

PROJECT :

**STIMULATING CITIZENS
PARTICIPATION TO RECYCLE
PROCESSES THROUGH THE
IMPLEMENTATION OF BENEFITS
SYSTEMS**

Benefit As you Save – BAS

DELIVERABLE :

**LOCAL BAS PLAN OF VARI – VOULA
VOULIAGMENI MUNICIPALITY
(D3.1.2.)**

JULY 2018

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1. INTRODUCTION

The Municipality of Vari - Voula - Vouliagmeni (VVV) applied for the Interreg V-B Balkan - Mediterranean financial instrument 2014-2020, as adopted by the European Commission in Commission Decision C (2015) 6619 on 25/09/2015, for the implementation of the project "STIMULATING CITIZENS PARTICIPATION TO RECYCLING PROCESSES THROUGH THE IMPLEMENTATION OF BENEFITS SYSTEMS",

The application for funding was approved and Subsidy Contract No (BMP1 / 2.2 / 2265/2017) was signed between the (a) Managing Authority of the Territorial Cooperation Objective Programs of the Ministry of Economy and Development acting as the Managing Authority of the "Interreg V - B Balkan Mediterranean 2014-2020" Program and b) of the Municipality of Vari - Voula – Vouliagmeni

Main objectives of the Program are

- Creation of local strategies, action plans and tools in the Balkan region in order to increase the proportion of sorting in the waste source in order to promote reuse and recycling.
- Strengthening citizen participation in recycling systems
- Improving citizens' income through active participation in local recycling activities.
- Developing a common strategy for institutional reimbursement of recyclability in the field of waste recycling
- Joint developing a common platform for measuring the performance of BAS systems.
- Sharing best practices and transferring knowledge to innovative solid waste management in local level.

Partners of the Program are the Municipality of Vari - Voula - Vouliagmeni / LEADER, the Municipality of N. Philadelphia - N. Chalkidona, the Municipality of Limassol (Cyprus), the Municipality of Tirana (Albania), the Environmental Center

for Development, Education and Networking (Albania), the University of St. Clement of Ohrid, the Department of Technology and Technical Sciences (Former Yugoslav Republic of Macedonia) and the City of Sofia (Bulgaria).

The BAS Project Plan study is being developed within Work Package 3, Deliverable D.3.1.1. of the project .

The local BAS plan project will be reviewed and enriched in the light of the experience gained during the implementation of the project.

The basic philosophy of the BAS Plan is to test the use of specific incentives for citizens, businesses and organizations in the city to strengthen their participation in the Municipality's recycling activities. It is estimated that the philosophy of positive reward will have significant effects and will be a bridge between the current situation and the future where, on the basis of the European and national waste strategy, the polluter pays principle should be applied.

The local BAS project will include pilot actions that are designed with a view to:

- ✓ the possibility to align with the VVV's existing plans and the already established Local Waste Management Plan
- ✓ The ability to repeat and expand after the end of the Project without requiring additional funding.
- ✓ Easiness to be adopted by the services of the Municipality
- ✓ Convenience for citizens

2. THE CURRENT / REAL SITUATION OF THE MANAGEMENT OF URBAN SOLID WASTE IN THE MUNICIPALITY OF VARI – VOULA - VOULIAGMENI

2.1 Population data

The permanent population of the Municipality according to the latest inventory of 2011 is as follows:

Table 1	
PERMANENT POPULATION OF VARI – VOULA – VOULIAGMENI MUNICIPALITY *	
TOTAL OF MUNICIPALITY	48.399
VARI	15.855
VOULA	28.364
VOULIAGMENI	4.180

**Source : Hellenic Statistical Authority*

The analysis of the type of housing (number of households in buildings), which is important for the design of Urban Solid Waste (USW) management programs and recycling actions, is :

Table 2			
CONCENTRATION OF HOUSEHOLDS IN BUILDING BLOCKS*			
	Buildings	Blocks	% in total
Buildings with 1 household	5.164	5.164	15,40%
Buildings with 2 households	1.953	3.906	11,65%
Buildings with 3-5 households	2.191	8.764	26,14%
Buildings with 6-9 households	842	6.315	18,83%
Buildings with 10-19 households	486	7.290	21,74%
Buildings with more than 20 households	91	2.093	6,24%
Total	10.727	33.532	100,00%

**Source : Hellenic Statistical Authority*

Project Cofinanced by ERDF and National Funds

2.2. Waste generation and management

Following the European Coding for different waste streams, the picture of the production of municipal solid waste in the municipality of Vari Voulas Vouliagmenis for the last two years (2017 and 2016) is shown in Table 3 below.

Table 3 GENERATION OF SOLID WASTE IN VVV MUNICIPALITY (2016 – 2017)					
CODE	FRACTION TYPE	QUANTITY (tn) 2017	%	QUANTITY (tn) 2016	%
20 03 01	Mixed urban waste	33.210,870	86,1631%	33.402,530	88,5398%
15 01 06	Mixed packaging of recyclable materials	3.325,270	8,6272%	3.313,000	8,7817%
20 02 01	Biodegradable waste / Greens (pruning)	1.145,180	2,9711%	266,740	0,7070%
17 01 01	Concrete	493,600	1,2806%		
17 01 02	Bricks	127,100	0,3298%	A	a
17 01 03	Tiles and ceramics	97,700	0,2535%		
17 01 07	Mixtures of concrete, bricks , tiles and ceramics			701,000	1,8581%
17 09 04	Mixtures of construction and demolition waste	58,900	0,1528%		
15 01 07	Glass packaging	48,020	0,1246%	41,300	0,1095%
17 05 04	Soils and stones	35,100	0,0911%		

13 02 05	Non-chlorinated engine and lubrication oils	1,600	0,0042%		
20 01 36	Disposable electrical and electronic equipment	0,382	0,0010%	0,540	0,0014%
20 01 21	Fluorescent tubes and other mercury-containing wastes	0,205	0,0005%	0,200	0,0005%
20 03 02	Waste from outdoor / flea markets	0,170	0,0004%		
20 01 35	Discarded electrical and electronic equipment containing hazardous components	0,110	0,0003%	0,680	0,0018%
	Total	38.544,207	100,0000	37.725,990	100,0000

Table 4 ITINERARIES OF DIFERENT FRACTIONS OF SOLID WASTE IN VVV MUNICIPALITY				
CODE	TYPE OF FRACTIOON	COLLECTION	TRANSPORT	DESTINATION
20 03 01	Mixed urban waste	VVV Municipality	VVV Municipality	LANDFILL (public – gate fees)
15 01 06	Mixed packaging of recyclable materials	VVV Municipality	VVV Municipality	Private company without fees

20 02 01	Biodegradable waste / Greens(pruning)	VVV Municipality	VVV Municipality	Private company and landfill
17 01 01	Concrete	VVV Municipality	VVV Municipality	Private quarry – gate fees
17 01 02	Bricks	VVV Municipality	VVV Municipality	Private quarry – gate fees
17 01 03	Tiles and ceramics	VVV Municipality	VVV Municipality	Private quarry – gate fees
17 01 07	Mictures of oncrete, bricks , tiles and ceramics	VVV Municipality	VVV Municipality	Private quarry – gate fees
17 09 04	Mixtures of construction and demolition waste	VVV Municipality	VVV Municipality	Private quarry – gate fees
15 01 07	Glass packaging	Private company	Private company	Private company
17 05 04	Soils and stones	VVV Municipality	VVV Municipality	Private quarry – gate fees
13 02 05	Non-chlorinated engine and lubrication oils	Private company	Private company	Private company
20 01 36	Disposable electrical and electronic equipment	Private company	Private company	Private company
20 01 21	Fluorescent tubes and other mercury-containing wastes	Private company	Private company	Private company
20 03 02	Waste from outdoor / flea markets	VVV Municipality	VVV Municipality	Private company and landfill
20 01 35	Discarded electrical and electronic equipment containing hazardous components	Private company	Private company	Private company

The main equipment of waste management of VVV municipality (bins and trucks) is described in Tables 5 and 6

Table 5			
WASTE BINS IN VVV MUNICIPALITY			
	TYPE OF BINS	VOLUME	NUMBER OF BINS
1	BINS OF MIXED WASTE	1.100 lt	2.250
2	BINS OF MIXED WASTE	600 lt	100
3	BINS OF MIXED WASTE	240- 550 lt	732
4	BINS FOR MIXED RECYCLABLE AND PACKAGING (blue colored)	1.100 lt	1.160

Table 6		
VEHICLES OF VVV MUNICIPALITY FOR USW COLLECTION		
	TYPE OF VECHICLE	NUMBER
1	Waste collection vehicles	25
2	Shippers	8
3	Trucks	13
4	Trucks with grapple	6
5	Small trucks	5
6	Vehicles for washing bins	2

An important element of the applied USW management system in the Municipality of VVV is the pilot program of separate collection of organic sources from which a high quality soil improver (VITA GREEN & VITA GREEN plus) is produced. The local enterprises involved in the Organic Picking Program at Source and the brown collection bins are distributed as shown in Table 7 below:

Table 7						
COMPANIES IN VVV MUNICIPALITY PARTICIPATING IN SOURCE SELECTION OF ORGANICS AND AVAILABLE EQUIPMENT OF BROWN BINS						
City Section	Category of enterprise	Number of enterprises	Brown bins 60 lit	Brown bins 120 lit	Brown bins 660 lit	Brown bins 1.100 lit
Vari	Restaurants, catering, taverns	19	19	22		
Vari	Hotels	1	1	1		
Vari	Super Markets	2	1	1	2	
Voula	Restaurants, catering, taverns	15	15	18		
Voula	Hotels	4	4	4		
Voula	Super Markets	1	1	1	2	
Vouliagmeni	Restaurants, catering, taverns	16	16	20		
Vouliagmeni	Hotels	5	8	12	4	3
Vouliagmeni	Super Markets	0	0	0		
	Total	63	65	79	8	3

2.3. Basic initial conclusions

If we focus on the three streams of interest in the BENEFIT AS YOU SAVE project, namely Mixed Urban Waste (Composites), Biodegradable and Recyclable Packaging Materials, we observe that the collected mixed waste remain at a very high percentage of all (86% - 88.5%), while the collected recyclables remain at low rates of total waste (8.6-8.7%). The biodegradable collections also remain at very low rates but have spectacularly increased by 70% from 2016 to 2017 due to the implementation of the separate biodegradable (pruning) program within the framework of VVV's collaboration with the National Kapodistrian University of Athens.

Table 8

Waste code	Waste stream	Quantity 2017 (tn)	%	Quantity 2016 (tn)	%
20 03 01	Mixed Urban Waste	33.210,870	86,1631%	33.402,530	88,5398%
15 01 06	Mixed Packaging recyclable materials	3.325,270	8,6272%	3.313,000	8,7817%
20 02 01	Biodegradable waste (pruning)	1.145,180	2,9711%	266,740	0,7070%

This figure is significantly different from the European Union's (EU) targets, the National Waste Management Plan (EWC) objectives and the objectives of the Local Waste Management Plan of the Municipality of Vari Voula Vouliagmeni.

The new EU targets linked to the "circular economy" set the following percentage targets for recycling for Greece and more specifically:

- Gradual **reduction of landfill for Greece to 20% in 2030 and 10% by 2035** (Greece is the exception, the target is more severe)
- **Recycling and reuse of municipal waste for Greece 50% in 2025, 60% in 2030 and 65% in 2035.**

- Increase the **recycling and reuse targets for packaging waste**:

1. **65% until 31/12/2025** (55% plastic, 60% wood, 75% ferrous metals, 75% aluminum, 75% glass and 75% cartoon)
2. **75% until 31/12/2030** (75% wood, 85% ferrous metal, 85% aluminum, 85% glass and 85% cartoon)

The National Waste Management Plan (NWMP) provides for:

- Separate collection at least for glass, paper, metal and plastic, to ensure at least recycling **60% of their total weight from the pre-qualification stage to 2020.**
- Separate collection of biowaste as a primary step in the new management system to facilitate the separate collection and recycling of bio-waste sorted at source to achieve the objective of separate collection **of 40% of the total bio-waste by 2020.** Treatment of separately collected bio-waste with the aim of producing compost which meets quality standards for its re-use in accordance with international and / or national standards.

The Local Waste Management Plan of the Municipality of VVV (LWMP) provides:

- The generation of bio-waste streams involving citizens and local businesses. The objective of separate collection of bio-waste is in line with national targets, **although serious reservations are expressed in the text of the LWMP.**
- The creation of a mandatory separate collection of paper, and plastic-metal and glass. The objective is in line with the objectives at national level, **although serious reservations are also expressed in the text of the LWMP.**

3. DECISION MAKERS AND ANTICIPATIONS FROM BAS PROJECT

To introduce any change to the waste management system, we must gain the support of a wide range of stakeholders. We need to create a permanent "alliance" that will not disappear after the end of the project. We must therefore

acknowledge their role, integrate their proposals and ideas, in order to avoid practices that can be dealt with negatively.

We propose to conduct a seminar / training program with key persons implementing the new policy, for example:

- Executives in VVV Municipal Cleaning and Recycling Service
- decision makers in local businesses and other waste producers in the region (catering companies, hotels, hospitals)
- teachers in primary and secondary education as well as staff / teachers in preschool units (eg kindergartens)

All of the above are considered as the "multipliers" of the BAS project. Their decisions and support are indispensable for enhancing the expected results of various waste management systems with Source Sorting, such as the application of Benefit As You Save systems in the context of this project , or Pay as You Throw (PDO) systems. These new proposed systems are in direct comparison/conflict with the current horizontal system of charging municipal fees based on the square meters of buildings, without taking into account any other factor.

The axes of this training program are :

- The importance of preventing waste generation, reuse, recycling, composting for the environment, public health, the economy and social cohesion
- The current situation of waste management in Attica, the risks from the quantitative and qualitative composition of Municipal Solid Waste
- Source Selection - a system of incentives for citizens and businesses
- Presentation of good practices of municipalities inside and outside the country for recycling and composting with BAS and PAYT systems

4. PILOT ACTIVITIES

These actions are at the heart of Benefit As You Save's plan. They will lead the VVV Municipality to a system of incentives for citizens and / or legal entities to

enhance their participation in the sorting of recyclable and biodegradable (organic) waste and their diversion from burial.

4.1. Selection of streams for source selection sorting

We choose to apply Benefit As You Save to two (2) main waste streams.

- 1) In the stream of recyclable packaging materials we divide it into three (3) individual streams :

a) Paper

b) Other recyclable PMD (Plastic – Metal – Drinkable packaging)

γ) Glass

- 2) In the stream of biodegradable ones we also divide into two (2) individual streams

(a) Pruning (green waste)

b) Organic (biodegradable kitchen waste and dining areas)

The infrastructure, people and VVV municipality equipment that will support the choice of source separation of these waste stream, are critical factors for the success of BAS project. The information of residents is also a very important issue.

The way of recording the contribution of citizens and / or legal entities to the diversion of the above streams from burial and the process of returning benefits to citizens and / or legal entities (eg discounts on services or goods via a voucher printed from an electronic platform) is also an important factor of the project success.

4.2 Choice of the area to implement pilot activities

It is proposed to implement pilot activities in area “ **Pigadakia**” - Voula. The majority of buildings at “Pigadakia” includes 1 to 5 households. “Pigadakia” is a representative area of VVV Municipality in terms of residence density.

Figure 1

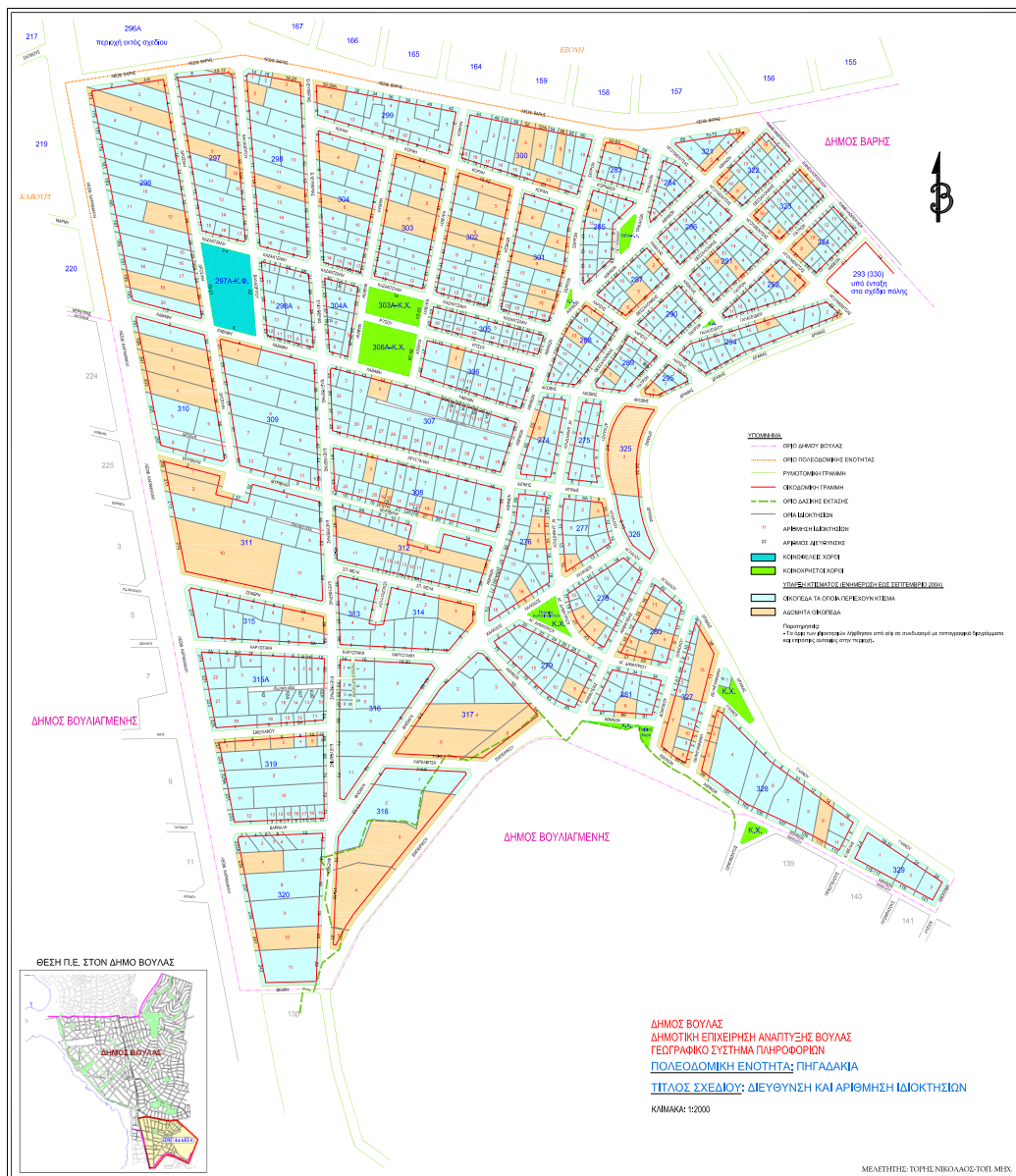


Figure 1

“Pigadakia” into VVV Municipality

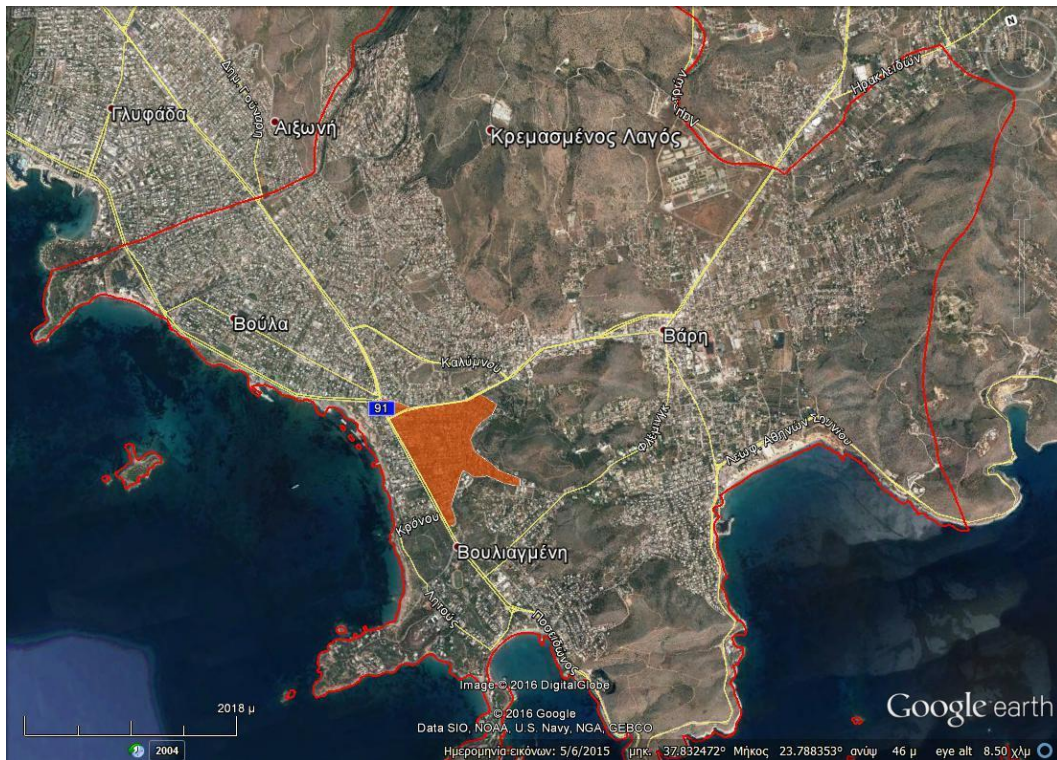


Table 9

Date * of households per number of members in Pigadakia area in 2011

Members of each household	2011 One house buildings			2011 Two houses buildings			2011 Block of flats		
	Number of households	Habitants	Buildings	Number of households	Habitants	Buildings	Number of households	Habitants	Buildings
1	28	28	28	24	24	12	98	98	20
2	74	148	74	44	88	22	143	286	29
3	78	234	78	33	99	17	106	318	22
4	94	376	94	23	92	12	90	360	18
5	27	135	27	6	32	3	26	130	6
6	10	60	10				5	32	1
7	3	24	3						
Total	314	1.005	314	130	335	66	468	1.224	96

*Source Hellenic Institute of Statistics, Population inventory 2011

Table 10 presents the 2018 estimations of house data by number of members in the Pigadakia area, where the pilot program of Waste Separate Collection in Source will be implemented. The estimations were based on: a) the population changes in Pigadakia in the years 2007 and 2011, b) the estimations of executives of VVV Municipality – Waste management and Recycling Directorate, and c) on site sampling of buildings by the Municipal Cleaning and Recycling Directorate and by Philipos Kirkitsos, external collaborator of the Municipality who has undertaken the "CONSULTING SERVICES FOR RECYCLING AND ALTERNATIVE MANAGEMENT OF MUNICIPAL WASTE".

Table 10

Estimation * of residences per number of members in Pigadakia area in 2018

Members of each household	2018 one house buildings			2018 two houses buildings			2018 Block of flats		
	Number of households	Habitants	Buildings	Number of households	Habitants	Buildings	Number of households	Habitants	Buildings
1	33	33	33	28	28	14	115	115	24
2	87	174	87	52	104	26	168	337	34
3	92	276	92	39	117	20	125	374	26
4	111	443	111	27	108	14	106	424	21
5	32	159	32	7	38	4	31	153	7
6	12	71	12				6	38	1
7	4	28	4						
Total	370	1.184	370	153	395	78	551	1.441	113

*Source : Philipos Kirkitsos, Deliverable "CONSULTING SERVICES FOR RECYCLING AND ALTERNATIVE MANAGEMENT OF MUNICIPAL WASTE".

Table 11 presents the aggregate housing data by number of members in the Pigadakia area for the years 2011 and 2018.

Table 11

Aggregated housing data by number of members in the Pigadakia area for the years 2011 and 2018

2011			2018		
Number of households	Residents	Buildings	Number of house holds	Residents	buildings
912	2.564	476	1.074	3.020	561

*Source Hellenical Statistocal Authority -Inventory 2011 & Philipos Kirkitsos, Deliverable "CONSULTING SERVICES FOR RECYCLING AND ALTERNATIVE MANAGEMENT OF MUNICIPAL WASTE".

Table 12 presents the data of the installed bins in Pigadakia area.

Table 12

Bins installed in Pigadakia area in 2018

2018	Bins of 1.100 lt for mixed waste	Blue bins of 1.100 lt for recyclable materials	Stable bins 400 lt mainly in on house buildings	Brown bins * 120 lt for organics
Bins installed	106	77	28	170

*According to Directorate of Waste Management & Recycling

4.3 Proposal of compensatory benefits during pilot activities implementation.

The implementation of the project includes the purchase by VVV Municipality of special packaging that includes recycling bags, as well as special stickers with the unique QR code markings. Each special package should be associated with a reward service exclusively for residents of the Municipality (hereinafter "Users") who are involved in the recycling process carried out with these recycling bags, as well as special stickers with the unique QR code markings.

In summary, the awarding service should include discounts and offers for Users, VVV products and services, and a variety of businesses, henceforth partners of the program. VVV Municipality and Associates should be posted on a specific website in order to promote, promote and generally distribute the products and services of the Municipality and businesses.

In particular, for a successive award, the below steps are necessary:

(a) the company supplier of bags company should operate and manage an online platform (hereinafter referred to as the "**Platform**") that can be hosted: (i) on a website (hereinafter referred to as the "**Site**") and (ii) in an application for mobile phone devices (hereinafter "**Application**"). In particular, Users, through the Platform installed on the Website and in the Application, benefit from the offers of the Affiliates (hereinafter referred to as "**Offers**"), which are incorporated either in Discount Coupons (hereinafter referred to as "**Discount Coupons**") or gift vouchers (hereinafter referred to as "**Gift Certificates**").

(b) In addition, the company supplier of the special bags should create for the Municipality of Vari-Voula-Vouliagmeni a personal portal, which is a special interface, in which the Municipality of Vari-Voula-Vouliagmeni may describe, modify and / or customize the Offers it wishes to make available to Users. In this portal, the Municipality will be able to: (i) be informed of the number of Users who have activated the Discount Coupons and have selected their Promotions per site and (ii) to inform the Users, on issues of environmental education and waste separate collection in source.

the Offers of the Municipality of Vari-Voula-Vouliagmeni to the citizens will be governed by the terms of the rewards. The following will apply for each offer

- The Offer may be created directly through the special interface of the Municipality of Vari-Voula-Vouliagmeni and will be published to all Users of the Platform, directly from the time when the Municipality of Vari-Voula-Vouliagmeni will activate it.
- The duration of each Offer is subject to the sole discretion of the Municipality of Vari-Voula-Vouliagmeni and is binding on each User.

The project is also include commitments of the bags' provider. The bag's provider will inform the public about the benefits to be users of the the pilot system. The bag's provider will report daily, haw the obligation of the presentation of statistical data to the municipality, and the proper providing of the benefits to the participating users.

The company that will supply the special bags and support the platform should cooperate with partners of BAS project and will be solely responsible:

- For the good operation of the Platform, the Website, the linkage of the awards addressing interface with the official project site: benefits-as-you-save.eu, the portal used by the VVV Municipality, as well as for ensuring the unobstructed reception of benefits by Users.

- To record the performance of Users with respect to their participation to the Recycling Process.
- The Platform will provide to the VVV Municipality full information, on daily basis, regarding: (a) the number of Discount Vouchers / Gift Vouchers issued by the Users; and (b) the degree of effect of each Offer on Users, through quantitative and qualitative statistics, in order to be assessed by the Municipality
- For the general promotion of VVV Municipality

VVV Municipality undertakes the cost of the supply and the disposal of special packages with recycling bags and special stickers with the unique QR code markings.

4.4. Choosing a way to collect recyclable and organic waste

After detailed discussions with executives of Directorate of Waste Management & Recycling of VVV, taking into account a) the data from another program that is already in progress in the Municipality of VVV (following the decision No. 12155 / 9.112017 of the Municipality Special Secretariat for the Management of Sectoral Operational Programs ERDF and CF of the MINISTRY OF ECONOMY AND DEVELOPMENT / SPECIAL SECRETARIAT OF MANAGEMENT OF SECTORS OF THE ERDF AND OF THE SPECIAL MANAGEMENT OFFICE OF THE OPERATIONAL PROGRAM "TRANSPORT INFRASTRUCTURE, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT" of the Action "Integrated Waste Management in the Municipality of Vari-Voula-Vouliagmeni" in the priority axis "Conservation and protection of the environment - Promotion of the profitable use of resources" of the Operational Program "Transport Infrastructure, Environment and Sustainable Development" - with the transaction code (MIS): 5001895), and b) the deliverable "CONSULTING SERVICES FOR RECYCLING AND ALTERNATIVE MANAGEMENT OF MUNICIPAL WASTE" by the collaborator of the Municipality Philippos Kyritsos, **the proposal on the method of collection of recyclable material packaging and organic waste, as part of the pilot application of the local Benefit As You Save plan is as follows:**

I. We choose to apply Benefit As You Save to two (2) main waste streams..

- 1) In the stream of recyclable packaging materials we divide it into three (3) separated streams

a) Paper The bag comes out of the house once a week and is collected manually by the Door - Door, from the Municipality's waste collection vehicle which already collects recyclable packaging materials. The description of the relevant bag is given in Chapter 3.3 herein and will include special self-adhesive labels with the unique QR code markings to be scanned by the municipal employees who board the waste collection vehicle and will be equipped with a special QR code reader scanner. The bag capacity must be at least 45 liters, should be of polymeric material, carry handles for easy transport and closure at the open edge, be labeled "Paper Only". It is suggested to have a dark blue color

b) Other recyclable PMD (Plastics - Metals - Mixed Packages) Here, the bag also comes out of the house once a week, and is door to door collected manually by the Municipality's vehicle, which is already collecting recyclable packaging materials. The described bag description is given in Chapter 3.3 herein and includes special self-adhesive labels with the unique QR code markings to be scanned by the municipal employees who board the garbage truck and will be equipped with a special reader of the QR code (scanner). The bag capacity should be at least 45 liters, be of polymeric material, carry handles for easy transport and closure at the open end. It is proposed to have a different color from the bag in which the paper is collected.

c) Glass. Near each building there will be a "blue bell" to place the glass which will be emptied *by a municipal open truck* with a grab crane. These bells can be purchased by the Municipality, with or without fee by the Hellenic Recycling Recovery Company

2) In the stream of biodegradable ones we also divide into two (2) separated streams

(a) Pruning (green waste) - Will be collected from the pavement by open trucks with or without a grab and with loader (JCB)

b) Organic (biodegradable kitchen waste and dining areas) - In each building (or per two buildings) a brown bin will be placed for the Organic sorting in source. The size and characteristics of the bins will be specified by the Municipal Directorate for Waste management and Recycling. Suitable bins of 120 or 240 liters, preferably with a padlock. The brown bins will be collected by a municipal organic waste collection vehicle which will have two features, in addition to those with an ordinary waste collection vehicle have. 1) The vehicle will weigh each bin 2) The vehicle will identify each bin by means of an appropriate recognition/ identification system and this information will be transferred to a database at the offices of the Waste Management & Recycling Directorate of VVV Municipality. Each household will be able to transport its organic waste into suitable paper or other biodegradable bags of 7-10 liters. The bag can be placed in a small base in the kitchen and then driven to the brown bin outside the house.

4.5 Publicity Activities

A. We propose the implementation of neighborhood information events / municipal information events

VVV Municipality will implement a program of information events such as informative meetings. The organization of an event in the central area of the Municipality is also a choice. The results that the Municipality of VVV has already achieved through the Sorting at Source, such as the separate collection of green and organic waste, are a very important factor to argue about the necessity of Sorting at Source concept. During the events, the VITA

GREEN soil improver will be presented. Companies using brown bins and citizens participating in composting process will be referred.

At least three (3) related events/ conferences, should take place, one in Vari, one in Voula and one in Vouliagmeni

- B. We propose the implementation of three (3) additional events in elementary schools or in high schools (school in Vari, school in Voula and a school in Vouliagmeni)

The children of the primary schools in the area of the Municipality's are invited for a week to properly place their litter in bins that will be at a central point of their school.

Representatives of the municipality will visit each school separately to explain to the children the correct classification and will give all the project brochure together with the benefits as described in the corresponding chapter of this guide.

The school that collects the most properly distributed waste will gain extra benefits. The awarding process will take the form of an extra event

- C. Other information actions could be a) posters placement at various locations in the application area and b) linking the site of the Municipality with the project website

4.6. Training Activities

4.6.1. Training Program for staff Municipality

Implementation of 2 training programs is foreseen

Each program will be addressed to 10 participants and the total duration of the course will be 50 hours.

The programs will embed the basic principles of adult learning in line with the Unified Training Action Management System. Emphasis will be given to the use of participatory - interactive techniques (brainstorming, case study, working groups, role play, etc). Throughout the programs, trainees will be given opportunities to enrich the process with views, suggestions, experiences. The trainers will be certified by the Hellenic Organization of Certification and Professional Orientation (EOPPEP).

In case the Municipality considers that the implementation of all training hours in the form of conventional classroom training is disfunctional, it will be possible to implement the programs in the form of blended learning, ie using a platform of simultaneous and non simultaneous distance learning.

The training programs include the following section. The final content and duration of sections, will be based on the needs analysis survey, the profile of the two groups of participants and the requirements of the Municipality.

Table 13

	SECTIONS	HOURS
1.	Introduction : Urban Solid Waste Management (MSW). The importance for the environment, health, economy, social cohesion Quantitative and qualitative composition of MSW Basic Principles of Solid Waste Management	3
2.	Legislative and Strategic framework European and National Strategy for MSW Management European and national legislative framework The National Waste Management Plan (NWMP)	2
3.	Local government and Solid Waste Management The Role of the Region The Role of the Municipalities The importance of citizen participation	2
4.	The Municipality of Vari - Voula - Vouliagmeni and Solid Waste Management Local Plan for solid Waste Management Targets for Recycling	3

	Targets for bio-waste (composting)	
5.	<p>The Benefit As You Save Project within TNCP BalkanMed</p> <p>The importance and the overall objectives</p> <p>The scenarios in the Municipality of VVV based on the relevant study</p> <p>Pilot actions during the Project</p> <p>Waste fractions Sorting at Source</p> <p>The sustainability of BAS after the end of the Project</p> <p>Benefits for the municipality and the local community</p>	5
6.	<p>Operational organization of the Municipality for the implementation of the BAS</p> <p>Tasks - Staff competencies of the Municipality</p> <p>(collection staff, equipment maintenance personnel, administrative staff) Issues of co-operation among workers</p> <p>Rational resource allocation</p> <p>Way of collection and temporary storage</p> <p>Available vehicles</p> <p>BAS application support equipment</p> <p>Maintenance of BAS application equipment</p> <p>Measuring Recycling Performance of separated waste streams</p> <p>Motivation of citizens and enterprises</p> <p>Incentives addressed to citizens and businesses</p> <p>Follow up and reporting BAS system performance</p>	15
7.	<p>Relationship of the Municipality's staff with the citizens</p> <p>The communication strategy of the Municipality regarding the application of the BAS</p> <p>Issues of daily information and communication with citizens</p>	10

	Information Management Manage Requests Conflicts management	
8.	Presentation of good practices in Municipalities inside and outside the country	3
9.	Occupational Health and Safety Issues in the field of waste management	5
10.	Implementation of horizontal principles: Equal opportunities and non-discrimination Sustainable development Equality between men and women	2

4.6.2. Training Program for “multipliers”

There will be 3 training programs in which participants are expected to come from different groups, eg. elected counsellors or representatives of civil society organizations, teachers and parents, representatives of associations of different professions, sensitized citizens and persons in general who are interested in and are able due to their role or will to disseminate and extend the BAS message. Each program’s participants will be 10 to 20 and the total duration will be 50 training hours.

The methodology to be followed is based on the principles of adult education in accordance with the Unified System for the Management of Training Activities. Emphasis will be given to participatory - interactive techniques and encouraging participants to contribute with experiences, comments, suggestions.

In case there is a difficulty in the availability of participants to attend all training hours in the form of conventional classroom training, it will be possible to implement the programs in the form of blended learning, ie using distance learning methods.

The proposed content of the training programs includes the following sections. the final content and duration of which will be based on the needs survey, the profile of the 3 groups of participants and the requirements of the Municipality.

Table 14

	SECTIONS	HOURS
1.	<p>Introduction :</p> <p>Impacts on the environment and public health from: waste uncontrolled dumping, disposal of landfill, incineration.</p> <p>Quantitative and qualitative composition of Municipal Solid Waste</p> <p>The importance of waste prevention, re-use, recycling, composting for environment, health, economy, and social cohesion</p> <p>Actual situation of waste management in Attica, the risks</p>	2
2.	<p>Basic Principles of Solid Waste Management</p> <p>Management Stages hierarchy</p> <p>Sorting in Source</p> <p>Principle of proximity and small scale</p> <p>Extended Producer's responsibility</p> <p>"Not In My Back Yard"</p>	2
3.	<p>European and National Strategy for Solid Waste Management</p> <p>The new framework for the "circular economy"</p> <p>The National Waste Management Plan (NWMP)</p> <p>The Regional Waste Management Plan in Attica</p>	2

4.	The importance of the waste management in municipal level The Local Plan of the Municipality of V-V-V Targets for Recycling Targets for bio-waste (composting)	2
5.	The Benefit As You Save Project within TNCP BalkanMed The importance and the overall objectives The scenarios in the Municipality of V-V-V based on the relevant study / The pilot actions during the Project / The Sorting Streams in Source The incentive system for citizens and businesses The sustainability of BAS after the end of the Project Benefits for the municipality and the local community	3
6.	Design Recycling Activities at selected areas with the support of social groups Schools / Households / Businesses / public areas Develop specific applications	12
7.	Compost Production Domestic composting / Composting in neighborhood level / Municipal composting	12
8.	Methods of raising awareness among citizens Design of communication activities Incentive systems	10
9.	Presentation of good practices in Municipalities inside and outside the country in recycling and composting	3

10.	Implementation of horizontal principles: a) Equal opportunities and non-discrimination b) Sustainable development c) Equality between men and women	2
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4.7 Time Plan of BAS Pilot activities

Time Plan 1

TIMEPLAN OF COMMUNICATION AND TRAINING ACTIVITIES												
	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19
Leaflets distribution												
1 st Conference to communicate pilot activities												
Events in public areas (schools and implementation area)												
Two training programs for municipal staff												
3 training programs for multipliers												
2 nd Conference – communication of results												

The above timetable is a part of the overall implementation schedule of the Implementation Stages (IS) and its deliverables

IS.1 Equipment purchase

IS.2 Training

IS.3 Information activities / Communication / Dissemination of results

IS.4 Pilot Actions - Participation in transnational activities / conferences – Operation of an e-platform to return benefits.

Timeplan 2

IS	7/2018	8/2018	9/2018	10/2018	11/2018	12/2018	1/2019	2/2019	3/2019	4/2019	5/2019	6/2019	7/2019	8/2019	9/2019	10/2019	11/2019
IS.1																	
IS.2																	
IS.3																	
IS.4																	

5. ADDITIONAL ASPECTS – IMPLEMENTATION FRAMEWORK

The legislative framework for the separate collection of recyclable materials in Greece and the European Union is as follows:

- **National Waste Management Plan & Law 4496/2017:** On the basis of the National Waste Management Plan (NWMP) and Law 4496/2017 the separate collection of recyclable materials includes the following materials: a) Paper, b) Glass, c) Plastic and d) metal.
- **NWMP targets for all alternative management waste**
 - ✓ Creation of an electronic register of managers / producers of products by 31/12/2015 by EOAN (Hellenic Recycling Organization)
 - ✓ Monitoring the performance of Alternative Management Systems on the basis of the legislative requirements, auditing their operation and taking measures in case of malfunctions and, in case of non-compliance, imposing a fine.
 - ✓ Implementation of awareness-raising programs for the public and focus to certain targeted groups / entities.
 - ✓ Achievement of quantitative collection-recovery targets - preparation for re-use-recycling.
 - ✓ Strengthening the role of Municipalities to organize - monitoring - recording the work of alternative management of all streams and, mainly of urban waste. Provide incentives to enhance municipalities participation in alternative management work
 - ✓ More inspections controls
 - ✓ Integration of Green Points and Recycling Centers in Sorting at Source Alternative Waste Management
- **Directive 98/2008 & Law 4042:** Both EU Directive 98/2008 (Articles 10 and 11) and Law 4042 (Articles 27 and 27) **potentially** provide for separate collection to facilitate or improve recovery and provided that it **is technically, environmentally and economically feasible**.
- **New Framework Directive for the Circular Economy** revising the previous Directive 98/2008 / EC..

- **Targets of National Waste Management Plan for packaging waste**
 - ✓ Implementation of alternative waste management programs (Article 5 of Law 2939/01), which will include at least: supporting measures to achieve / improve quantitative targets, methods for the organization of alternative packaging management.
 - ✓ National coverage networks for sorting packaging waste at the source
 - ✓ Directly promote separate collection of paper, glass, metal and plastic. Separate collection of less waste streams can only be done if it is documented from an environmental, technical and economic point of view.
 - ✓ Updating operational plans for alternative management systems
 - ✓ Adoption and observance of specifications for recovered packaging waste per material (Recyclable Materials-Green Separately Collection Centers)
 - ✓ Color of each bin, the same all over Greece.
 - ✓ Prohibiting or restricting the use of packaging materials that reduce or prevent recovery and incentives to promote the use of reusable and recyclable.
 - ✓ Organization of alternative management systems for packaging containing residues of dangerous substances.
- **Law 4042 & National Waste Management Plan for separated collection of organics:**

Separate collection of organic materials is included as a requirement in law 4042 at 10% by 2020, which has been modified to 40% in the National Waste Management Plan. Directive 31/1999 / EC also provides for the diversion of 75% of bio-waste by landfill by 2020.

6. ANTICIPATED RESULTS

In the following table are presented anticipated results of the project as they were described in Application Form – AF and Specification of budget – SOB of BAS project.

Table 15

	Project Partner	Area of Implementation of BAS plan	Description of Deliverable in AF and SOB
LP1	Municipality of Vari - Voula - Vouliagmeni	Vari – Voula - Vouliagmeni - GR	D 3.1.2. Feasibility study in municipal area
PP2	Municipality of Filadelfeia - Chalkidona	Filadelfeia – Chalkidona - GR	D3.2.1. Feasibility study, local action plan development
PP3	Municipality of Limassol	Limassol - CY	D3.3.1 BAS plan data collection and registration D3.3.2. BAS activities feasibility study
PP4	Environmental Center for Development Education and Networking	Tirana - AL	D3.4.1. Survey for target groups D3.4.2. BAS Action Plan feasibility study
PP5	Municipality of Tirana	Tirana - AL	D3.5.1. BAS plan data collection and support D3.5.2. BAS activities feasibility study

PP7	Faculty of Technology and Technical Science- University St. Kliment Ohridski- Bitola (UKLO)	Veles – FY Bitola - FY	D3.7.1. Local BAS Action Plan development D3.7.2. BAS feasibility–viability study implementation
PP8	Sofia Municipality	Sofia - BG	D3.8.1. Local BAS action plan development

7. MONITORING AND FOLLOW UP DURING BAS PLAN DEVELOPMENT AND IMPLEMENTATION

7.1 Follow up indicators

The proposed Indicators for the Monitoring of the Performance of the BAS Pilot Actions represent the behavior of the inhabitants of Vari - Voula - Vouliagmeni as it evolved over time, before pilot actions (years 2016, 2017) and after them (years 2018, 2019)

Table 16

a/a	Indicator code	Description	Calculation Method
1	IWtotal _{20_03_01}	Indicator to monitor weight (absolute quantities) of Mixed Urban Waste in total municipal area	Weigh (tones) of Mixed Waste stream in all VVV Municipality area before pilot activities implementation and after pilot activities implementation, per year
2	IWselected_area _{20_03_01}	Indicator to monitor weight (absolute quantities) of Mixed Urban Waste in pilot implementation area (Pigadakia – Voula)	Weigh (tones) of Mixed stream in pilot implementation area (Pigadakia – Voula) before pilot activities implementation and after pilot activities implementation, per year
3	IPtotal _{20_03_01}	Indicator to monitor the percentage of Mixed Urban Waste in total municipal area	Percentage of mixed waste stream in total waste generated in VVV Municipality before pilot activities implementation and after pilot activities implementation, per year
4	IPselected_area _{20_03_01}	Indicator to monitor the percentage of Mixed Urban Waste in pilot implementation area (Pigadakia – Voula)	Percentage of mixed waste stream in pilot implementation area (Pigadakia – Voula) before pilot activities implementation and after pilot activities implementation, per year

5	IWtotal _{15_01_06}	Indicator to monitor weight (absolute quantities) of Mixed Recyclable Waste of Packaging in total Municipal area (separately collection)	Weight (tones) of recyclable stream, in total Municipal area before pilot activities implementation and after pilot activities implementation, per year
6	IWselected_area _{15_01_06}	Indicator to monitor weight (absolute quantities) of Mixed Recyclable Waste of Packaging in pilot implementation area (Pigadakia – Voula) - separately collection	Weight (tones) of recyclable stream, in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
7	IPtotal _{15_01_06}	Indicator to monitor percentage of Mixed Recyclable Waste of Packaging in total Municipal area (separately collection)	Percentage of recyclable stream, in total waste generated in Municipal area before pilot activities implementation and after pilot activities implementation, per year
8	IPselected_area _{15_01_06}	Indicator to monitor percentage of Mixed Recyclable Waste of Packaging in pilot implementation area (Pigadakia – Voula) - separately collection	Percentage of recyclable stream, in total waste generated in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
9	IWselected_area _{20_01_01}	Indicator to monitor weight (absolute quantities) of paper-cardboard in pilot implementation area (Pigadakia – Voula) separately collected <u>only in pilot implementation area.</u>	Weight (tones) paper-cardboard), in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
10	IPselected_area _{20_01_01}	Indicator to monitor percentage of paper- cardboard in pilot implementation area (Pigadakia – Voula) separately collected <u>only in pilot implementation area.</u>	Percentage of paper- cardboard in total waste generated), in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
11	IWtotal _{20_01_02}	Indicator to monitor weight (absolute quantities) of glass in	Weight (tones) of glass in VVV Municipality , before pilot activities

		total Municipal area (separately collected)	implementation and after pilot activities implementation, per year
12	IWselected_area _{20_01_02}	Indicator to monitor weight (absolute quantity) of glass in pilot implementation area (Pigadakia – Voula) - separately collected	Weight (tones) of glass in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
13	IPtotal _{20_01_02}	Indicator to monitor percentage of glass in total municipal area (separately collected)	Percentage of glass in total waste generated in VVV Municipality before pilot activities implementation and after pilot activities implementation, per year
14	IPselected_area _{20_01_02}	Indicator to monitor percentage of glass in pilot implementation area (Pigadakia – Voula) - separately collected	Percentage of glass in total waste generated in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
15	IWtotal _{20_01_08}	Indicator to monitor weight of biodegradable kitchen waste (absolute quantities) in total municipal area – separately collected	Weight (tones) of biodegradable kitchen waste in VVV Municipality before pilot activities implementation and after pilot activities implementation, per year
16	IWselected_area _{20_01_08}	Indicator to monitor weight of biodegradable kitchen waste (absolute quantities) in pilot implementation area (Pigadakia – Voula) - separately collected	Weight (tones) of biodegradable kitchen waste in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year
17	IPtotal _{20_01_08}	Indicator to monitor percentage of biodegradable kitchen waste in total waste generated in VVV municipality – separately collected	Percentage of biodegradable kitchen waste in total waste generated in VVV Municipality before pilot activities implementation and after pilot activities implementation, per year

18	IPselected_area _{20_01_08}	Indicator to monitor percentage of biodegradable kitchen waste in total waste generated in pilot implementation area (Pigadakia – Voula) separately collected	Percentage of biodegradable kitchen waste in total waste generated in waste in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation ,per year
19	IWtotal _{20_02_01}	Indicator to monitor weight of pruning waste (absolute quantities) in total municipal area – separately collected	Weight (tones) of pruning waste in VVV Municipality before pilot activities implementation and after pilot activities implementation, per year
20	IWselected_area _{20_02_01}	Indicator to monitor weight of pruning waste (absolute quantities) in pilot implementation area (Pigadakia – Voula) separately collected	Weight (tones) of pruning waste in in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation ,per year
21	IPtotal _{20_02_01}	Indicator to monitor percentage of pruning waste in total waste generated in total municipal area (separately collected)	Percentage of pruning waste in total waste generated in VVV Municipality before pilot activities implementation and after pilot activities implementation, per year
22	IPselected_area _{20_02_01}	Indicator to monitor percentage of pruning waste in pilot implementation area (Pigadakia – Voula) separately collected	Percentage of pruning waste in total waste generated in pilot implementation area Pigadakia – Voula before pilot activities implementation and after pilot activities implementation, per year

The data in Table 16 should be compared with corresponding data of Attica Region. If there are any differences compare to the data of Attica Region or of the entire country, it would be very useful to estimate the reasons for this difference, on the efficiency of Separately Collection in Source.

7.2 Follow up implementation and targets achievement

The project "STIMULATING CITIZENS PARTICIPATION IN RECYCLING PROCEDURES THROUGH THE IMPLEMENTATION OF COMPENSATION SYSTEMS", "Benefit As You Save - BAS", within INTERREG - BalkanMed 2014-2020, should be supervised by the Directorate of Waste Management and Recycling of VVV Municipality.

- ✓ In order to meet the objectives of the Municipality of Vari - Voula - Vouliagmeni for the diversion of the biodegradable fraction of urban waste.
- ✓ In order to fulfill the Municipality's obligations to establish a separate collection of bio-waste.
- ✓ To achieve an increase in the recycling performance
- ✓ To utilize raw materials in municipal solid waste for the production of suitable bio fertilizer (compost).

The increasing of the quantities that pre-selected - recycled - composting, will lead to a decrease of quantities of unprocessed waste, that are currently leaded to burial. There are obvious economic benefits , resulting from the saving/reduction of landfill taxes and fines.