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JOINT ACTION PLAN FOR AGRICULTURE WASTE MANAGEMENT IN POMORIE MUNICIPALITY, BURGAS DISTRICT, REPUBLIC OF BULGARIA AND PINARHISAR MUNICIPALITY, KIRKLARELI PROVINCE, REPUBLIC OF TURKEY, 2015 - 2018



Contracting authority: "Europe and We" Association, town Pomorie

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LIST OF ABBREVIATIONS

EU – European Union

AAU – agriculture area used

AAU/per capita – agriculture area used per capita

LWM – Law on Waste Management

MEW - Ministry of Environment and Water of Republic of Bulgaria

MoEU - Ministry of Environment and Urbanisation of Republic of Turkey

NPWM- National Strategic Plan for Waste Management

NGO – Non-government organization

PETC – pan-European transport corridor

WPP – Wastewater purification plant



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INTRODUCTION

This Joint action plan for agriculture waste management in Pomorie Municipality, Burgas District, Republic of Bulgaria and Pinarhisar Municipality, Kırklareli province, Republic of Turkey /2015-2018/ is based on the cross-border summary assessment of the current state of the waste management sector in both cross-border municipalities, focusing on the state of the process of composting of biodegradable agriculture waste, and the developed summarized SWOT analysis, activities, measures and indicators for the sector.

The Soil Thematic Strategy (COM 2006/231) calls for the use of compost as one of the best sources of stable organic matter from which new humus can be obtained in degraded soils. The organic farming regulation (2092/91EEC until 31.12.2008 and 834/2007/EC of 01.01.2009) defines the conditions for the use of compost in organic farming.

Environmental pollution is one of the most fundamental and pressing problems of modernity. Many international and regional organizations monitor issues related to nature and human society, seeking to remove them at least partially and make the interaction more fully and favorably. This is one way to improve the relationship man - nature. In recent years, as result of industry evolution and the vital activity of people in the environment huge amount of waste of any kind is generated. By inappropriate waste management there are real risks for both the environment and public health. In practice various treatment methods are used to limit the maximum extent of these risks.

The main method of waste disposal in Bulgaria is at depots. Recently an alternative method for biodegradable fraction management is composting, which is widespread in Western models for waste treatment.

In 1997 the Congress in Atlanta marks the beginning of world composting policy (processing organic waste into fertilizer). Jacques Yves Cousteau then surprises all, predicting that by 2050, compost will be as valuable as gold.



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Composting is an exothermic process in which organic substrates are subject to aerobic biodegradation of the mixed microbial population in a suitable temperature and humidity. In the process of biodegradation organic substrate undergoes a physical and chemical reaction with the formation of a stable humus-riched final product. This product is valuable for agriculture as an organic fertilizer and as a means to improve soil structure. Humus-riched products quickly come into balance with the ecosystem in which they are imported and do not cause distortions in it, as this is observed in the import of unprocessed organic waste.



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1. SCOPE OF THE ACTION PLAN

Geographic scope

Pomorie Municipality that consists of 17 settlements and Pinarhisar Municipality that consists of 1 small municipality, 13 villages and 6 hamlets.

Time frame

The action plan is developed for the period 2015 – 2018.

Subject of the action plan

The Joint action plan for agriculture waste management in Pomorie Municipality, Burgas District, Republic of Bulgaria and Pinarhisar Municipality, Kırklareli province, Republic of Turkey for the period 2015 - 2018 concerns issues relating to waste treatment and recycling, including those of agriculture in cross-border territory.

2. GENERAL CHARACTERISTICS OF POMORIE AND PINARHISAR MUNICIPALITIES

POMORIE MUNICIPALITY

Pomorie Municipality is located in the southeastern part of the Republic of Bulgaria. In accordance with the administrative-territorial division of the country, it is part of Burgas District. The total area occupied by Pomorie Municipality is 413 304 dca, which is 5.3% of Burgas District. Pomorie Municipality has a total of 17 settlements. In the municipal territory there are 3 towns - Pomorie, Aheloy and Kableskovo and 14 villages - Aleksandrovo, Bata, Belodol, Gaberovo, Goritsa, Galabets, Dabnik, Kamenar, Kozichino, Kosovets, Laka, Medovo, Poroy and Stratsin. The population of the municipality is total 27,532 people. Pomorie Municipality neighbors with Burgas, Nessebar, Ruen and Aytos Municipality. The strongest competitive advantage of Pomorie Municipality is that it lies on the Black Sea coast, as well as the favorable geographic location regarding the international infrastructure corridors. Pomorie Municipality is located near and under the influence of the pan-European Transport Corridor PETC 8, connecting the Adriatic to



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the Black Sea region, as well as PETC 4. Burgas Airport is 8 km far from town Pomorie.

With respect to the balance of the territory, Pomorie Municipality has a high share of agricultural areas (66.2% against 57.4% for Bulgaria and 51.6% for Burgas District). The share of settlements and urban areas (1.8%) is lower than the average for the country (4.1%) and Burgas District (2.4%). The share of forest areas in the municipality (25.4%) is lower than the national average (33.5%) and the average in Burgas District (40.5%). Slightly higher than the national average is the share of territories for mining (2.5% against 2.4% for the national), but it is the same for Burgas District (2.5%).

Pomorie is an administrative, municipal and cultural center. It has unique nature which makes it an attractive place for year-round recreation and treatment of various diseases. It is situated on a narrow rocky peninsula (3.5 km inside the Black Sea) 20 km away from Burgas and 18 km from Sunny Beach resort.

PINARHISAR MUNICIPALITY

Pınarhisar is located on the old road to Istanbul, at the road fork-Luleburgaz Kırklareli. The northern parts of the municipality are characterized by hills and rock formations 500-600 m high. The area north of the municipality is forested. To the east is Vize Municipality, to the west - Kırklareli province, to the south - Luleburgaz Municipality, to the north – Demirkoy Municipality. Pınarhisar Municipality is 581 square km and its altitude is 192 m. Municipality Pınarhisar comprises 1 small municipality 13 villages and 6 hamlets. According to last civil registry records the population is 22 729 people, of whom 11 263 live in the city center, and 11 466 live in the villages around.

Pınarhisar was founded by Semendirek Tekfuru in 425 years B.C within the Eastern Roman Empire and was named VIRISIS, meaning “wells” in Latin. Pınarhisar is a historic cities area of Kırklareli. In 1368 at the time of Murat I, it was captured from the Byzantines by Veteran Michal. In 1877-78 during the Turkish-Russian War, the city was occupied by the Russian troops and a large part of the Balkan War took place precisely around this region. In 1912 Pınarhisar was conquered by the Bulgarian troops. (July 23, 1913 was exempt from this occupation.) After the World War I, the city was conquered again -this time by Greek army and on November 8, 1922 again returned to the borders



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of Turkey. In 1911 Pınarhisar was declared a municipality, in 1915 - for the mayoralty, in 1953 was declared a municipality.



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3. GENERAL CHARACTERISTICS OF THE AGRICULTURE AND FORESTRY SECTORS IN POMORIE AND PINARHISAR MUNICIPALITY. FIELDWORK – NEEDS, LIMITATIONS.

Pomorie Municipality has good natural resources for agriculture development - fertile agriculture land, which creates opportunities for the use of products produced in the municipality as a raw material for the food industry. Natural resources are a prerequisite for the development of grain production, viticulture, and livestock breeding.

A serious problem for effective agriculture development is the highly fragmented and scattered agriculture land. This is the first serious problem to solve - land consolidation.

The machinery is outdated and inadequate. The irrigation systems, which are crucial for agriculture, are also in poor condition. Meanwhile investment opportunities of agriculture cooperatives established and associations of private farmers are limited. It is necessary a more active use of the opportunities provided by the European Agricultural Fund for Rural Development through the Rural Development Programme 2014-2020.

Agriculture areas occupy 273,419 dca or 66.2% of the total municipal area, which is 413,189 dca. 215 693 dca (79%) of the agriculture land are arable land, including 35,783 dca of irrigated area. AAU per capita for 2010 is 5.52 dca, which puts Pomorie among the group of municipalities with a high level of AAU/per capita (> 4.8 dca) according to the Social - economic development analysis designed for the purposes of the Regional Operational Programme 2014 - 2020. According to the share of agricultural area used (AAU) in the general a municipal area for 2010, Pomorie also falls within the group of municipalities with a high share of AAU (> 32.58%) - 36.28 dca. The relative share of farms in the municipality against the total number for the country for 2010 was 0.47%, as Pomorie falls in the group of municipalities with a big share (> 0.4%).

According to the size of the area grain production is dominant in the municipality. Second place is taken by perennials and most of all vineyards, where wine varieties dominate.

Major cereal and industrial crops covered in the municipality are wheat, barley, rye, sunflower, coriander, lavender and canola.



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The main guidelines in livestock breeding are for protection and restoration of animals' reproduction, preserving their valuable genetic qualities. At the moment it is essentially extensive basis in domestic economy and in private yard. Larger livestock farms and farms cover less than half of the animals in the municipality.

Now it develops mainly on extensive basis in households and private yard. Larger livestock farms cover less than half of the animals in the municipality.

In Pinarhisar Municipality there are about 3500 - 4000 farmers who deal mainly with crop production, which occupies a major share of agriculture in the region. Land used for crop production is around 250 thousand m², as 50% is used for growing wheat, 37% - sunflower, 10% - for maize and 3% for vegetables.

In 82% of the agriculture land in Kirklareli province irrigated agriculture is developed, without leaving land fallow. In 18% of them irrigated agriculture is developed. Irrigated land in the area is 488,192 dca in total, 337,554 of which are irrigated by the country and 150,638 are irrigated by farmers. The total area of arable land in Pinarhisar municipality is 581,164 dca of which less than 3% are irrigated. Irrigated areas in the Pinarhisar Municipality are 15,900 dca in total, 50% - 7950 dca are irrigated by the country, and the other half - 7,950 dca - by the farmers.

Table 1: Irrigated area within Kirklareli province and Pinarhisar Municipality

	Irrigation by the country (dca)	Irrigation by farmers (dca)	Total (dca)
Pinarhisar Municipality	7 950	7 950	15 900
Kirklareli province	337 554	150 638	488 192

Of the total of 1,914,187 01 dca in Kirklareli county 1,747,917 dca are occupied with cereal and other industrial crops, 36,338 dca - with orchards and 21,187 - with vegetable and herb gardens.

The purpose of lands in Pinarhisar Municipality is as follows:

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- ✓ Arable fields - 226 041 dca;
- ✓ Vineyards and gardens - 1,349 dca;
- ✓ Pastures and meadows - 17,740 dca;
- ✓ Forests and shrubs - 244,730 dca;
- ✓ Deserted farmland - 3,851 dca;
- ✓ Non-arable agriculture areas - 91,310 dca.

In the structure of agriculture in Kırklareli province cereals, sunflower, sugar beet, corn, legumes for food vineyards play an important role. Regarding agriculture products wheat and sunflower prevail. Other important crops together with cereals and sunflowers are sugar beet, corn and potatoes. The areas where vines are grown are 2% of the arable land in Kırklareli province. In 84% of this area are grow vegetables, in 12% - vineyards, in 8% - fruit.

In Pınarhisar Municipality and its villages mainly wheat and sunflower are grown. The vegetables are grown predominantly cabbage, spinach, leeks, tomatoes, cucumbers, peppers, green beans and lettuce. In the municipal center and the villages there are 56 greenhouses, and on 14 acres is developed agriculture under tunnels of plastic film.

Furthermore in Pınarhisar Municipality covered agriculture production is developed. In the municipality there are 19 dca of greenhouses in total.

The most important source of income for the people in the region is agriculture and livestock breeding. Year by year, however, the income decreases, the area per capita decreases and the majority of farmers, who cannot make a living from the small plots of land leave it. Below is a diagram of production quantities of livestock breeding for 2012 for Kırklareli province and Pınarhisar Municipality.

Kırklareli province

- ✓ cattle (domesticated) - 133 018 animals
- ✓ buffalos - 1547 animals
- ✓ cattle (mongrels) - 14 675 animals
- ✓ cattle (local) – 3 622 animals
- ✓ sheep (local) - 214 741 animals
- ✓ goats (fur) - 68 394 animals
- ✓ sheep (merinos) - 420 animals.



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- ✓ chicken for meat - 30 168 animals
- ✓ chicken for eggs - 366 200 animals
- ✓ turkeys - 11 603 animals
- ✓ ducks - 3 331 animals
- ✓ geese– 7 056 animals
- ✓ horses - 918 animals
- ✓ mules - 185 animals
- ✓ donkeys - 927 animals
- ✓ new beehives - 35 407 items
- ✓ old beehives - 10 850 items
- ✓ total beehives - 46 257 tons
- ✓ honey production - 652 538 tons
- ✓ wax production -29 637 tons

Pinarhisar Municipality

- ✓ cattle (domesticated) - 8 946 animals
- ✓ sheep (local) - 21 255 animals
- ✓ goats (fur) - 12 319 animals
- ✓ poultry (production of winged birds)
- ✓ chicken for eggs - 9000 animals
- ✓ turkeys - 650 animals
- ✓ ducks - 300 animals
- ✓ geese - 450 animals
- ✓ horses - 56 animals
- ✓ mules - 30 animals
- ✓ donkeys – 147 animals
- ✓ new beehives - 3 618 items
- ✓ old beehives - 600 items
- ✓ total beehives - 4 218 tons
- ✓ honey production – 10 545 tons
- ✓ wax production - 21 090 tons

In the framework of the project 2 parallel field surveys in 2014 were carried out, which involved a total of 204 respondents - farmers of Pomorie and Pinarhisar Municipality.,



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The main conclusion from the analyzes of questionnaires completed by respondents, is that "field production – grain cultures" is most widespread followed by vegetables, viticulture and horticulture.

Livestock breeding is usually not so popular compared to crop production and the questionnaires show that cattle breeding has a big share.

Based on field study in Pomorie Municipality in 2014 the following requirements and limitations are identified:

1. Need for conducting a public information and motivation campaign through various means in order to increase the awareness about the composting benefits, the options for composting and to enhance preparedness for composting the agriculture waste generated.
2. Need for conducting an information campaign to present the benefits of the utilization of agriculture waste by composting - on the one hand reducing waste at the landfill, and on the other, producing quality soil conditioner - compost.
3. Need for a special focus on large-scale farmers in presenting the opportunities and benefits of composting.
4. Need for imposing strict sanctions on farmers, violating bans on burning agriculture waste, by which to motivate impeccable producers;
5. Need for additional motivation for farmers which compost "partially" or solve the problem of agriculture waste in the statutory manner - by detailed explanations and presentation of facilities for the farmers in composting.
6. Need for a detailed presentation of composting benefits to the target groups - economic, environmental, physical / structural / benefits, chemical, biological and other benefits.
7. Need for a detailed presentation of the different types of composting systems - with their advantages and disadvantages;
8. Need for a broader presentation to the public - households, farmers, etc., of project "Establishment of a regional system for waste management in Burgas region" and the investment measures in it regarding solid municipal and biodegradable waste management on the territory of Pomorie Municipality;



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9. To seek opportunities to provide free composting containers to a maximum range of stakeholders;
10. To seek opportunities for introducing stimulating taxation - waste fee based on the amount of waste disposed;
11. To seek opportunities to introduce tax relief for composting of biodegradable waste generated;
12. To seek opportunities for preferences for receiving subsidies in the implementation of various methods of reducing waste generated on the farm;
13. Presentation of the benefits of composting for organic farmers, as a specific target group.

Based on the summarized data from the study in Pinarhisar Municipality the following requirements and limitations are identified:

1. Need for familiarizing farmers with the right ways of treatment and disposal of biodegradable waste generated by their activities.
2. Need for a detailed explanation to farmers of the concept composting, composting process and its benefits.
3. Need for further motivation of those farmers who endeavor to treat their waste on "environmental-friendly" way, but still do not compost.
4. Need for a detailed presentation of composting as a process, prerequisites for obtaining quality compost, benefits of compost.
5. Need for implementing measures to motivate and support population and farmers in particular - free distribution composting containers, seminars, trainings, information meetings which to provide detailed information on the composting process and the benefits of using compost in agriculture and households.
6. The high degree of positive attitude towards composting determines the necessity of possible options for introducing a local composting system.
7. Determination of the type of composting system which to be implemented at the local level (centralized / decentralized), after conducting a study on the



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attitudes of the target groups and needs and constraints assessment in the target region.

8. Need among the target group to organize various training and informative events, presenting detailed information on the standards and requirements that meet the compost produced intended for sale and subsequent use in agriculture.

9. Need for linking waste fee to the amount of waste disposed.

10. Need for the introduction of various financial, tax and material incentives for farmers, composting their biodegradable waste.

11. Need for more detailed presentation of the benefits of certification for organic production and familiarizing farmers with the procedure and the specific requirements for certification as organic producer.



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4. SYSTEM FOR WASTE MANAGEMENT IN POMORIE AND PINARHISAR MUNICIPALITY. ANALYSIS OF THE CURRENT STATE OF BIODEGRADABLE WASTE TREATMENT. COMPOSTING.

POMORIE MUNICIPALITY

System for waste collection and disposal

Waste collection and disposal is carried out by "RTC" Ltd., Elin Pelin. A system is selected, made by irremovable containers type "Beaver" - metal and plastic, metal buckets with a capacity of 110 l, 240 l and containers of 4 cub.m. The frequency of waste disposal varies according to need and season.

Table 1 Organization of waste management in Pomorie Municipality

Municipality	Administrative unit	Number of staff	Company in service	Form of contract	Term of the contract	Vessels-type and number	Frequency of transportation	Technique - type and number
Pomorie	"Territorial planning and environment protection" Department	20	"RTC" Ltd., Elin Pelin	Law on Public Procurement	-	Containers type "Beaver"- 1.1 – 645 containers	In Pomorie and Aheloy (m. 06-09) – every day; two times a week for villages Off season- once a week	4 cars during the winter season with a total capacity of 64 cub. m; 7 cars during the winter season with a total capacity of 112 cub. m;

The waste collected is deposited in "Kamenar" depot, as for 2013 7208 tons of waste was deposited. After the construction of a regional waste management system, waste of Pomorie Municipality will be transported to the transfer station in town Nessebar, which will serve both municipalities.





According to Art. 19 of the Law on Waste Management, the municipality mayor is responsible for:

- ✓ separate collection of household waste in the municipality at least for the following materials: paper and cardboard, metals, plastics and glass (par. 3, p. 6). The systems for separate collection under art. 19, par. 3, p. 6 include all settlements with a population of more than 5,000 residents and resorts;
- ✓ provision of sites for free disposal of separately collected waste from households, including bulky waste, hazardous waste and other in settlements with a population greater than 10,000 inhabitants in the municipality and, if necessary, in other settlements (Art. 19, par. 3, p. 11).

If there is failure to observe the requirements of Art. 19, par. 3 pt. 11 of the LWM, the deductions under Art. 64 of the LWM increase by 15% for the period until failure removal. (Art. 19, par. 5).

According to Art. 22 of the LWM, the Municipal Councils adopt Regulations on waste management, which set the terms for separate waste collection and transfer, utilization and disposal. Such have already been developed or the publication for public discussion in the municipalities of the region lies ahead. The inclusion of an obligation to provide information for recyclable waste purchased/obtained by all entities involved in such activities - stations, shops, etc. on their territory is recommended. The data for the country suggest that the majority of recyclable materials nowadays are obtained from purchase of secondary raw materials.

Packaging waste are part of recyclable materials and a contract with organization for packaging waste utilization is not enough to meet the requirements of the Law. This is clearly seen from the data presented below.

Separate waste collection

Pomorie Municipality has a contract for the separate collection of packaging waste of "Ecobulpack" Jsc. from 28.09.2010 and supplementary agreement since 13.02.2013. For the purposes of separate collection in the municipality there are the following vessels:

- ✓ Yellow containers type "Chest" for collection of packaging waste from paper, plastic and metal - in Pomorie 58 containers and in Aheloy 20 containers;



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- ✓ Green containers type "Igloo" for collection of packaging waste from glass - in Pomorie 75 containers and in Aheloy 5 containers.

The following table presents information available for separately collected fractions of household waste for recycling for the period 2009 - 2012, and the information from the report of the organization for utilization of packaging waste in 2013.

Table 2 Separately collected fractions in Pomorie Municipality, 2009-2013

Year	Separately collected fractions of household waste for recycling (tons)				
	Paper and cardboard	Plastics	Metals	Glass	Total
2009	41,09	22,63	0	5,9	70,42
2010	-	-	-	-	-
2011	23,38	-	0	1,46	24,84
2012	144,58	-	0	1,5	146,08
2013*	37,223	6,271	0	4,4	47,934

* The data for 2013 are from the Concept for Management of Regional waste system Region Burgas.

48 tons represent 2% of the amount of paper, cardboard, plastic and glass, formed in Pomorie Municipality (including by tourists) and 7% of the weight of the amounts of packaging.

Utilization of biodegradable waste in Pomorie Municipality

In Pomorie Municipality agriculture is one of the leading sectors that have a positive impact on the economic growth in the municipality. In Pomorie Municipality the agriculture producers registered in 2012 are 536.



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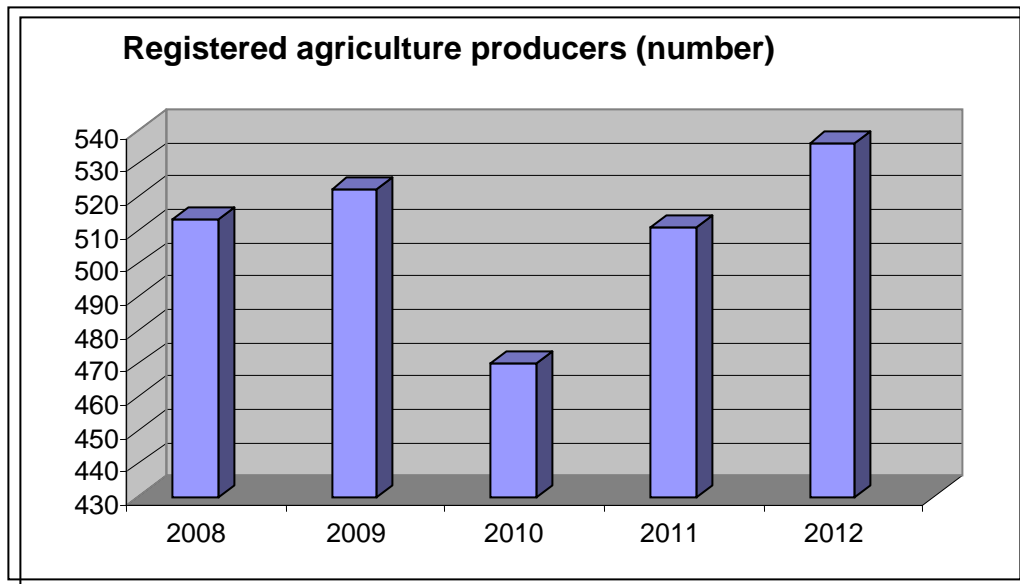


Chart 1. Registered agriculture producers

Source: Municipal Development Plan of Pomorie Municipality for the period 2014 – 2020

Agriculture producers in Pomorie Municipality are a lot more, as only stock breeders are 1778 and the arable land in the municipality is 79% of the total area of the municipality, including the area for irrigation.

It is necessary to note these statistics because through it measures for the implementation of mechanisms for introducing separate collection of biodegradable waste can be derived and priorities in waste management at the municipal level to be defined.

Two systems for biodegradable waste management are applicable - centralized and decentralized, which suggest various measures and approaches to implement separate biodegradable waste collection and composting.

Composting has a crucial role in reducing the impact of the depots to the environment by deflecting much of household waste from being disposed. To the benefits of separate organic waste collection can be added air protection also, because it reduces greenhouse gases.

The final product from composting – compost, is a valuable raw material, which is used as fertilizer, soil conditioner or mulch. It increases the nutrients in the soil, helps retain moisture in and suffocates weeds. Thus, by using compost the need for application of





fertilizers and pesticides can be reduced. This in its turn makes it less possible the entry of harmful substances from the soil surface and groundwater. Compost enhances the soil's ability to retain moisture.

The Soil Thematic Strategy (COM 2006/231) calls for the use of compost as one of the best sources of stable organic matter from which new humus can be obtained in degraded soils. The organic farming regulation (2092/91EEC until 31.12.2008 and 834/2007/EC of 01.01.2009) defines the conditions for the use of compost in organic farming.

Compost utilization

About 50% of compost in the EC is used in agriculture, 20% for landscaping, about 20% in the production of artificial growing media and soil and 25% for private consumption. Countries which produce compost mainly from mixed waste, tend to use it in agriculture (Spain, France), for soil remediation or covering material in depots (Finland, Ireland, Poland). It is successfully used in restoration work at construction sites, for example, lawns around the streets or landscaping after construction. The demand for compost varies in Europe depending mostly on the needs for soil improvement and consumer confidence.

Still in Pomorie Municipality there is not a system for separate biodegradable waste collection and respective steps have not been taken.

Significant source of atmospheric pollution for Pomorie Municipality is the illegal burning of plant waste, especially during the spring-summer season and local heating with solid fuel in winter. In this connection for Pomorie Municipality it is necessary rapid measures to be taken in order to reduce illegal fires and uncontrolled burning of plant biomass.

Centralized system for organic waste collection and treatment

Centralized composting plants are planned to be built in the municipalities at whose regional depots are disposed over 20,000 tons of waste annually. At the regional depots in Burgas separation plant will be provided, which in particular will separate



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biodegradable fraction of household solid waste stream, as well as composting plant which is originally planned to treat separately collected green organic waste, but with capacity to cover composting of sieved organic fraction of mixed municipal solid waste. Also composting facilities will be provided for the two transfer sites in Karnobat and Nessebar. Pomorie Municipality is a member of "Waste Management – Burgas Region" Association and with this role participates in the project.

PINARHISAR MUNICIPALITY

The capacity of the depot that serves Pinarhisar Municipality is 500 000 m³. The daily amount of household solid waste is 16 tons, the annual is 5840 tons. 800 - 1000 containers with a capacity of 800 l are serviced by two specialized tippers and 7 people, waste is transported at 2 km distance from the city. The depot is leased for a period of one year.

Household waste is still not collected separately. In the depot waste is manually separated to glass, plastic, nylon, paper and metal. The town has the potential for household waste collection and disposal in an appropriate, environmentally friendly way, namely through composting.

The daily amount of medical waste is 8.82 kg, per week is 61.92 kg; annually - 3220 kg. Medical waste is collected by specialized car for medical waste, and after that is disposed in a ditch in the area Ambarkaya, outside the town, get bombarded with lime and then earth.

In Turkey, the number of composting facilities is quite low. There are 9 – in Istanbul, Izmir, Antalya, Mersin, Kemer, Giresun, Turgutlu, Edirne and Yalova.

In Pinarhisar waste that can be composted, are mainly from:

- ✓ Agriculture activity - animal waste from distant neighborhoods, where livestock breeding is developed and plant waste from agriculture activities;
- ✓ Remains from vegetables, fruits, etc. from warehouses for wholesale and local market, which is organized on a certain day of the week (Saturday) in the town center;
- ✓ Cut grass and pruned branches from fields and parks;



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- ✓ Domestic kitchen waste.

According to Law on Environment, art. 7 for large urban municipalities and art. 14 and art. 15, for the rest municipalities are assigned to collect and transport to depots, to treat and dispose solid waste in a way that does not harm human health and protects the environment. In 2006 with number B.18.0.ÇYG.0.04.01.156 / 7204 / 22.06.2006, the General Directorate "Environmental Management" of the Ministry of Forest and Environment prepares time work plan of facilities for household solid waste disposal. According to art. 11 of the Law on Environment (amendment 13.05.2006-5491/art. 8) large urban municipalities and smaller ones, are required to construct/assign construction, operate/assign operation of facilities for solid waste disposal.

In the two target regions of project "Joint promotion of agriculture waste composting" - Pomorie and Pinarhisar Municipality, agriculture is a priority sector with a leading role in socio-economic development. Waste generated from agriculture with vegetable and animal origin are suitable for composting, thereby achieving multiple impact.

Composting is a natural way to recycle organic waste. All living beings are organic and degrade naturally. In natural systems, dead plants and animals fall into the ground and are degraded by bacteria, fungi and other microorganisms. When people manage the process of organic matter conversion into soil, it is called composting. Compost is a dark, loose, smelling of earth substance in the soil in forests, under the grass in the meadows and under piles of old leaves in the garden.

Compost includes stabilized organic matter and living organisms as well, which constantly recycle nutrients from dead animals and plants. The final compost and organisms that produce it are vital for the health of plants, soil and entire ecosystems. The idea of agriculture waste composting is to remove organic matter from waste for disposal, and use them in the farm/garden. Composting offers specific ways to reduce and reuse valuable organic resources, in order to make farms and communities healthier and more sustainable.

Preferred options for dealing with biodegradable waste are:

- ✓ prevention and minimization – by avoiding waste generating;
- ✓ organic treatment - mainly of kitchen, garden, agriculture waste, including composting;



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- ✓ recycling - mainly of paper and cardboard but also of textiles;
- ✓ residual treatment - thermal treatment with energy utilization or by mechanical-organic treatment.

The above mentioned options for treatment of waste generated can be successfully implemented in agriculture, but the most common is composting and subsequent use of compost produced in the activity. Those options for biodegradable waste treatment contribute to reducing the negative anthropogenic impact on the environment and limiting climate change.

The community and agriculture composting in Pomorie and Pinarhisar Municipality is the ideal method that can be applied to small settlements, for the so called rural settlements or sparsely populated areas and/or remote areas.

In order composting to be successfully applied, especially agriculture and domestic, awareness campaigns should be constantly conducted to highlight the environmental benefits (reduced transport costs and emissions, need for less power for treatment, replacement of peat and fertilizers in horticulture, etc.), and not least the financial benefits of domestic composting. After time unconvinced and unmotivated people give away composting.

An important measure to encourage owners of farms/gardens at the initiation and maintenance of activities in agricultural and home composting is to provide services for chopping bulky waste from gardens. Well chopped wood waste as shrubs and woody debris are not only extremely valuable source of composting material- but of technological point of view chopping large plant waste to a certain size is very important in order to ensure a steady flow of the composting process. The services for chopping waste offered by local authorities are a very effective tool for promoting the recycling of bulky organic waste from gardens and parks in the most appropriate way. They can be offered for free from 2 to 4 times a year at fixed dates or can be ordered on an individual basis. The owner of the garden can decide whether the chopped material will be stored or shipped in the composting facility.

The main conclusion is that through composting of relatively small amounts of organic waste, big amounts of organic waste could be composted qualitatively and without significant costs, which will have significant impact on the capacity and costs for organic waste collection and treatment at municipal and regional level.



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Community composting on the spot can be defined as a decentralized composting because it complies with the principle of proximity to the source, i. e. recycling of small quantities of organic waste near the source of waste. This composting happens on small sites at the end of the settlement by the local population, organized in some form. This would require an effective self-organization of the local population not only to export organic waste on these sites, but to compost them with together with other waste or effort distributed by common consent, then use the compost for their own needs. The benefits of such a composting are many, but the most important is the principle of proximity, to solve local problems with waste and make it available resource.

Composting of green waste from parks and gardens of municipalities consists of collecting, transporting, temporary storage and composting. This waste are divided into such generated by the maintenance of public parks and gardens and such provided by private households or commercial users.

Composting of agriculture waste leads us to different practices that farmers can use to manage organic materials on the farm. All techniques for agriculture waste composting use the natural activity of bacteria, fungi and other soil organisms to degrade organic substances and bring them back in the soil. The degraded organic material – compost, is essential to the existence of a healthy farm.

Composting of agriculture waste may be the most economical and environmentally friendly way for utilization of organic substances generated in the garden. The benefits of agriculture waste composting are various:

- Diverts organic matter from depots - up to 30% of household solid waste is biodegradable and can be diverted from depots. Waste composting extends the life of depots and reduces costs and environmental impact associated with them.
- Saves money - each kilogram of organic matter composted reduces to one kg waste for collection, transportation and disposal or incineration. Avoiding any of these steps saves money of the community.
- Improves the health of the soil and plants, conserves water and reduces the need to use chemicals - compost helps soil to increase water absorption and to preserve humidity; reduces erosion and the need for irrigation; provides and stores nutrients are therefore requires less fertilizer and pesticides.



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- Prevents from the harmful effects of burning agriculture waste - burning produces large amounts of carbon monoxide, particulates and carcinogenic hydrocarbons that are irritating and cause health problems.
- Raise the awareness and efforts to recycle and reduce waste - agriculture waste composting is a very good way for people to start thinking about what is in their waste and is a "practical" introduction to the recycling process. Once people feel empowered to deal with the organic part of their waste, they become active in other activities to reduce and recycle waste.

Composting is one of the most effective ways to prevent the real danger of an ecological catastrophe. This is the best way to manage and recycle biodegradable waste and, in particular, agriculture waste, which makes it unique and irreplaceable. The benefits of compost are indisputable, but it needs to become common knowledge among farmers, which in addition to financial and material incentives would produce very good results for composting. The effect of composting is versatile; as the main results include reducing the cost for waste collection and disposal, increasing the life span of depots, and on the other hand, reducing the quantity of greenhouse gases emissions into the atmosphere.



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5. SUMMARIZED SWOT - ANALYSIS

The summarized **SWOT - analysis** developed identifies the strengths and weaknesses in the waste management from agriculture production in Pomorie and Pinarhisar Municipality and defines the opportunities and threats.

STRENGTHS	WEAKNESSES
<p><u>Pomorie Municipality</u></p> <ul style="list-style-type: none"> ➤ National and local legislature, built on European principles in the field of waste management; ➤ Developed national, regional and local strategic documents which to identify the main priorities in the field of waste management; ➤ There is a system for separate collection, which is the basis for separation of organic fraction of household waste; ➤ The inclusion of Pomorie Municipality in the construction of a regional system for waste management Bratovo-west; ➤ Composting methods have long been known and there are traditions in composting of garden and animal waste especially in the villages of the Municipality. 	<p><u>Pomorie Municipality</u></p> <ul style="list-style-type: none"> ➤ Low awareness of population on waste treatment and the benefits of proper disposal; ➤ Poor information on the treatment of food and garden / "green" waste and economic and environmental benefits for the population; ➤ There is no system of separate collection and utilization of agriculture waste; ➤ There is a system for separate collection of packaging waste, but it is not working. The containers are used for different household waste; ➤ Insufficient financial resources for implementation of best practices and advanced technologies for waste treatment and disposal; ➤ Lack of qualified human



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<p><u>Pinarhisar Municipality</u></p> <ul style="list-style-type: none"> ➤ Process of introducing European legislative practice for waste management started as well as strategic planning approaches; ➤ Presence of political will to introduce measures for environmentally friendly waste treatment; ➤ Use of EU funds and programs. 	<p>resources for agriculture waste management;</p> <ul style="list-style-type: none"> ➤ Lack of qualified human resources for the management of waste from agricultural activity; ➤ There is a risk of unauthorized pollution with domestic and agriculture waste, especially in villages. <p><u>Pinarhisar Municipality</u></p> <ul style="list-style-type: none"> ➤ Insufficient administrative capacity, especially at municipal level to implement the requirements of the environmental legislation and for programming, preparation, management and monitoring of investment programs, plans and projects; ➤ High costs of investments for improving and adequate protection of the environment and implementation of environmental legislation; ➤ Different levels of access to certain basic services between rural and urban areas (waste collection); ➤ Outdated approach of waste management, mainly treated by burning;
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	<ul style="list-style-type: none"> ➤ Low level of awareness of environmental issues and needs of local administrations, managers, farmers and the general public; ➤ Poorly developed systems for collection (including separate collection), waste transportation and facilities for environmentally friendly waste treatment; ➤ Insufficient measures for waste minimization, reuse, recycling and utilization; ➤ Many risk depots for municipal and biodegradable waste, illegal landfills, past pollution, small depots because of the practices for uncontrolled disposal and the presence of other highly polluted areas; ➤ Increase of industrial waste because of economic growth without appropriate conditions for their environmentally friendly disposal.
OPPORTUNITIES	THREATS
<p><u>Pomorie Municipality</u></p> <ul style="list-style-type: none"> ➤ The target region offers very good opportunities for the application of 	<p><u>Pomorie Municipality</u></p> <ul style="list-style-type: none"> ➤ Increasing the amount of waste disposed, including agriculture



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<p>decentralized agriculture waste composting;</p> <ul style="list-style-type: none"> ➤ By garden and agriculture waste composting large aggregated amounts of organic waste can be treated, which will have significant impact on the capacity and the cost of organic waste collection and treatment at municipal and regional level; ➤ Expanding and more efficient development of the system of separate waste collection for recovery of organic biodegradable components, including encouraging domestic composting in villages; ➤ Optimizing the system of waste collection and disposal; ➤ Introduction of financial and economic incentives for composting and penalties for offenders; ➤ Implementation of measures to raise the awareness of the local population; ➤ Limiting illegal fires and uncontrolled burning of plant biomass; ➤ Preventing and reducing waste generating; ➤ Environmentally friendly waste disposal; ➤ Reducing the risk of old pollutions; ➤ Creating a regional waste management system; 	<p>waste;</p> <ul style="list-style-type: none"> ➤ Lack of good practices and modern technology for agriculture waste treatment and disposal; ➤ Insufficient administrative capacity for waste management; ➤ Insufficiently informed population and farmers about the methods for agriculture waste utilization; ➤ There is a risk of unauthorized pollution with domestic and agriculture waste, especially in the villages; ➤ Low environmental awareness among the population and low level of support.
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- Introduction of measures to prevent forest fires and ban on burning of stubble;
- Use of European funds, Operational Programme "Environment", Programme for rural development and other national financial sources to achieve the measures and indicators set.

Pinarhisar Municipality

- Realization of accelerated economic growth and increase of national financial resources for investments in the environment and in particular in the construction of infrastructure for services in the "Environment" sector;
- Use of pre-accession EU financial instruments for solving problems related to environmental protection and waste management, incl. bio-degradable waste;
- Increasing the financial capacity to implement environmental projects thanks to alternative financing activities in environmental protection and waste management, through the participation of Turkey in various global funds / projects;
- Potential for development of the institutional framework for awareness and public participation in making decisions on waste management;

Pinarhisar Municipality

- Global climate change, falling of Turkey in the drought zone and risks related to unforeseen disasters (i.e. Floods, accidents, drought);
- Further increase of pollution due to intensification of agriculture, industry, transport and tourism, not observing environmental requirements and standards;
- Lack of knowledge and awareness in terms of effective waste management, leading to misunderstanding of the risks to the environment and human health from uncontrolled agriculture waste pollution;
- There are no developed strategic plans for waste management based on "sustainable development";



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| <ul style="list-style-type: none">➤ There is a potential for engaging business in the effort to protect the environment and waste management;➤ Introduction of effective modern techniques and technologies applied in respect of waste management. | <ul style="list-style-type: none">➤ Insufficient qualified human resources for waste management in the municipality.➤ Increasing the amount of household solid waste and agriculture waste. |
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6. STRATEGIC OBJECTIVES, ACTIVITIES AND INDICATORS.

When developing strategic objectives, activities and indicators of the action plan into account are taken the fundamental tenets of a number of policy and planning documents of Republic of Bulgaria and Republic of Turkey. Among them is the National Strategic Plan for a phased reduction of biodegradable waste going to depots 2010 - 2020, the National Strategic Plan for management of waste from construction and demolition of Republic of Bulgaria for the period 2011 - 2020 and the draft National Plan for Management of sewage sludge.

NPWM is developed in close coordination with the Third National Plan on Climate Change, 2013-2020, and in particular in the part relating to greenhouse gas emissions by "Waste" Sector. The provisions of the National Reform Programme of Republic of Bulgaria in the implementation of the "Europe 2020" Strategy, the National Development Programme: Bulgaria 2020, the National Strategy for Regional Development 2012-2022 and the National Action Plan for Management of Persistent Organic Pollutants 2012-2020, are considered.

In Turkey, many different departments and institutions deal with the management of solid waste and there is no integration or interaction between them. Solid waste causes problems if the waste is not disposed of properly and, with a rapid increase in the population, the problems will increase in the future. In Turkey, the principles for the use of waste management and proper technology are based on a number of Environmental Laws. In the 20-year period up to 2003, (1983–2003), only three regulations concerning waste were established whereas in the years between 2003 and 2008 ten further regulations were introduced. The strategic regulations about waste management that now apply in Turkey are:

- ✓ Analysis "Development of sanitary landfills and waste-to-energy from landfill Gas in Turkey 2013";
- ✓ Municipal waste management in Turkey, edited by European Environmental Agency - February 2013;
- ✓ "National Recycling Strategy and Action Plan".

The disposal methods used in Turkey to comply with these regulations are listed here.



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- ✓ Sanitary landfill - solid waste materials are stored by depositing and compacting in large areas that have an impermeable layer to prevent soil and air matter pollution. This impermeable layer is formed of both compacted clay and geomembrane. The most important requirement for a sanitary landfill is the prevention of harmful effects on the environment and humans by the use of this impermeable layer;
- ✓ Incineration - in Turkey incineration is mainly used for medical waste, unlike some countries where domestic waste materials are also incinerated;
- ✓ Sterilization - in Turkey sterilization plants have been constructed since 2006 following changes in the regulations and it is now applied in several cities. Currently the adopted method in a large number of cities is immersion by liming. One target of the Waste Management Action Plan is to increase the number of sterilization plants.

According to Municipal waste management in Turkey the **most important factors and waste management initiatives in Turkey are:**

- ✓ *The By-Law on Solid Waste Control* is the first step of the solid waste management in Turkey. Although it has some shortcomings in its implementation, the Municipal solid waste management system has been improved based on new regulations and supported by studies, according to the Turkish Ministry of Environment and Urbanisation;
- ✓ *The amount of collected Municipal solid waste in 2010* was 25 million tonnes, equivalent to 84 % of the total generated Municipal solid waste. The share of Municipal solid waste going to landfill was increased by 5 % in the years between 2001 and 2010. The number of sanitary landfill sites increased from 15 in 2003 to 68 in the 3rd quarter of 2012;
- ✓ *According to 2010 TurkStat data*, 54 % of the municipal waste is sent to sanitary landfills and 44 % is dumped into municipality dumpsites. 2 % of the Municipal solid waste was reported as composted or disposed of by other methods;
- ✓ *Municipal waste management is improving*. The number of licensed recycling and recovery facilities has skyrocketed in the last decade. In 2003, there were 46 recycling and recovery facilities for different recyclable waste types, whereas by 2012 the number of licensed facilities increased to 956. However, these improvements in the waste management capacity have not yet been reflected in the reported data.



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Ongoing initiatives towards improving the Municipal Solid Waste management system in Turkey are listed below:

It is aimed to set up a waste management system in Turkey acting in accordance with the related national legislation and EU legislation, covering the establishment of necessary waste treatment facilities (pretreatment facilities and landfills) and transfer stations, reduction of the amount of waste, ensuring recycling and reuse, and reducing the waste transportation costs (MoEU, 2012). As a first step to achieve these objectives, studies are being carried out across Turkey. Waste management plans involving details on the collection process have been prepared by municipalities (MoEU, 2012) since 2008. By the end of 2011, 283 packaging waste management plans are approved by the MoEU. Most of the EU waste management directives have also been transposed into Turkey's national legislation.

There is insufficient reliable data to produce a sound projection for the future of the Municipal solid waste management system of Turkey. However, there are important pieces of legislation in place that give an indication of the future trends in Municipal solid waste management practices. Currently, most of the EU waste management directives concerning Municipal solid waste management have been transposed into Turkey's national legislation in (MoEU, 2012):

- ✓ By-Law on General Principles of Waste Management (05.07.2008);
- ✓ By-Law on Control of Packaging Waste (24.08.2011);
- ✓ By-Law on Landfilling of Waste (26.03.2010).

The By-law on the landfilling of waste makes provisions for the monitoring, control, closure and after-care procedures of landfill facilities. It has also created a reporting mechanism and database to support this. The National strategy on the reduction of biodegradable waste to be disposed of in landfill facilities has also been developed at a draft stage. This strategy shall include the measures to be taken with the methods such as recycling, composting, biogas production or energy/material recovery. According to the strategy for the reduction of biodegradable waste amounts, the implementation of the EU Landfill Directive (99/31/EC) will be carried out by 2025 (MoEU, 2012). An extraordinary effort and an improvement in communication and cooperation between the government, local authorities and the public and private sectors are required if the proper implementation of the regulations mentioned above is to be achieved.



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Landfilling of biodegradable municipal solid waste

The By-law on Landfill of waste (No:27533 2012/03) aimed to decrease the amount of landfilled biodegradable municipal waste in a scheduled period. The preparation of a strategy to decrease the amount of biodegradable waste is on-going according to the Turkish Ministry of Environment and Urbanisation. In order to decrease the amount of biodegradable waste sent to landfill sites, new MBTs are under construction. 8 composting facilities and 6 facilities for electricity production from methane gas are operating (MoEU 2012).

Regional differences of Municipal solid waste recycling from 2001 to 2010

There is no regional data for recycling for Turkey reported to Eurostat. According to the Turkish Ministry of Environment and Urbanisation, the management of municipal waste is under the responsibility of municipalities as a regional management approach by the Ministry of Environment and Urbanization. Since 2003, municipalities are implementing municipal waste management projects by cooperating with other municipalities in the region (through the municipalities union).

The relation between landfill tax level and recycling level of Municipal solid waste

As mentioned before, the metropolitan municipality and other municipalities are responsible for providing collection, transportation, separation, recycling, disposal and storage of waste services. Legislation came into force in October 2010 to provide and state principles to bring sustainability to environmental infrastructure services and waste services. These principles involve regulation of fees to be paid to the relevant municipality by subscribers who benefit from these services. Municipalities should be able to cover the expenditure of infrastructure services though the fees collected from households.

In implementing the priorities in terms of objectives, activities and indicators of the relevant national planning documents is considered that Republic of Bulgaria is a member of the EU, while Turkey is in process of implementing European legislation in the field of environmental management, and in process of developing national, regional and local planning documents for sustainable waste management in the country.



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7. STRATEGIC OBJECTIVES

Strategic objective of the Joint action plan for agriculture waste management in Pomorie and Pinarhisar Municipality 2015 - 2018 is to achieve regional and national targets for reducing the quantities of waste produced and increase the share of recycled organic waste, including agriculture waste.

Operative Objective 1:

Reducing the harmful effects of waste from agricultural activity by preventing their generating and promoting their reuse.

Operative Objective 2:

Increasing the quantities of recycled and recovered agriculture waste by creating conditions for building a network of treatment facilities of all waste generated, which to reduce the risk to human health and the environment.

Operative Objective 3:

Making the public a key factor in applying the hierarchy of agriculture waste management.



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8. ACTION PLAN

The Joint action plan for agriculture waste management in Pomorie and Pinarhisar Municipality 2015 - 2018 contains 12 specific actions/measures and related indicators that contribute to achieving the strategic objectives of the local, regional and national level on sustainable planning and agriculture waste management. The activities have been formulated on the basis of field studies in both cross-border municipalities in 2014, the prepared a summarized cross-border assessment of the needs of the farmers identified in Pomorie and Pinarhisar Municipality of dealing with agriculture waste generated, as well as on the cross-border assessment of the impact of the composting process in Pomorie and Pinarhisar Municipality, conducted within this project.



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Strategic objective (SO)	Activities/measures	Sources of financing	Implementation period	Expected results	Implementation indicators		Responsible institutions	
					Current	Target	Leading	Partner
GO 1, GO 2	1.1 Creating a regional waste management system in Pomorie and Pinarhisar Municipality 1.2 Building open sites for composting waste of public parks and gardens	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey; European programmes and projects.	2018 2018	Created a regional waste management system in Pomorie and Pinarhisar Municipality		2 Municipal systems Number and capacity of the existing open sites - 10 Amount of waste treated	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business
GO 1, GO 2	1.3 Reducing the volume of agricultural waste on behalf implementation of recycling and utilization.	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey;	2018	Reduced volume of agricultural waste disposed		Amount of waste treated	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business



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		European programmes and projects.						
GO 1, GO 2	1.4 Expansion and more efficient development of the system of separate waste collection for utilization of organic biodegradable components, including through encouraging domestic composting in villages	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey; European programmes and projects.	2018	Efficient development of the system of separate waste collection for utilization of organic biodegradable components		Amount of waste treated	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business
GO 1, GO 2	1.5. Building sites for collection of agriculture waste from households and farmers	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey; European programmes and projects.	2018	Built sites for collection of agriculture waste from households and farmers		Number of sited built - 7	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business



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<p>GO 1, GO 2</p>	<p>1.6 Development and implementation of the Municipal programme for solid waste management for the period until 2020 in Pinarhisar Municipality</p> <p>1.7 Updating and implementation of the Municipal Programme for Environmental Protection for the period until 2020 in Pomorie Municipality</p>	<p>Municipal and state budget R. Bulgaria;</p> <p>Municipal and state budget by sectors R. Turkey;</p> <p>European programmes and projects.</p>	<p>2016</p>	<p>Developed and operating Municipal programme for solid waste management for the period until 2020 in Pinarhisar Municipality</p> <p>Updated and implementation of the Municipal Programme for Environmental Protection for the period until 2020 in Pomorie Municipality</p>		<p>Number of plan documents – 2</p>	<p>Pomorie Municipality, Pinarhisar Municipality</p>	<p>MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kirklareli, NGOs, private business</p>
<p>GO 1, GO 2</p>	<p>1.8 Establishment of municipal Agriculture Council and Council on Environment Protection, including representatives of local public administration, the competent state bodies, professional organizations, NGOs and other stakeholders</p>	<p>Municipal and state budget R. Bulgaria;</p> <p>Municipal and state budget by sectors R. Turkey;</p> <p>European programmes and projects.</p>	<p>2017</p>	<p>Established municipal Agriculture Council and Council on Environment Protection</p>		<p>Number of council established - 4</p>	<p>Pomorie Municipality, Pinarhisar Municipality</p>	<p>MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kirklareli, NGOs, private business</p>



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GO 1, GO 2	1.9 Introduction of financial and economic incentives to encourage composting locally and sanctions for violators	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey; European programmes and projects.	2018	Introduced financial and economic incentives to encourage composting locally and sanctions for violators		Number of regulations introduced; Number of sanctions	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business
GO 1, GO 2	1.10 Limitation of unregulated fires and uncontrolled burning of plant biomass	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey; European programmes and projects.	2018	Limited unregulated fires and uncontrolled burning of plant biomass		Number of normative acts; Number of violators sanctioned	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business
GO 1, GO 3	1.11. Encouraging farmers and the general public to use compost to reduce agriculture waste	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey European	2018	Trainings among farmers carried out; Existing composting facilities.		Number of trainings among farmers carried out - 10; Number of existing composting facilities - 20.	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business



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		programmes and projects						
GO 1, GO 3	1.12.Increasing public awareness for more effective participation in waste management and personal health and environmental benefits	Municipal and state budget R. Bulgaria; Municipal and state budget by sectors R. Turkey; European programmes and projects	2018	Increased public awareness		20 information campaigns carried out, number of projects completed -5	Pomorie Municipality, Pinarhisar Municipality	MEW, Ministry of Environment and urbanization, Turkey, Regional governments in Burgas and Kırklareli, NGOs, private business



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With the implementation of the measures planned in the action plan biodegradable waste in the two municipalities is expected to be reduced. This reduction will benefit the environment and contribute to sustainable resource management - by reducing greenhouse gas emissions from depots into the atmosphere, improving the energy balance of the country by energy utilization from the combustion of high calorific fraction in waste and improving soil quality through use of compost and other products of the treatment of bio-degradable agriculture waste.

One of the effective tools for biodegradable agriculture waste management and reducing their amount, intended for disposal, is the introduction of additional fee or tax to be paid for each ton of waste disposed on the one hand, and the introduction of incentives for the use of compost, on the other. Thus on the one hand reduction of the amount of biodegradable waste going to depot will be stimulated, and the other the construction of composting facilities at regional and local level will be stimulated. The fees/taxes collected may be used for:

- ✓ promoting various activities in waste management (PR, financial support for construction of technical infrastructure for treatment, incl. in advance, of separately collected biodegradable materials);
- ✓ rehabilitation of landfills;
- ✓ closure and after care of depots - part of the eco fee for disposal should be collected partly to cover the necessary costs of depot closure after depletion of their capacity, including for the monitoring period (about 30 years), gas treatment and leachate. This is often ignored in the calculation of waste tax, as a result - 10 or 20 years after the closure of a depot citizens pay not only for the current system of waste collection and treatment, but also for the closed depot as all costs for its operation have not been taken into account;
- ✓ financial incentives for compost producers.



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9. MONITORING AND ASSESSMENT

The main task of monitoring is to note deviations from the action plan action early enough to allow for timely correction. The monitoring will be carried out by checking the quantitative variation of indicators, which reflect the degree of progress in the implementation of measures outlined in the action plan. Coordinating bodies in monitoring and assessing the implementation of the action plan are Pomorie and Pinarhisar Municipality. Operational units of the coordinating authorities are the departments responsible for waste management in the two municipalities.

Functions of the coordinating body:

- ✓ analyzes and assesses information about the degree of implementation of the measures in the action plan, according to the indicators;
- ✓ Assesses public importance and commitment of society to the implementation of the action plan.

The other institutions and stakeholders responsible for the implementation of the Action Plan are the relevant ministries of the Republic of Bulgaria and the Republic of Turkey - Ministry of Environment and Water, Ministry of Environment and Urban Planning and its regional divisions, business, branch organizations, research institutes, NGOs within its jurisdiction which should take action and make the necessary arrangements for implementation of the measures in the action plan, in the relevant periods, and to facilitate the coordination body in collecting and compiling information required for reporting on the implementation of the action plan.

Based on the monitoring carried out, periodic assessment of the degree of implementation of the measures in the action plan and the results of its implementation is made. The assessment of the action plan is the basis for preparation of the annual reports of municipal and cross-border level, for the results regarding the sustainable agriculture waste management. Upon finding no progress or insufficient implementation of the measures in the action plan to reduce the amount of biodegradable waste , the coordinating body for their implementation will analyze and implement the necessary changes and updates to ensure that the objectives of reducing the amount of biodegradable waste will be achieved.



10. RECOMMENDATIONS

In the framework of the project was carried out a study and needs assessment of farmers in 2014 in Pomorie and Pinarhisar Municipality. After the implementation of key project activities for both target areas cross-border assessment of the effect of composting on the degree of environmental pollution was carried out. As a result of studies conducted farmers and local stakeholders from both target municipalities got united around common problems in the agriculture waste management. The main recommendations are included in this action plan, but some of them require the participation of municipal structures and other stakeholders, to be promptly implemented in practice and to reduce the negative human impact on the environment:

- ✓ In both target municipalities to create Agriculture Council and Council on the Environment Protection, including representatives of local public administration, the competent state bodies, professional organizations, NGOs and other stakeholders. Structures created should meet at least once a quarter to discuss pressing problems.
- ✓ To nominate representatives of local farmers in the two target regions to be included in the Agriculture Council at local level by presenting the needs of farmers and protect their interests in policy and decision making.
- ✓ To seek the cooperation and support of local and state authorities to improve relevant policies, especially those related to agricultural waste treatment and recovery.
- ✓ To acquaint farmers with the damage that is inflicted on the environment and natural resources in the non-use of agricultural land for its intended purpose and inappropriate use of chemical fertilizers and pesticides.
- ✓ To promote practicing sustainable agriculture.
- ✓ To encourage generation of less agriculture waste and the treatment of already generated waste in environmentally friendly way.
- ✓ Seek opportunities to give free composting platforms farmers in the two target regions.



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- ✓ To provide opportunities for composting of agricultural waste without special containers for composting - the principle of "do it yourself" using old stuff or compost pile.
- ✓ Demonstration composting platforms composting, installed under project "Joint promotion of agriculture waste composting" and the results achieved to be used as an example and good educational practice from which other farmers to learn and in this way the effect to be multiplied.
- ✓ Conduct information and awareness campaigns among farmers for the benefits of composting, basic principles and rules in composting, as for a specific target group to be selected organic producers.
- ✓ Conduct information campaigns presenting potential harms to the environment and threats to humanity from climate change, carbon dioxide emissions, methane and other greenhouse gases and quantities of waste accumulated in the depot. Presentation of the steps that each farmer can take to help limit climate change.
- ✓ Work with children and young people to get acquainted with the basic principles of composting and its benefits - conducting workshops and information sessions with children and adolescents to build ecological thinking and behavior.
- ✓ Organization of joint practical measures "on the spot" with the inclusion of farmers and children - joint agricultural activities jointly, organized collection of agriculture waste, joint activities in the treatment of biodegradable waste generated by agriculture activity.
- ✓ Organization of joint seminars, trainings, workshops to share experiences, good practices and innovative approaches, as well as current developments in the application of good agriculture practices and environmentally friendly behavior in agriculture and processing of agricultural waste generated.
- ✓ Building and maintaining an online database of farmers in the border region, creating opportunities for cross-border partnership in the field of agriculture, good agricultural practices, sustainable agriculture and environmentally friendly treatment of agriculture waste.



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- ✓ Promoting the principles of sustainable development and the promotion of environmentally friendly behavior, natural resources and directed to future generations.
- ✓ Promoting the principles of sustainable agriculture, limiting greenhouse gas emissions and contributing to limit climate change.
- ✓ Low levels of carbon dioxide and waste reduction, by advising farmers on efficient use of resource and waste reduction.
- ✓ Reducing pollution and resource use and minimizing waste, promoting resource efficiency of agriculture at cross-border level.
- ✓ Sustainable use of resources, efficiency and clean technologies to help transform both trans-border states in low-carbon economies.

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