

Waste-cluster Relationship on the Example of Regional Waste Landfill in Blagoevgrad

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Abstract. Bulgaria is facing serious challenges about environmentally friendly way of waste management. Commissioning of the Regional Waste Management System - Blagoevgrad is going to ensure their environmentally friendly utilization and disposal, which is in close relation with the defined hierarchy in Bulgarian Waste management act - prevention, utilization, final disposal. The attempt to be created relation between regional waste management and cluster policy is related to the development of a cluster model, named by authors "Waste utilization and mitigation of climate change". The implementation of the model will contribute to sustainable and efficient waste management in Blagoevgrad region, as well as in the territory of Bulgaria, in relation with the requirements of European legislation. In other side this contributing to the realization of the main Community priorities for Cohesion Policy: sustainable development and increasing the attractiveness of regions, by improving accessibility, ensuring adequate quality and level of services and preserving their environmental potential.

Key words: regional waste management, cluster model, resource utilization, climate change, mitigation, Blagoevgrad, municipality.

Introduction

Environmentally friendly waste management is a priority for the European countries in transition, especially for the last 10-15 years. Following the waste management model, applied in some European countries, the Bulgarian Ministry of environment and water has adopted the approach for building of regional landfills for waste disposal with pre-treatment. In order to implement the recommendations of Ministry of environment and water in 2011 has been formed "Regional Waste Management Association - Blagoevgrad". The association is independent, voluntary, non-government organization,

which includes municipalities from Blagoevgrad and Kyustendil province. ([Ministry of environment and water, List of Regional associations of waste management in Bulgaria](#)).

The participants in this association are the following municipalities: Municipality of Blagoevgrad and Municipality of Simitly, both from Blagoevgrad district and Municipality of Rila, Municipality of Boboshevo and Municipality of Kocherinovo, from Kyustendil district. In September 2019 has finished the first stage of construction of the regional landfill under the project "Regional Waste Management System, Blagoevgrad Region,

servicing the municipalities of Blagoevgrad, Simitly, Rila, Kocherinovo and Boboshevo - Phase I". The implementation of projects for the construction of municipal waste management systems, of which regional landfills are part, is regulated by Directive 1999/31/EC on the landfill of waste. In accordance with its requirements, it is planned to build regional systems to cover waste management in the country. (Ministry of environment and water, Waste management Blagoevgrad).

In this paper the authors are facing the challenge to represent a relationship between wastes and clusters. Clusters, according to Porter (PORTER, 2003) "are geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types."

Material and Methods

For the purpose of the present study the authors have been investigated some characteristics of the clusters and the structure of the regional waste management association. The authors present an example of a model, which is focused to waste-cluster relationship on the example of the regional landfill in Blagoevgrad.

Results and Discussion

The different definitions for clusters are focusing on different aspects. The concept of clusters usually consists of three important dimensions (SLAVOVA & BANKOVA, 2016). According to the same authors the first dimension is related to considering clusters as a *geographic concentration of specialized firms*, advanced skills and competences of the workforce, as well as the support of institutions that increase knowledge flows and their dissemination as a result of their proximity. This grouping of different strengths is often referred to as a promising strategy for maintaining global competitiveness. Second - *Clusters include a network of joint / cooperative enterprises* (companies that have formal, social and

economic links between). It is thought that geographical proximity facilitates planned interactions, which are important elements of the innovation process. Third - Clusters are characterized by a certain dynamic social and organizational element, the so-called "institutional attachment / fixation" - attracting various interconnected innovation partners, thus facilitating intensive interaction and cooperation between them. H. Rocha and R. Sternberg (ROCHA & STERNBERG, 2005) call the third dimension of clusters a network of cooperative organizations.

The structure of Regional waste management association is consisted of General assembly and Chairman of administrative board. The administrative board includes the mayors of the five municipalities (Blagoevgrad, Simitly, Rila, Boboshevo and Kocherinovo) and the Chairman of the Administrative board is the mayor of Blagoevgrad municipality.

Each municipality participates with different percent in the activities for construction of the regional landfill and putting it into operation; construction of waste treatment facilities by making cash (property) contributions; providing project financing for the different stages of construction of the regional landfill and / or other waste treatment facilities; the amount of the contribution of the regional association to the realization of the project.

The participation of each municipality as a member of the association is shown on the diagram showed on Fig. 1.

The main objectives of the Regional Waste Management Association - Blagoevgrad are the joint construction, management and operation of the regional landfill for non-hazardous wastes, situated on a property, owned by the Blagoevgrad Municipality. The property falls within the boundaries of the existing municipal landfill of Blagoevgrad Municipality; management of widespread and specific waste streams; efficient resources utilization, resulting from waste management processes.

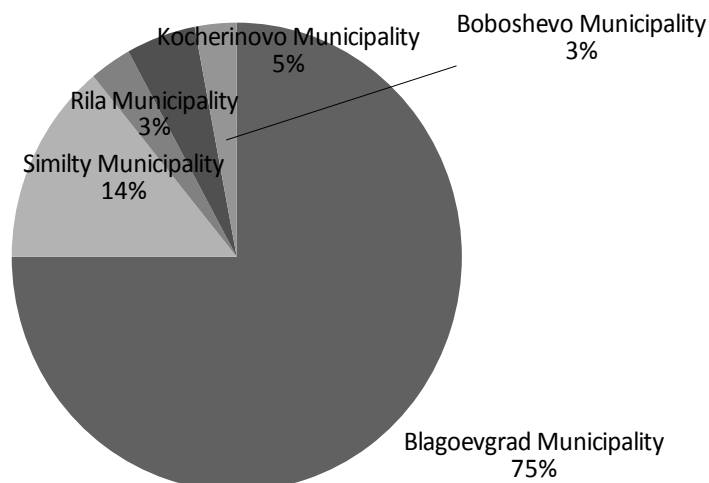


Fig.1. Participation of each member (municipality) of the Regional Association (in %) (after [ATANASOVA, 2017](#)).

In order to be achieved the above mentioned objectives it is upcoming for all municipalities to:

Select company/companies for:

- Collecting of municipal waste from the containers according to appropriate developed transport schedules;
- Operation of the regional landfill on the territory of Blagoevgrad Municipality.

Select company/companies for:

- Collecting of widespread and specific waste streams and their transportation to the installation and places for pre-treatment, preparing for recycling and composting.
- Collecting of hazardous household waste by announcing schedules for each municipality;
- Collecting of bulky waste by announcing schedules for each municipality;

Select company/companies for:

- Operation of waste pre-treatment/separation installations for waste and their future recycling; anaerobic disposal of bio-waste and composting of green waste;
- Operation of installations for storage of hazardous and bulky waste.

The regional waste management - cluster policy relationship is consisted of the potential benefits for the above mentioned future companies. Taking into consideration all above mentioned the authors have

developed an example for acting regional cluster, which can be used for waste management. The cluster in this case is on the example of regional waste landfill in Blagoevgrad.

The activities are separated in different groups - A, B, C, D.

A. Collecting and transportation of total municipal waste stream, bio-waste and green waste.

One company (**A**) can be responsible for operation of the regional landfill and also for collecting the household waste from Blagoevgrad and Similty.

One company (**B**) can be responsible for collecting of household waste from Kocherinovo, Rila and Boboshevo. It is necessary to be done on a set schedule.

B. Collection of widespread waste - packaging waste and transfer to the pre-treatment (separation) installation located in the industrial zone of Blagoevgrad;

The implementation of this activity can be done from one Packaging Waste Recovery Organization (**C**), licensed by the Ministry of environment and water of Bulgaria. The Organization can operate on the territory of all five municipalities on a set schedule.

C. Collection, transportation and operation of sites for hazardous and bulky waste

The activity, for all five municipalities, can be implemented by one company (D), licensed by the Ministry of environment and water of Bulgaria for working with hazardous waste.

D. Operation of pre-treatment installation

The activity can be done from one company (E) with good experience.

All companies are interconnected due to the fact that the waste management

processes are consistent and continuous. The Regional Waste Management Association - Blagoevgrad should oversee the implementation of all waste activities and financial dimensions. The proposed example for cluster organization can be defined as an organized effort to maximize the benefits of waste treatment, growth and competitiveness of clusters in the Blagoevgrad region.

Table 1. Proposal for participation of the companies included in the regional system.

Municipality	Collection and transportation of household bio-waste and green waste	Collection of packaging waste including widespread waste	Collection, transport and operation of sites and installation for hazardous and bulky waste	Collection, transport and operation of sites and installation for pre-treatment of waste
Blagoevgrad	Company A	Recovery organization C	Company D	Company E
Simitly	Company A	Recovery organization C	Company D	Company E
Rila	Company B	Recovery organization C	Company D	Company E
Kocherinovo	Company B	Recovery organization C	Company D	Company E
Boboshevo	Company B	Recovery organization C	Company D	Company E

Conclusions

The study represents the aim of the authors to research and create a connection between waste and clusters on the example of the regional landfill in Blagoevgrad. This type of differentiation and organization of the activities between the separate companies can be used in other regional landfills. The implementation of the proposed cluster model could have multiplier effect - on future regional waste management and disposal systems; economy, activities related to mitigate the climate change.

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