately collected stream shall consist of the following main fractions:

- paper (cardboards, printed paper, mixed paper),
- plastics (foils, PE, PVC, rest plastics),
- glass (white, colored),
- metals (ferrous, non-ferrous) and
- non recyclable materials.

According to the market needs the following fractions of materials shall be sorted through the plant's process:

- A. Paper
 - I. Cardboard
 - II. Printed paper
 - III. Rest paper
- B. Plastics
 - IV. Foils (LDPE)
 - V. HDPE
 - VI. PET
 - VII. PVC
 - VIII. Rest plastics
- C. Glass
 - IX. White
 - X. Brown (mixed color glass)
- D. Metals
 - XI. Ferrous
 - XII. Non ferrous

Based on the above the following hand-sorting sections shall be needed:

- Cardboard and Printed-paper: one section with 1 worker.
- Rest paper: one section with 1 worker.
- PET: one section with 1 worker.
- HDPE: one section with 1 worker.
- PVC: one section with 1 worker.
- LDPE: one section with 1 worker.
- Rest plastics: one section with 1 worker.
- Non ferrous metals: one section with 1 worker.
- White glass: one section with 1 worker.
- Colored glass: one section with 1 worker.

- The total number of hand-sorting personnel is 10 (excluding additional workers to cover vacations or illnesses).

The total cost of the sorting plant is estimated at 2.216.000 Euro.

MBT plant in Roesti

The waste entering the MBT facility is directly connected to the collection system. The waste presented hereafter is in connection with the separate collection of the residual fraction included in MSW. The mixed municipal solid waste, excluding the Recyclable materials that will be collected separately, will feed the MBT plant.

The quantity of mixed waste expected for the design year (2016) is about 34070 tons.

The expected quality of the incoming stream is:

Material	Tonnage (tn/year)	Percentage
<i>Residual waste bin</i>	33.485	98,28%
<i>garden waste</i>	195	0.57%
<i>Market waste</i>	390	1.15%
TOTAL	34.070	100,00%

The MBT plant, will be located together with the landfill and the MRF facility, in order to obtain economy of scale

The humid fraction will be treated in a MBT plant station in order to produce compost like output (CLO). The biostabilization process that will be used will be an aeration process in modular covered heaps. This solution also allows the possibility, if the organic waste is collected separately to proceed with the production of good quality compost. The capacity of the MBT plant will be around 34070 tn/year. It is expected that during the first year of the implementation, the impurities in residual waste bin will be high, so the plant will mainly operate as a MBT & biostabilization Plant. But gradually, since the public participation will be improved, the quality of produced compost like output will be also improved, and it may be acceptable for fertilizing purposes. Hence, the CLO may be used at least at the beginning as cover material in the landfill and the rest can be utilized in the recultivation of existing dumpsites and old landfills or other contaminated areas as well as in forests, mines, quarries and cultivation not intended for human consumption. Later the CLO is expected to be of better quality and its absorption by the market may be possible.

The MBT plant consists of the following:

- Waste Reception area (under a semi-closed metallic building)
- Pre-treatment building
- Biostabilisation area
- Maturation / Refinery area (under a metallic shed).
- Administration building

The area needed for the MBT plant is approximately 13,000 m²

Based on the incoming capacities dimensioning calculations have been executed. The mechanical pre-treatment has been designed for an overall capacity of 34.070 tons/yr, operable for 312 days per year, with one 7h shift, thus 109,2 tons/d or about 15,6 tons/h. Each aeration treatment for the biodegradable fraction will operate 350 days per year, 24 hours per day

The estimated amount of Compost like output to be produced is 10902 tn/year (~32 % of input) while residues of around 17.750 tn/year (~51,8 % of input) will be disposed in the

landfill. The losses in the biological treatment are approx. 5.110 tn/year (~14,8 % of input). The ferrous metals are 307 tn/year (~0.8 % of input).

A critical value that has to be calculated is the number of biostabilisation covered heaps needed for the total annual quantity of incoming waste:

Daily volume entering the biostabilisation heaps	130	<i>m³/d</i>
Volume of biostabilization heap	820	<i>m³/cycle</i>
Number of days for filling each heap	6,3	<i>days</i>
Number of days that the humid fraction remains inside heaps	28	<i>days</i>
Total days for each cycle	34,31	<i>days/cycle</i>
Number of days that the plant receives waste	312	<i>days/year</i>
Treatment cycles per year for each heap	9,1	<i>cycles/year</i>
Total cycles needed for total quantity of waste	50	<i>cycles</i>
Number of heaps		6 Heaps

A market for this low quality compost (Compost Like Output – CLO) should be developed, since the public participation will be improved, the quality of produced compost like output will be also improved, and it may be acceptable for soil improving purposes. Alternatively, these products could be used in the landfill as cover material or in the environmental clearance of the existing landfills and other contaminated land in the county. In any case, in the future tender for the operation of the MBT, specific clauses need to be included in order to motivate the operator to find a market for the produced CLO.

The total costs of the MBT plant is estimated at 5.123.170 Euro.

Extension of composting plant in Raureni

The existing composting facility at Valcea is operating in a capacity of 14.000 tons per year of municipal waste.

As mentioned before, in order to handle the additional capacities (total capacity of about 40993 tn/year), the existing composting facility in Raureni must accept a functional conversion during the process and treatment of the input stream to the facility.

To increase the current capacity of the plant we can decrease retention time from 10 to 6 weeks with no significant difference to the quality of the final product. To increase the efficiency of the composting process intensive aeration should be performed in order to achieve the necessary compost quality in less time.

The technical solution proposed to be applied in the specific case study to enhance the composting process is described below:

Provision of intensive / continuous aeration at each heap shall be applied, by means of a single blower of adequate capacity and a distribution pipe line to be installed at the base of each heap. If possible this could be a sub-floor channel with perforated concrete cover.

Moreover, a membrane cover could be installed over each heap enhancing significantly the composting process. The process shall be fully controlled by means of temperature through measuring probes installed on the heap, connected to the PLC which shall control the aeration flow (blowers). The organic matter can be totally decomposed as short as 4 weeks period.

A winding mechanism could be installed to cover / uncover each heap.

The results of such process change are presented below.

Table B-10 Proposed design calculations for Raureni composting plant

Composting hall	5.000	m ²
Heaps	8	
Heap length	100	m
Heap width	4,3	m
Heap average height	2,1	m
Effective area	3.440	m ²
Effective volume	7.224	m ³
Retention time for composting	6	weeks
Specific weight	0,65	tons/m ³
Daily input	172,0	m ³ /d
	111,8	tons/d
Yearly input	62.780	m ³ /yr
	40.807	tons/yr

In this respect complete aeration unit with pipeline, special heap cover, probes with PLC control and winding mechanism for all 8 heaps will be provided for the facility. Also a shredder will be provided for the pre-treatment of the incoming waste.

The total costs for the extension of the composting plant is estimated at 1.290.000 Euro.

- **Component 3- Waste disposal:** includes the following elements:
 - 1 sanitary landfill in Roesti
 - Closure and environmental clearance of two non-compliant landfills

The main targets for the waste disposal component include:

- The safe disposal of the untreated waste and the residues that will be generated in the waste treatment facilities
- The closure of 2 urban non compliant landfills according to the provisions of the Accession treaty

The closure of all non compliant landfills is proposed to be financed from the ERDF.

Landfill in Roesti

As it has already been mentioned, there is already a sanitary landfill in operation located in Feteni, in which the part of the collected waste is currently disposed off. The existing **landfill in Feteni** (Integrated Environmental Permit no. 57/11.01.2010) with current capacity disposal of 31500 tn for 2011, has a volume capacity of 1,000,000 m³ and the life duration is 25 years. The landfill has a total area of 80.000 m². It is waterproofed with a compact argillaceous bed of 50 cm, bentonitic geocomposite, double coarse geomembrane and protection geotextile of 2,000g/m² and has foreseen a treatment station for the leachate through reverse osmosis, fully automated with a capacity of 60 m³ /day. This landfill is in compliance with the EC and Romanian legislation. The existing landfill in Feteni will be integrated in the project as it will service zones 1 and 3.

A new sanitary landfill in Roesti, fully compliant with the 99/31/EC Directive and the respective national legislation will be constructed, serving the remaining part of the county for zones 2, 4, 5, 6.

The area lies within the area of ROESTI and is located approximately 35 km southwest of Rm Valcea. It has a total area of 16 hectares and is covered by meadows and forests. The main feature of the area are tributaries east of the river Cernisoara, that fragment the area into strips VE. The valleys near the rivers are usually large and have altitudes of hills 300-470 m. I general slope has values between 8-12 degrees. The hydrographic network is

represented by Cernisoara River with its tributaries: Baiasa, Talpa, Manosul and Cuienilor. (Geotechnical study, 2008, S.C EPC Consultanta de Mediu S.R.L)

The new landfill in Roesti will receive the following fractions:

- Residues from the MBT- biostabilization plant in Roesti
- Street sweeping waste

The following table presents the quantities & the percentage of each type of residues that needs to be landfilled for 2016.

Table B-11 Waste disposal per waste type

Incoming waste (total input)	19610	%
Residues from MBT- biostabilization Plant	17750	90.5
Street sweeping	1860	9.5

The estimated capacity of wastes that will be landfilled in Roesti will be approximately 19610 tn/year (or 26531 m³ for 2016 including the cover material). Additionally the CLO produced in the MBT- biostabilization plant may be used as cover material in the landfill or similar works

Under the SOP Environment the first cell of the landfill will be financed. It is estimated that the lifetime of the first phase will be more than 5 years with a receiving capacity of approximately 184543 m³ of waste (approx 7 years). The total volume of waste that will need to be landfilled in the next 28 years (2013-2040) will be approximately 753.013 m³.

The works related to the construction of the landfill have been thoroughly described in chapter 8 and include:

- Basin formulation – earth works

The overall SL of Valcea, will be developed in two cells - phases. The lowest altitude of the cell (in absolute units) will be +328m, while the highest altitude will be +356m. The bottom of the cell has been configured in the shape of W. The slopes of the W will be at least 5% and the peaks' altitude is 1m higher than the bottoms' one. The grade of the basin is 5% and it is uniform for the whole surface of the 1st cell

- Lining

The lining system of the new landfill includes (from the bottom to the top):

- Compacted Clay liner: an artificial hydrogeological barrier shall be constructed. This barrier can consist of clay or another material with equivalent properties and shall have a thickness of at least 0,5 m thickness as required by Romanian regulation
- Geomembrane: The polymer membrane type selected is HDPE, because it has a higher chemical resistance compared to the most of other types of polymer membranes. The thickness of the polymer membrane will be at least 2 mm
- Geotextile: is used for protection of the HDPE membrane against tear and wear during the installation works and against damages from particles in the drainage layer. The geotextile is non-woven geotextile, needle - punched polypropylene, capable of resisting exposure to the sun for minimum two years. The weight of the geotextile is 1,200 gr/m²
- Sand layer: Sand layer is used, in addition to geotextile, for the protection of the polymer liner against tear and wear during the installation works and against damages from particles in the drainage layer. The sand layer will consist of particles smaller than 0.08 m. The layer's thickness will be at least 0.10m
- Drainage layer: The thickness of the drainage layer will be 50 cm. Materials used for drainage layer shall be free-draining graded gravel without any

content of clay- or silt. The content of organic material (CaCO_3) shall be less than 20%. The coefficient of permeability of the drainage material shall be larger than 10⁻³ m/s. The grain size distribution will be from 16 to 32 mm while maximum grain size is 32 mm

- Separation geotextile: On the top of the drainage layer a separating layer should be applied, to prevent the components from the upper layer to enter the drainage layer. The used geotextile shall be long term endurant materials, as polypropilene (PP) or high density polyethylene (HDP), with mass unit on surface $\geq 200 \text{ gr/m}^2$. Geotextiles must allow the water to enter and to follow the quality requests according to the provisions of the standards into force

- Leachate collection and management

The collection of leachate shall be facilitated by pipes, which will be positioned having an adequate inclination to achieve effective flow of leachate to the lower level of the basin, installed within the drainage layer. in a special surface formation of the deposition basin. The collection pipes shall be made of HDPE perforate by 2/3 of their diameter and shall have a nominal diameter $D = 250 \text{ mm}$. The diameter has been selected taking into consideration precipitation data of the area, as well as the basin of the landfill. The pipes installed into the gravel zone. For the installation of the leachate collection pipes a special topical formation of the basin is constructed.

According to the proposed design, at the bottom of cell four (4) pipes will be placed. The produced leachate will be collected from the respective pipes. At the end of each pipe, down of the embankment, a non-perforated pipe will be connected. The non-perforated pipes shall be made of HDPE and shall have a nominal diameter $D = 250 \text{ mm}$, and will lead the collected leachate through the embankment to the collection sump.

Uphill the collection sumps there will be a gate-valve sump in order to cut off flow when the pipe cleaning is taking place.

The collection sumps are made of HDPE. The internal diameter of the leachate collection sumps shall be 1 m, and the equipments are emplaced such as to allow the control and cleaning of the collecting and evacuation pipes.

The selected technology for the leachate treatment is the Reverse Osmosis method.

The leachate treatment plant shall comprise the following units.

- Equalization tank
- Pre-filtration unit
- Stripping unit
- Reverse Osmosis unit
- Effluent collection tank

The leachate will be collected in a leachate equalization tank with a volume of at least 500 m³. Following, the collected leachates will be led to the pre-filtration unit, followed by a stripping unit and from here is the leachate then conducted to the reverse osmosis unit. The pre-filtration treatment consists of two sand filters. The Reverse Osmosis unit will consist of a 2-lines 3-step-RO (working simultaneously), allowing the cleaning procedure without need to stop the entire process. The treated leachates will be collected in the effluent collection tank. From the effluent collection tank a part of the treated leachates (maximum approx 45m³/d) will be recirculated to the landfill body and the rest will be discharged to an applicable receiver (Olteanca Creek). The concentrate (maximum approx 28m³/d) from this stage will be collected in tanks and transported for treatment in appropriate facilities.

- Biogas collection and management

The landfill gas management system shall consist out of the following:

- Collection wells

- Biogas transfer piping network
- Biogas collection stations
- Biogas discharge main pipe (perimetric biogas pipe)
- Condensate traps system
- Flare unit
- Rainwater management

The flood protection works of the site consist of the following:

- Circumferential ditches.
- Triangular gutters.
- Stormwater drainage system consisting of grated wells, circular concrete pipes, rectangular manholes which collect the stormwater from the plateau of the buildings and lead them with safety to the final receptor.
- Circular culvert for the crossing of road.
- Wells where there is confluence of ditches or there is a connection between a ditch and a pipe..
- For the protection of the embankments from erosion, the foot of each embankment will be lined with shotcrete in the places where stormwater may gather.
- In the places where the ditches discharge the water towards the final receptor, the natural soil will be covered with riprap in order to protect the soil near the embankments from erosion, as well as lead the stormwater safely away from them.
- Finally, the flood protection works are completed by a perpendicular culvert (1.5m width and 1,00m height), which passes underneath the road just outside the entrance of the landfill site.
- Infrastructure work
 - Monitoring system
 - Main entrance - fencing
 - Security house
 - Weighbridge building
 - Weighbridge
 - Sampling area
 - Administration building
 - Maintenance building
 - Parking for personnel and visitors
 - Internal roads
 - Access road
 - Tire washing system
 - Fire Protection zone:
 - Fire fighting system:

The total costs landfill construction is estimated at 4.935.257 Euro.

It is noted that in the future the 2nd phase of the landfill will be developed next to the first cell in order to be able to receive residues for an additional 23 years (overall the landfill lifetime will be approx 30 years). The surface of the second phase of the landfill will be approx 6 ha and its capacity approx 560.000 m³.

Closure of non compliant landfills

The Valcea County had 2 urban non compliant landfills, to be closed and environmentally cleaned (Calimanesti & Dragasani). According to the data collected the existing non compliant landfills have a total surface of 5,2 ha and the estimated waste disposed is approximately 475.000 m³.

Table B-12 Existing dumpsites

Location	Surface (ha)	Year of cessation of operation	Occupied volume (m³)
Calimanesti	1,6	2009	275.000
Dragasani	3,6	2009	200.000
Total	5,2		475.000

As far as the dumpsites that will receive the total amount of the waste are concerned, after the transportation and emplacement of the waste from the other dumpsites and the arrangement of the waste relief, a top capping system will be implemented according to the relevant Romanian legislation.

The main objectives of the designed capping system are to:

- Minimize infiltration of water into the waste;
- Promote surface drainage and maximize run off;
- Control gas migration and;
- Provide a physical separation between waste and plant and animal life.

The capping system normally includes a number of components which are selected to meet the above objectives. The principal function of the capping system is to minimize infiltration into the waste and consequently reduce the amount of leachate being generated.

It is noted that the closure of the rural dumpsites is not part of the project as the Local Authorities have currently the responsibility to proceed with the necessary arrangements. In fact these dumpsites have been closed since 2009. Therefore the relevant section refer to the rehabilitation of the urban non compliant landfills

The urban non compliant landfills will be environmentally cleaned implementing with complete capping system as the relevant Romanian legislation imposes:

- support layer of 0.50 m thickness with $k \geq 1 \times 10^{-4}$ m/s;
- gas drainage layer made of granular materials of 0.30 m thickness and $k \geq 1 \times 10^{-4}$ m/s;
- protection geotextile with a density of 1,000gr/m³
- HDPE polymer membrane of minimum 2.00 mm thickness;
- protection geotextile with a density of 1,000gr/m³;
- rainwater drainage layer made of granular materials of 0.30 m thickness and $k > 1 \times 10^{-3}$ m/s;
- separation geotextile with a density of 400gr/m³;
- soil cover layer of minimum 1 m thickness, from which the upper 0.15 m will be enriched topsoil
- Biogas wells for passive (Calimanesti) and / or active (Dragasani)removal of the biogas
- Flare for the combustion of biogas in Dragasani
- Biofilter (using compost generated in the central waste management facility) in Calimanesti
- Perimetric rain water collection system – flood protection
- Fencing

The total cost for the environmental clearance of all non compliant landfills is estimated at approximately 3.160.264 Euro.

It is also noted that the project beneficiary will be responsible for the cost of biogas management and monitoring in the urban non compliant landfills (an amount of 5.000 €/year has been considered as cost for the monitoring of each closed landfill)

- **Component 4 – Technical assistance and public awareness**

A core part of the proposed integrated waste management system is the raising of public awareness for two reasons:

- The active participation of the citizens in the waste reduction and separate collection of the household waste is crucial for the success of the system
- The proposed system will raise the waste management tariffs (current tariffs in Annex C). It is necessary to communicate to the citizens how this increase will correspond to the improvement of the living standards and how the value of the waste management scheme to be implement will exceed that additional amount of money the citizens will have to pay

The basic means for rising of the public awareness in relation to waste management may include (the list is not exhaustive):

- Awareness campaigns in the media (TV and radio spots, newspaper ads, special shows in TV, etc.)
- Campaigns in schools
- Organizations of hearings, open public discussions
- Organization of a local 'green help desk' in the big urban areas
- Other types of campaign (flyers, brochures, polls, etc.).

During project implementation Consultants should be employed in order to carry out:

- PROJECT MANAGEMENT
- WORKS SUPERVISION

The scope of work to be performed by a qualified (national or international) Consultant will include, but is not limited to, the following tasks:

- Planning and coordination
- Implementation and management
- Institutional coordination and representation
- Reporting functions

The Consultant in charge of Construction Supervision will be responsible for managing and supervising the works contracts and in general will fulfil all duties of the Engineer as defined in the FIDIC Red and Yellow Book Conditions of Contract for Construction (Red Fidic for the new landfill and Yellow Fidic for the rest of the works).

Construction Supervision will be necessary to: ensure the works are constructed in accordance with the design and specifications, safeguard the quality of construction, oversee the safety of the works, and when required, to provide a cost-monitoring service to the client.

The total cost for the raising of public awareness, technical assistance and supervision is estimated at approximately 1.367.395 Euro.

- b) In respect of the work involved, identify and quantify the key output indicators and, where relevant, the core indicators to be used:

Table B-13: Physical indicators

Component	Description	Units	Number of units
Component 1 – Waste collection and transport			
Collection bins	120 lt 240 lt 1,1 m ³ Bell bins	Items	14623
Homecomposters	220 lt	Item	20200
Hazardous municipal waste*	6 m ³	Item	9
Bulky waste containers	105 m ³	item	7
Component 2 – waste treatment			
Sorting plants	Total Capacity (tn/year): 41.050	Item	3
MBT/biostabilization plant	Capacity (tn/year): 34.070	Item	1
Extension of existing composting plant in Raureni	Total Capacity (tn/year): 40.993 Additional capacity: 20.900	tn/y	20.900
Component 3 – waste disposal			
Sanitary landfill	Capacity (tn/year): 19610	Item	1
Non compliant landfills	Cleaning and in situ environmental clearance	Item	2 urban of total surface 5,2 ha

* not to be funded under ERDF

Table B-14: Performance indicators / Core indicators

Indicator	Unit	Before project (2011)	After project (2016)
Component 1 – Waste collection and transport			
Total population in human settlements concerned (Core Indicator)	Inhabitants	384120	391740
Total generated municipal waste (Core Indicator)	T / year	146288	149743
Total collected municipal waste (Core Indicator)	T / year	142851	149743
Total collected household waste	T / year	98213	102465
Total collected household-like waste	T / year	36170	37641
Total collected street waste	T / year	5645	6792
Total collected park and garden waste	T / year	941	949
Collected market waste	T / year	1882	1897
Separate collected recyclable waste	T / year	3750	44500
Other separate collected waste	T / year	-	75003
Specific municipal waste production (Household + Household-like + institutions)	Kg/inh x a	367	388
Specific household waste collection	Kg/inh x a	251	262
Percent of population connected to collection services in total and in urban, rural areas (Core Indicator)	%	Total: 95% Urban: 100% Rural: 90%	Total: 100% Urban: 100% Rural: 100%
Percent of population connected to separate collection services in total and in urban, rural areas (Core Indicator)	%	Total: 30% Urban: 10% Rural: 20%	Total: 100% Urban: 100% Rural: 100%
Provided container volume for waste collection	m ³ / inh x year	0,01	0,03
No and volume of containers for mixed waste collection	No and m ³	Bins 5442; Total volume [m ³]: 702	Bins 16687 Total volume [m ³]:2954
No and volume of containers for separate waste collection (Core	No and m ³	Bins 2321 Total volume [m ³]:	Bins 6430

Indicator	Unit	Before project (2011)	After project (2016)
Indicator)		3420	Total volume [m ³]: 7317
No of transfer stations (Core Indicator)	No	5	5 covering the whole county
No and capacity of press containers	No and m ³	5 of 24 m ³ each or equivalent	5 of 24 m ³ each or equivalent
No and capacity of hauling vehicles	No	5 or equivalent	5 or equivalent
Number and volume of containers for special wastes (bulky waste)	No and m ³	31 containers of 249m ³	54 of total volume of 352 m ³
Component 2 – waste treatment			
Recycling rate for paper (packaging)	% and t / year	11,4% 896 tn/year	70% 6.500 tn/year (additional quantities of non packaging paper, eg, printed paper are also expected to be recovered)
Recycling rate for plastic (packaging)	% and t / year	5,5% 530 tn/year	67,4% 6518 tn/year
Recycling rate for glass (packaging)	% and t / year	5,4% 391 tn/year	49,1% 3919 tn/year
Recycling rate for metal (packaging)	% and t / year	7,8% 231 tn/year	84,9% 2811 tn/year
No and capacity of sorting plants (Core Indicator)	No and t/year	1 3756 tn/year	4 plants 44800 tn/year
Total diversion rate for biodegradable waste not disposed of in landfills (Core Indicator)	% and t / year	14,0% 11.900 tn/yr	55,1% 46.900 tn/yr
No and capacity of treatment plants (Core Indicator)	No and t/year	1 (composting plant) 14000 tn/yr	2 of 75000 tn/yr in total (Composting plant + MBT / biostabilization plant)
Amount of compost produced	t/year	7000 compost	20466 tn/yr compost
Amount of CLO produced	t/year	-	10903 tn/year CLO
Amount of biodegradable waste diverted through home-composting	% and t / year	0% 0 tn/yr	3% 4668 tn/yr
Component 3 – waste disposal			
Amount of waste disposed of in compliant landfills (Core Indicator)	t/year	35000	65506
No and capacity of landfills compliant with EU standards (Core Indicator)	No and m ³	1 of 102.000 m ³ cumulative volume	2 landfills of total cumulative volume of 425560 m ³ (Feteni=321.000 m ³ , Roesti=104.560 m ³ for the year 2016)
No and volume of environmentally closed urban landfills (Core Indicator)	No and m ³	0	2 landfills of approximately 475000 m ³

It is specified that the performance of the system as it is presented in the table above is based on the specific assumption on waste generation, composition and the mass balances of the respective facilities. In any case the system will minimum achieve the targets imposed by the legislation namely:

- **2013**
 - ***Diversion of biodegradable waste from landfill: 38.851 tn (50% of biodegradable waste generated in 1995)***
 - ***Packaging paper recycling: 5.207 tn (60%)***
 - ***Packaging plastics recycling: 2.399 tn (22,5%)***

- **Packaging metals recycling: 1.655 tn (50%)**
- **Packaging glass recycling: 4.810 tn (60%)**
- **Packaging wood recycling: 662 tn (15%)**
- **Packaging material recycling: 20.224 tn (55%)**
- **Packaging plastics recovery: 22.062 tn (60%)**
- **2016**
 - **Diversion of biodegradable waste from landfill: 52.484 tn (65% of biodegradable waste generated in 1995)**
 - **Packaging paper recycling: 5.800 tn (60%)**
 - **Packaging plastics recycling: 2.673 tn (22,5%)**
 - **Packaging metals recycling: 1.843 tn (50%)**
 - **Packaging glass recycling: 5.358 tn (60%)**
 - **Packaging wood recycling: 737 tn (15%)**
 - **Packaging material recycling: 22.530 tn (55%)**
 - **Packaging plastics recovery: 24.578 tn (60%)**

c) Main beneficiaries of the infrastructure (i.e. target population served, quantified where possible):

The project beneficiary is the Valcea County Council, as representative of the Intercommunity Development Association for Sanitation Valcea, set up in the County. IDA has been formulated by the total of the local communes of the County. The project seeks to benefit the whole population, urban and rural of the Valcea County. Currently the population of the county is estimated at 404.337 inhabitants (2011) of which 45,4% is located in urban areas, while the rest (54,6%) is located in the rural part of the county. In 2016, the reference year, the people benefiting will be 391740 inhabitants.

d) Is the construction of the infrastructure to be delivered through a public-private partnership (PPP)?

Yes No

If yes, describe the form of the PPP (i.e., selection process for private partner, structure of PPP, infrastructure ownership arrangements, risk allocation arrangements, etc.):

N/A

Give details of how the infrastructure is to be managed after the project is completed (i.e., public management, concession, other form of PPP).

The institutional mechanism proposed to carry out the integrated waste management throughout VALCEA county requires compliance with the framework regulations of GD 855/2008, and requirements of SOP Environment MA. Currently, the "Association of Intercommunal Development for the Sanitation Service of Valcea localities" is registered to Rm. Valcea law court with certificate no.87608/28.07.2010 (sanitation field). The act and statute of the association are approved by 90 ATUs. The documents of the existent association are enclosed in the institutional report.

The **County Council** will be the main player in the management and implementation of investments for the integrated waste management system in Valcea County, approved by SOP Environment.

The Project Implementation Unit (PIU) was set up by Valcea CC through CCO no. 88/2010. The PIU consists of 8 members with various backgrounds including technical, financial, legal, public relations and procurement experts. The PIU is responsible for all stages of the project development including, project preparation, project implementation and project operation.

According to the requirements established for SOP Environment financing, after the investment phase is finished, the management of the new facilities will be delegated through **delegation contracts** to operators, by means of **public tenders**. Contracts will need to be concluded with operators for the management of the activities composing the sanitation services including waste collection, transfer, long distance transport, treatment, processing and disposal. The following types of contracts are proposed:

The joint management of the sanitation service activities which is within the responsibility of the members of the Association shall be carried out under the form of **delegated management, based on the management delegation contracts which shall be awarded to the operators based on the public tender procedures organised.**

It is important to specify that the proposed institutional set up within the regionalization process carried out under SOP ENV makes reference only to the activities related to **municipal waste management** from the list of activities the sanitation service of localities consists of, as listed at art. 2, line (3) of Law no. 101/2006.

Following the analysis of options presented in the institutional report institutional, the Valcea County Council decided on the following option, in relation to the operation contracts to be made:

- A contract for collection / transport by unifying Zone 1 with Zone 3. The activities include: the collection / transport waste from the generator to transfer station and sorting plant in Brezoi, the operation of the transfer station and sorting facilities and transport of waste from transfer sorting facilities (or directly) to treatment/disposal facilities
- A contract for collection / transport by unifying Zone 4 with Zone 6 (only rural areas). The activities include: collection / transport waste from the generator to transfer stations, transfer stations operation, transport of waste from transfer stations to sorting / treatment / disposal facilities;
- A contract for collection / transport by merging zone 2 to zone 5 (mainly rural). The activities includes: collection / transport waste from the generator to transfer stations, transfer stations operation, transport of waste from transfer stations to sorting / treatment / disposal facilities;
 - IDA will be contracting authority (the mandate) in the name and on behalf of TAU served;
- A contract for central waste management facility in Roesti. This contract will include the operation of sorting / MBT / landfill in Roesti;
 - Valcea County Council (the mandate) will be contracting authority for this contract;

Regarding the collection and transportation of waste in the county this is carried out: specialized operators (public / private) which have contracts with local authorities. These contracts are valid until 2018 at the latest. Some contracts have provisions for selective collection of recyclable waste, while a small number of these contracts that does not ensure the meeting of the respective targets. The analysis of these contracts is presented in the institutional report. Following this analysis the following conclusions were made:

Of the 89 TAU (total in the county are the county TAU 90 including the county council):

- In 43 TAU, where the Grup Salubrizarea Urbana SA Bucuresti and SC Urban operates, according to the contract there are specific clauses for termination of contracts when the integrated system starts its operation (some contracts have clauses in relation to selective collection). In all 43 of ATU the collection / transportation of waste will be delegated by the IDA;
- In 33 TAU SC Urban SA operates and these contracts will be terminated as follows: in 1 TAU in 2012, in 3 TAU 2013, in 6 TAU in 2014, in 8 TAU 2015, in 7 TAU 7 in 2016, in 5 TAU in 2017, and in 3 TAU in 2018. These contracts also have clauses for selective waste collection Upon completion of these contracts the collection / transportation of waste will be delegated by the ADI;
- In 2 TAU Presacet Calimanesti operates and these contracts will cease when the new system will be implemented and the tenders for collection / transport / sorting at the county level will be launched. The collection / transportation of waste will be delegated by the ADI;
- Other areas covered by PHARE will delegate the operation of the service of collection / transport to ADI;
- 3 TAU operate with their own equipment. The collection / transportation of waste will be delegated by the ADI.

Ownership of investments and goods

Valcea County Council will be the owner of the new infrastructure.

It is assured that lands needed for realization of project belong to public property of the local authorities and are at the Projects availability, as all administration rights have been given to the County (relevant decision have been issued). It is approved that lands needed for realization of the Project are not under any other legal dispute.

In Annex D the status of the available documents related to the land is presented.

Existing goods and their integration into the new system

It has to be specified that according to the in force legal provisions, **there is a possibility to extend a sanitation service management delegation contract only in the cases expressly regulated by Law no. 101/2006, respectively:**

- ❖ *in case of reasons of general interest, case in which the contract duration period cannot be extended with more than 2 years;*
- ❖ *in case the operator, upon the request of the authority of the local public administration and for the suitable carrying out of the sanitation service has carried out investments which cannot be depreciated within the period remaining until the expiry of the initial contract unless an excessive tariffs and taxes increase is applied.*

A. Rm Valcea ISPA project:

ISPA project serving for Rm Valcea Municipality under the Financing Memorandum agreed between the Government and the European Commission for financial assistance grant support from the Instrument for Structural Policies for Pre-accession measure "Integrated waste management system in Ramnicu Valcea, Romania" concerns the construction of a new landfill in the town Feteni, the closure of Răureni non compliant landfill, the construction of a composting plant in Raureni and measures for waste collection and transportation. The integration of this ISPA project in the county project is presented below:

- M. Rm. Valcea is a member of IDA;

- M.Rm. Valcea will organize a tendering procedure for the waste collection / transport of the municipality. The delegation contract will be valid until IWMS will be implemented in Valcea County, but no sooner than 3 (three) years, after this IDA will award this activity for the entire zone in which Rm. Valcea municipality belongs to;
- The Feteni landfill and the composting plant in Raureni will manage the north part of the county as proposed in technical - financial funding application;

In the specifications of the tenders for the operation of the landfill (Feteni) and composting plant (Raureni), there will be specific waste streams to be managed according to the respective SOP grant application, as well as the responsibilities of the parties regarding the monitoring of contracts and the arrangements for approval of tariffs

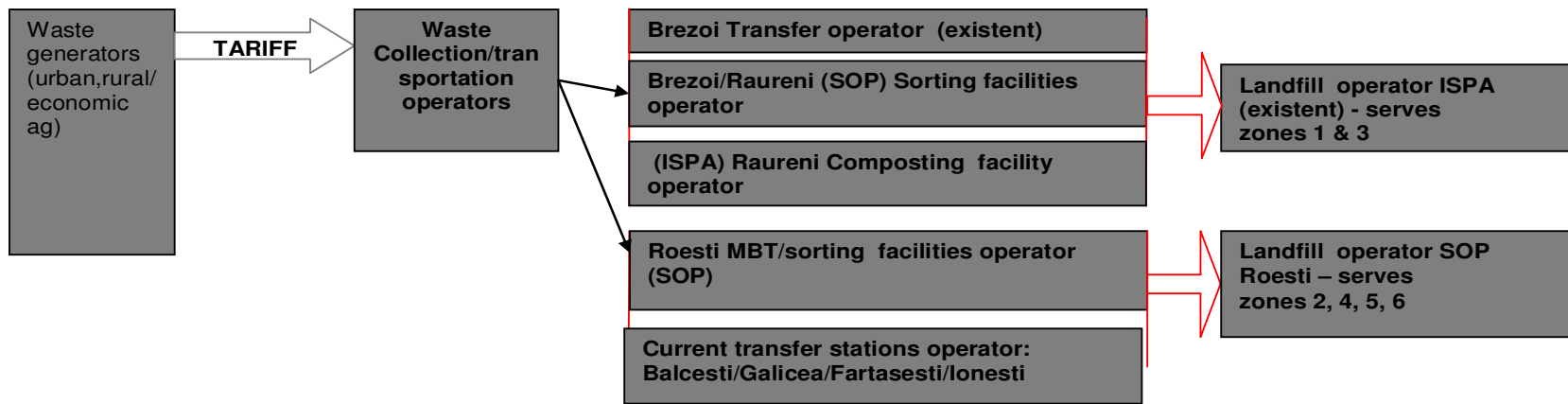
B. PHARE projects:

With respect to Phare projects, the waste management services covered by these projects will be delegated by the IDA on the name and on behalf of the respective local authorities. Goods purchased by PHARE beneficiaries of these projects will remain in their property. The details are presented report in the institutional analysis

With respect to the post closure activities of the two urban non compliant landfills the services of the local authorities of Calimanesti and Dragasani will be responsible

PROPOSED PAYMENT SYSTEM

Three payment systems for the sanitation services were proposed: ***Option 1 – a special tax system, Option 2 – a tariff system and Option 3 – mixed system.*** It has to be specified that currently with *Valcea County a tariff system is implemented, which Valcea CC has expressed the desire to maintain, as indicated in the scheme below*



* it is noted that according to the contractual arrangements presented earlier the waste collection and transport operators will also operate the facilities in the respective zones

This decision, assumed by the local authorities in Valcea County, is properly reflected in the Position Paper for Project Implementation.

e) Does the project form part of a Trans-European Network agreed at Community level?

Yes

No

N/A

B.5. Project objectives

B.5.1. Current infrastructure endowment and impact of the project

The proposed project seeks to resolve the significant environmental and operational problems related to waste generation and management and develop an integrated waste management system in the County that will improve the living conditions of its citizens and support Romania in achieving the waste management targets imposed by the Accession Treaty. The system as such, will be in full compliance with the EU and national environmental principles and legislation and will address all elements of waste management namely from waste prevention and waste collection to disposal of residues. The proposed system is tailored to the needs of the County and it was identified as being the most cost-effective and affordable for the citizens of the County. The specific goals that the proposed system seeks to achieve include:

- The prevention of the waste generation via the promotion of home-composting and raising of public awareness
- The increase of the connection rate to sanitation services in urban and rural areas to reach 100% from about 100% and 90% that was until today respectively
- The compliance with landfill and packaging Directives, the Industrial Emissions Directive, the waste framework Directive, the WEEE Directives and respective Romanian legislation, via the implementation of selective collection and the construction and operation of sorting plants and biodegradable waste treatment plants
- The overall reduction of waste disposal into the landfill
- The protection of the environment and public health via the operation of a compliant landfill and the closure of the existing non-compliant landfills.
- The strengthening of the capacities of the Valcea county in relation to waste management as well as to the implementation and monitoring of waste management works
- The raising of awareness of the citizens in relation to the benefits deriving from the project implementation as well as the change in their habits needed in relation to waste collection and management

In this respect the project seeks to develop the necessary infrastructure in order for Valcea County to be able to fulfil its obligations as they derive from the Accession Treaty and the relevant national legislation. The main quantified targets and deadlines have already been presented in Table B-1.

The waste quantity generated in the County is presented in the following table.

Table B-15: Waste generation in Valcea County (tn/y)

	Waste type	EWL Code	2013	2016
1	Generated municipal solid waste out of which:	20 03	147293	149743
1.1	Mixed domestic waste	20 03 01, 20 01	102041	102465
1.2	Similar mixed waste from commerce, industry, institutions	20 03 01, 20 01	36751	37641
1.3	Park and garden waste – market waste	20 02, 20 03 02	945	949
1.4	Street waste	20 03 03	5667	6792
1.5	Generated but uncollected waste	20 01, 15 01	0	0
2	Waste electrical and electronic equipment (WEEE)	16 02	1598	1567
3	Hazardous waste in municipal waste	20 01 with asterisk	781	766
4	Bulky waste	20 03 07	1126	1404

The following table presents the main discrepancies of the current waste management system and the ways the proposed project seeks to overcome these discrepancies.

Table B-16: Proposals for improvement of Valcea waste management system

Waste management stage	Current situation	Proposed interventions	Impacts
Waste collection and transport	Existing old equipment is inefficient and in some cases requires high levels of maintenance Connection to sanitation services, 100% in urban areas, 90% in rural areas Part cover with selective collection 5 transfer stations	Implementation of selective collection in 100% of urban and rural population Purchase of bins of total storage capacity of 6225 m ³ and trucks of total capacity of 943 m ³ (trucks to be provided by the operators)	Increase connection rate to 100% of the population in 2013 Optimization of waste logistics Upgraded waste collection equipment Fulfilment of the targets according to the Regional Waste Management Plan
Waste recovery	Low level of recycling Lack of adequate sorting infrastructures 1 available in Dragasani Landfilling of the major amount of waste collected	Development of 3 sorting plants in Roesti, Raureni, Brezoi	Fulfilment of the packaging Directive targets Reduction of waste that end up into the landfill
Waste treatment	Lack of adequate facilities for the treatment of biodegradable waste 1 composting plant available in Raureni Landfilling of the major amount of waste collected	Development of 1 MBT/biostabilization plant in Roesti Purchase of 20200 homecomposters	Fulfilment of the landfill Directive targets Reduction of waste that end up into the landfill Reduction of the environmental impacts related to landfill operations
Waste landfill	Wastes are disposed in the existing compliant landfill in Feteni covering the population from Rm Valcea 2 non-compliant landfills have not been closed	Closure of 2 urban non compliant landfills in Calimanesti & Dragasani	Disposal in compliant landfill in line with EC and Romanian standards Reduction of the environmental impacts related to landfill operation via the management of biogas
Public awareness	Very limited initiatives Absence of strategy	Implementation of public awareness campaigns focused	Successful implementation of the proposed waste

Waste management stage	Current situation	Proposed interventions	Impacts
		on the need of sustainable and cost effective waste management	management system Increased public awareness for the need of sustainable and cost effective waste management
Institutional structures	Fragmented and weak institutional structure for waste management not designed on facilitating expansion and improvements throughout the County. Absence of bylaws for operational procedures and penalties. Insufficient financing capabilities of local beneficiary. Absence of cost recovery through introduction of 'polluter pays' principle	Establishment of Technical Assistance for the PIU that will gradually develop into a permanent unit in charge of integrated waste management in Valcea County Gradual enforcement of cost recovery through application of "polluter pays principle"	Creation of an institutional framework suitable for effective waste management Increased capability to manage an integrated waste management system Adequate, cost effective and financial sustainable waste management system

B.5.2. Socio-economic objectives

The project seeks to improve the living status of the citizens of Valcea County, which is deteriorated by the current waste management practices. More specifically, the proposed project seeks, among other things to:

- Reduce the environmental impacts related to current waste disposal. These impacts are associated with the pollution of surface and groundwater with leachate and the emission of biogas, which is a greenhouse gas. The reduction will occur via the disposal of treated residues instead of untreated mixed waste.
- Increase the utilization of material included in the waste and preservation of natural resources (mainly mineral resources – global impact)
- Reduce the quantity of waste that end up in landfill thus increasing the landfill lifetime and providing the opportunity to utilize free land for more valuable purposes than waste disposal
- Reduce the visual disamenities, odours, verms and other health risks related with the current waste management practices
- Allow all citizens of Valcea County to have access to waste management services
- Reduce the waste management cost via the optimization of the waste collection system

In this respect the main socio-economic benefits from the implementation of the proposed project can be grouped into three main categories:

- The reduction of visual disamenities, odours and direct health risks. The quantification of these benefits is presented in section E.2.2 and is based on (i) increase in land values in the areas surrounding the rehabilitated dump sites; (ii) avoided cleaning costs for not having to treat impact of uncontrolled discharges of leachate and/or the

cost to develop alternative water sources when applicable and (iii) reduction of disamenities related to uncollected waste.

- The resource cost savings, which is related to (i) the recovery of recyclable products and the production of compost and (ii) the reduction of the total amount of waste finally going to final disposal, which extends the economic life of the landfills. The quantification of these benefits is presented in section E.2.2 and is based on (i) proceeds for the sale of recyclable products, compost and energy and (ii) when applicable to the project, avoided investment and operating costs at the landfill site
- The reduction of greenhouse gas emissions, which is related to (i) the avoidance (or proper collection) of methane and carbon dioxide emissions, which typically account for 64% and 34% in volume, respectively, of all gas generated from decomposing waste. The quantification of these benefits is presented in section E.2.2 and is based on the estimation of the annual expected reduction in tonnes of methane and carbon dioxide (CO₂) due to the project, transformation of the methane quantities into CO₂-equivalent using a standard conversion factor and monetization of the resulting quantities of CO₂ and CO₂-equivalent using a standard value of EUR per tonne of CO₂

Also the project as such involves the development of complex and big infrastructure which requires the employment of specialized and non specialized personnel. More specifically during the construction phase numerous workers will have the opportunity to work in the development of the infrastructure (temporary workers). From the initiation of the operation of the facilities it is foreseen that more than 200 people with various backgrounds will have the opportunity to work. Also at least 10 people will be employed at County Council level in order to carry out the tasks of the Project Implementation Unit.

The project will have direct impact in the recyclables market which will be expanded in order to absorb the increases quantities of recyclables that will be produced in the sorting plant. Also, as soon as the system operation smoothens and the public becomes educated the generated CLO in the MBT plant may be of better quality and a market could potentially be developed

Currently in the area a private county landfill is in operation and will serve the whole county. This initiative is taken into account and is integrated into the system.

Finally, this project alongside all other waste management project developed in the Romanian Country seek to contribute in the fulfilment of all waste management obligations undertaken by the Romanian Government during the process of Accession into the EU.

B.5.3. Contribution to the achievement of the Operational Programme

The project seeks to contribute to the objectives identified under:

Priority Axis 2 “Development of integrated waste management systems and rehabilitation of historically contaminated sites”

of the Sectoral Operational Programme for Environment, namely:

- To increase the population covered by municipal waste collection and management services of adequate quality and at affordable tariffs:

This is achieved by the implementation of the selective collection system described previously which is expected to cover the 100% of the population in 2013 (today mainly mixed collection is implemented and as a part selective collection). The proposed project is the most cost-efficient and it is viable respecting the affordability level of 1,8% of lowest decile impact

- To reduce the quantity of landfilled waste

This is achieved via the selective collection scheme that will be implemented, which will be supplemented by a sorting plant and a MBT plant. The total waste quantity that will be landfilled will be approximately 44% of the generated waste and it will be mainly treated residues and partly mixed waste

- To increase the quantity of recycled and reused waste

This is achieved via the selective collection scheme that will be implemented, which will be supplemented by 4 sorting plants in total. In total approximately 44500 tn/year of recyclables will be recovered

- To set up efficient waste management structures

This is achieved via the organization and operation of the Project Implementation Unit and the technical assistance contract that will concern the monitoring and management of the works

- To reduce the number of historically contaminated sites

In total, 2 urban non compliant landfills will be environmentally cleaned.

The following table presents indicators related to the project's contribution to the SOP objectives.

Table B-17: Indicators related to SOP Objectives

Indicator	Unit	Project contribution
Output		
New or completed integrated waste management systems at county/regional level	1 item	Development of 1 integrated solid waste management system at County level
Old municipal waste landfills closed in urban areas	2 items	Ex and In situ environmental clearance of all urban non-compliant landfills
Result		
Population benefiting from improved waste management systems	391740 inhabitants	The whole county population will benefit in terms of connection to sanitation services as well as improvement of the living conditions via the reduction of the environmental impacts related to current waste management practices

The project fulfils all relevant eligibility and selection criteria in order to be financed by ERDF in the framework of SOP Environment. More specifically:

- From institutional point of view the IDA has been formulated by the total of the local communes of the County and the PIU has been formulated, staffed and is in operation
- The proposed project falls within the priorities of the SOP Environment (Priority Axis 2)
- The implementation period of the project is prior to 2013
- The project seeks to fulfil the county obligations in relation to waste management legislation, which cannot be fulfilled otherwise
- The project is not correlated with any other EC financing
- All proposed eligible costs are according to the Romanian legislation (Order 1182/2643/7.9.2009)
- The land on which the waste management infrastructure will be located are under the public / local ownership

- All background documentations (Feasibility study, CBA and EIA studies have been concluded)
- The necessary permits have been issued

C. RESULTS OF FEASIBILITY STUDIES

C.1. Provide a summary of the main conclusions of the feasibility studies conducted

The feasibility study conducted in order to assess the waste management needs of Valcea County resulted in the following major conclusions:

- The current waste management is not adequate and in some cases inappropriate since:
 - Waste collection in several cases is performed by non authorised operators
 - Selective collection is implemented only in parts of the county
 - Existing equipment are in some cases old and insufficient
 - Not adequate treatment of biodegradable waste is carried out and hence it is not possible to reach the targets imposed by legislation
 - Not enough recycling facilities exist in order to recover the recyclable waste and hence it is not possible to reach the targets imposed by legislation
 - There are 2 urban non compliant landfills that have ceased their activity but have not be environmentally cleaned yet
 - The waste is disposed mainly without treatment contrary to the requirement of the legislation
- An integrated waste management system will need to be implemented in order to ensure the fulfilment of the targets foreseen by the legislation and ensure the environmental protection in the most cost efficient manner. The system's main components will include:

- In terms of waste collection:

- **Division of the county in 6 waste management zones**

The waste collection will be carried out as follows:

- **Collection in 4 bin system:** the system involves selective collection in the following fractions: paper/cardboard, glass, rest recyclables and residual fraction. It will be implemented in both urban and the rural areas of the waste management zones that is not present. All the existing systems collection systems will be maintained and expanded to include separate collection of paper and glass.
- Collection of **special waste streams** in **4 collection points**
- In terms of waste treatment / disposal:
 - Development of 1 (additional to the existing one in Raureni) **MBT/biostabilization plant in Roesti** for the treatment of residual fraction/biodegradable waste, in which the content of the residual waste bin will be treated. The plant will generate metals and compost like output to be used as landfill cover, for the rehabilitation of non compliant landfills and depending on its quality as soil conditioner. Also residues will be generated that will end up in the landfill. The capacity for the treatment plant is 34070 tn/year and will produce 10903 tn/year of CLO, 307 tn/year of metals and 17750 tn/year of residues
 - Existed **composting plant in Raureni** with total necessary capacity 40993 tn/year (current operation 14000 tn/year), 20466 tn/year compost produced and 6140 tn/year residues to landfill (In order to

handle these additional capacities the composting plant in Raureni must accept a functional conversion of the process during the production of the final product (compost). More details about the proposed solution are described in chapter 8 of the FS.

- **Development of 3 sorting facilities** in which the content of the bins with recyclables will be treated.
 - The capacity for the proposed sorting plant in Roesti is 10180 tn/yr and will produce 4709 tn/year of recyclables and almost 5471 tn/year of residues
 - The capacity for the proposed sorting plant in Raureni is 27871tn/yr and will produce 14872tn/year of recyclables and almost 12999tn/year of residues
 - The capacity for the proposed sorting plant in Brezoi is 2.992 tn/yr and will produce 1600 tn/year of recyclables and almost 1392 tn/year of residues
 - The needed capacity for the existed sorting plant in Dragasani is estimated 3756 tn/yr and will produce 2047 tn/year of recyclables and almost 1708 tn/year of residues
- **Construction of a new landfill in Roesti** (for zones 2,4,5,6) which will receive approximately 19610 tn/year (or 26531 m³ for 2016 in total including the cover material). Additionally the CLO produced in the MBT- biostabilization plant may be used as cover material in the landfill or similar works. Under the SOP Environment the first cell of the landfill will be financed. It is estimated that the lifetime of the first phase will be approximately more than 5 (about 8) years with a receiving capacity of approximately 184543 m³ of waste. The total volume of waste that will need to be landfilled in the next 28 years (2013-2040) will be approximately 753.013 m³.

Use of the existing **compliant landfill in Feteni** where needed to handle a capacity of 45896 tn/year and will cover the remaining quantities from Zone 1 & 3 (Current disposal in Feteni is about 31500 tn/year)

- Promotion of **homecomposting** in rural areas (4668 tn/year)
- **Environmental closure of existing landfills** : 2 urban non compliant landfills in Calimanesti & Dragasani of total surface 5,2 ha will be environmentally cleaned with solid waste excavations and complete capping system as the relevant Romanian legislation imposes

It is noted that the preparation of this CF/ERDF application and supporting documents (feasibility studies, environmental studies, tender documents, etc.) is financed under the SOP "Environment" Axis 6 – Technical Assistance.

The following table describes the main results of the background studies (Master plan, Feasibility study, cost benefit analysis and environmental impact assessment studies)

Table C-1: Main results of background studies

Item	Key dimension of the Feasibility Study	Description	Reference
1	Technical analysis	<p>The proposed system includes:</p> <ul style="list-style-type: none"> • Selective collection in urban and rural • Purchase of the necessary equipment for selective collection • Construction of 3 sorting plants of capacity of 41050 tn/year • Construction of 1 MBT plant of capacity of 34070 tn/year • Expansion of existing composting plant in Raureni to receive approx 41.000 tn/y of waste • Construction of the first cell for 1 sanitary landfill 19610 tn/year • Cleaning of 2 urban non-compliant landfills 	Chapter 8 of FS
2	Institutional aspects	<p>The main elements of the regionalization process of sanitation services in Valcea County refer to:</p> <ul style="list-style-type: none"> - Intercommunity Development Association; - County Council, as Project Beneficiary, with the Project Implementation Unit; - Position Paper for the Project implementation; - Contract awarding procedure. <p>At VALCEA COUNTY level, the setting up of the “<u>Association of Intercommunal Development for the Sanitation Service of Valcea localities</u>” is concluded. The members of IDA are: the CC, the Local Councils of all 3 municipalities and 9 towns and 78 Local Councils (all ATUs).</p> <p>VALCEA COUNTY Council will act as Beneficiary of the Project. For a sound implementation of the project, the County Council set up the <u>Project Implementation Unit</u>. The PIU members were involved in this project from the very beginning, which has determined a strong and efficient collaboration with the consultant.</p> <p>The Position Paper for the Project Implementation has been drafted, which comprises the options selected concerning the award of sanitation contracts, respectively, the invoicing and collection of the tariffs for the sanitation services. The Position Paper will be signed by the representatives of all Local Councils in VALCEA COUNTY and VALCEA COUNTY COUNCIL.</p> <p>For an efficient management of future available resources for municipal waste management, services for the project implementation and for the collection of municipal waste, waste transport/transfer, treatment and disposal will be performed based on the public procurement procedures.</p> <p>The following <u>categories of operators</u> for the activities which are part of the services shall be selected, through a public tender:</p> <ul style="list-style-type: none"> - A contract for collection / transport by unifying 	Chapter 11 of FS

		<p>Zone 1 with Zone 3 (3 & 4 according to the MP- except M. Rm. Valcea where an operator will serve the city). The activities include: the collection / transport waste from the generator to transfer station and sorting plant in Brezoi, the operation of the transfer station and sorting facilities and transport of waste from transfer sorting facilities (or directly) to treatment/disposal facilities</p> <ul style="list-style-type: none"> - A contract for collection / transport by unifying Zone 4 with Zone 6 (only rural areas). The activities include: collection / transport waste from the generator to transfer stations, transfer stations operation, transport of waste from transfer stations to sorting / treatment / disposal facilities; - A contract for collection / transport by merging zone 2 to zone 5 (mainly rural). The activities includes: collection / transport waste from the generator to transfer stations, transfer stations operation, transport of waste from transfer stations to sorting / treatment / disposal facilities - A contract for central waste management facility in Roesti. This contract will include the operation of sorting / MBT / landfill in Roesti <p>As regards the payment mechanism for the sanitation services, it was decided that a tariff system should be introduced at County level, in both urban and rural areas (HH and ICI), which will be collected by the local authorities within IDA</p>	
3	Environmental aspects	<p>This project aims at improving the living conditions of the citizens as well as the environmental conditions in Valcea County, via the optimization of the waste management system which is currently insufficient.</p> <p>The main environmental benefits from the project include:</p> <ul style="list-style-type: none"> • Reduction in the quantities to be disposed and in fact the amount of untreated waste to be disposed will be minimized. This results in the reduced landspace needs, reduced biogas generation (and greenhouse gases) and generation of leachate of reduced polluting load <ul style="list-style-type: none"> • Protection of atmosphere, ground and underground water • Reduction in waste generation via homecomposting • Maximize the material recover and recycling from waste resulting in less depletion of natural resources • Restrict the uncontrolled disposal of waste via the 100% connection to sanitation services in the whole county <ul style="list-style-type: none"> • The gradual restoration of biodiversity and landscape in the areas formerly used as non-compliant landfills – protection of local amenity • Reduction of dispersion of uncontrolled leachate and biogas from the urban non compliant landfills <ul style="list-style-type: none"> • Reduction of odour problems due to waste 	Chap 8 FS

		generation Overall the project presents significant environmental benefits which are much higher than the environmental impacts related to the project including mainly the air emissions and wastewater generated in the new MBT and sorting facilities	
4	O&M	The O&M costs have been calculated for each component of the system separately (namely collection, operation of transfer stations, MBT and sorting plants and landfill disposal as well as for the monitoring of the urban non compliant landfills). The total project O&M costs for the system in the first year of operation (2013) is estimated at 9,6 mEuro/year or 67,8Euro/tn of waste collected. Waste collection corresponds to 52% while the other facilities cover the rest of the amount	Chapter 10 of the FS
5	Financial Indicators	The project is considered affordable to population and financially viable in the case of co-financing from the EC. The main financial indicators are: FRR/C (prior community assistance): -5,70% FNPV/C (prior community assistance): -24,5million Euro FRR/K (after community assistance): -0,05% FNPV/K (after community assistance): -4,0 million Euro Funding gap: 93,53% One should always bear in mind that waste management projects are environmental projects, not generating much revenues. Hence the low FRR/K is attributed to this fact as well as to the fact that EC is contributing 82,44% of the funding gap	Chapter 10 of the FS
6	Tariff and affordability	Future residential (household) tariffs has been oriented to the income of the lowest decile of population, in such a way that the monthly expenditure for waste management including 24% VAT shall not exceed 1.8% of the mean net (disposable) household income of the lowest income decile (weighted average at County level, including both urban and rural households). The proposed tariff forecast foresees an increase of the residential (household) tariff from 224 RON/t in 2011 to 384,7 RON/t on project expiry (in 2041). The non-residential tariff (predominately attributed to "economic units") forecast includes for an initial linear increase to reach the DPC (374,2 RON/t) in 2013	Chapter 10 of the FS
7	Economic analysis	According to the economic analysis performed: ERR: 16,0% ENPV: 1,9 million Euro B/C ratio: 1.03	Chapter 10 of the FS
8	Sensitivity analysis	The main variables examined were the financial/economic investment and O&M costs and the financial revenues / economic benefits of the project. It appears that all of the financial parameters (investments, revenues, and O&M costs) and all of the economic parameters (economic benefits and economic costs) are considered key variables. (Key variables are defined as those for which a change of 1% in value results in a change of at least 5% in FNPV/K or ENPV).	Chapter 10 of the FS
9	Risk analysis	Based on the assumed pessimistic and optimistic scenarios, FRR/K before community assistance lies in the range from highly negative to 1,1%, while ERR lies in the range from negative to 57%. The FNPV/K before community assistance is always negative while the ENPV lies in the range -€16,2 million to €34,5million. The larger	Chapter 10 of the FS

	proportion of the range remains economically profitable even under unfavourable deviations of the main variables from assumptions.	
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C.1.1. Demand analysis

The proposed project will be implemented in Valcea County which is located in the South – Western Region of Romania. In 2009 the population in Valcea County was 408.518 inhabitants. 45.4% of the inhabitants live in urban areas, while the rest remain at the rural parts of the county. The population presents a decrease, that varies from -0,4% to -0,7% per year for the period of 2009-2016 and -0,9% to - 1,22% per year for the period of 2024 to 2040.

The following table presents the main characteristics of the county.

Table C-2: Main characteristics of Valcea County

Parameter	Baseline information		
Surface area (km ²)	Total County: 5,765 (19,73% of the region and 2,4% of the county) Urban areas: 33.659 (6,8% of the county) Rural areas: (93,2% of the county)		
Settlements	2 municipalities, 9 cities, 78 communes, 136314 household 3 persons/household		
Main economic activities	Tourism, hunting and related services, Forestry, Industry, Construction, Services		
GDP		GDP for year 2008 (billion RON)	GDP for year 2008 (RON / capita)
	Valcea	2,239	5477

The following table presents the present and future figures in relation to population and waste generation in Valcea County.

Table C-3: Evolution of population and waste generation in Valcea County

Urban									
Year	2010	2011	2013	2016	2020	2025	2030	2040	2041
Inhabitants	184814	183718	181527	177995	172628	165055	156867	139711	137999
Household waste	60695	67286	67541	67818	67900	67573	66859	64577	64287
Similar comercial, industrial & institutional waste	32439	32698	33224	34028	35130	36557	38043	41199	41528
Garden and park wastes	939	941	945	949	950	945	935	901	898
waste from markets	1878	1882	1889	1897	1899	1890	1869	1803	1795
Street-cleaning residues	5633	5645	5667	5691	5698	5670	5608	5409	5385
Total collected municipal waste	101584	108451	109266	110383	111577	112635	113314	113888	113893
Non-collected municipal waste	6460	0	0	0	0	0	0	0	0
hazardous municipal waste	0	459	454	445	432	413	392	349	345
Bulky waste	0	919	908	977	947	1026	975	869	858
Total generated municipal waste	108044	109829	110627	111804	112956	114074	114681	115106	115116

Rural									
Year	2010	2011	2013	2016	2020	2025	2030	2040	2041
<i>Inhabitants</i>	221934	220619	217988	213746	207301	198207	188374	167772	165701
Household waste	15090	30928	34500	34647	34690	34517	34138	32926	32780
Similar comercial, industrial & institutional waste	3444	3472	3528	3613	3730	3882	4039	4375	4409
Garden and park wastes	0	0	0	0	0	0	0	0	0
waste from markets	0	0	0	0	0	0	0	0	0
Street-cleaning residues	0	0	0	1101	1136	1183	1231	1333	1343
Total collected municipal waste	18534	34400	38028	39361	39557	39581	39408	38633	38532
Non-collected municipal waste	19205	3436	0	0	0	0	0	0	0
hazardous municipal waste	0	331	327	321	311	297	283	252	249
Bulky waste	0	221	218	427	415	793	753	671	663
Total generated municipal waste	37739	38388	38572	40109	40282	40671	40444	39556	39444

Total Valcea county									
Year	2010	2011	2013	2016	2020	2025	2030	2040	2041
<i>Inhabitants</i>	406748	404337	399515	391740	379928	363261	345240	307483	303700
Household waste	75785	98213	102041	102465	102590	102090	100997	97503	97066
Similar comercial, industrial and institutional waste	35883	36170	36751	37641	38860	40439	42083	45573	45938
Garden and park wastes	939	941	945	949	950	945	935	901	898
waste from markets	1878	1882	1889	1897	1899	1890	1869	1803	1795
Street-cleaning residues	5633	5645	5667	6792	6835	6853	6838	6741	6729
Total collected municipal waste	120118	142851	147293	149743	151134	152216	152722	152521	152425
Non-collected municipal waste	25665	3436	0	0	0	0	0	0	0
hazardous municipal waste	0	790	781	766	743	710	675	601	594
Bulky waste	0	1139	1126	1404	1362	1819	1729	1540	1521
Total generated municipal waste	145783	148217	149200	151913	153238	154745	155125	154662	154560

The following table presents the generation in Valcea County in kg/capita/year

Table C-4: Waste generation in Valcea County (kg/capita/year)

	2010	2011	2013	2016	2020	2025	2030	2040	2041
Urban	585	598	609	628	654	691	731	824	834
Rural	170	174	177	188	194	205	215	236	238
Total	358	367	373	388	403	426	449	503	509

The following table presents the composition of the waste generated in Valcea county.

Table C-5: Projected composition of municipal waste

Type of waste	County average			urban			rural		
	%			%			%		
	2013	2023	2033	2013	2023	2033	2013	2023	2033
Paper and board waste	13,8%	18,0%	19,8%	16%	18,0%	19,8%	9%	12,6%	15,7%
Glass waste	7,7%	8,8%	8,9%	9%	8,0%	8,9%	5%	5,6%	5,7%
Metal waste	3,7%	5,0%	5,2%	4%	8,0%	5,2%	3%	3,8%	3,9%

Type of waste	County average			urban			rural		
	%			%			%		
Plastic waste	10,8%	13,0%	14,3%	11%	10,5%	14,3%	10%	11,7%	13,6%
Wood waste	3,8%	4,0%	4,2%	4%	3,0%	4,2%	4%	4,3%	4,4%
Biodegradable waste	50,8%	42,0%	39,8%	47%	45,0%	39,8%	61%	55,0%	50,0%
Other waste	9,4%	9,2%	7,8%	10%	7,5%	7,8%	7%	7,0%	6,7%
TOTAL	100,0%	100,0%	100,0%	100%	100,0%	100,0%	100%	100,0%	100,0%

The following table presents the gaps and demands in the various stages of waste management.

Table C-6: Demands to implement integrated waste management

Waste management stage	Problems identified	Gaps and demands compared to existing situation
Waste collection	<ul style="list-style-type: none"> collection in several cases is performed by non authorised operators contrary to legal requirements selective collection is implemented only in parts of the county contrary to the targets imposed by the legislation and the waste management plans existing equipment are old and insufficient in some cases Connection rates in urban and mainly in rural areas must be 100% 	<p>Total required bin volume: 10272 m³ Additional bin volume needed: 6225 m³ Total required truck volume: 1836 m³ Additional truck volume needed: 943 m³</p>
Transfer stations locations	<ul style="list-style-type: none"> 5 existed transfer stations are located in Brezoi (5.803 tn/y), Firtatesti (6.565 tn/y), Balcesti (6.602 tn/y), Galicea (3.125 tn/y), Ionesti (3.945 tn/y) 	<p>Maintenance of (5) transfer stations in the county and so as to optimize the waste collection logistics</p>
Biodegradable waste treatment	<ul style="list-style-type: none"> Non adequate treatment of biodegradable waste – inability to reach the targets imposed by legislation and the waste management plans 1 existed composting facility for treatment in Raureni 	<p>Diversion of biodegradable waste from landfill (tn):</p> <ul style="list-style-type: none"> 16334 (2010) 38851 (2013) 52484 (2016) <p>In the baseline year of 1995 the total biodegradable waste generated in the County was 92311 tn.</p>
Recovery of recyclable material	<ul style="list-style-type: none"> selective collection is implemented only in parts of the county 1 existed facility for recovery of recyclable materials (Dragasani) 	<p>In year 2013 there is need to recover / recycle (refers to packaging waste):</p> <ul style="list-style-type: none"> 5207 tn/year paper and cardboard 2399 tn/year plastic 4809 tn/year glass 1655 tn/year metal 662 tn/year of wood 20224 tn/year recycling 22062 tn/year recovery <p>In year 2016 there is need to recover / recycle (refers to packaging waste):</p> <ul style="list-style-type: none"> 5800 tn/year paper and cardboard 2673 tn/year plastic; 5358 tn/year glass 1843 tn/year metal 737 tn/year of wood 22530 tn/year recycling 24578 tn/year recovery
Landfill	<ul style="list-style-type: none"> the existing landfill serving Rm Valcea is in compliance with the national and EC standards but covers only the population from the 	<p>The existing landfill in Feteni will be utilized and together with the one proposed in Roesti will accept Approx.</p>

Waste management stage	Problems identified	Gaps and demands compared to existing situation
	municipality	65500 tn/y of waste and will be disposed after the system becomes fully operable
Old non complaint landfills	<ul style="list-style-type: none"> The existing 2 urban non compliant landfills have ceased their activity but have not been cleaned, causing severe environmental and public health threats 	Closure of 2 urban non compliant landfills of 5,2 ha surface.

All facilities that are proposed to be constructed in the framework of the project are designed to receive the capacities of the year 2016. The following table presents the design capacities of the main infrastructures.

Table C-7: Design capacity of main infrastructures

Waste generation (tn/yr)	149743
Homecomposting	
Expected capacity (tn/y)	4668
Transfer stations (existed)	
Brezoi Capacity (tn/yr)	5803
Galicea Capacity (tn/yr)	3125
Firtatesti Capacity (tn/yr)	6565
Ionesti Capacity (tn/yr)	3945
Balcesti Capacity (tn/yr)	6602
Sorting station Brezoi (proposed)	
Capacity (tn/year)	2.992
Recovered recyclables (tn/year)	1600
Residues to landfill (tn/year)	1392
Sorting Station Roesti (proposed)	
Capacity (tn/year)	10180
Recovered recyclables (tn/year)	4709
Residues (tn/year)	5471
Sorting Station Raureni (proposed)	
Capacity (tn/year)	27871
Recovered recyclables (tn/year)	14872
Residues to landfill (tn/year)	12999
Sorting Station Dragasani (existed)	
Capacity (tn/year)	3756
Recovered recyclables (tn/year)	2047
Residues to landfill (tn/year)	1708
MBT/ biostabilization Plant Roesti (proposed)	
Capacity (tn/year)	34070
CLO produced (tn/year)	10903
Metals (tn/year)	307
Residues to landfill (tn/year)	17750
Composting Plant Raureni (existed*)	
Capacity (tn/year)	40933 (planned)
Compost produced (tn/year)	20466
Metals (tn/year)	-
Residues to landfill (tn/year)	6140
Landfill Roesti (proposed)	
Capacity (tn/y)	19610
Landfill Feteni (existed)	
Capacity (tn/y)	45896

It is noted that all facilities will be constructed according to Romanian and EC standards and best practices.

C.1.2. Options considered

The option analysis was made in two levels:

- Location of the central waste management facility
- Technological options for the integrated waste management facilities

Location of the central waste management facility

A compliant landfill is already in operation in the County (in Feteni), serving the Rm Valcea Municipality. This landfill cannot be extended, in order to serve the whole county for 30 years, as there is no land available. Feteni already works on 5 cells and the land nearby is not under local ownership and it is dedicated for other activities. Therefore a second landfill needs to be developed, which is also reflected in the Regional Waste Management Plan. The Feteni landfill will cover Ramnicu Valcea municipality and the northern area of the county, while Roesti the rest of the county. One of the most important decisions needed in the framework of the integrated waste management system is the sitting of the appropriate area for the establishment, and especially of the central waste management facilities and especially the landfill.

With respect to the central waste management facilities, the extensive consultation with the stakeholders as well as the search for the location of the central waste management site resulted in 2 acceptable locations for the county under examination. These locations are located in:

- Roesti and
- Dragasani.

Both sites have their advantages and disadvantages concerning the potential location of the waste management infrastructure but both of them are in principle appropriate.

The comparative examination of the two locations resulted to the conclusion that the central waste management facilities should be constructed in Roesti mainly due to:

- The position of the site in Roesti (Centre weighted) against Dragasani.
- Its visual isolation
- Public acceptance
- It will not influence significantly the environmental conditions in the area

The landfill in Roesti, will be constructed in order to receive the wastes and residues of the remaining part of the county that is not covered from the existing landfill, according to the regional waste management plan and the waste management master plan for Valcea County.

It is estimated that the lifetime of the first phase will be more than 5 years with a receiving capacity of approximately 184543 m³ of waste. The total volume of waste that will need to be landfilled in the next 28 years (2013-2040) will be approximately 753.013 m³.

Technological alternatives

The following presents the alternative options evaluated in the feasibility stage. It is noted that initially the screening of the alternative options for the waste treatment is carried out. The current waste management priorities of the authorities are to implement low-cost simple technologies, affordable to the served population, which will be combined with the recycling scheme in order to reach all the legislative targets related to waste management.

- **Measures for waste prevention (same for all options):**
 - Homecomposting of 4668 tn/y of organic waste in the rural areas
- **Proposed waste collection scheme (same for all options)**
 - Collection in 4 bin system: the system includes selective collection in the following fractions: paper/cardboard, glass, rest recyclables and residual (biodegradable) fraction.
- **Existed Transfer stations network (same for all options)**
 - The existed transfer stations are located in Brezoi (5.803 tn/y), Firtatesti (6.565 tn/y), Balcesti (6.602 tn/y), Galicea (3.125 tn/y), Ionesti (3.945 tn/y)
- **Proposed (& existed) system for collection of recyclables (same for all options)**
 - The capacity for the proposed sorting plant in Roesti is 10180 tn/yr and will produce 4709 tn/year of recyclables and almost 5471 tn/year of residues
 - The capacity for the existed sorting plant in Dragasani is estimated 3756 tn/yr and will produce 2.047 tn/year of recyclables and almost 1.708 tn/year of residues
 - The capacity for the proposed sorting plant in Raureni is 27871 tn/yr and will produce 14872tn/year of recyclables and almost 12999 tn/year of residues
 - The capacity for the proposed sorting plant in Brezoi is 2.992 tn/yr and will produce 1600 tn/year of recyclables and almost 1392 tn/year of residues

The materials that will be recovered from the above facilities include metal, glass, paper/cardboard, plastic. The residual stream (residuals) from the sorting plants will be treated to the MBT-biostabilization plant in Roesti and Raureni respectively (from Roesti & Dragasani to Roesti and from Raureni and Brezoi to the existing in Raureni)
- **Alternative options for the treatment of the biodegradable fraction of the waste:**

The following table presents the options under evaluation and includes also the overall disposal needs, which are related to each option.

Table C-8: Overview of the options under evaluation for the treatment of the biodegradable fraction of the waste in the feasibility stage

TREATMENT OF BIODEGRADABLE FRACTION OF WASTE		
Option 1	Option 2	Option 3
<p>Approx 60% of the total waste which will be collected in the residual waste bin will be treated in the central MBT / biostabilization plant in Roesti. The plant will generate metals and compost like output to be used as landfill cover, for the rehabilitation of non compliant landfills and depending on its quality as soil conditioner. Also residues will be generated that will end up in the landfill. The capacity for the treatment plant is 34070 tn/year and will produce 10903 tn/year of CLO, 307 tn/year of metals and 17750 tn/year of residues</p>	<p>Approx 60% of the total waste which will be collected in the residual waste bin will be treated in the central MBT plant in Roesti. The plant will generate secondary fuel to be used in energy intensive industries and metals. The residues that will be generated will end up in the landfill.</p> <p>The capacity for the treatment plant is 34070 tn/year and will produce 15332 tn/year of SRF, 307 tn/year of metals and 9914 tn/year of residues</p>	<p>Approx 60% of the total waste which will be collected in the residual waste bin be treated in the central MBT plant in Roesti.</p> <p>The plant will generate energy from biogas, metals and compost like output to be used as landfill cover, for the rehabilitation of non compliant landfills and depending on its quality as soil conditioner. The residues that will be generated will end up in the landfill. The capacity for the treatment plant is 34070 tn/year and will produce 6201 MWh/year of energy, 11925 tn/year of CLO, 307 tn/year of metals and 8142 tn/year of residues</p>
<p>Existed composting plant in Raureni with total necessary capacity 40993 tn/year, 20466 (tn/year) compost produced and 6140 (tn/year) residues to landfill (In order to handle these additional capacities the composting plant in Raureni must accept a functional conversion as explained in the next paragraphs)</p>		
WASTE DISPOSAL (Landfill Capacity)		
<p>Option 1: 19610 tn/yr, Option 2: 11774 tn/yr, Option 3: 9308 tn/yr</p> <p>(referring to the total amount of residues to be disposed and separated, per waste treatment option in all the county except Z3 and Z1 where is covered by the existing facilities in Rm Valcea). The existed landfill in Feteni with capacity 45896 tn/year will cover the remaining quantities from Zone 3</p>		

The following table summarizes the options analyzed and indicates the system that will be implemented.

Table C-9: Options for waste management

Stage	Options examined	Selection	Comments
Waste collection	• N/A	Collection in 4 receptacles system: the system involves selective collection in the following fractions: paper/cardboard, glass, rest recyclables and residual (biodegradable) fraction. The system is in line with the recently introduced law	It is noted that there is possibility to expand the 4-receptacle system implemented via the optimization of the waste logistics, without the need to purchase additional bins or even change the configuration of the sorting plant.
	Type of bins used	120lt, 240lt, 1,1 m ³ and 1,5m ³	
	Type of trucks used	16m ³ in urban areas 12m ³ in rural areas	
Central waste management location	• Roesti • Dragasani	Roesti	Roesti is considered suitable and among other advantages is the preferred location concerning the position of the site against Dragasani.
Biodegradable waste treatment	Option 1: MBT, (biostabilization) Option 2: MBT, (biodrying) Option 3: MBT, (anaerobic digestion)	MBT/biostabilization	The advantages are: • Highest ENPV • Low cost technology • Public acceptance • Good environmental performance
Recovery of recyclable material		Sorting facilities in Raureni, Brezoi & Roesti together with the existing one in Dragasani	The waste separated and the commercial institutions will be directly forwarded to the recycling facilities
Landfill		2 central county landfills compliant with the legislation (For construction in Roesti and one existing in Feteni)	This is defined by the regional waste management and the waste management master plan. All residues will be disposed off in the landfill
Old non-compliant landfills	Complete closure	Complete closure for urban landfills	All closure is carried out according to the legislative provisions and the principle of cost efficiency

The following table presents the financial elements for each alternative option. It is noted that the investment cost are related to the costs of the main infrastructure to be developed, excluding contingencies, and cost of designs, public awareness etc. The ENPV is calculated with the help of the model that has been developed for waste projects in Romania.

Table C-10: Financial performance of each option

	Investment cost (€) – constant prices	Operation cost (€/year - 2016) - constant prices	Revenues (€/year-2016)- constant prices	NPV@5% (€)	Dynamic prime cost (€/tn)	ENPV @5,5% (€)	Ranking
Option 1	26.087.716	8.760.300	827.200	152.626.325	76,84	16.964.586	1
Option 2	29.489.546	9.305.900	827.200	164.299.566	82,72	9.536.301	3
Option 3	32.899.546	9.245.400	1.224.000	161.416.980	81,24	10.422.374	2

As it can be seen in the table above the Option 1 (biostabilization Option) presents the higher ENPV and thus is considered to be the most preferable option.

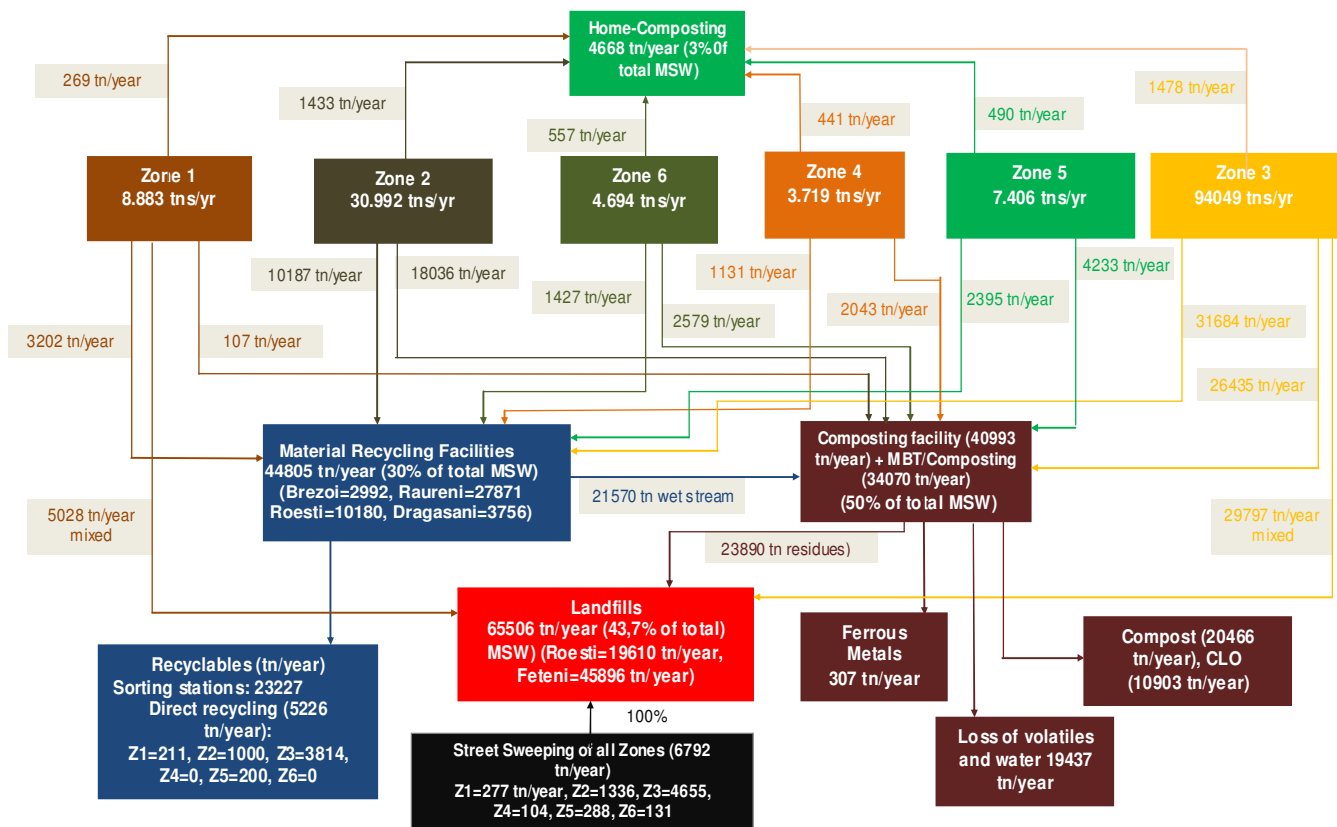
The main elements of the proposed system include:

- The central waste management facilities is proposed to be located in Roesti and will serve the total population of all zones except the quantities that driven in the facilities of Ramnicu Valcea (from Z1 & Z3)
- Selective collection system will be implemented in all areas of the county, employing basically 4-bin collection scheme (1.paper/cardboard, 2.glass, 3.rest recyclables and 4.

Residual (biodegradable) fraction), except in areas where other separation systems already exist and will be maintained

- Additionally to the existing one in Dragasani three new sorting stations is proposed to function consisting of lines of handpicking and magnets for ferrous metals. The recyclables from Z2,4,5,6 will be transferred to the central sorting station in Roesti, Raureni will serving the quantities from Z3 and Brezoi will serving the quantities from Z1
- The analysis of the treatment alternatives for the biodegradables concluded that MBT/biostabilization seems the better option, if considering the financial constraints.
- Home composting will be promoted in the rural areas. The aim being that at least 20% of the population, composts at home its biodegradable fraction.
- The residual separated fraction from the sorting plants will lead to the MBT/biostabilization & Composting plant in Roesti and Raureni respectively (from Roesti & Dragasani to Roesti and from Raureni and Brezoi to the existing in Raureni)
- All the residues from the treatment plants and the mixed waste from transfer stations (5 existing) will be disposed off in the landfill of the central waste management facilities in Roesti and in Feteni landfills respectively.
- Two non compliant landfills (in Calimanesti & dragasani) will be shut down and rehabilitated according to the deadlines imposed by the legislation.

Flow diagram for option 1



It is noted that with respect to other waste streams, such as waste electrical and electronic equipment, construction and demolition waste, end of life vehicles, etc, separate management schemes should be developed. The studies for the elaboration of such schemes are under elaboration / will be elaborated in the framework of other projects (existing / foreseen) which refer specifically to each waste stream. Where applicable the installations foreseen for the municipal solid waste (e.g. transfer stations, etc) may be utilized

for the management of these waste streams. With respect to sewage sludge management, the chapter 6 of FS provides the relevant information.

The following tables indicate the fulfilment of the targets for biodegradable and packaging waste according to the selected option for the year 2013 & 2016.

Table C-11: Fulfillment of waste management targets in 2013 & 2016

Biodegradable waste		
	2013	2016
Generation (tn/y)	85.007	84.793
Allowed to be landfilled (tn/y)	46.156	32.309
To be diverted (tn/y)	38.851	52.484
Landfilled according to the selected option(tn/y)	<p>MBT/Biostabilization plant and composting plant Biodegradable input: 52.832 tn/y Biodegradable disposed: 5.932 tn/y Biodegradable treated: 46.900 tn/y</p> <p>Sorting plants Biodegradable input: 25.042 tn/y Biodegradable disposed: 0 as all residues will be treated in the MBT and composting plants</p> <p>Homecomposting: Biodegradable input: 4.700 tn/y Biodegradable disposed: 0 tn/y Biodegradable treated: 4.700 tn/y</p> <p>Direct recycling by operators: Biodegradable (paper) input: 997 tn/y Biodegradable disposed: 0 tn/y Biodegradable (paper) treated: 997 tn/y</p> <p>Direct Disposal of mixed and street sweeping waste Biodegradable input: 26.478 tn/y Biodegradable disposed: 26.478 tn/y</p> <p>Total generation: 85.007 tn/y Total disposed: 32.410tn/y Total treated: 52.597tn/y</p> <p>Note: The CLO is fully stabilized after the biological treatment and it is considered that in case it reaches the landfill it is not biodegradable</p>	<p>MBT/Biostabilization plant and composting plant Biodegradable input: 53.144 tn/y Biodegradable disposed: 5.972 tn/y Biodegradable treated: 47.172 tn/y</p> <p>Sorting plants Biodegradable input: 25.220 tn/y Biodegradable disposed: 0 as all residues will be treated in the MBT and composting plants</p> <p>Homecomposting: Biodegradable input: 4.700 tn/y Biodegradable disposed: 0 tn/y Biodegradable treated: 4.700 tn/y</p> <p>Direct recycling by operators: Biodegradable (paper) input: 1.111 tn/y Biodegradable disposed: 0 tn/y Biodegradable (paper) treated: 1.111 tn/y</p> <p>Direct Disposal of mixed and street sweeping waste Biodegradable input: 25.839 tn/y Biodegradable disposed: 25.839 tn/y</p> <p>Total generation: 84.793 tn/y Total disposed: 31.810tn/y Total treated: 52.983tn/y</p> <p>Note: The CLO is fully stabilized after the biological treatment and it is considered that in case it reaches the landfill it is not biodegradable</p>
Packaging waste		
	2013	2016
Paper to be recycled tn/year	5.207	5.800
Paper recovered to be recycled tn/year	<p>Sorting plants Paper input: 7.200 Paper recovered: 6500 Recovered directly by economic units: 997 Total: 7.497</p>	<p>Sorting plants Paper input: 8.081 Paper Recovered : 7.290 Recovered directly by economic units: 1.110 Total: 8400</p>
Plastics to be recycled tn/year	2.399	2.673
Plastic recovered to be recycled tn/year	<p>Sorting plants Plastic input: 8.691 Plastic Recovered: 6.518 Recovered directly by economic units: 608 Total: 7.126</p>	<p>Sorting plants Plastic input: 8.736 Plastic Recovered : 6.552 Recovered directly by economic units: 677 Total: 7.229</p>
Metals to be recycled tn/year	1.655	1.843

Metals recovered to be recycled tn/year	Sorting plants Metal input: 3.095 Metal Recovered: 2.811 Total: 2.811	Sorting plants Metal input: 3.150 Metal Recovered: 2.836 Total: 2.836
Glass to be recycled tn/year	4.810	5.358
Glass recovered to be tn/year	Sorting plants Glass input: 5.628 Glass Recovered: 3.940 Recovered directly by economic units: 1.359 Total: 5.299	Sorting plants Glass input: 5.600 Glass Recovered: 3.919 Recovered directly by economic units: 1.864 Total: 5.783
Wood to be recycled tn/year	662	737
Wood recovered to be recycled tn/year	Recovered directly by economic units: 1.729	Recovered directly by economic units: 1.926
Total recycling tn/year	20.224	22.530
Recycling tn/year, according to project	24.462	26.174
Total recovery tn/year	22.062	24.578
Recovery tn/year, according to project	>24.462	>26.174

It is specified that the performance of the system as it is presented in the table above is based on the specific assumption on waste generation, composition and the mass balances of the respective facilities. In any case the system will minimum achieve the targets imposed by the legislation namely:

- **2013**
 - ***Diversion of biodegradable waste from landfill: 38.851 tn (50% of biodegradable waste generated in 1995)***
 - ***Packaging paper recycling: 5.207 tn (60%)***
 - ***Packaging plastics recycling: 2.399 tn (22,5%)***
 - ***Packaging metals recycling: 1.655 tn (50%)***
 - ***Packaging glass recycling: 4.810 tn (60%)***
 - ***Packaging wood recycling: 662 tn (15%)***
 - ***Packaging material recycling: 20.224 tn (55%)***
 - ***Packaging plastics recovery: 22.062 tn (60%)***
- **2016**
 - ***Diversion of biodegradable waste from landfill: 52.484 tn (65% of biodegradable waste generated in 1995)***
 - ***Packaging paper recycling: 5.800 tn (60%)***
 - ***Packaging plastics recycling: 2.673 tn (22,5%)***
 - ***Packaging metals recycling: 1.843 tn (50%)***
 - ***Packaging glass recycling: 5.358 tn (60%)***
 - ***Packaging wood recycling: 737 tn (15%)***
 - ***Packaging material recycling: 22.530 tn (55%)***

- ***Packaging plastics recovery: 24.578 tn (60%)***

In relation to the 2020 targets for 50% recycling of all recyclables (paper, plastic, glass and metals) the proposed infrastructure meets them since (with the support of the direct recycling by the economic operators):

- For paper: Target 9.600 tn/y, achieved >11.032tn/y
- For plastic: Target 7.500 tn/y, achieved >7.200tn/y (additional contribution of at least 300tn/y is expected from the economic operators compared to 2016 figures presented above)
- For metal: Target 2.600 tn/y, achieved >3.145tn/y
- For glass: Target 5.500 tn/y, achieved >5.783tn/y

D. TIMETABLE

D.1. Project timetable

	Start date (A)	Completion date (B)
1. Feasibility studies:	01/12/2010	31/08/2012
2. Cost-benefit analysis (including financial analysis):	01/12/2010	31/08/2012
3. Environmental impact assessment:	02/06/2011	10/08/2012
4. Design studies:	01/12/2010	31/07/2012
5. Preparation of Tender documentation:	01/12/2010	15/12/2012
6. Expected launch of tender procedure(s)	15/02/2013	30/06/2013
6.1 Technical Assistance for Management Support and Public Awareness for the Integrated Waste Management System in Valcea County	15/02/2013	31/05/2013
6.2 Supervision of Construction for the Integrated Waste Management System in Valcea County	15/02/2013	31/05/2013
6.3 Support to beneficiary by the designer	Offer request: Start date of contract 01/06/2013	End date of contract 30/09/2014
6.4 Annual project Audit	15/02/2013	31/05/2013
6.5 project verification	Offer request: Start date of contract 01/06/2013	End date of contract 30/11/2014
6.6 Supply of Waste Collection equipment	15/02/2013	31/05/2013
6.7 Supply of equipment for composting plant	15/02/2013	31/05/2013
6.8 Construction of the Sorting Station, MBT Plant and landfill in Roesti	28/02/2012	30/06/2013
6.9 Construction of sorting plants in Brezoi and Raureni	28/02/2012	30/06/2013
6.10 Environmental clearance of existing urban non-compliant landfills in Valcea County	28/02/2012	30/06/2013
7. Land acquisition:	Already available	
8. Construction phase / contract:	01/06/2013	30/11/2016
8.1 Technical Assistance for Management Support and Public Awareness for the Integrated Waste Management System in Valcea County	01/06/2013	30/11/2016 (incl DNP)
8.2 Supervision of Construction for the Integrated Waste Management System in Valcea County	01/06/2013	30/11/2016 (incl DNP)
8.3 Support to beneficiary by the designer	01/06/2013	30/11/2014
8.4 Annual project Audit	01/06/2013	30/11/2016 (incl DNP)
8.5 project verification	01/06/2013	30/11/2014
8.6 Supply of Waste Collection equipment	01/06/2013	31/8/2014 (incl DNP)
8.7 Supply of equipment for composting plant	01/06/2013	31/8/2014 (incl DNP)
8.8 Construction of the Sorting Station, MBT Plant and landfill in Roesti	01/07/2013	30/09/2016 (incl DNP)
8.9 Construction of sorting plants in Brezoi and Raureni	01/07/2013	31/08/2016 (incl DNP)
8.10 Environmental clearance of existing urban non-compliant landfills in Valcea County	01/07/2013	30/11/2016 (incl DNP)
9. Operational phase:	01/10/2013	31/12/2041

Following an indicative timetable for the execution of the works is presented

D.2. Project maturity

D.2.1. Technical (feasibility studies, etc.):

In terms of the technical preparation and maturity of the project the following studies have been completed:

- Master plan for the integrated solid waste management system in Valcea County: November 2010
- Feasibility study for the integrated solid waste management system in Valcea County: August 2012
- Cost benefit analysis: August 2012
- Environmental impact assessment: agreement issued in August 2012
- Application: February 2012
- Tender documents: The following table presents the overview of the tender documents to be prepared, in the framework of the project:

Table D-2: Estimated tenders

TYPE OF CONTRACT		DESCRIPTION	TYPE OF CONTRACT	ESTIMATED DATE OF PUBLICATION	ESTIMATED BUDGET – CONTANT PRICES
SERVICES	1	Technical Assistance for Management Support and Public Awareness for the Integrated Waste Management System in Valcea County	OT, (GEO No.34/2006, 19/2009)	02/2013	591.708,00 €
	2	Supervision of Construction for the Integrated Waste Management System in Valcea County	OT, (GEO No.34/2006, 19/2009)	02/2013	777.877,00 €
	3	Support to beneficiary by the designer	Direct negotiation / offer request	-	49.353,00 €
	4	Audit	Offer request	02/2013	40.000,00 €
	5	Project verification	Offer request	-	15.000,00€
SUPPLIES	1	Supply of Waste Collection equipment (Bins)	OT (GEO No.34/2006, 19/2009)	02/2013	1.796.750 €
	2	Supply of equipment for composting plant	OT (GEO No.34/2006, 19/2009)	02/2013	1.290.000 €
WORKS	1	Construction of central waste management facility - Sorting Station, landfill & MBT Plant in Roesti	OT (GEO No.34/2006, 19/2009)	02/2013	14.058.285,00 €
	2	Construction of sorting stations in Brezoi and Raureni	OT (GEO No.34/2006, 19/2009)	02/2013	6.471.972,00€
	3	Closure of existing urban non compliance landfills	Offer request	02/2013	3.312.476,00 €

D.2.2. Administrative (authorisations, EIA, land purchase, invitations to tender, etc.):

All available documentation has been issued, including:

- Urban certificate for the IWMS (Raureni – sorting plant, Brezoi - landfill, sorting plant, MBT, Brezoi – sorting plant) – Annex F
- Local decisions on the land availability in Raureni, Brezoi and Roesti – Cadastral certificates
- Relevant permits

The environmental agreement is attached in Annex G and the Natura 2000 Declaration in Annex I .

D.2.3. Financial (commitment decisions in respect of national public expenditure, loans requested or granted, etc. - give references):

Through Article 55 of General Regulation no. 1083/2006, and in accordance to the SOP Environment, the Romanian Government and Valcea County Council are committed to participate to the financing of the funding gap of the eligible initial investment cost (of the so-called “decision amount”) projects as follows:

- 16,56% to be financed by the State budget;
- 1% to be financed by Valcea County Council

The part of the eligible cost not financed by grants (non funding gap portion) will also be financed by the beneficiary, as well as the non-eligible part of the project including VAT, which is reclaimable to a great extent (see table below).

To cover its financial obligations in the project, Valcea County Council is legally in a position to contract a loan if necessary. The total amount of investment costs not covered by grants and which will be covered by the County Council (including the co-participation in the “Funding gap” of 1%, and excluding reclaimable VAT) is: 3.855.729 EUR (current prices). It is understood at this stage that the local contributions will be provided by the local budget of the County Council without the help of loans

The following table presents the project financing plan in current prices.

Table D-3: Project financing plan, 2012-2013 (Euro) – current prices

1. Total value of the project (total cost = eligible + ineligible costs) 40.226.962 100%	1.1 Eligible cost	1.1.1 Funding gap	1.1.1.1 EC contribution (max 82,44%) 24.461.648 82,44% of 1.1	
	31.724.647,2 79% of 1	29.672.062,5 93,53% of 1.1	1.1.1.2 State Budget contribution (16,56%) 4.913.694 16,56% of 1.1	
			1.1.1.3 County Council contribution (1%) 296.721 1% of 1.1	
		1.1.2 Non Funding GAP (County Council Contribution) 2.052.584,7 6,47% of 1.1		
	1.2. Ineligible cost (other categories than eligible) 8.502.314,4 21% of 1	1.2.1 County Council contribution 8.502.314,4 100% of 1.2	1.2.1.1 VAT 7.684.730,6 90,4% of 1.2	Reclaimed (County Council) 6.998.174,4 non reclaimed (County Council) 686.556,2
		1.2.1.2 Others (County Council) 817.583,8 9,6% of 1.2		

The following table presents the financial sources of investment cost per year (in current prices).

Table D-4: Annual financial sources – current prices (Euro)

Source	2012	2013	Total
ERDF	10.143.589	14.318.059	24.461.648
State budget	2.037.577	2.876.117	4.913.694
County Council	974.194	2.192.696	3.166.890
TOTAL	13.155.359	19.386.872	32.542.232
VAT (total)	3.394.206	4.290.524	7.684.731
GRAND TOTAL	16.549.566	23.677.397	40.226.962

D.2.4. If the project has already started, indicate the current state of works:

N/A

E. COST-BENEFIT ANALYSIS

E.1. Financial analysis

E.1.1. Short description of methodology and specific assumptions made

The financial CBA has been carried out in accordance with the methodological principles laid down in the "Guidelines for CBA of Solid Waste Projects"⁵ (hereafter referred to as "CBA Guidelines") which are specific for the Romanian waste sector and were published by the responsible managing authority in May 2009, as well as the more general EC "Guide to Cost Benefit Analysis of investment projects under Structural funds, Cohesion Funds and Instruments for Pre-Accession" published by the EC's DG region in June 2008. A further methodological working document is the EC's "Working document 4: Guidance on the Methodology for carrying out Cost-Benefit Analysis", published in August 2006 (in the following referred to as WD4).

Following the requirements of these guidelines, the CBA is performed applying the "incremental method", to ensure that only revenues and cost directly attributable to the project are considered in the analysis. The incremental cost and incremental revenues are determined through a comparison of two basic scenarios: a "with-project" and "without-project" scenario (i.e. the incremental values result from the difference between these two scenarios).

The special methodology applied in the financial CBA is described in detail in the CBA Guidelines mentioned above, especially the WD4 and the National CBA Guidelines.

The purpose of the financial analysis is to assess the financial performance of the proposed action and/or project over the period under consideration, with the view to establish the extent of financial self-sufficiency and long term sustainability of the proposed project, its financial performance indicators, as well as the justification for the amount of EU assistance being sought.

More specifically, the financial analysis has to cover the following steps: (i) estimate the project revenues and costs and their implications in terms of cash-flow; (ii) to determine the funding gap of the selected option and subsequently calculate the eligible expenditure that can be co-financed by the Funds (iii) define the project financing structure and its financial profitability; (iv) verify the sufficiency of the projected cash flow to ensure the adequate operation of the project and meet all investment and debt service obligations.

It should be noted that the subject of the present analysis are all municipal waste management activities in Valcea County Council. Waste collection activities, which will be carried out by the same kind of (private) operators as are in place now, is included in the analysis too, although it is not part of the eligible project funding. The other activity sectors, which will be added through the project, have been analysed in detail on the basis of technical, financial and operational inputs provided by the technical team (detailed within the accompanying model).

Some specific aspects are highlighted in the following:

The calculations are performed based on cost and benefits expressed in constant 2011 prices. The discount rate used for the financial CBA is 5%, in accordance with the CBA guidelines.

The funding gap analysis, which defines the amount of co-financing required by the project, as well as the calculation of the financial performance indicators of the project are based on incremental cash-flows expressed in constant 2011 Euro. The analyses are carried out

⁵ Guidelines for Cost Benefit Analysis of Solid Waste Projects to be supported by the Cohesion Fund and the European Regional Development Fund in 2007-2013. Final Draft, May 2009

based on the Discounted Cash-flow (DCF) method, that allocates costs and benefits on a time series in the year in which they occur and then discounts them to express their present value. Non-cash items such as the (technical) contingencies and depreciation cost are not considered. In the following, the methodological steps to establish the funding gap rate and the EU Grant are described.

Step 1: Calculation of the funding gap rate (R):

$$R = \text{Max EE/DIC}$$

where Max EE is the maximum eligible expenditure (DIC – DNR), DIC is the discounted investment cost (excluding contingencies in accordance with WD 4) and DNR is the discounted net revenue (= discounted revenues – discounted operating costs + discounted residual value). Other investment cost such as the replacement cost and variations of working capital attributed to the project have also been included in the DNR calculation, in accordance with the CBA guidelines (the definition of the financing gap in section 3.3 of WD 4 implies that the DIC includes only the initial investment cost, which excludes the replacement cost and the variations of working capital).

Step 2: Calculation of the decision amount (DA), i.e. “the amount to which the co-financing rate for the priority axis applies”:

$$DA = EC * R$$

where EC is the eligible cost. The eligible cost is expressed in current prices (i.e. includes price adjustments for inflation) and also includes the technical contingencies.

Step 3: Calculation of the (maximum) EU Grant:

$$\text{EU Grant} = DA * \text{Max CRpa}$$

where Max CRpa is the maximum co-financing rate fixed for the priority axis in the Commission’s decision adopting the operational programme (OP). In this case the rate to be applied is 82,44%.

Step 4: Calculation of the financial performance indicators of the project (FNPV/C, FRR/C, FNPV/K, FRR/K).

The FRR/C and the FNPV/C are calculated to assess the financial profitability of the investment. These indicators show the capacity of the net revenues to remunerate the investment costs, regardless of the way these are financed. When computing the financial profitability of own (national) capital (FNPV/K, FRR/K), the financial resources - net of EU grant - invested in the project are taken as outflows instead of the investment costs. Capital contributions have been considered at the moment they are actually paid out for the project or reimbursed (in the case of loans).

The financing plan is established based on the results of the funding gap calculation. The Community assistance (EU Grant) is calculated based on the Decision Amount (DA) as described above. The remnant portion of the DA is allocated to the Central and Local Governments taking into account the specifications made in the SOP – ENV in this regard. The share of eligible cost that is left after subtraction of the DA (“non funding gap”) is financed directly by the beneficiary (County Council).

The financial forecasts (Profit and Loss account, Cash-Flow, and Balance Sheet) have been prepared for the with-project in current RON and EURO equivalents and the profit and loss account for the Without-project scenarios in current RON. The financial forecasts of the integrated waste management system in the with-project scenario are the basis for the financial sustainability analysis.

Reference period: The period of projections is the same as the project’s reference period, which is 31 years, and includes the period of project implementation (2 years: 2012 - 2013) and the useful economic lifetime of the landfill (a further 29 years: 2013 – 2041).

Economic life of assets: As regards to the technical life of assets and equipment, which has an impact on the level of replacement cost that needs to be taken into consideration during the reference period, the project assets are split into the following main categories:

Building and construction	40 years
Plant and machinery	12 years
Vehicles	8 years
Containers	6 years

In addition to replacement costs for project assets, other major investments required after the initial project implementation period 2012-2013:

- Replacement of equipment after the end of their life
- Extension of the capacity of the MBT plant due to increase in waste generation

Assumptions regarding **macroeconomic indicators** such as GDP growth, inflation rates, exchange rates and net income of the region have been based on official forecasts. They are shown in the tables in Annex C.

Assumptions regarding **service coverage** and **landfilling** are as follows:

Table E-1: Assumed coverage by sanitation service, in %

Year	2010	2011	2012	2013	2016
Without project					
Urban	90%	100%	100%	100%	100%
Rural	44%	90%	90%	90%	90%
With project					
Urban	90%	100%	100%	100%	100%
Rural	44%	90%	90%	100%	100%

The following two tables show in comparison the annual waste quantities to be disposed:

Table E-2: Annual quantities of waste disposed of without project, 2010-2041 (tonnes)

	2010	2011	2012	2013	2016	2020	2030	2041
Residues from MBT & Composting plant	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100
Residues from sorting plant	1.708	1.708	1.708	1.708	1.708	1.708	1.708	1.708
Mixed waste, street sweeping	123.043	123.507	123.971	124.432	126.759	127.980	129.120	128.313
Total	126.851	127315	127.779	128.240	130.567	131.788	132.928	132.121

In the “without project” case shown above, almost of the waste disposed would go to the existing compliant landfill.

Table E-3: Annual quantities of waste landfilled with the project, 2010-2041 (tonnes)

	2010	2011	2012	2013	2016	2020	2030	2041
Residues from MBT & Composting plant	2.100	2.100	2.100	23.505	23.890	24.095	24.327	24.220
Residues from sorting	1.708	1.708	1.708	20.712	21.571	21.906	22.583	25.220
Mixed waste, street sweeping	123.043	123.507	123.971	19.875	20.054	19.938	18.945	15.241
Total	126.851	127.315	127.779	64.092	65.515	65.939	65.855	64.681

Project costs

Initial project costs in current EUR are presented below:

Table E-4: Initial project costs in Euro (current prices)

Initial project costs (current EUR)	Eliaible		Non-eliable	
	2012	2013	2012	2013
General costs				
Designs/verifications	857.774	11.215	0	0
Total	857.774	11.215	0	0
Civil construction				
Composting or MBT plant	1.170.034	1.731.104	0	0
new landfill	1.301.263	1.854.137	0	0
Sorting station	2.593.824	3.855.021	0	0
Non compliant landfills	321.496	2.740.384	0	0
Access roads	0	0	0	528.719
Utilities	0	0	0	270.234
Total	5.386.617	10.180.646	0	798.954
Plant and machinery				
Composting or MBT plant	2.151.558	1.691.048	0	0
new landfill	518.374	1.539.445	0	0
Sorting station	1.227.510	2.669.232	0	0
Non compliant landfills	29.397	273.037	0	0
Collection equipment and home-	1.841.006	0	18.630	0
Total	5.767.845	6.172.761	18.630	0
Contingencies				
Composting or MBT plant	120.235	159.199	0	0
new landfill	65.867	157.870	0	0
Sorting station	138.325	303.509	0	0
Non compliant landfills	12.702	140.185	0	0
Access Road	0	0	0	0
Utilities	0	0	0	0
Collection equipment and home-	66.641	0	0	0
Designs/verifications	31.050	522	0	0
Total	434.819	761.284	0	0
Totals excluding intangibles				
Total composting or MBT plant	3.441.827	3.581.351	0	0
Total new landfill	1.885.504	3.551.452	0	0
Total sorting station	3.959.659	6.827.762	0	0
Total landfill	363.594	3.153.605	0	0
Access Road	0	0	0	528.719
Utilities	0	0	0	270.234
Collection equipment and home-composting	1.907.647	0	18.630	0
Designs/verifications	888.823	11.737	0	0
Total	12.447.054	17.125.906	18.630	798.954
Intangible components				
Technical assistance	168.736	205.370	0	0
Publicity/PIU/taxes	405.653	515.456	0	0
Supervision during implementation	308.819	547.653	0	0
Grand total	13.330.262	18.394.385	18.630	798.954

Table E-5: Initial project costs in Euro (constant prices)

Initial project costs (current EUR)	Eligible		Non-eligible	
	2012	2013	2012	2013
General costs				
Designs/verifications	828.767	10.500	0	0
Total	828.767	10.500	0	0
Civil construction				
Composting or MBT plant	1.130.468	1.620.702	0	0
new landfill	1.257.259	1.735.888	0	0
Sorting station	2.506.110	3.609.165	0	0
Non compliant landfills	310.624	2.565.614	0	0
Access roads	0	0	0	495.000
Utilities	0	0	0	253.000
Total	5.204.460	9.531.369	0	748.000
Plant and machinery				
Composting or MBT plant	2.078.800	1.583.200	0	0
new landfill	500.844	1.441.266	0	0
Sorting station	1.186.000	2.499.000	0	0
Non compliant landfills	28.403	255.624	0	0
Collection equipment and home-	1.778.750	0	18.000	0
Total	5.572.797	5.779.090	18.000	0
Contingencies				
Composting or MBT plant	116.169	149.046	0	0
new landfill	63.640	147.801	0	0
Sorting station	133.647	284.152	0	0
Non compliant landfills	12.272	131.244	0	0
Access Road	0	0	0	0
Utilities	0	0	0	0
Collection equipment and home-	64.387	0	0	0
Designs/verifications	30.000	488	0	0
Total	420.115	712.732	0	0
Totals excluding intangibles				
Total composting or MBT plant	3.325.437	3.352.948	0	0
Total new landfill	1.821.743	3.324.956	0	0
Total sorting station	3.825.757	6.392.317	0	0
Total landfill	351.299	2.952.482	0	0
Access Road	0	0	0	495000
Utilities	0	0	0	253000
Collection equipment and home-composting	1.843.137	0	18000	0
Designs/verifications	858.767	10.988	0	0
Total	12.026.139	16.033.691	18.000	748.000
Intangible components				
Technical assistance	163.030	192.272	0	0
Publicity/PIU/taxes	391.935	482.582	0	0
Supervision during implementation	298.376	512.726	0	0
Grand total	12.879.480	17.221.272	18.000	748.000
	30.866.752			

O&M costs: The forecast of full O&M cost of the integrated waste management system in the with-project and without-project scenarios are presented in the following tables, differentiating by activity. A real increase of unit staff costs averaging 3,0% p.a. has been assumed in the projections.

Table E-6: Forecast of O&M cost, with-project scenario – constant 2011 prices

O&M cost projection – with project – constant EUR	2013	2014	2016	2020	2030	2041
Operating costs - collection	4.966.543	5.058.800	5.245.752	5.632.887	6.659.983	7.846.983
Operating costs – sorting plant	1.212.721	1.230.452	1.266.843	1.347.423	1.566.556	1.828.196
Operating costs – transfer stations	324.513	326.062	329.239	335.901	354.148	376.052
Operating costs – MBT plant	853.752	857.558	865.366	881.738	926.584	980.414
Operating costs – landfill	2.280.763	2.301.815	2.325.644	2.513.914	2.609.999	2.708.279
Operating costs – other	0	10.358	10.557	10.973	12.112	13.480
Total O&M Costs	9.638.293	9.785.046	10.043.400	10.722.836	12.129.382	13.753.403

Table E-7: Forecast of O&M cost, without-project scenario – constant 2011 prices

O&M cost projection – without project – constant EUR	2013	2014	2016	2020	2030	2041
Operating costs - collection	4.304.362	4.318.815	4.343.190	4.381.887	4.422.768	4.407.888
Operating costs – sorting plant	26.600	26.600	26.600	26.600	26.600	26.600
Operating costs – transfer stations	324.513	326.062	329.239	335.901	354.148	376.052
Operating costs – MBT plant	70.000	70.000	70.000	70.000	70.000	70.000
Operating costs – landfill	2.623.433	2.632.242	2.647.098	2.670.683	2.695.599	2.686.530
Operating costs – other	51.638	52.592	55.297	62.095	78.353	101.196
Total O&M Costs	7.400.546	7.426.311	7.471.424	7.547.166	7.647.468	7.668.266

In the with-project scenario, total unit O&M cost of the system is 67,8 €/t (without capital cost), of which around 35 €/t (52%) are for waste collection services. A similar unit cost for collection has been assumed for the without-project scenario. In line with instructions provided by the Managing Authority a penalty for non-compliance with the Landfill Directive has been included in the O&M cost of the without-project scenario, equivalent to 50,000 € per year (included as other operating cost in the above table).

Revenues attributable to the project considered in the analysis result from tariffs charged to residential and non-residential users (see section E.1.4), sales of recyclable materials and compost. The assumptions made with regards to the latter are as follows:

Recyclables: The recyclables leaving the sorting plant in 2016 are as indicated in the following below. The 2011 prices utilised within the model are also given in the table.

Table E-8: Possible selling price of recyclable materials

Product	Tonnes in 2016	Price in EUR/t	Total sale in 2016 (EUR)	2016 weighted average price EUR/t
Paper and cardboard	9.918	40	396.707	
Glass	3.919	2	7.838	
Metal	3.145	160	503.200	
Plastic	6.552	50	327.600	
Total	23.534		1.235.345	52,5
* Based on an exchange rate of 4.18 RON/EUR for 2011.				RON/t¹ 219,4

Compost: There is no good market for compost in Valcea County. However, it is supposed that 10% of the compost produced, being of superior quality, will sell at 5,0 EUR/t

Collection ratio: At present, the collection ratio is near 100% according to the surveys conducted, as non-paying households are usually counted as non-covered by the service. The calculation model requires entering a general average collection ratio. This percentage has been assumed to be increasing from 95% to 99% by 2016, and remaining at 99% in the following years.

E.1.2. Main elements and parameters used in the CBA for financial analysis

	Main elements and parameters		Value Not discounted	Value Discounted (Net Present Value)
1	Reference period (years)	31		
2	Financial discount rate (real) (%) ⁶	5.0		
3	Total investment cost excluding contingencies (in euro, not discounted) ⁷		29.651.304	
4	Total investment cost (in euro, discounted)			26.151.545
5	Residual value (in euro, not discounted)		4.122.750	
6	Residual value (in euro, discounted)			908.487
7	Revenues (in euro, discounted)			60.846.644
8	Operating costs (in euro, discounted)			60.063.581
Funding gap calculation⁸				
9	Net revenue = revenues – operating costs + residual value (in euro, discounted) = (7) – (8) + (6)			1.691.550
10	Investment cost – net revenue (in euro, discounted) = (4) – (9) (Article 55 (2))			24.459.995
11	Funding gap rate (%) = (10) / (4)		93,53	

Where VAT is recoverable, the costs and revenues should be based on figures excluding VAT.

⁶ Specify if the rate is real or nominal. If the financial analysis is conducted in constant prices, a financial discount rate expressed in real terms shall be used. If the analysis is conducted in current prices, a discount rate in nominal terms shall be used.

⁷ Investment cost should here exclude contingencies in accordance with working document number 4.

⁸ This does not apply: 1) for projects subject to the rules on State aids in the meaning of Article 87 of the EC Treaty (see point G.1), pursuant to Article 55(6) of Regulation (EC) No 1083/2006 and 2) if operating costs are higher than revenues the project is not considered as revenue generating in the sense of Article 55 of Regulation (EC) No 1083/2006, in which case, ignore items 9 and 10 and set funding gap to 100%.

E.1.3. Main results of the financial analysis

	Without Community assistance (FRR/C)		With Community assistance (FRR/K)	
	A		B ⁹	
1. Financial rate of return (%)	-5,70%	(FRR/C)	-0,05%	(FRR/K)
2. Net present value (euro)	-24.459.995	(FNPV/C)	-3.989.902	(FNPV/K)

The project shows a return on national equity capital (FRR/K) of -0,05% after the EU contribution, i.e. this is below minimum expectations even for a non-commercial project. In general, it must be borne in mind that solid waste projects are much less profitable than commercial sector projects. However, the low FRR/K in this case is mainly because, the EC contribution does not cover 100% of the established funding gap and the investments include significant environmentally necessary but non-revenue generating expenditures (e.g. the closure of the non compliant landfills and the home-composters). The low financial profitability of the project is offset by the high ERR achieved by the project

E.1.4. Revenues generated over its lifetime

a) Do the charges cover the operational costs and depreciation of the project?

Revenues generated by the project (including tariffs from users, revenues from sales of recyclable material and compost) entirely cover the O&M cost and the financial cost of the system (interests on loans assumed to finance future reinvestments and asset replacements). Despite the affordability cap on household tariffs, depreciation cost of the project's assets is almost totally covered.

The financial sustainability analysis shows a positive cash flow balance throughout the entire period of analysis.

b) Do the charges differ between the various users of the infrastructure?

Charges differ for the residential and non residential users of the system.

Future residential (household) tariffs will be oriented to the income of the lowest decile of population, in such a way that the monthly expenditure for waste management including 24% VAT shall not exceed 1.8% of the mean net (disposable) household income of the lowest income decile (weighted average at County level, including both urban and rural households). This household income forecast is based on the official statistics on the net (disposable) income of households in Romania and Valcea County for the period 2008 - 2010 as published by the National Institute of Statistics (INS).

The tariff calculations are based on a constant capital methodology, where the discounted capital costs (investment and reinvestment) minus the residual value is divided by the discounted project tonnage, and then multiplied by the actual forecasted tonnages (not discounted). This value is added to the calculated operational costs (minus reject revenues) and divided by the forecasted tonnage to provide a user tariff on an annual basis.

The proposed tariff forecast foresees an increase of the residential (household) tariff from 224 RON/t in 2011 to 384,7 RON/t on project expiry (in 2041). The non-residential tariff

⁹ For the calculation of the project profitability without ("C") and with ("K") Community assistance, refer to the guidance provided by the Commission in line with Article 40 of Regulation (EC) No 1083/2006.

(predominately attributed to "economic units") forecast includes for an initial linear increase to reach the DPC (374,2 RON/t) in 2013. Thereafter the non-residential tariff is based on an annual assessment of which is the greater, the DPC or the residential tariff, this is in accordance with the CBA Guidelines as non-residential tariffs should not be lower than the residential (household) tariff.

In this way, the imposed affordability limit is taken account of for residential users, the "polluter pays" principle is fully applied to non residential users and the financial liquidity of the operator of the project, Valcea County IDA, is preserved.

Table E-9: Excerpts from annual tariff development plan, in constant (2011) RON/t and RON/cap/month

Year	2011	2012	2013	2014	2015	2016	2017	2020	2030	2041
Tariffs in RON/t, excl. VAT										
Projected residential tariff - (households)	224,0	231,6	253,8	260,0	267,0	274,1	281,5	304,7	374,2	384,7
Affordability ratio (in % of lowest decile income)	1,66%	1,67%	1,80%	1,80%	1,80%	1,80%	1,80%	1,80%	1,77%	1,41%
Projected non-residential tariff (economic units)	266,6	323,1	374,2	374,2	374,2	374,2	374,2	374,2	374,2	374,2
Tariffs in RON/cap/month (residential), incl. VAT										
Average			6,16	6,33	6,52	6,71	6,91	7,55	9,55	10,13
Urban households			9,01	9,26	9,53	9,81	10,11	11,04	13,97	14,86
Rural households			3,79	3,89	4,01	4,13	4,25	4,65	5,86	6,18

The calculation of the per capita tariffs in urban and rural areas is based on the per capita waste generation in the respective areas in order to comply with the "polluter pays principle" (see section below).

Residential tariffs have been calculated as an average for the whole county. However, in practice, the private collection operators may apply different tariffs in different collection zones, according to the amounts of waste generated and collected (rural areas have lower waste generation per capita than the urban ones) and specific costs incurred (urban zones cause less costs per tonne than rural ones). They will also adjust their tariffs to the prices they have to pay at the different transfer stations, which might differ as a result of different distances to the central landfill.

It is to be noted that there is no separate charge levied on waste from markets, parks, street sweeping, following current practice, and that the related cost will be included in the tariffs paid by users as described above.

c) Are the charges proportional

i) To the use of the project/real consumption?

Charges applied to residential and non residential customers will be proportional to the real consumption of services.

As can be seen in the preceding table, per capita tariffs calculated for residential users are based on the respective per capita waste generation.

ii) To the pollution generated by users?

In general, as described above, billing is based directly or indirectly, on the tonne of waste generated by users, which is consistent with the polluter-pays-principle. In the long run, tariffs have been set at the full-cost recovery level of the system (DPC), which is also consistent with the polluter-pays-principle. While residential tariffs, due to affordability issues, will reach this level progressively, non-residential users will pay a full cost recovery tariff from the beginning (starting 2013).

E.2. Socio-economic analysis

E.2.1. Provide a short description of methodology (key assumptions made in valuing costs and benefits) and the main findings of the socio-economic analysis:

The economic analysis is performed strictly along the CBA Guidelines, using the model provided for this purpose by JASPERS.

In this analysis, costs for investment and for O&M are valued differently from their financial values. The cost composition and the conversion of financial costs to economic ones is as follows:

Breakdown of costs and factors for conversion of financial to economic costs

Table E-10: Breakdown of costs and factors for conversion of financial to economic costs

Cost category (not considering land acquisition)		<u>Construction</u>	<u>Operation</u>	<u>Conversion Factor</u>
Traded goods	%	40,00%	25,00%	1,00
Non-traded goods	%	10,00%	10,00%	0,90
Skilled Labour	%	5,00%	5,00%	1,00
Unskilled Labour	%	40,00%	50,00%	0,48
Transfer payments	%	5,00%	10,00%	0,00
Total (%)		100%	100%	

Unskilled labour is therefore counted for about half of its financial cost and transfer payments, such as various taxes contained in the operation costs, are not counted.

On the benefit side, the following items are considered:

- a) Resource cost savings, the recovery of recyclable products and the value of produced compost (project increments);
- b) Reduction of disamenities, odours and direct health risks, valued by means of the reduction of land having a reduced value due to the existence of a nearby landfill (the size of the waste facilities being determinant); the value for land value reduction is assumed to be 5% of an approximate value of 600M EUR.
- c) Improved waste services, separate from any environmental improvement brought about by the proposed new waste management system, many more people in Valcea County will benefit from an organized waste collection service as a result of the project, as the coverage of the population increases.

This benefit is valued based on observed willingness-to-pay. The proportion of billings which is actually collected is about 95%, even in a situation where strict sanctions against non-payers are not taken. The collection rate may be somewhat lower in certain parts of Valcea County, but there is a strong suggestion that the population is willing to pay at least the current tariffs for waste management services. A value of €59/tonne, the mean residential tariff forecasted for 2013, is therefore considered a conservative valuation of the benefit to householders of the improved waste service levels in the County. This benefit is related to the additional waste that will be collected in an organized manner as a consequence of the project

- d) The reduction of greenhouse gas emissions, as calculated by JASPERS in the Guidelines for CBA of Solid Waste Projects in Romania (March 2009) and presented in the table below:

Table E-11: CO2 emissions per tonne of waste

Not collected or collected and not disposed of properly	kg	833
Mixed waste going directly to compliant landfill	kg	250
Bio-waste collected separately and composted -aerobic	kg	26
Packaging waste collected separately and recycled	kg	-1037
Mixed waste to MBT for compost, with landfilling of rejects	kg	161

Further assumptions applied in the calculation of economic benefits are presented in the following section.

E.2.2. Give details of main economic costs and benefits identified in the analysis together with values assigned to them:

Benefit	Unit value (where applicable)	Total value (in euro, discounted)	% of total benefits
Total resource cost savings	52 €/t of recyclables	15.023.982	26,6%
Improved waste service levels in the County	61 €/t of waste	5.080.034	9,0%
Total reductions of disamenities and health risks	2 €/t of waste	20.347.769	36,0%
Total reductions of greenhouse gas emissions	25 to 45 €/t of CO2	16.012.327	28,4%
Total		56.464.112	100,00%
Cost	Unit value (where applicable)	Total value (in euro, discounted)	% of total costs
Traded goods		23.956.481	43,9%

Benefit	Unit value (where applicable)	Total value (in euro, discounted)	% of total benefits
Non traded goods		7.277.257	13,3%
Skilled labour		4.042.920	7,4%
Unskilled labour		18.042.422	33,1%
Economic value of land		1.254.614	2,3%
Total		54.573.694	100%

Around 35,8% of total ENPV of project cost corresponds to investment cost and around 64,2% to O&M cost (including reinvestments).

E.2.3. Main indicators of the economic analysis

Main parameters and indicators	Values
• Social discount rate (%)	5,5
• Economic rate of return (%)	16,0
• Economic net present value (in euro)	1.890.418
• Benefit-cost ratio	1,03

E.2.4. Employment effects of project

Number of jobs directly created:	No (FTE) (A)	Average duration of these jobs (months) (B)
1. During implementation phase	200	18 months
2. During operational phase	150 jobs for waste management infrastructure (engineers, supervisors, drivers, handlers, technicians, workers, handpickers) 60 jobs for waste collection (drivers, workers) Total number of jobs: 210	12 months / year x 24 years or 288 months in total

[NB: indirect jobs created or lost are not sought for public infrastructure investments.]

E.2.5. Identify the main non-quantifiable / non valuable benefits and costs:

The main economic benefits and costs related to the implementation of the project have been quantified and calculated in the economic analysis. Other benefits / costs that are closely connected with the project but cannot be quantified include:

- The elimination of uncontrolled waste deposits and dumpsites improves the aspect of towns, villages and landscapes and makes the area more attractive to live in and to visit it;
- The project has a beneficial educational effect on population regarding environmental awareness, which could be further increased by sensibilisation campaigns to adults and schoolchildren;
- The general improvement of the living conditions of the citizens as a result of the complete connection to sanitation services alongside the significant improvement of the environmental conditions due to the operation of modern waste management facilities;
- The social / economic development of the area, due to the development of a new market, namely the waste management and recycling market as well as due to the construction works that will take place during the next few years.

E.3. Risk and sensitivity analysis

E.3.1. Short description of methodology

The main purpose of the sensitivity and risk analysis is twofold:

- Assess the impact on key economic indicators in case the value of key variables is changed
- Assess the likelihood of changes in the key variables that will have impact on the key economic indicators

The analysis is performed in 3 consecutive stages, as follows:

- Stage 1: Identification of key variables. This includes the calculation of the values of the key economic indicators after variations of +/- 1% for the following variables: (i) project investment cost; (ii) revenues; (iii) operation and maintenance costs; (iv) economic benefits; (v) economic costs (investment); and (vi) economic costs (operation and maintenance). A key variable is considered to be the one for which a change in its value of 1% results in a variation of more than 1 percentage point in the base case FRR/K or ERR or more than 5% in the value of the base case FNPV/K or ENPV.
- Stage 2: Calculation of switching values for the key variables: a switching value is calculated per key variables, which is the maximum variation (in percentage) in the key variable that is permitted before the FNPV or ENPV (whichever is relevant for that specific key variable) turns negative.
- Stage 3: Calculate the probably distribution or likely range of the key economic indicators.

E.3.2. Results of Sensitivity analysis

The first step is to test for key variables. The following table presents the results of the calculations.

Table E-12: Results of the identification of the key variables

	Variable tested	Revised Financial rate of return (FRR/K)	Financial net present value (FNPV/K) variation	Economic rate of return (ERR)	Economic net present value (ENPV) variation
	Base case (project key economic indicators)	-0.05%	-3.989.902	16,0%	1.890.418
1	Project investment cost - increase of 1%	-0,22%	-4.251.417		
2	Project investment cost - decrease of 1%	0,13%	-3.728.386		
3	Revenues - increase of 1%	0,79%	-3.381.435		
4	Revenues - decrease of 1%	-0,92%	-4.598.368		
5	O&M costs - increase of 1%	-0,90%	-4.590.537		
6	O&M costs - decrease of 1%	0,77%	-3.389.266		
7	Economic benefits - increase of 1%			17,5%	2.455.059
8	Economic benefits - decrease of 1%			14,2%	1.325.777
9	Economic costs (Investment) - increase of 1%			15,0%	1.695.085
10	Economic costs (Investment) - decrease of 1%			17,0%	2.085.750
11	Economic costs (O&M) - increase of 1%			15,3%	1.540.013
12	Economic costs (O&M) - decrease of 1%			16,6%	2.240.822

Key variables are defined as those for which a change in its value of 1% results in a variation of more than 1 percentage point in the base case FRR/K or ERR or more than 5% in the value of the base case FNPV/K or ENPV. It appears that all of the financial parameters (investments, revenues, and O&M costs) and all of the economic parameters (economic benefits and economic costs) are considered key variables.

The switch value analysis gives the following results:

Table E-13: Switching values for key variables

	Critical variable	Switching value	
1	Project investment cost	Maximum increase before FNPV/K turns negative (%)	(already negative)
2	Revenues	Maximum decrease before FNPV/K turns negative (%)	(already negative)
3	O&M costs	Maximum increase before FNPV/K turns negative (%)	(already negative)
4	Economic benefits	Maximum decrease before ENPV turns negative (%)	3,4%
5	Economic costs (Investment)	Maximum increase before ENPV turns negative (%)	9,7%
6	Economic costs (O&M)	Maximum increase before ENPV turns negative (%)	5,4%

E.3.3. Results of Risk analysis

This project being an environmental project, seeks to improve the living conditions in the Counties under examination and also to contribute to the reaching of the waste management

targets foreseen from the Accession Treaty. As such and despite the fact that the strict financial indicators (e.g. FNPV after community assistance) are negative, the economic analysis results in a favourable conclusion, highly beneficial for the community (ENPV: 1,9mEuro, ERR: 16,0% and B/C Ratio: 1.03).

Therefore this project is considered as useful and feasible in socio economic terms and should be implemented.

The question is whether the economic conclusions, specifically the ENPV and ERR, could be undermined by plausible errors in the analysis or projections i.e. the risk, that the conclusion, the project is worthwhile in socio-economic terms is incorrect.

In addressing this question a strictly analytical approach to quantifying this risk is not possible. This is because:

(i) there is not a sound basis for determining what the probability distribution functions or parameters of the key variables are. In reality the functions are probably not symmetric, let alone normally distributed, and

(ii) these variables are not independent of one another (as is usually assumed in a Monte Carlo simulation, for example). If the population does not develop in accordance with the projection then both revenues (waste service billings) and costs are likely to be affected in the same direction, for example.

The accuracy suggested by a very quantified approach is likely to be illusory. The risk is therefore considered by formulating likely pessimistic and optimistic scenarios. The working for this analysis is presented in the financial model (worksheet 'RISK').

The assumptions made in the pessimistic and optimistic scenarios are given in the following table.

Table E-14: Assumptions used in pessimistic and optimistic scenarios for the risk analysis

Variable		Pessimistic assumption	Optimistic assumption
Financial variables			
1	Investment	20%	-5%
2	O&M	20%	-10%
3	Revenues	-20%	10%
Economic costs			
4	Investment	20%	-5%
5	O&M	20%	-10%
Economic benefits			
6	Improved waste service levels	-10%	20%
7	Resource cost savings	-20%	100%
8	Reductions of disamenities and health risks	-10%	20%
9	Reductions of greenhouse gas emissions	-10%	50%

The impact of the pessimistic and optimistic assumptions on the economic indicators are presented in the table below.

Table E-15: Risk analysis results: impact of pessimistic and optimistic assumptions on economic indicators

Risk Analysis Results	FRR/K before community assistance	FNPV/K before community assistance	ERR	ENPV (Th EURO)
Base case	-5,70%	-24.459.995	16,0%	1.890.418
Pessimistic scenario	Highly negative	-53.690.651	Highly negative	-16.173.131
Optimistic scenario	1,1%	-11.106.819	57,2%	34.486.831

Based on the assumed pessimistic and optimistic scenarios, FRR/K before community assistance lies in the range from highly negative to 1,1%, while ERR lies in the range from negative to 57%. The FNPV/K before community assistance is always negative while the ENPV lies in the range -€16,2 million to €34,5million. The larger proportion of the range remains economically profitable even under unfavourable deviations of the main variables from assumptions. Moreover it should be noted that in addition to the main economic benefits and costs related to the implementation of the project which have been quantified and calculated in the economic analysis, there are other benefits / costs that are closely connected with the project but cannot be quantified.

Some of the risks that are associated with the successful and beneficial project implementation and the mitigation measures include:

- **Underestimation of investment costs:**
The investment costs have been calculated based on a relatively detailed design of the facilities. Therefore it is expected that the project investment costs will not exceed by more than 5-10% the already calculated costs. In this respect an amount for contingencies has been foreseen. Also the discounts that are expected to be offered by the tenderers during the procurement procedure are expected also to compensate any potential increase of the investment budget.
- **Underestimation of operation costs:**
The operation costs have been calculated based on a relatively detailed design of the facilities. However the fact that these costs are based on the calculated waste amount that is expected to be generated in the county results in a level of uncertainty. In any case several safe assumptions were made, when calculating these costs, which are expected to balance any possible overrun in the costs.
- **Sizing of the facilities:**
The sizing of the facilities was based on the waste generation estimated using the common methodology implemented in Romania, the forecast of the population and the assumptions that the waste management targets have to be met. In case, during the project implementation it appears that the size of the facilities is either underestimated or overestimated, this will be dealt with, via operational changes in the system. All facilities proposed are simplified, which do not require comprehensive technologies and big investments and potential need to modify their capacity can be made via adaptations in their operation mode (e.g. number of shifts, frequency of collection, change of the storage time).

F. ANALYSIS OF THE ENVIRONMENTAL IMPACT

F.1. How does the project:

- a) contribute to the objective of environmental sustainability (European climate change policy, halting loss of biodiversity, other ...);

The project is implemented in Romania under the Environmental Sectorial Operational Program (SOP ENVIRONMENT) 2007-2013, Priority Axis 2 – Waste management sector continuing the actions of pre-accession assistance (ISPA and PHARE projects).

By transposition of the *acquis communautaire*, Romania has accepted and adopted new laws and standards regarding environment quality. The implementation of the European Directive 2008/98/EC on waste (which repeals certain Directives) has produced a significant change in the national and county policy regarding the management of the solid waste.

This project aims at the development of a sustainable waste management system in Valcea county, which will reduce the environmental impact by improving the current management waste services and also by realizing the closure of the existing non-compliant landfills. All these activities will be based on Sectorial Operational Program (SOP), Priority Axis 2, in accordance with EU regulations.

The new integrated solid waste management system shall have to provide better services and shall contribute to the improvement of the quality of the environment and health of the population. Also, through the implementation of the project, the following will be achieved:

- implementation of selective collection system for recyclables
- recovery and recycling of the packaging waste and recyclable materials, namely metals, glass, paper and plastic
- treatment of the biodegradable fraction of waste
- development of a sanitary landfill for the disposal of the residues fo waste treatment

More specifically, the project contribution to the achievement of sustainable development objectives will be significant in the sense that:

- it will prevent the uncontrolled disposal of waste on soil, surface and ground/underground waters;
- it will prevent the annual direct disposal into the atmosphere of the CO₂ equivalent to the volume of the collected/treated waste, which will accordingly reduce the effect of global warming;
- It will lead to the gradual restoration of biodiversity and landscape, by reintroduction into the natural circuit the areas of current non-compliant landfills.

- b) respect the principles of preventive action and that environmental damage should as a priority be rectified at source;

The proposed project complies with the preventive action principles and the fact that the environmental impairment would be identified at the source as a priority.

With the implementation and the development of a complete selective collection system, followed by the waste sorting, it is foreseen that the solid waste recycling market will increase in the region

Using a waste treatment/recycling system the quantity of final waste disposal will decrease with a consequent increase of the quality of the environmental conditions and minimization of the environmental impact related to waste management

c) respect the "polluter pays" principle.

In general, as described in the CBA section, the billing is based directly or indirectly, on the tonne of waste generated by users, which is consistent with the polluter-pays-principle. In the long run, tariffs have been set at the full-cost recovery level of the system (DPC), which is also consistent with the polluter-pays-principle. While residential tariffs, due to affordability issues, will reach this level progressively, non-residential users will pay a full cost recovery tariff from the beginning (starting 2013).

F.2. Consultation of environmental authorities

Have the environmental authorities likely to be concerned by the project been consulted by reason of their specific responsibilities?

Yes No

If yes, please give name(s) and address(es) and explain that authority's responsibility:

Prior to obtaining the development consent (urban certificate or other form of permit to proceed with the project), the project had to enter the EIA procedure. According to the Romanian legislation, the authorities likely to be concerned by the project by reason of their specific environmental responsibilities are represented in a Technical Review Committee (in Romanian CAT) which is consulted in all the stages of the EIA procedure.

TRC consists of representatives of various county authorities, such as: Local Environmental Protection Agency (LEPA) Valcea, Regional Environmental Protection Agency (REPA Craiova), National Environmental Guard- County Commissariat of Valcea County, Inspectorate for Emergency Situations for Valcea County, National Administration "Romanian Water"- Water Basin Administration Olt and Valcea Public Health Directorate.

The coordination of the EIA procedure and the issuance of Environmental Agreement and Natura 2000 Declaration for the project is within the competence of Regional Environmental Protection Agency for Craiova County.

Adress: Petru Rares Str, No 1, Craiova, Dolj County, PC: 200349

Phone: 0351 – 428037

0746248743

Fax: 0251.419.035

e-mail: office@arpmdj.anpm.ro

The competent authority for the issuing of the water agreement is National Administration "Romanian Water"- Water Basin Administration Olt

Adress: Remus Bellu Str., No. 6, Râmnicu Vâlcea, Vâlcea County, ROMÂNIA

Phone: +40 250 739 840

Fax: +40 250 738 255

e-mail: dispecer@dao.rowater.ro

If no, please give reasons:

TEXT BOX

F.3. Environmental Impact Assessment

F.3.1. DEVELOPMENT CONSENT¹⁰

F.3.1.1. Has development consent already been given to this project?

Yes

No

F.3.1.2. If yes, on which date

N/A

F.3.1.3. If no, when was the formal request for the development consent introduced:

Development Consent submissions estimated date January 2013

F.3.1.4 By which date is the final decision expected?

The date estimated is February 2013

F.3.1.5. Specify the competent authority or authorities, which has given or will give the development consent.

The competent authority is Valcea County Council.

F.3.2. APPLICATION OF COUNCIL DIRECTIVE 85/337/EEC ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA)¹¹

F.3.2.1. Is the project a class of development covered by:

- Annex I to that Directive (go to question F3.2.2)
- Annex II to that Directive (go to question F.3.2.3)
- Neither of the two annexes (go to question F.3.3)

F.3.2.2. When covered by Annex I to that Directive, include the following documents:

- a) the information referred to in Article 9(1) of that Directive;
- b) the non-technical summary¹² of the Environmental Impact Study carried out for the project;
- c) information on consultations with environmental authorities, the public concerned and, if applicable, with other Member States.

¹⁰ The decision of the competent (national) authority or authorities which entitles the developer to proceed with the project. In cases where the project submitted is part of a wider operation, the development consent should refer only to the project submitted to the Commission. In cases where more than one development consent decisions are required, please repeat the information as many times as necessary.

¹¹ OJ L 175, 5.7.1985, p. 40.

¹² Prepared under Article 5(3) of Directive 85/337/EEC.

F.3.2.3. When covered by Annex II to that Directive, has an Environmental Impact Assessment been carried out for this project?

Yes

in which case, include the necessary documents listed under point F3.2.2.

a) the information referred to in Article 9(1) of that Directive;

According to national EIA legislation, the information related to Art. 9(1) is comprised in the Environmental agreement (included in Annex G).

The Environmental Agreement contains the reasons on which the decision is based and also the information on public consultation process; no comments received from the public.

The public was informed about the decision to grant the Environmental Agreement and the content of the Environmental Agreement through announcement, as presented in the EIA Summary in Annex K

The Environmental Agreement comprises all the mitigation measures and conditions to prevent and reduce the environmental impact.

The decision to grant the development consent (building permit) will be taken by the competent public administration authority (according to F 3.1.5.), which will make available to the public the information referred to in Article 9 (1) of the EIA Directive

b) the non-technical summary¹³ of the Environmental Impact Study carried out for the project;

The non-technical Summary is presented in the Annex H.

c) information on consultations with environmental authorities, the public concerned and, if applicable, with other Member States.

The competent environmental authority (according to the assigned competency) is REPA Craiova, which coordinates the stages of the EIA procedure (screening, scoping and review of the EIA Report) and decides upon issuing the Environmental Agreement.

REPA Craiova and other authorities likely to be concerned by the project (by reason of their specific environmental responsibilities) are represented in a Technical Review Committee (in Romanian CAT) and consulted in all stages of the EIA procedure.

The TRC consists of the representatives from various authorities represented at county and region level (please see section F-2).

Consultation with environmental authorities, other authorities and public was held during the EIA procedure, in different stages, as required by the EIA legislation.

During the EIA procedure, the public was informed through public announcements and debate, in compliance with the stages of the EIA procedure.

- The process of public consultation started on 17.11.2011, when the announcement regarding the request of the Environmental Agreement was posted on REPA's website. The announcement was also posted at the date of 23.11.2011 on website at the headquarters of the Valcea County Council and to the City Halls of Roesti, Brezoi, Raureni, Dragasani, Calimanesti, on the City Halls and published in the local newspaper "Curierul de Ramnic" on 24.11.2011.

¹³ Prepared under Article 5(3) of Directive 85/337/EEC.

- CAT meeting on 06.01.2012 – following the assessment of documents and consultation within TRC, corresponding to the Screening Stage, the REPA Craiova established that for the project will be the subject to EIA.
- Announcements of the screening decision were posted on 09.01.2012 on REPA's website. The announcement was also posted at the date of 12.01.2012 on website and at the headquarters of the Valcea County Council, to the City Halls of Roesti, Brezoi, Raureni, Dragasani, Calimanesti and published in the local newspaper "Curierul de Ramnic".
- After the elaboration of the EIA Report, the announcement regarding the public debate was published at 17.02.2012. The announcement was also posted at the date of 22.02.2012 on website and at the headquarters of the Valcea County Council, to the City Halls of Roesti, Brezoi, Raureni, Dragasani, Calimanesti and published in the local newspaper "Curierul de Ramnic".
- Public debates were organised in 2 localities, at the headquarters of the Valcea County Council (13.03.2012), and the City Hall of Roesti (14.03.2012).

The Beneficiary, the Consultant and the EIA evaluator were available for the public during the debate. During the public debates, no comments were raised.

REPA Craiova issued the Final Decision on 11.07.2012

It is noted that that no public observation was received after the issuance of the environmental agreement.

It is noted that in addition to the above, a health study was carried out in order to assess the impacts of the landfill in the neighbourhood areas. The result is that, the locations of the central facility as well as the waste treatment activities that will be carried out within the facility do not cause health impacts in the area.

The Environmental Agreement no. 10 was issued on 10.08.2012.

EIA Decision and Environmental Agreement were made available to the public. The announcement regarding the Final Decision was published in the local newspaper "Curierul de Ramnic", on 31.07.2012. The announcement was also posted on the website and at the headquarters of the Valcea County Council, at the City Halls headquarters of Roesti, Brezoi, Raureni, Dragasani and Calimanesti.

The "Summary of the EIA Procedure", presenting all the steps which were carried out regarding the EIA procedure, it's attached in Annex K.

For this project it was not necessary to have consultations with other Member States.

No



in which case, explain the reasons and give the thresholds, criteria or case by case examination carried out to reach the conclusion that the project has no significant environmental effects:

TEXT BOX

F.3.3. APPLICATION OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT DIRECTIVE 2001/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL¹⁴ (SEA-Directive)

F.3.3.1. Does the project result from a plan or programme falling within the scope of the SEA Directive?

No

in which case please provide a short explanation:

Yes

in which case, in order to appreciate if wider potential cumulative effects of the project have been addressed, please provide either an internet link to or an electronic copy of the non-technical summary of the Environmental Report carried out for the plan or programme

The present project is part of the SOP Environment that falls under SEA procedure, which was performed accordingly. SEA procedure for SOP ENV started on 23rd of January 2006. A public hearing was organized on 17th of January 2007 with the aim to discuss both the draft SOP and the Environmental Report. Following SEA procedure, the Environmental License was issued on 31st of January 2007 (SEA report available on http://www.mmediu.ro/vechi/proiecte_europene/01_integrare_europeana/02_POS_mediu/10_Alte_documente/SEA_report_ENV_EN_final.pdf).

The project results also from the Regional Waste Management Plan for Region 4 South West Oltenia. The Regional Waste Management Plan was subject to SEA procedure in accordance with EU Directive 2001/42/EC. The comments made by the public and relevant stakeholders during consultation process were taken into account in the final version of the RWMP. The Non-technical Summary of the SEA Procedure for RWMP it's presented in Annex H

Based on the RWMP, a Valcea County Waste Management Plan (CWMP) was prepared as required by current legislation. The CWMP was also the subject to SEA Procedure. The Non-technical Summary of the SEA Procedure for CWMP it's presented in Annex H.

F.4. Assessment of effects on NATURA 2000 Sites

F.4.1. *Is the project likely to have significant negative effects on sites included or intended to be included in the NATURA 2000 network?*

Yes

in which case

- 1) Please provide a summary of the conclusions of the appropriate assessment carried out according to Article 6(3) of Council Directive 92/43/EEC¹⁵.

TEXT BOX

¹⁴ OJ L 197, 21.7.2001, p. 30.

¹⁵ OJ L 206, 22.7.1992, p. 7.

- 2) In case, compensation measures were deemed necessary according to Article 6 (4), please provide a copy of the form "Information on projects likely to have significant negative effect on NATURA 2000 sites, as notified to the Commission (DG Environment) under Directive 92/43/EEC¹⁶".

No

in which case attach a completed Appendix I declaration filled in by the relevant authority.

Natura 2000 Declaration no. 6009/18.05.2012 including the afferent map is attached in Annex I

F.5. Additional environmental integration measures

Does the project envisage, apart from Environmental Impact Assessment, any additional environmental integration measures (e.g. environmental audit, environmental management, specific environmental monitoring)?

Yes

No

If yes, specify

The landfill and the mechanical-biological treatment plant in Roesti are subject to the provisions of the Industrial Emissions Directive 2010/75/EC and an integrated permitting procedure shall be applied accordingly including a detailed assessment of proposed techniques and performances.

Thus, when designing the landfill at Roesti, all the provisions of Directive 1999/31/EC, as well as of the Technical Norm on Waste Landfill have been taken into consideration. To protect the groundwater, surface water and soil from emissions resulting from the landfill, the bottom of the landfill shall be sealed after excavation and filling of the natural terrain shall be laid. The bottom lining system consists of different layers for different purposes which ensure long term protection.

The lining system of the new landfill includes (from the bottom to the top):

- Compacted Clay liner
- Geomembrane
- Geotextile
- Sand layer
- Drainage layer
- Separation geotextile

The natural geologic barrier completed by the artificial one shall ensure a protection equivalent to a permeability coefficient of $K \leq 1 \times 10^{-9} \text{ m/s}$ and a thickness of 1.00 m. The artificial geologic barrier shall have a thickness of at least 0.50 cm.

The design of the landfill envisages the collection of rain water, leachate and other types of waste water resulting from the sites and their treatment prior to their discharge into the emissary, in accordance with the provisions of Annex 1 of Directive 1999/31/EC.

¹⁶ Document 99/7 rev. 2 adopted by the Habitats Committee (established under Directive 92/43/EEC) at its meeting on 4 October 1999.

A system to collect the landfill gas produced in the landfill will be installed. The envisaged gas collection system consists of:

- Gas extraction wells;
- Gas collection and transmission system including pipe network, condensate traps and gas sub-station;
- flare system

The surface sealing system for the Roesti Landfill to be installed at the top of each landfill cell will consist (from bottom to the top) of the following components:

- Support layer of minimum 0.50 m thickness with $k > 1 \times 10^{-4}$ m/s;
- Gas drainage layer made of granular or artificial materials having minimum 0.30 m thickness with $k > 1 \times 10^{-4}$;
- Compacted clay liner of minimum 0.50 m thickness, with $k < 5 \times 10^{-9}$ m/s or other equivalent barrier;
- Protection Geotextile
- Rainwater drainage layer made of granular materials of minimum 0.30 m thick and $k > 1 \times 10^{-3}$ m/s or of artificial materials;
- Separation geotextile;
- Soil cover layer of minimum 1 m thickness, from which the upper 0.15 will be enriched topsoil.

The MBT plant falls also under the scope of the Industrial Emissions Directive and the respective BREFs were followed, in terms of waste treatment, abatement measures, monitoring etc.

An environmental monitoring system will be introduced to control the environmental impact of the Integrated Solid Waste Management System in Valcea County. Specific environmental monitoring will be conducted after closure of non-compliant landfills.

Monitoring of the environment for the landfill will be conducted in accordance with the requirements set out in the EC Landfill Directive 1999/31/EC, as amended.

The monitoring of the environmental factors shall be carried out for the following:

- construction phase for all investments;
- operational phase for the investments;
- post-closure monitoring of landfill;
- post-closure monitoring of all non-compliant landfills which shall be closed within the project.

During the project implementation, LEPA/REPA, NARW and Environmental Guard will monitor the achievement of the permits conditions and requirements, related to the prevention of negative environmental impact.

The main mitigation measures include:

- specific measures during construction in order to prevent the excessive generation of dust, noise, etc
- protection and safety measures
- waste transport will be made in organized manner and at appropriate periods in order to reduce noise, traffic and dust

- monitoring of groundwater during the operation and post closure of the landfill
- collection and treatment of leachate, during the landfill operation – monitoring for potential leakage
- biogas management, during the landfill operation – monitoring for potential leakages
- cleaning of the facilities on a regular basis
- green belt
- rehabilitation of the landfill after the end of its lifetime

With respect to monitoring, this includes:

- 3 drills for the monitoring of underground water
- 8 biogas monitoring wells
- 1 portable gas analyzer
- 5 methane detectors
- 10 settlement martyrs

F.6. Cost of measures taken for correcting negative environmental impacts

If included in total cost, estimate proportion of cost of measures taken to reduce and/or to compensate for negative environmental impacts

%

2

The percentage includes costs that are taken to further reduce the environmental impacts related to waste management, than what is already imposed by the legislation. This means that this percentage does not include the costs for the lining of the landfill and the works for the management of the leachate and biogas produced, or the works for the closure of non compliant landfills. This percentage refers to additional measures including:

- Biofilters in sorting and MBT plants, in order to reduce odours and emissions of volatiles and dust
- Green belt and fence for the visual isolation and protection of the facilities and also for the reduction of dust
- Environmental protection measures in urban non compliant landfills

F.7. In case of projects in the areas of water, waste water and solid waste:

Explain whether the project is consistent with a sectoral/integrated plan and programme associated with the implementation of Community policy or legislation¹⁷ in those areas:

¹⁷ In particular, Directive 2000/60/EC of the European Parliament and of the Council (Water Framework Directive) (OJ L 327, 22.12.2000, p. 1) Council Directive 1991/271/EC (Urban Waste Water Treatment Directive) (OJ L 135, 30.5.1991, p. 40), Article 7 of Directive 2006/12/EC of the European Parliament and of the Council (Waste Framework Directive) (OJ L 114, 27.4.2006, p. 9), Council Directive 1999/31/EC (Landfill of Waste Directive) (OJ L 182, 16.7.1999, p. 1).

The project is compliant with REGIONAL WASTE MANAGEMENT PLAN for Region 4 South West Oltenia, and in particular with COUNTY WASTE MANAGEMENT PLAN. These documents were developed under the Framework Directive 2006/12/EC.

The proposed integrated waste management system in Valcea County complies with the provisions of the new Waste Framework Directive 2008/98/EC.

Also, the investments proposed through the project are in accordance with the provisions of Directive 1999/31/EC on landfill of waste. Thus, the new Roesti landfill included in the project was designed in compliance with the provisions of this Directive.

With respect to the diversion of biodegradable waste from landfill for the year 2013, the quantity diverted will be 52.597 tn and the quantity landfilled will be 32.410, which is below the target imposed by legislation (50% of the biodegradable waste generated in 1995 is allowed to be landfill corresponding to 46.156 tn). Similarly, regarding the diversion of biodegradable waste from landfill for the year 2016, the quantity diverted will be 52.983 tn and the quantity landfilled will be 31.810 which is below the target imposed by legislation (35% of the biodegradable waste generated in 1995 is allowed to be landfill, corresponding to 32.309 tn).

After the project implementation, the entire population of Valcea County, estimated for the year 2016 at 149.743 habitants, will be connected to sanitation services. Also the selective collection will be implemented to 100% of the population of Valcea County, fulfilling in this way the Accession Treaty and Directives deadlines and targets.

Regarding the recycling of packaging waste the project will contribute to reaching the targets for the year 2013 as follows:

Packaging waste	2013
<i>Packaging Paper recycled:</i>	<ul style="list-style-type: none"> • Target: 60% or 5.207 tn • Quantity recycled: 86,4% or 7.497 tn
<i>Packaging plastics recycled:</i>	<ul style="list-style-type: none"> • Target: 22,5% or 2.399 tn • Quantity recycled: 66,8% or 7.126 tn
<i>Packaging glass recycled:</i>	<ul style="list-style-type: none"> • Target: 60% or 4.810 tn • Quantity recycled: 66,1% or 5.299 tn
<i>Packaging metals recycled:</i>	<ul style="list-style-type: none"> • Target: 50% or 1.655 tn • Quantity recycled: 84,9% or 2.811 tn
<i>Packaging wood recycled:</i>	<ul style="list-style-type: none"> • Target: 15% or 662 tn • Quantity recycled: 39,2% or 1.729 tn
<i>Packaging recycled:</i>	<ul style="list-style-type: none"> • Target: 55% or 20.224 tn • Quantity recycled: 66,5% or 24.462 tn
<i>Packaging recovered:</i>	<ul style="list-style-type: none"> • Target: 60% or 22.062 tn • Quantity recycled: >>66,5% or 24.462 tn or

G. JUSTIFICATION FOR THE PUBLIC CONTRIBUTION

G.1. Competition

Does this project involve State Aids?

Yes No

If yes, please give in the table below the amount of aid, and, for approved aid the state aid number and the reference of the approval letter, for block-exempted aid the respective registry number, and for pending notified aid the state aid number¹⁸.

Sources of aid (local, regional, national and Community):	Amount of aid euro	State Aid number/ registry number for block-exempted aid	Reference of approval letter
Approved aid schemes, approved ad hoc aid, or aid falling under a block exemption regulation:			
Aid foreseen under pending notifications (ad hoc aid or schemes) :			
Aid for which a notification is outstanding (ad hoc aid or schemes)			
Total aid granted:			
Total cost of the investment project			

G.2. Impact of Community assistance on project implementation

For each affirmative answer, give details:

Will Community assistance:

a) accelerate implementation of the project?

Yes No

¹⁸ This application does not replace notification to the Commission under Article 88(3) of the EC Treaty. A positive decision by the Commission on the major project under Regulation (EC) No 1083/2006 does not constitute state aid approval.

b) be essential to implementation of the project?

Yes

No

a) The Community Assistance definitely accelerates the implementation of this project that brings a key contribution to the Accession Treaty of Romania in the field of environment. The amount of the funds needed from the Community is considerable (24.461.648 Euro representing 77,1% of the eligible cost), funds that cannot be easily attracted from other sources. Without the EU funds, the works could only be performed in longer time, in more phases, but the compliance with the Accession Treaty obligations might be compromised.

b) The EU financial assistance is essential for Valcea County in order to comply in time with the relevant environmental acquis (Directive no. 99/31/EC on waste landfill, Directive no. 2000/76/EC on waste incineration, Directive no. 94/62/EC on the management of packages and package waste, as subsequently amended, Resolution no.2000/532/EC, amended by Resolution no. 2001/119 on the establishment of a waste list, Directive 2008/98/EC on waste, directive 20004/12/EC on packaging and packaging waste). The EU grant is also essential because of the estimated contribution of this project to the regional development having in view the opportunity for further investments (by providing basic public services in the region).

H. FINANCING PLAN

H.1. Cost breakdown (Current prices)

	Euro	TOTAL PROJECT COSTS (A)	INELIGIBLE COSTS ⁽¹⁾ (B)	ELIGIBLE COSTS (C)=(A)-(B)
1	Planning/design fees	839.267		839.267
2	Land purchase/site organization	0	0	0
3	Building and construction	15.230.830	495.000	14.735.830
4	Plant and machinery	11.622.886	271.000	11.351.886
5	Contingencies ⁽²⁾	1.215.448	0	1.215.448
6	Price adjustment (if applicable) ⁽³⁾	1.675.479	51.584	1.623.895
7	Technical assistance	485.075		485.075
8	Publicity	300.000		300.000
9	Supervision during construction implementation	827.239		827.239
10	Miscellaneous County expenses	0	0	0
10	Sub-TOTAL	32.196.224	817.584	31.378.640
11	(VAT ⁽⁴⁾) and other taxes	8.030.738	7.684.731	346.007
12	TOTAL	40.226.962	8.502.314	31.724.647

(1) Ineligible costs comprise (i) expenditure outside the eligibility period, (ii) expenditure ineligible under national rules (Article 56(4) of Regulation (EC) No 1083/2006), (iii) other expenditure not presented for co-financing. NB: The starting date for eligibility of expenditure is the date of receipt of the draft operational programme by the Commission or 1 January 2007, whichever is the earlier.

(2) Contingencies should not exceed 10% of total investment cost net of contingencies. These contingencies may be included in the total eligible costs used to calculate the planned contribution of the funds – Section H2.

(3) A price adjustment may be included, where relevant, to cover expected inflation where the eligible cost values are in constant prices.

(4) Where VAT is considered as eligible, give reasons.

(5) Total cost must include all costs incurred for the project, from planning to supervision and must include VAT even if VAT is considered non eligible.

H.2. Total planned resources and planned contribution from the Funds

H.2.1. Community contribution calculation

		Value
1.	Eligible cost (in euro, not discounted) (Section H.1.12(C))	31.724.647,2
2.	Funding gap rate (%), if applicable = (E.1.2.11)	93,53%
3.	Decision amount, i.e. the "amount to which the co-financing rate for the priority axis applies" (Article 41(2)) = (1)*(2). If H.2.1.2 not applicable, the decision amount must respect the maximum public contribution according to state aid rules	29.672.062,5
4.	Co-financing rate of the priority axis (%)	82,44%
5.	Community contribution (in euro) = (3)*(4)	24.461.648

H.2.2. Sources of co-financing

In the light of the results of the financing gap calculation (where relevant) the total investment costs of the project shall be met from the following sources:

Source of total investment costs (€)					Of which (for Information)
Total investment cost [H.1.12.(A)]	Community assistance [H.2.1.5]	National public (or equivalent)	National private	Other sources (specify)	EIB/EIF loans:
(a)= (b)+(c)+(d)+(e)	(b)	(c)	(d)	(e)	(f)
40.226.962	24.461.648	15.765.314			

H.2.3. Expenditure already certified

Have expenditure for this major project been already certified?

Yes No

If yes, state the amount: EUR.

H.3. Annual financing plan of Community contribution

The Community contribution (H.2.1.5) shall be presented below in terms of the share of annual programme commitment.

(in Euro)	2011	2012	2013
[ERDF]		10.143.589	14.318.059

I. COMPATIBILITY WITH COMMUNITY POLICIES AND LAW

With regard to Article 9 (5) of Regulation (EC) No 1083/2006 provide the following information:

I.1. Other Community financing sources

I.1.1. *Has an application been made for assistance from any other Community source (TEN-T Budget, LIFE+, R&D Framework Programme, other source of Community finance) for this project?*

Yes No

If yes, please give details (financial instrument concerned, reference Nos, dates, amounts requested, amounts granted, etc.):

TEXT BOX

I.1.2. *Is this project complementary to any project already financed or to be financed by the ERDF, ESF, Cohesion Fund, TEN-T Budget, other source of Community finance?*

Yes No

If yes, give details (provide precise details, reference Nos, dates, amounts requested, amounts granted, etc.):

TEXT BOX

I.1.3. *Has an application been made for loan or equity support from EIB / EIF for this project?*

Yes No

If yes, please give details (financial instrument concerned, reference Nos, dates, amounts requested, amounts granted, etc.):

TEXT BOX

I.1.4. *Has an application been made for assistance from any other Community source (including ERDF, ESF, Cohesion Fund, EIB, EIF, other sources of Community finance) for an earlier phase of this project (including feasibility and preparatory phases)?*

Yes No

The preparation of the CF/ERDF application and supporting documents (feasibility studies, environmental studies, tender documents, etc.) are funded by the SOP Environment – Axis 6. More specifically, the preparation of the applications is developed in the framework of the project:

„Support for MA SOP Environment, in order to prepare the portfolio of projects financed by Axis 2 of SOP Environment”

The studies are elaborated by Consortium consisting of the following companies:

- Epem SA (Greece)

- ISPE (Romania)

I.2. Is the project subject to a legal procedure for non-compliance with Community legislation?

Yes No

If yes, please give details:

TEXT BOX

I.3. Publicity measures

All publicity activities within the Project will be implemented in compliance with the provisions of EU Regulation No. 1159/2000. The measures will include:

- Erection of **billboards** according to established standard (under § 6.1 of the above mentioned Regulation). Billboards will be placed on all project sites;
- After finalization of works, the billboards will be removed not later than six months after completion of the work and replaced by permanent **commemorative plaques** for infrastructures accessible to the general public;
- **Posters** will be displayed on the premises of bodies implementing or benefiting from the Project (County councils, local councils, regional and local environmental agencies, employment agencies, vocational training centres, chambers of commerce and industry, development agencies, etc.);
- All **notifications of aid** to beneficiaries sent by the competent authorities shall mention the fact of part-financing by the European Union and may state the amount or percentage of the assistance funded by the Community instrument concerned;
- All **publications** (such as **booklets, leaflets and newsletters**) concerning the Project will contain a clear indication on the title page of the European Union's participation and, where appropriate, that of the Fund concerned as well as the Community emblem if the national or regional emblem is also used;
- Information will be also available by **electronic means (e.g. websites) and by audio-visual material (presentations, CD-ROMs, etc.)** with due regard to new technologies which permit the rapid and efficient distribution of information and facilitate a dialogue with the general public;
- In all events such as **conferences, seminars, fairs and exhibitions** in connection with the Project Implementation it will be clearly stated that make the Community contribution to these assistance packages explicit by displaying the European flag in meeting rooms and using the Community emblem on documents.

The details of the campaigns have still to be designed. The measures directed to the general public will include, but not be limited to campaigns in print, radio and TV media.

During the project implementation, the progress reports of the project will include copies of the communication material produced and evidence of the information events carried out in the period of time reported.

Publicity measures will be implemented in order to raise public awareness and acceptance among the population. The measures aim at:

- Increasing the beneficiaries' awareness of the Community assistance
- Increasing the beneficiaries' awareness of the value of the improved waste services

- Increasing the beneficiaries' willingness to pay adequate fees for the improved services
- Inform the public about the project measures, cost and benefits in order to ensure project acceptance through transparency.

The total budget estimated for the implementation of publicity measures is 318.780 Euro (in current prices).

The main part of the publicity measures shall be implemented during the years 2012 and 2013.

I.4. Involvement of JASPERS in project preparation

I.4.1. Has JASPERS technical assistance contributed to any part of the preparation of this project?

Yes No

I.4.2. Describe the elements of the project where JASPERS had an input (e.g. environmental compliance, procurement, review of technical description).

From the very beginning, JASPERS followed up the preparation of the project supporting documents (Master Plan, Feasibility Study, Economic, Financial and Institutional Analyses, Application Form). JASPERS has prepared comments and suggestions for the improvement of the above mentioned reports prepared by the Consultants. In addition, JASPERS discussed with the Consultant and the Beneficiary the proposed options (technical, institutional, financial, environmental etc) and the investment package proposed for financing.

JASPERS contribution included mainly the following aspects:

- Support in the project structuring – support in defining technical options, support in completion of the project application (better clarity in the presentation of the project)
- Support in defining the institutional set-up
- Support in structuring the CBA document and the whole application in line with the relevant EC documents and requirements
- Support to the Managing Authority in the preparation of several guidelines related to the waste management sector: i) guidelines for the completion of the Application forms, ii) national CBA guidelines

I.4.3. What were the principal conclusions and recommendations of the JASPERS contribution and were these taken into account in the finalisation of the project?

The main conclusions and recommendations of JASPERS:

- The proposed project is in line with the relevant environmental acquis and brings a significant contribution to the Accession Treaty provisions of Romania in the field of environment
- The proposed project is compliant with SOP document
- The Managing Authority should ensure that the co-financing funds are available in due time in order to avoid project bottlenecks during implementation
- The local beneficiary should strengthen the project implementation structure by employing additional TA expertise (in particular, procurement experts) at the earliest.

- The beneficiary should implement with TA support a plan to enforce the monitoring of waste management services (adequate performance indicators etc)

I.5. Public procurement

In cases where contracts have been advertised in the Official Journal of the European Union, give reference.

Contract	Date	Reference
...

J. ENDORSEMENT OF COMPETENT NATIONAL AUTHORITY

I confirm that the information presented in this form is accurate and correct.

NAME:

SIGNATURE:

ORGANISATION: General Directorate MA SOP Environment
(MANAGING AUTHORITY)

DATE: