

# **Integrated Solid Waste Management System in ARAD County**

## **ENVIRONMENTAL IMPACT ASSESSMENT (EIA)**

One of the objectives for the project implementation is to reduce significantly the environmental load through changing current non-compliant waste management practices, rehabilitation of sites affected (closing down of non-compliant landfills) and putting into operation of new facilities.

Since the approval and implementation of a project on such scale requires the completion of compulsory preliminary steps related to environmental regulation, the procedure for obtaining the environmental agreement was performed in accordance with GD 1213/2006 establishing the environmental impact assessment framework procedure for certain public or private projects, which transposes the EIA Directive 85/337/EEC into the Romanian legislation.

Arad Environmental Protection Agency Decision No. 112/23.04.2009 certifies the compliance with legal requirements on environmental protection – with respect to the technical features of the project, as it represents the regulatory act of the competent environmental authority. Details about this procedure are provided in Volume 1 of Funding Application.

This section of the Feasibility Study, in accordance with the requirements of the Guide presents a summary of the relevant environmental aspects considered by the Consultant during the elaboration of this project phase.

A number of preliminary remarks are necessary to be made:

- The consultant considered the top issue of identifying viable sites because:
  - Previous experience gained in the field of waste management facilities planning and design indicated the site selection issue as vulnerable.
  - In Romania, at the stage of location selection for future landfills, except a legal provision on the minimum distance to inhabited areas there are no other restrictions applicable at national level on the premises of municipal waste collection and treatment facilities. However, Local Spatial Planning Regulations are always taken into account for site selection.
- The design and selection of technology principle also considered the observance of full compliance with applicable legal requirements, both for the stage of construction and of operation or post-closure (if necessary).

Starting from those mentioned above, a hierarchy of meaning and importance of environmental aspects addressed in the elaboration stage of the Feasibility Study includes:

1. The location of new sites with respect to inhabited areas.
2. The location of new sites with respect to protected natural areas.
3. The issue of "significantly sensitive" emissions to the nearby inhabited areas - namely air emissions (including smells) and noise.
4. Water management on site - or solutions for the collection / treatment / disposal of sewage.
5. Balance of land surfaces affected.

## 6. Operational management of waste generated.

A brief description of the above mentioned aspects is given as follows.

### **1. Distance of the proposed sites to human settlements** is:

- The site in Arad zone on which the composting plant will be built lies at a distance of about 1,000 m from the city of Arad. It should be noted that near the site there is an industrial area where a number of other municipal waste management facilities are in operation. However considering the distance to the nearest houses which is less than 1000 m the technology proposed for the composting plant was the one of tunnel composting with biofilter to reduce the nuisance caused by odors.
- The site in Chisineu-Cris zone on which the transfer station will be built lies north east of Chisineu Cris town, at a distance of about 3,500 m from the first houses.
- The site in Ineu zone on which the transfer station, sorting station and composting plant will be built lies south east of Mocrea village, at a distance of about 1,700 m to the first houses in Mocrea village.
- The site in Sebis zone on which the transfer station will be built lies north of Sebis town, at a distance of about 1,500 m from the first houses in Prunisor village.
- The site in Barzava zone on which the transfer station will be built lies south of Barzava locality, at a distance of 300 m from a military unit and about 350 m from houses.

Taking into account the distance between sites limit and inhabited areas, no adverse effects on human settlements or other public interest objectives are envisaged during construction works.

### **2. Location of new sites with respect to protected natural areas**

The assessment of four of the five sites (Arad, Ineu, Sebis and Barzava) on which the new investments will be built have led to the result that they are not located near protected areas or in the Natura 2000 network.

Also, in the analyzed area there is no habitat of plant or animal species included in the Red Book (rare and protected species), migration routes and shelters for animal growth, nutrition, rest and winter.

Given the non-significant impact on terrestrial and aquatic ecosystems of the activities that will take place on the future facilities site, no measures to decrease the impact on this environmental component will be necessary.

The non-compliant landfill site in Chisneu Cris (to be closed) and the future transfer station on the adjacent site are located in a Natura 2000 site.

ROSPA0015 Campia Crisului Alb si Crisului Negru Natura 2000 site comprises about 45% of Chisineu Cris administrative territorial unit area. The site has a total area of 32,196 ha.

This is one of the sites for aquatic and forest birds in Campia Tisei. The area is composed of two distinct sites. The one with larger area is located in the triangle formed by Crisul Alb and Crisul Negru, and is characterized by the riverside forests along the rivers (namely Socodor, Somos,

Sintea, Adea, Lunca), extending between swamps, meadow and pastures of a particular type. Two pond systems (in Socodor and Tamasda) can also be found in the area.

In this area can be found species as *Chlidonias hybridus*, *Himantopus himantopus* as well as *Aquila heliaca*.

The non-compliant waste landfill and the future transfer station are located in this area as well.

The second area is located in the meadow of Crisul Negru and includes riverside forests (namely Gurbediu) and high plain forests (such as Goroniste etc.).

Closing down the non-compliant waste landfill in Chisineu Cris will have a direct and incontestably beneficial effect on the local ecosystem. Disappearance of food source will lead to migration of opportunistic bird populations and reduction of pressure on habitat. Instead, the new facility can not be a target food zone for the return of these species in the area because waste is not stored outdoors in transfer station, being directly disposed off in closed containers with compaction, so no direct contact with waste any longer. It was not considered necessary or requested to conduct appropriate assessments of bird populations being affected in the area as none of the above mentioned species does not use for mating, breeding, nesting and hibernation the area of the non compliant landfill and the site for the transfer station which is in the immediate continuation of the non compliant landfill.

However, special protection measures will be taken during the construction period in order to minimize as much as possible the air pollution and noise.

Among the 35 factors which increase the vulnerability degree mentioned in the Standard Form for ROSPA0015 the waste management activities are not included. Anthropogenic activities and their effects within the site and the neighbourhood were grouped according to the general consequences and to the affected site area. In this regard it is mentioned at code 421 Waste disposal activity which has a class A intensity but is produced on only 5% of the site area.

Through the Integrated waste management system in Arad county it is proposed exactly ***to eliminate the anthropic activity which has effects on the ROSPA0015 site by closing the non compliant landfill in Chisineu Cris.***

No direct air pollutants to influence the biological components in the area will be generated during the operation of all new facilities.

Measures related to the management of waste water generated on each site provide adequate protection of the quality of water bodies so that no induced changes in the aquatic biocenosis occur.

For each of the sites where the proposed investment facilities will be developed, a green belt will be planted around the analyzed area from the surrounding areas. Also, in order to prevent the access of animals to sites, these will be surrounded by fence.

After completion of non-compliant landfills closure works, grass seeds will be sowed on the entire surface. It will be cut for 2 years. The land surface will be thus returned to the natural circuit.

### **3. Air pollution and noise**

These two environmental aspects are always considered sensitive when there are sensitive receptors in the proximity of work areas. It should be noted that as regards project proposed conditions, no cases were identified in which the limit values of environmental quality standards are exceeded beyond the limit of the site.

In the execution phase of the works, sources of air pollution are generated by typical activities of works on masses of land, construction installation and infrastructure.

Following the realization of the works mentioned above, air pollution is generated by the particulates with a large dimensional range, including particles with aerodynamic equivalent diameters less than 10 µm (inhalable particles, they can affect human health).

Pollutants are to be produced by exhaust gas emissions from the equipment that will perform operations and vehicles for transporting materials, along with particulate emissions. Pollutants associated with machinery and transport vehicles Diesel type internal combustion engine consist of nitrogen oxides, carbon oxides, sulfur oxides, particulates containing heavy metals (Cd, Cu, Cr, Ni, Se, Zn), organic compounds.

For this stage, measures to reduce air pollutant emissions include:

- work platforms provided with water spray in the precipitation free periods so as to avoid / reduce the atmospheric dispersion of particulate matter;
- avoidance of activities such as loading / unloading of vehicles with dust-generating material during windy periods;
- use of vehicles and machinery equipped with engines whose emissions comply with the law in force and their proper maintenance of them.

In the operating phase, activities carried out in the waste management facilities that generate sources of air pollutants are the following:

- waste transport and unloading on the transfer stations, sorting station and composting plant platforms, which generates lower particulate emissions,
- pollutants generated by exhaust gas emission from vehicles transporting and handling waste,
- decomposition gas emission from aerobic degradation of waste (composting).

Measures for particulate emission control are operational measures for the sources found on the studied sites.

As regards mobile sources, they should respect the laws in force.

Polluted air in the composting station will be treated with a bio-filter.

The compliance with accepted level of noise at the boundary of the protected territories (inhabited areas) according to *OM 536/1997 for approving the hygiene rules and recommendations on the population life environment*, with subsequent amendments and supplements was taken into consideration for both the construction phase and operation phase of waste management facilities.

Thus, according to art. 17, the level of noise measured with respect to the set conditions<sup>1</sup> should not exceed 50 dB for individual houses or 35 dB<sup>2</sup> for flats.

During the night, the continuous equivalent level should be reduced by 10 dB.

Also, all equipment used outdoors both in the construction phase and in the operation phase will have to comply with *GD 1756/2006 on the limitation of level of noise emission in the environment by equipment for use outside buildings*.

Sources of noise during the construction of transfer stations, sorting station and composting plants will be generated by the following activities:

- actual construction works and equipment assembly works (e.g. topsoil stripping, excavations, concrete casting, assembling the necessary equipment for waste sorting and transfer);
- transport and preparation of construction materials.

Given the limited time duration of the construction works and location of sites at a long distance to the inhabited areas, it is considered that the impact of noise in this phase will be insignificant.

The main activities representing noise sources occurred during the operation of transfer stations, sorting station and composting plants are the following:

- vehicles bringing waste to stations or to landfill in traffic;
- transfer stations equipment (press - where appropriate, running the container) operation;
- sorting station and composting plants equipment (front loader, hook lift, magnetic separator, sorting belts, bale presses, shredders, and ventilation fans) operation.
- To minimize the noise impact of daily activities or any other nuisance caused by heavy car traffic associated with the transfer stations, sorting station and composting plants operation, the following measures are taken into account:
  - reduction in the speed limit and controlling access to the area;
  - planting of a perimeter greenbelt;
  - dimensions of the premises so as to ensure access in order to reduce engine noise (waiting transport vehicles will not stand outside the site);
  - use of materials in roads and platforms construction to reduce noise production.

#### **4. Water management on site**

One measurable gain related to the environmental benefits provided through the project implementation is improvement of water body's quality.

---

<sup>1</sup> measured at 3 m from the outer wall of the dwelling and 1.5 m height from the ground

<sup>2</sup> measured inside the room with windows closed

Achieving this goal and maintaining this state of good quality during the operational phase involves a series of constructive and operational measures proposed in the Feasibility Study.

The input of water flow meant for technical purposes at the new sites is reduced, as it is provided exclusively from own underground sources (low drilling depth).

Although where there are several facilities of the same type (e.g. transfer stations) their operation is similar, it is considered necessary to make distinct presentation of each of them because of the site features and different methods of generated wastewater management.

#### Biodegradable waste composting station – Arad

- collection system for wastewater from washing of compost maturation platform, intensive composting platform, and compost storage shed (concrete drain, pumping station, collection tank and transportation to the municipal wastewater treatment plant);
- collection system for pluvial water (PVC/PEHD drain pipe system, pluvial water catchment infrastructure, pumping station);
- waterproofing of interior roads and technology platforms by using concrete.

#### Waste transfer station - Chisineu-Cris

- collection system for wastewater from washing of unloading platform, skip lift transfer /handling platform of transfer station and containers (concrete drain, pumping station, collection tank and transportation to the wastewater treatment plant);
- collection system for pluvial water (PVC/PEHD drain pipe system, pluvial water catchment infrastructure, pumping station);
- waterproofing of interior roads and technology platforms by using concrete.

#### Sorting, transfer and composting stations – Ineu

- collection system for domestic wastewater from the reception cabin and sewage from washing of containers and platforms (PVC/PEHD Dn 200 pipe system, collection tank and transportation to the wastewater treatment plant).
- waterproofing of interior roads and technology platforms by using concrete.

#### Waste transfer station – Sebis

- collection system for wastewater from washing of unloading platform, skip lift transfer / handling platform of transfer station and containers (concrete drain, pumping station, collection tank and transportation to the wastewater treatment plant);
- collection system for pluvial water (PVC/PEHD drain pipe system, pluvial water catchment infrastructure, pumping station);
- waterproofing of interior roads and technology platforms by using concrete.

### Waste transfer station – Barzava

- collection system for wastewater from washing of unloading platform, skip lift transfer / handling platform of transfer station and containers (concrete drain, pumping station, collection tank and transportation to the wastewater treatment plant);
- collection system for pluvial water (PVC/PEHD drain pipe system, pluvial water catchment infrastructure, pumping station);
- waterproofing of interior roads and technology platforms by using concrete.

### **5. Balance of land surfaces and soil damage**

The table below gives a structured presentation of works and equipments necessary for soil and subsoil protection for each potential source of pollution. Both project phases (construction and operation) are taken into account.

Measures are common to all facilities.

<b>No.</b>	<b>Potential soil and subsoil pollution sources</b>	<b>Works and equipments for soil and subsoil protection</b>
1	Removal of an area of 1.5 ha from farm-use classification	Effect compensation through the rehabilitation of 62 ha area (the closure of non-compliant landfills component)
2	Soil profile structure amendment	Considered unnecessary, insignificant damage
3	Accidental leakage of petroleum compounds - during construction and materials transportation activities	Preventive and intervention measures set in operational management plans and specific requirements for the Constructor
4	4 Heavy metal emissions from the exhaust gas	Technically good vehicles and with a low level of emissions
5	Improper storage of construction or operational waste	Containers for storage of construction or operational waste
6	Improper storage of household waste	Bins for storage of household waste within the construction site
7	Improper management of household manure type water	"Ecological" toilets within the construction site.  Distinct technical solutions per site related to the collection / treatment / discharge of wastewater from the operational phase

### **6. Waste Management**

-The provisions of *GEO 78/2000 on waste regime*, approved by Law 426/2001 with subsequent amendments and supplements, shall be respected both in the construction and operation phase; also the provisions of *GD 856/2002 on the waste management records and approval of the list of waste, including hazardous waste* are applicable and shall be respected.

The main types of waste to be generated during the activities in construction of investment facilities are the following:



- construction of transfer stations, composting plants and sorting station
  - technological waste: waste from construction, oil, batteries and waste tires, oil impregnated materials (e.g. cleaning rags, auto oil filter)
  - waste similar to household waste from personnel on-site activities
- closing down of non-compliant landfills and rural dump sites
  - technological waste: excavated land (e.g. building perimeter channel), oils, batteries and waste tires, oil impregnated materials (e.g. cleaning rags, auto oil filter)
  - waste similar to household waste from personnel on-site activities.

The Constructor will be bound by the service procurement documents (i.e. specifications) to develop and present a waste management plan for the whole duration of the construction site. The plan will be to ensure, as minimum requirement, full compliance with legal provisions in force on the date of contract award.

The main types of waste to be generated during the operation activities are the following:

- technological waste;
- waste from maintenance of vehicles and machines: oil, batteries and waste tires, oil impregnated materials (e.g. cleaning rags, auto oil filters), waste metal (scrap metal and spare non-usable parts);
- similar waste from personnel activities.

Practices, techniques and authorized collection / treatment / transport / disposal services are available at local and regional levels for all types and categories of waste generated over the project implementation phases.

All aspects presented in the sections above have been taken into account in economic and technical dimensioning of the project at feasibility study level. Environmental Protection Competent Authority has not requested additional measures to control source pollutants emissions or protection measures for receptors.

The table below presents the stages covered within the EIA procedure.

Nr. crt	Project beneficiary	Project's name	Locations	Procedure's stage	Date
1	Arad County Council	Integrated waste management system in Arad county	Arad, Nadlac, Pecica, Curtici, Santana, Pancota, Chisineu Cris, Ineu, Sebis,	Submission at the environmental protection competent authority of the beneficiary's request together with the technical fiche ( annex to the Urban planning certificate) and the technical report ( memo)	20.02.2009
				public announcement on the submission of the application and of the Technical Memorandum were published in local news papers and other local media. Publication in the media of the announcement of request for Environmental Agreement by LEPA Arad (in accordance with Order 860/2002 with its subsequent amendments) and publishing on its own webpage	24.02.2009
				<b>Declaration</b> of town halls regarding the period of publication of the announcement at their premises own webpage	20.02.2009 – 25.03.2009
				Arad EPA representatives together with County Council representatives visited all the locations included in the project	27.02.2009
				LEPA Arad requested additional info with the address sent to both Beneficiary and the Consultant on	12.03.2009
				Technical Advisory Committee organized, corresponding to the EIA screening stage and decided the project, which falls under the class of developments not covered either by Annex I or II of the GD 1213/2006, an EIA is not necessary	01.04.2009
				LEPA Arad has informed Arad County Council regarding the Decision of screening stage through Decision 3141	14.04.2009
				Announcements of the screening decision were published in local news papers and other local media	15.04.2009
				<b>Environmental license number 112 was issued by EPA Arad – Form B without Environmental permit</b>	23.04.2009