

## RESEARCH ARTICLE

**(Open Access)****Current Situation of the Solid Waste Management in Gjirokastra Region: Problems and Challenges for the Future**ORNELA ÇUÇI<sup>1</sup>, ADEM META<sup>2</sup>, FATBARDH SALLAKU<sup>3</sup>, REXHEP SHKURTI<sup>4</sup><sup>1</sup>European University of Tirana<sup>2</sup>Faculty at Cuyahoga Community College, Cleveland, Ohio, USA<sup>3</sup>Agricultural University of Tirana, Department of AgroEnvironmental and Ecology, Tirana<sup>4</sup>Eqerem Çabej University, Gjirokastra**Abstract**

The system of collecting waste and the current situation in their management is the main objective of this paper, to help the local government for sustainable waste management in the district of Gjirokastra. Through this study it was possible the provision of a database for the management of actual waste at the regional level, an analysis of actual system of waste management, the criteria necessary for managing them through an approach of sustainable development environmental, economic and social. Geographical space, which is the objective of this study is Gjirokastra district, consisting of three districts and currently, according to the new territorial division of 6 municipalities. To provide data on the current situation of waste used the data of municipalities and communes under the old territorial division. Processing of this database, the most important qualities and characteristics of the area are classified into 6 new municipalities functioning. Also they have interviewed over 250 employees and stakeholders the respective municipalities, and are inventoried evidence on policy practices and technologies used. They were examined waste prevention policies at national, regional and local enforcement practices, and based on general descriptions of available activities to prevent / reuse / recycling has prepared a detailed SWOT analyze. With SWOT analysis and data arising from it the results of this study suggest measures for the sustainable management of waste in the district of Gjirokastra, because the waste generated is collected without any prior sorting and no recycling process for hazardous waste appliances (batteries, etc. together with them even hospital waste). Disposal of waste from communities and municipalities realized using plastic bags or not, but without any preliminary separation according to their content or without taking into consideration all the resource sharing and protection from further urbanization. Keywords: keyword; keyword; keyword. urban waste management, SWOT analysis, Gjirokastra district, the municipality, the community.

**1. Introduction**

General description for Gjirokastra district.

District size reaches approximately 2427.04 km<sup>2</sup>. Population in 2014 caught the number 129 828 inhabitants according to Civil Registry and 65,301 people according to the last census conducted in 2011. Gjirokastra region has three districts, composed by old administrative division of the 6 municipalities and 26 municipalities, and 6 municipalities according to the new administrative division.

Gjirokastra municipality according to the 2011 Census, has a population of 25,301 inhabitants, whereas according to the Civil Registry it counts 52,054 inhabitants. Gjirokastra Municipality covers an

area of 469.25 km<sup>2</sup>, with a density of 53.91 inhabitants / km<sup>2</sup> according to the 2011 Census and 110.93 inhabitants / km<sup>2</sup> according to the Civil Registry. The municipality consists of 7 administrative units, which are: Gjirokastra, CepoLazarat, Picar, Lunxhwri, Odrie and Antigone and has under its administration a city and 38 villages.

Libohovw Municipality according to the 2011 Census has a population of 3,667 inhabitants, while according to the Civil Registry, the municipality has 7,158 inhabitants. Libohovw Municipality covers an area of 248.24 km<sup>2</sup> with a density of 28.83 inhabitants / km<sup>2</sup>. The municipality consists of three

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administrative units, which are: Libohovw, Libohovw Center and Zagorie and has under its administration one city and 17 villages.

Tepelene municipality by the 2011 Census has a population of 8,949 inhabitants, while according to the Civil Registry, the municipality counts 16,371 inhabitants. Tepelenw Municipality covers an area of 431.24 km<sup>2</sup> with a density of 37.96 inhabitants / km<sup>2</sup>. The municipality consists of four administrative units, which are: Tepelenw/Tepelenw Center, Lopes and Kurvelesh and has under its administration one city and 24 villages.

Memaliaj Municipality, according to the 2011 census has a population of 10,657 inhabitants, whereas according to the Civil Registry, the municipality has 21,476 inhabitants. Memaliaj Municipality covers an area of 372.07 km<sup>2</sup> with a density of 78.90 inhabitants / km<sup>2</sup>. The municipality consists of 6 administrative units, which are: Memaliaj, Memaliaj Village, Luftinw, Buz, Krahes and Qesarat, and has under its administration one city and 53 villages.

Permet municipality by the 2011 Census has a population of 10,614 inhabitants, whereas according to the Civil Registry, the municipality counts 20,301 inhabitants. Pwrmeti Municipality covers an area of 601.95 km<sup>2</sup> with a density of 33.72 inhabitants / km<sup>2</sup>. The municipality consists of 5 administrative units,

which are: PermetÇarçovw, Frasher, Petran and Piskovw Centre and under its one city and 49 villages. Gjirokastra district is part of the Southern Highlands province, which includes the southern part of the country to the border with Greece. This region has diverse geological construction, but its dominant geological formations are limestone, which form mountains and mountain ranges and terrigenous deposits which mainly fill the valleys. The climate of this region is featured pronounced highlands Mediterranean, with very hot and dry summer, with autumn, winter and spring with abundant atmospheric precipitation. Atmospheric precipitation were above the national average. Southern Highlands Province stands for great water wealth. Precipitation are numerous and reach up to 1800 mm per year. The average annual temperature in Gjirokastra is 14.5 degrees Celsius

## 2. Materials and Methods

### *Demographics*

Gjirokastra district is located in the south-eastern point of the country. Bordered by Fier, Korca, Vlora and Greece which lies to the east and southeast. All county surface totaling approximately 2427.04 km<sup>2</sup>, while rivers Vjosa and Drinos pass across the county. County has three districts, consisting of 6 municipalities where most of the population live in villages.

**Table 1:** Demographic Data for the Region

Municipality	Population (inhabitants)	
	Census 2011	Registers of Civil Status
Gjirokastër	25301	52054
Libohovë	3667	7158
Tepelenë	8949	16371
Memaliaj	10657	21476
Përmet	10614	20301
Këlcyrë	6113	12468
TOTAL	65301	129828

### *Current situation*

#### *The waste management in the county*

The population has increased significantly during the last 10-12 years, thanks to the phenomenon of migration from rural areas close to her, as well as from other areas of the country. The population growth was accompanied by another with the worsening of the situation of urban waste

management and, specifically, with the availability of opportunities for disposal of waste without causing damage to the health of the population and its surrounding environment. Currently, urban waste in the city's largest district, that of Gjirokastra, waste disposed of in an open field, depending on the local government bodies. This field is located in a place called "Gwrhot", about 2 km from the city center, it has not the capacity to cope with the amount in the

growth of urban waste, and since it is designed without taking into consideration environmental protection, no system for collecting water to percolate. Before 1997, the area was considered peripheral zone, while today, the informal area residents have homes only 120-150 m away from it. As a consequence,

potential contamination from landfills poses a growing threat to the environment and health of citizens at. As shown in the figure below, the landfill during the summer takes systematically fire, which has increased the level of pollution in the city.



**Figure 1:** View from the current situation of waste management

The same, even worse is the situation in other municipalities of the County, the city of Tepelenw residues continue to be deposited in the river Vjosa, 1 km from the center inhabited, while the city of Permet waste is disposed near the village Kutal, 1 km from the center inhabited and worse still, only 50 m from

the nearest house, (informal). In small municipalities has no waste collection service and individuals are responsible for the removal and elimination of their waste, which leads to haphazard waste disposal, on the side of the road, or in the incineration of waste in nature.



**Figure 2:** View from the current situation of waste management

Urban waste generated from domestic sources, state administration with all its structures, the sectors of construction, manufacturing and various services. Waste is collected without any prior separation, a part may result in hazardous (eg. Batteries, etc.). Waste removal is done through municipal collection points with jumps directly or through the special plastic bag or not, but anyway no separation of waste by type or composition.

Transport of waste in landfills (areas) of garbage from collection points no frequency and quality desired, as a result, the residence time of waste

at these points allows their fermentation and consequently, deterioration in the quality of urban and growth risk to the health of citizens. The problem is worsened in the summer. Regarding the selection and appointment official landfills, these selection of landfills, do not meet environmental criteria aimed towards the maximum possible limitation of pollution dispersion. And the minimum level of population exposure to this pollution. Nationally information for the amount of generated waste and their composition is relatively limited.

Assessment at the national level gives a figure of about 600,000 tons per year, with a specific output of 0.8 kg / capita per day, this amount increased about three times in comparison with 1990. The amount of generated waste increases with the economy and with the gradual increase of the standard of living. The most important components are those organic waste, paper, glass, metals, textile waste, a plastic and wood, to which the percentage of organic matter, depending on the region, ranging from 40-60% of their total. These wastes is added an amount of approximately 350,000 tons per year inert waste for which there is no special landfills and therefore they go to the landfills of waste, adding volume and created difficulties in their managing

Direct responsibility of the management of urban waste is the local government. In most of the cities waste collected and transported through municipality service companies to, or private companies contracted by municipalities.

In relation with the organization's current drawing local scale waste in the district of Gjirokastra, noted that:

- Vehicles are poor standard and uncovered;

- The state of waste collection bins is relatively bad;
- Removing infrequent and irregular waste leads to overflow, even pouring bins;
- Waste in the streets causing smell and risk of epidemics.

### 3. Results and Discussions

#### *Waste collection system*

Analysis of the territory is the first part of the process of planning, and should be oriented with respect to the outstanding issues, but also in relation to the objectives that we have imposed. Data from bibliographic taken a year production growth of urban waste around 8-10% of a product, about 0.7 kg / person / day = 255 kg / person / year, so even though the trends are apparent in the increase, It stands less than the European average, which is 527 kg / person / year. The composition of waste evaluated, considering a decrease in the presence of the organic fraction and the presence of an inorganic fraction, which comprises a percentage of paper, glass, plastic, so far are not differentiated.

**Table 2.** Waste generation per capita per day for the domestic Waste (Gjirokastra town)

<b>Income Group</b>	<b>Minimum (kg/d/C)</b>	<b>Mean (kg/Cap/d)</b>	<b>Maximum (kg/Cap/d)</b>
High Income Area	0.18	0.43	0.81
Middle Income	0.11	0.37	1.34
Low Income	0.06	0.35	0.67
Informal settlements	0.05	0.29	0.81
Total	0.05	0.36	1.34

**Table 3.** Different kinds of waste according to their category

<b>Fractions</b>	<b>Percentage %</b>	<b>Specific weight kg/mc</b>
Organic	21.0	600
Paper	10.0	150
Cloth	4.0	250
Plastic	14.0	50
Glass	11.0	120
Inert	18.0	110
Metal and glass	9.0	350
Wood	0.0	750
Others	13.0	110
Total	100	

#### **SWOT analysis:**

After analyzing the criteria, which take into account such as environmental sustainability, economic and

social sustainability and waste management criteria, was developed for this study SWOT analysis below. The main issues considered are: economic development; infrastructure; territorial issues and

services; Gender issues, youth, social issues; administration and local revenues.

The key data used for this analysis were the inventory of evidence on policy practices and technologies, examination of waste prevention policy at national, regional and local levels, and implementation

practices. Also based on general descriptions of available activities to prevent / reuse / recycling and analysis of interviews over 250 municipal employees, municipal service and interest groups in each municipality, has prepared a detailed SWOT analysis  
Final results: Transnational SWOT Analysis

<b>Strength</b>	<b>Weakness</b>
<ul style="list-style-type: none"> <li>• Natural conditions for a tourist development (natural monuments, thermal water) animal breeding (vast surface of pasture), through the increase of production and processing capacities</li> <li>• Young population who has a high level of education, stability of the population of the area</li> <li>• Concerns and requests for the increase of the quality of the infrastructure, urban services (waste processing, processing of the non drinkable water and sewage water) and services,</li> <li>• Positive experience that tents to be preserved by the community</li> <li>• Significant job creation in comparison to other waste management practices</li> <li>• Social impact: Provides less expensive products to residents</li> <li>• Easily applicable</li> <li>• In significant majority of cases it is financially sustainable and income generating activity</li> <li>• A lot of bulky waste and quantities are diverted from landfill and lifespan extended</li> <li>• Benefit for citizens (citizens benefit from use of compos</li> </ul>	<ul style="list-style-type: none"> <li>• Low possibilities for investments;</li> <li>• Lack of infrastructure for the urban waste management,</li> <li>• Lack of the unit for the design of integrated projects that aim to develop the recycling business in the area.</li> <li>• Lack of interest from the local government units which face the lack of management capacities.</li> <li>• Low level of diversity of economic activities in the area.</li> <li>• Exodus of the families</li> <li>• Continuous seasonal migration lack of integration of young people in the economic activities of the area,</li> <li>• Low level of specialized education that offers different professions</li> <li>• Evident lack in the road infrastructure ; limited possibilities for investments or maintaining interventions;</li> <li>• When implemented at large-scale local level requires good planning to take all factors at household level into account;</li> <li>• There is a cost (although small);</li> <li>• Requires very good and continual public awareness and support to citizens;</li> <li>• Must have a very efficient collection system in place- often have to compete with private actors or residents that want to get rid of it bulky goods immediately</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Increase of the requests from the consumers to recycle the wastes from the origin,</li> <li>• Tourist sites away from the inhabited areas;</li> <li>• Construction of a landfill that will collect the waste of the whole region;</li> <li>• Access to the new technologies that offer development possibilities within this area;</li> <li>• Increase of support from the financing</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of a landfill in the region;</li> <li>• Disagreement of the local government units in the region on regard to the construction of a common waste management site.</li> <li>• The general tendency to abandon the rural areas aiming to move to the towns which provide them more economic and social possibilities</li> <li>• A continuous decrease of the public</li> </ul>

institutions;

- Inclusion of the region in the priorities of the Albanian government on regard to waste management financed by EU on environment;
- Opportunity to reduce landfill costs and increase income and job creation;
- Easy replicability
- Creates the opportunity for green job creation (directly and indirectly

institutions on regard to investments in these areas;

- Low awareness of population (if not properly informed especially initially may not bad results)
- In periods of economic crisis, although demand for used goods increases there is a decrease of donated goods

#### 4. Conclusions

The generated Waste is collected without any preliminary division. There is no recycling process for the dangerous household waste (batteries etc), (together with them are deposited the hospital waste). The disposal of the urban waste is done to the dumping sites by the communes and municipalities with a direct disposal or by using the plastic bags or not, but without any prior separation according to their contents or kind. After taking into account the SWOT analysis, and after discussion of all characteristics described in our study, the construction of a landfill under environmental legislation in force suggested as it comfortable variant, but each municipality must have a station reloading in its vicinity so that the landfill cells have greater durability. Besides providing the above information, this study suggested that the planning of waste separation at the source for the residents of the municipalities in the district of Gjirokastra, as this process enables the separate collection by their typology. The data of our study show that the collection of differentiated waste is the best way to preserve and maintain natural resources, the advantages of the generations of the future, re-use of

waste from paper, glass, plastics, wet waste, as this process contributes to maintaining a richer environment.

#### 5. References

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