

## INTEGRATED WASTE MANAGEMENT SYSTEM IN CARAS-SEVERIN COUNTY

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### Abstract

*To comply with national and European legislation on waste management in Caraș-Severin county is necessary to implement an integrated waste management system. This implies the existence of an institutional structure at county level: establishment of Intercommunity Development Association, Project Implementation Unit, which ensure implementation of the project: building ecological central warehouse and three transfer stations, closure of rural and urban non-compliant deposits.*

*The total costs of the project funded through the FEADR, state and local budget, is 18.639.807.000 lei, and the implementation period is 2012-2015.*

**Key words:** waste management, transfer stations, landfill, sorting station, environmental infrastructure

### INTRODUCTION

In order to reach the strategic objectives and the targets written in the Accession Treaty and in the waste management plans, it is necessary to implement an integrated waste management system in the county.

The assessment of the present waste management system in Caraș-Severin county led to the following conclusions:

- the present waste management system does not assure the conformity with the European and national legislation in the field;
- storing waste in non-conform depositing sites has a negative impact upon the environment (soil, water, air);
- there are not enough facilities for the selective waste collecting;
- the failure to treat biodegradable waste, dumped in non-conform depositing sites, represents a menace for the environment, by the release of leachate and biogas;
- the waste recycling degree is very low;
- the population's awareness in the domain of waste collection is relatively poor;
- the selective collection covers a narrow range (generally in the urban environment and the institutions in the rural milieu);

- the equipment used is obsolete and insufficient etc.
- limited expertise of local authorities in managing and monitoring the husbandry services, due to:
  - insufficient specialised staff, including in key fields such as: project management, public procurement etc.
  - absence of a medium and long-term strategies of sustainable local development on the local level.

In view of solving these problems, the integrated waste management system in Caraș-Severin county represents a requirement in order to conform and reach the targets set by national and European legislation for ensuring a sustainable development of local communities and improving citizens living conditions.

The conclusion drawn from all above is that the present waste management system in Caraș-Severin county is flawed and is not in accordance with the relevant national and European legislation.

### INSTITUTIONAL FRAME ON THE NATIONAL AND LOCAL LEVEL

The main institutions with responsibilities in the domain of waste management on the

national, county and local level are shown in Figure 1.

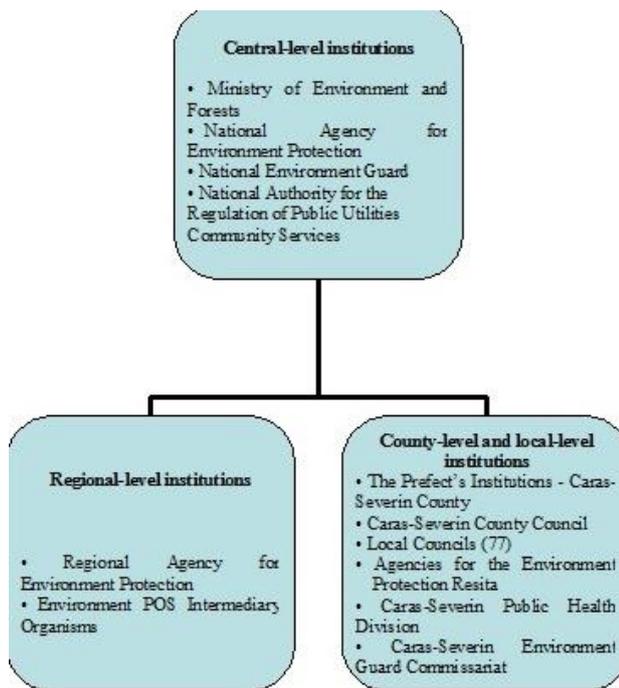


Figure 1. Institutions with responsibilities in the field of waste management

## PROJECT CONTEXT

Caras-Severin County belongs to Development Region 5 West, and has a surface of 8,519.76 km<sup>2</sup> (26.59% of the total region surface) and a population of 317,674 inhabitants, of which 56% live in the urban area, and the rest of 44% in the rural milieu.

Its preponderantly mountainous relief 65.4%, low population density 37.4 inhabitants/km<sup>2</sup>, along with the high degree of localities dissipation represent the major particularities of the county population's settlements.

Administratively, the county comprises 8 municipalities/towns and 69 communes containing 285 localities.

As regards the existing infrastructure in the field of waste management, the situation is the following:

- The present system of waste management consists in the collection and transport of waste to the Reșița Waste Sorting and Transfer Station;
- In July 2009 all rural waste dumping areas were closed in the 69 communes and the necessary ecologisation works were effected;

- All 69 communes are serviced by husbandry services;
- The rate of connection to the husbandry service is of 100% in the urban area and 99% in the rural zone;
- For 3 towns (Băile Herculane, Caransebeș, Oravița) and 23 communes waste operators were established, through PHARE projects: SC Ecologica Văliug SRL, SC Ecologica Oravița SRL and SC Ecologica Băile Herculane SRL; All three societies carry on activity of waste collection and transport in all ascribed localities;
- The selective waste collecting is not practised, except the areas covered by the companies established through PHARE projects, which have introduced selective collection in the county:
  - SC ECOLOGICA BĂILE HERCULANE SRL (1 town and 7 communes) serves about 24,200 inhabitants;
  - SC ECOLOGICA ORAVITA SRL (1 town and 12 communes) provides serves around 28,600 inhabitants;
  - SC ECOLOGICA VALIUG SRL (2 communes) at the service of 2,800 inhabitants;
  - CARANSEBEȘ WASTE MANAGEMENT SYSTEM offers services to about 29,000 inhabitants;
- Waste is collected in most cases in a mixed regime and transported to depositing sites;
- Waste collection is generally made from household to household at a pace varying from one locality to the next; the private operators (16) set up special points for recyclable waste collecting (paper and cardboard, plastic and metal, and glass, DEEE etc.) and in time a market of recyclables has emerged;
- There are no sorting and transfer stations, except those built within the PHARE projects: Oravița, Băile Herculane and Văliug;
- The waste collecting and transport equipment is insufficient and outdated for an appropriate management of the entire quantity of waste generated in the county;
- There are 5 recycling companies, but the selective collection of recyclables is absent.

The specific targets related to the waste recycling and profitable use, as they were settled in the national and European legislation, cannot be reached in the absence of the implementation of an adequate integrated waste management system in Caraş-Severin county, with focus on their selective collection.

In Caras-Severin there are no sorting stations, except several small manual sorting stations for the recovery of metals, paper and cardboard and plastic. The two storing ministations in Oravita and Baile Herculane built through PHARE projects cover approximately 16% of the county population.

Furthermore, there is no facility of waste composting and no organised system of biodegradable waste treatment in the county, the waste collected was deposited in non-conform closed urban and rural dumping sites. The urban depositing sites that are to be ecologised within the project Integrated waste management system in Caraş-Severin county are: Băile Herculane – closed in 2009, Caransebeş – ceased in 2009, Reşita – closed in 2009, Anina – ceased, Bocşa – stopped in 2011, Oţelu Roşu – ceased in 2011, Moldova Nouă – closed in 2012 and Oraviţa – closed in 2012;

To conclude, the reaching of the strategic objective and of the targets stipulated in the Accession Treaty, as well as in the waste management plans (PNGD, PRGD, PJGD) can be accomplished only by implementing a system of integrated waste management throughout the county.

## INTEGRATED WASTE MANAGEMENT SYSTEM IN CARAS-SEVERIN COUNTY (SIMD)

The financing and implementation of the integrated waste management system in the county is funded by the Environment POS Programme.

For this purpose, investments are proposed, meant to assure the reaching of the following objectives:

- The expansion of the selective collection system in the urban and rural area;
- Modernisation of the collection and transport equipment;

- Enhancement of the waste management system by building 3 transfer stations in the localities Oţelu Roşu, Pojejena and Bozovici, a Centre for the Integrated Waste Management in Lupac – ecological depositing site, sorting station (34,000 t/year) and simple mechanic-biologic treatment station (64,000t/year);
- Controlled depositing of waste etc.

The entire infrastructure to be built within the SIMD projects will become part of the public domain of Caras-Severin county.

The SIMD design took into consideration the main strategic documents on the national, regional and local level:

- National Waste Management Plan (PNGD);
- Regional Waste Management Plan (PRGD);
- County Waste Management Plan (PJGD);
- Environment Operational Sector Programme.

In order to collect waste, according to the County Waste Management Plan, one assigned to Caraş-Severin county 7 collection zones, presented in figure 2.



Figure 2. Waste collection zones in Caraş-Severin county

The targets for the recycling and profitable use of packing waste are shown in Table 1.

As for the treatment of waste, the main objective consist in the reduction of the quantity of biodegradable waste from depositing sites. The specific targets in this respect are the following:

- treatment of 30,000 t of biodegradable waste in 2013;
- treatment of 41,000 t of biodegradable waste in 2016.

Table 1. The targets for the packing waste in Caras-Severin county

Paper and cardboard (t)	5,821
Plastic (t)	1,884
Glass (t)	4,041
Metals (t)	911
Wood (t)	640
Total recycling (t)	16,994
Total sale (t)	18,539

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Romania's strategy and policy aims at the regionalisation of husbandry services, and the main elements of this process and implicitly of SIMD in Caras-Severin county refer to:

- Establishment of the Association of Intercommunity Development "INTERCOM Deseuri Caras-Severin/INTERCOM Waste Caras-Severin" (ADI Intercom) in 2009, with the following members: Caras-Severin County Council, the Local Councils of the 8 cities and towns and the Local Councils of all 69 communes;
- Signing the Position Document for the System Implementation;
- Constitution of the Project Implementation Unit within the Caras-Severin County Council;
- Granting procedure for the 12 contracts of services and works (closure and ecologisation of waste rural and urban dumping areas, 3 transfer stations, Centre for the Integrated Waste Management (CMID), supply of collection and transport equipment, public awareness and information for the implementation of SIMD, audit etc).

The ecological depositing site is situated on the Lupac village location, around 6 km west from Reșița and it will consist in two cells – phases, the first phase requiring 126,924 m<sup>3</sup> of excavations and 124,367 m<sup>3</sup> fillings for the configuration of the surface necessary to CMID. The surface of the first cell will be around 32,885 m<sup>2</sup> and will have a total capacity of approximately 495,938 m<sup>3</sup>, of which 431,250 m<sup>3</sup> will be the depositing volume. The

basin slope is 33%, uniform for the entire surface of the first cell, whereas the estimated life duration is about 6.5 years.

Its components are the following:

- The proper depositing site (the depositing space);
- The leachate capture and drainage system;
- Leachate operation station with 2 steps:
  - Mechanic step – for the pH level reduction and pre-filtering;
  - Biologic step – for proper treatment by osmosis and nano-filtering.

The leachate collected from inside the deposit is drained, through the layer and draining pipes, located at the basis of the deposit and gravitationally led by collectors toward the closed storage and retention tank, and then treated in the leachate purging station.

Caras-Severin County Council will be the main stakeholder in the management and implementation of the investments necessary for the realisation of SIMD. For each type of completed facility: sorting station/transfer station/compost making station/depositing site, Caras-Severin County Council must put at disposal the afferent lands and must participate in the co-financing of the project, as well as the financing of the ineligible expenditure within the project.

According to the grant contract, the total value of the project is 186,398,069 lei, of which eligible costs according to Environment POS 160,733,138 lei and ineligible costs 25,664,931 lei. The following categories will be granted by public tender:

- 7 contracts for the waste collection and transport;
- 1 contract for the operation of the 3 transfer stations that will be erected in the project: Oțelu Roșu 8388 to/year, Pojejena 9060 to/year and Bozovici 3400 to/year and of CMID Lupac, including long-distance transport from transfer stations to depositing site.

At present, there are 16 husbandry operators, of which 9 private and 7 public.

The purpose of the integrated waste management system is to ensure an integrated approach on the county level, in order to improve quality and ensure homogeneity of

husbandry services and conformation to the national and European legislation.

The procedure of granting the contracts for the operation of facilities (the 3 transfer stations) and the transport of waste from them to the central CMID depositing site will be organised by Caraş-Severin County Council in its own name.

For the year 2015, according to the Annual Plan of Tariff Evolution enclosed to the SMID projects, the tariffs for the urban area must not exceed 9.61 lei/inhabitant/month, and 7.19 lei/inhabitant/month for the rural area.

One of the main drawbacks of the system consists in the low percentage of tariff collection, especially in rural zones.

The proposed payment mechanisms should cover the operation and upkeep costs for all the system components: collection, transport, treatment, sorting, storage.

The future tariffs will take into account the population's affordability degree: 1.8% of the income of the poorest family.

The integrated waste management system will introduce new waste management practices: new management technologies, a new financial frame and new roles and responsibilities from the institutional viewpoint.

The efficiency of the new waste management system will suppose a high degree of comprehension and acceptance from the part of the public and of the other interested stakeholders. In this respect, raising public awareness will be necessary in all the project phase.

## CONCLUSIONS

At present, the project Integrated waste management system in Caraş-Severin county is under implementation, as follows:

- The Lupac conform depositing site (CMID) is in the stage of granting the works contract;
- The construction of the 3 transfer stations (Oţelu Roşu, Pojejena, Bozovici) is in the stage of evaluation of submitted offers;
- The closure and ecologisation of urban waste dumping sites is in the stage of evaluation of submitted offers;

The services contract for the public information and awareness was signed.

From the institutional point of view, in Caraş-Severin county it is functional, the main requirements of the regionalisation process have been fulfilled:

- Establishment of the Association of Intercommunity Development ADI Intercom;
- Establishment of the Project Implementation Unit;
- Signing of the Position Document for the Project Implementation.

As regards the PHARE projects, it was decided to integrate them into the new integrated waste management system after the cease of the conditions imposed in the PHARE Grant (2014).

All these decisions related to the operation modality were accordingly reflected in the position document conclude on the level of Caras-Severin county.

The conclusion to be drawn is that the integrated approach on the county level represents an efficient and viable system of waste management, able to reach the specific targets regarding the waste profitable use and recycling, set in the national and European legislation, and the improvement of the husbandry services quality.

The main purpose of closing the ecological depositing site is to minimise the water infiltration into waste and consequently to reduce the quantity of leachate released.

## REFERENCES

- National Waste Management Plan (PNGD);
- Regional Waste Management Plan (PRGD);
- County Waste Management Plan (PJGD);
- Environment Operational Sector Programme;
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- Grant contract no. 128521/19.03.2012 concluded between the Ministry of Environment and Forests and Caraş-Severin County Council;
- Technical memo for obtaining the environment sign off for the project "Integrated waste management system in Caras-Severin county";
- The documentation of granting the works contract for the Construction of the Centre of Integrated Waste Management in Caraş-Severin county within the project "Integrated waste management system in Caras-Severin county".