Horizon 2020

Call: H2020-SMEInst-2016-2017

(Horizon 2020 dedicated SME Instrument 2016-2017)

Topic: SMEInst-07-2016-2017

Type of action: SME-1

(SME instrument phase 1)

Proposal number: 808171

Proposal acronym: MOBI COMPOST

Deadline Id: H2020-SMEINST-1-2016-2017

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How to fill in the forms

The administrative forms must be filled in for each proposal using the templates available in the submission system. Some data fields in the administrative forms are pre-filled based on the previous steps in the submission wizard.

This proposal version was submitted by **Athanasios FILIS** on **06/11/2017 19:56:47** Brussels Local Time. Issued by the Participant Portal Submission Service.

Proposal ID **808171** *Acronym* **MOBI COMPOST**

1 - General information

Topic	SMEInst-07-2016-2017
Call Identifier	H2020-SMEInst-2016-2017
Type of Action	SME-1
Deadline Id	H2020-SMEINST-1-2016-2017

Acronym	MOBI COMPOST
Proposal title*	Modular and portable composting plant

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &

Duration in months	*6*
Free keywords	*compost, bio-waste*

Abstract

Our proposal concerns the design and construction of a modular, portable composting plant which will:
(i) be installed and operate at the farms or the processing enterprises only during the bio-waste "production" periods:
(ii) minimize the compost production time, compared to traditional methods
(iii) produce qualified compost with standard specifications
(iv) be adaptable to a wide range of raw material volumes as soon as to a wide range of bio-waste input specs.

Remaining characters 1529

Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under the 7th Framework Programme, Horizon 2020 or any other EU programme(s)? ○ Yes ◉ No

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Declarations

1) The coordinator or sole applicant declares to have the explicit consent of all applicants on their participation and on the content of this proposal.	☒
2) The information contained in this proposal is correct and complete.	☒
3) This proposal complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct).	☒

4) The coordinator or sole applicant confirms:

- to have carried out the self-check of the financial capacity of the organisation on https://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html. Where the result was "weak" or "insufficient", the coordinator confirms being aware of the measures that may be imposed in accordance with the H2020 Grants Manual (Chapter on Financial capacity check); or	◉
- is exempt from the financial capacity check being a public body including international organisations, higher or secondary education establishment or a legal entity, whose viability is guaranteed by a Member State or associated country, as defined in the H2020 Grants Manual (Chapter on Financial capacity check); or	○
- as sole participant in the proposal is exempt from the financial capacity check.	○

5) The coordinator or sole applicant hereby declares that each applicant has confirmed:

- they are fully eligible in accordance with the criteria set out in the specific call for proposals; and	☒
- they have the financial and operational capacity to carry out the proposed action.	☒
The coordinator is only responsible for the correctness of the information relating to his/her own organisation. Each applicant remains responsible for the correctness of the information related to him and declared above. Where the proposal to be retained for EU funding, the coordinator and each beneficiary applicant will be required to present a formal declaration in this respect.	

According to Article 131 of the Financial Regulation of 25 October 2012 on the financial rules applicable to the general budget of the Union (Official Journal L 298 of 26.10.2012, p. 1) and Article 145 of its Rules of Application (Official Journal L 362, 31.12.2012, p.1) applicants found guilty of misrepresentation may be subject to administrative and financial penalties under certain conditions.

Personal data protection

Your reply to the grant application will involve the recording and processing of personal data (such as your name, address and CV), which will be processed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. Unless indicated otherwise, your replies to the questions in this form and any personal data requested are required to assess your grant application in accordance with the specifications of the call for proposals and will be processed solely for that purpose. Details concerning the processing of your personal data are available on the privacy statement. Applicants may lodge a complaint about the processing of their personal data with the European Data Protection Supervisor at any time.

Your personal data may be registered in the Early Warning System (EWS) only or both in the EWS and Central Exclusion Database (CED) by the Accounting Officer of the Commission, should you be in one of the situations mentioned in:
-the Commission Decision 2008/969 of 16.12.2008 on the Early Warning System (for more information see the Privacy Statement), or
-the Commission Regulation 2008/1302 of 17.12.2008 on the Central Exclusion Database
(for more information see the Privacy Statement) .

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Proposal ID **808171** *Acronym* **MOBI COMPOST**

List of participants

#	Participant Legal Name	Country
1	FILIS ATHANASIOS	Greece

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Proposal ID **808171** *Acronym* **MOBI COMPOST** *Short name* **FILISCOMPOST**

2 - Administrative data of participating organisations

PIC	***Legal name***
910651715	*FILIS ATHANASIOS*

Short name: FILISCOMPOST

Address of the organisation

Street OKEANIDON

Town ELEFSINA

Postcode 192 00

Country Greece

Webpage www.greengeocycle.com

Legal Status of your organisation

Research and Innovation legal statuses

Public body ..... no

Non-profit ..... no

International organisation ..... no

International organisation of European interest ..... no

Secondary or Higher education establishment ..... yes

Research organisation ..... no

Legal person ..... no

Enterprise Data

SME self-declared status..... 31/12/2016 - yes

SME self-assessment ..... 31/12/2016 - yes

SME validation sme ..... unknown

Based on the above details of the Beneficiary Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

NACE Code: -

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Proposal ID **808171** *Acronym* **MOBI COMPOST** *Short name* **FILISCOMPOST**

Department(s) carrying out the proposed work

No department involved

Department name ☒ not applicable

☐ Same as organisation address

Street *Please enter street name and number.*

Town

Postcode

Country

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Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. Sex: (•) Male ( ) Female

First name: **Athanasios** Last name: **FILIS**

E-Mail: **research@filiscompost.com**

Position in org.: Owner

Department: FILIS ATHANASIOS ☒ Same as organisation

☒ Same as organisation address

Street: OKEANIDON

Town: ELEFSINA Post code: 192 00

Country: Greece

Website: www.greengeocycle.com

Phone 1: +302105294092 Phone 2: *+xxx xxxxxxxxx* Fax: *+xxx xxxxxxxxx*

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3 - Budget for the proposal

	Estimated eligible* costs (per budget category)		EU contribution		
	A. Costs of the feasibility study/Direct and indirect costs of the action	Total costs	Reimbursement rate %	Maximum EU contribution	Maximum grant amount
Form of costs	Lump sum				
Consortium/Beneficiary	50.000	71.429	70	50.000	50.000

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4 - Ethics issues table

Please, take into account that the ethics issues in SME Instrument Phase 1 only relate to the feasibility study and not to a possible further innovation project (i.e. Phase 2)

1. HUMAN EMBRYOS/FOETUSES		Page
Does your research involve Human Embryonic Stem Cells (hESCs)?	○ Yes ◉ No	
Does your research involve the use of human embryos?	○ Yes ◉ No	
Does your research involve the use of human foetal tissues / cells?	○ Yes ◉ No	
2. HUMANS		**Page**
Does your research involve human participants?	○ Yes ◉ No	
Does your research involve physical interventions on the study participants?	○ Yes ◉ No	
3. HUMAN CELLS / TISSUES		**Page**
Does your research involve human cells or tissues (other than from Human Embryos/ Foetuses, i.e. section 1)?	○ Yes ◉ No	
4. PERSONAL DATA		**Page**
Does your research involve personal data collection and/or processing?	○ Yes ◉ No	
Does your research involve further processing of previously collected personal data (secondary use)?	○ Yes ◉ No	
5. ANIMALS		**Page**
Does your research involve animals?	○ Yes ◉ No	
6. THIRD COUNTRIES		**Page**
In case non-EU countries are involved, do the research related activities undertaken in these countries raise potential ethics issues?	○ Yes ◉ No	
Do you plan to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	○ Yes ◉ No	
Do you plan to import any material - including personal data - from non-EU countries into the EU?	○ Yes ◉ No	
Do you plan to export any material - including personal data - from the EU to non-EU countries?	○ Yes ◉ No	

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In case your research involves low and/or lower middle income countries, are any benefits-sharing actions planned?	◯ Yes ◉ No	
Could the situation in the country put the individuals taking part in the research at risk?	◯ Yes ◉ No	
7. ENVIRONMENT & HEALTH and SAFETY		Page
Does your research involve the use of elements that may cause harm to the environment, to animals or plants?	◯ Yes ◉ No	
Does your research deal with endangered fauna and/or flora and/or protected areas?	◯ Yes ◉ No	
Does your research involve the use of elements that may cause harm to humans, including research staff?	◯ Yes ◉ No	
8. DUAL USE		Page
Does your research involve dual-use items in the sense of Regulation 428/2009, or other items for which an authorisation is required?	◯ Yes ◉ No	
9. EXCLUSIVE FOCUS ON CIVIL APPLICATIONS		Page
Could your research raise concerns regarding the exclusive focus on civil applications?	◯ Yes ◉ No	
10. MISUSE		Page
Does your research have the potential for misuse of research results?	◯ Yes ◉ No	
11. OTHER ETHICS ISSUES		Page
Are there any other ethics issues that should be taken into consideration? Please specify	◯ Yes ◉ No	

I confirm that I have taken into account all ethics issues described above and that, if any ethics issues apply, I will complete the ethics self-assessment and attach the required documents. ☒

How to Complete your Ethics Self-Assessment

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3 - Call specific questions

Call specific declaration(s)

I declare on my honour that: Neither I nor any of the members of the consortium (if relevant) are involved in concurrent submission or implementation with another SME instrument Phase 1 or Phase 2 project. ☒

Excluded Reviewers

You can provide up to three names of persons that should not act as an evaluator in the evaluation of the proposal for potential competitive reasons.

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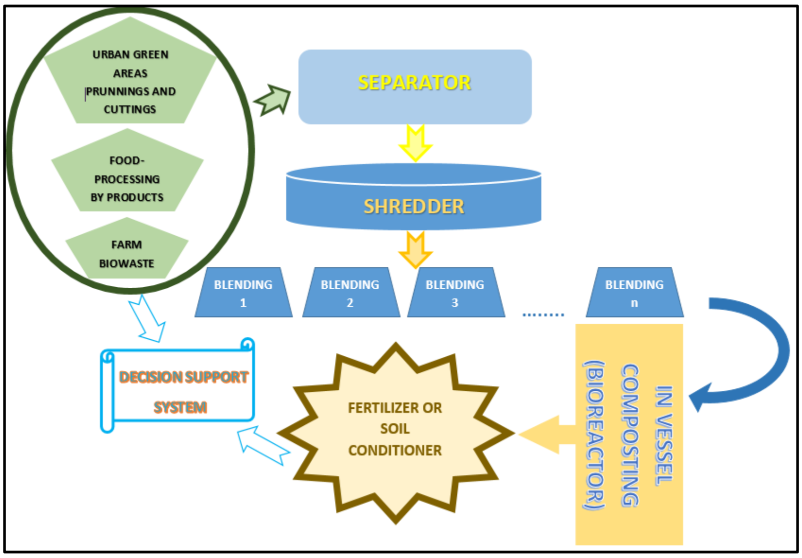
Title of Proposal: Developing of a modular and portable composting plant for the production of qualitative organic fertilizers (MOBI-COMPOST)

List of participants

Participant No	Participant organisation name	Country
1 (Coordinator)	FILIS ATHANASIOS	Greece

Filis Compost



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1. Excellence

1.1 Objectives

The EU bio-waste strategy aims to gradually reduce the bio-waste quantities, of buried in landfills, to all Member States in relation to the buried quantities in 1995. According to the European Compost Network (ECN, 2016) European Union produces 118-138 mil. tons of bio-waste per year. Bio-waste constitutes almost 50% of Municipal Solid Waste (MSW) in the EU while 75% of this material is buried in landfills. The environmental impact of this practice is identified as carbon (C) and nutrients leakage from the ecosystem and greenhouse gases emission.

Environmental consequences, according to "the polluter-pays" principle, is translated to monetary cost for EU Member States not complying with the Community's aims. Composting is the primary and preferred option in recycling, as experience in countries with integrated and applied bio-waste recycling programs has already featured.

Composting business have great opportunities because of the below reasons:

The new EU regulatory framework will adjust the production of compost and soil improvers from recycled bio-waste and organic residues, as part of a general bio-economy strategy promoting the production of new high added value products from renewable biological raw materials, in the action of the strengthening of circular economy.

According to ECN (Barth, 2010), at EU level (27 Member States) only 1/4 of the potentially produced organic waste (115 million tons) is recycled. The EU agriculture sector uses 30% - 40% of the produced compost, while landscape architecture absorbs 30% of the total amount of compost. Urban gardens need 20% of the produced quantity, while the remaining 10% of compost is led to the restoration of degraded soils.

Northern European territories face major problems of soil's phosphorous deficiency. This situation is overcome by large fertilizers imports from third countries as Egypt, Russia and Morocco. Besides the burden on the EU trade balance and the external dependence of agricultural production, a significant environmental problem of cadmium pollution of agricultural land arises. A considerable part of demand for additional phosphorus in agricultural soils of EU Nordic could possibly be accomplished by compost agricultural usage.

Our proposal concerns the design and construction of a modular, portable composting plant which will:

(i) be installed and operate at the farms or the processing enterprises only during the bio-waste "production" periods:

(ii) minimize the compost production time, compared to traditional methods

(iii) produce qualified compost with standard specifications

(iv) be adaptable to a wide range of raw material volumes as soon as to a wide range of bio-waste input specs.

During phase 1 of SME Instrument program, an integrated feasibility study will be carried out, including:

(i) Technical feasibility study. Detailed laboratory analyses will be implemented to the bio-wastes of various cultivations and processing procedures by-products. Examples of crops and processing activities that are of interest, are: olive groves, vineyards, wineries, olive oil mills, etc. Different blending percentages of input bio-wastes will be determined and also the corresponding standards of the resulting product (compost) will be determined. The exact temperature and humidity values, inside the in-vessel composter, will be adjusted in order to achieve short procedure composting times.

(ii) Market feasibility study. Potential clients will be determined precisely for both: rental and selling MOBI-COMPOST systems. Mapping of the distribution and proximity to the urban areas of various cultivations and food processing establishments will be achieved in order to estimate the spatio-temporal concentrations of the bio-wastes production. A detailed depiction of the public services responsible for the maintenance of urban and suburban green areas will be realized. For the distribution of the produced compost, cooperation with fertilizer warehouse companies will be seek. The Regarding to the extension of the activity outside Greece (especially to the North EU countries), strategic partnerships will be investigated.

(iii) Economic viability study. A detailed definition of total capital requirement and operational cost will be realized. Afterwards, the sales' prices of installation and rental costs will be determined. An estimation of the break-even and the ROI will be achieved in order to calculate the ιnvestment's viability.

(iv) Organizational - administrative feasibility study. It will include detailed job description for every employee and analysis of the necessary scientific knowledge and skills of the workers. It will also implement a detailed description of the MOBI-COMPOST's operational flow chart and the company's business structure.

1.2 Relation to the work programme

The call for proposals H2020-SMEInst-07-2016-2017 invites small and medium-sized enterprises to come forward with proposals aimed inter alia at implementing innovative solutions to the cyclical economy and creating added value products from waste produced, both, on the farm and throughout the food chain.
Within this proposal, we present the creation of an innovator in situ composting plant at the farm, at the processing units or at urban green areas, with the aim of producing high qualification compost that can be used either as a fertilizer or as a soil conditioner.

1.3 concept and methodology

(a) concept

Nowadays, the most common composting practice is the transportation of bio-wastes to the composting plants. The bio-wastes are placed in open withdraws at sheltered areas. Material is shaken at regular interval, by special equipment. Ventilation is ensured by air ducts on the bottom of the withdraws and continuous measurement of the temperature and humidity of the material is taken. The major drawbacks of this method are:
(i) High cost is required for the transportation of bio-waste from production sites (farms, food processing plants, urban greenery) to composting plants.

(ii) Huge volumes of bio-waste, from different crops and processing operations, are stacked at the composting plant depots daily. The composition of the composting material differs in every batch. As a result, the final compost product has no standardized composition.

(iii) The treatment of big bio-waste volume results to important environmental impact, due to the production of leachates and odors. Special environmental licensing is required for the plants.

(iv) Large composting plants have a high initial investment cost.

Another composting method applied for small volumes of bio-waste is the use of in-vessel composting. The disadvantages of this method are:
(ι) The equipment has a high market cost.
(ii) When installed in bio-waste production sites (cultivation, food processing establishment, or from the urban greenery), they are used only the period of bio-waste production. This, results in the non-rational use of high-value equipment and the extension of the amortization time of the original investment.
(iii) Good knowledge of the composting process is required from the users to achieve successful operation of the in-vessel composter and producing of qualified and stabilized compost.

The implementation of the proposed modular and transportable composting plant will solve all the above problems as follows:
(i) Bio-waste will not be transported from the production site (farm or urban green area) but composting will be carried out in situ. This, will greatly reduce the cost of compost production.
(ii) The in-situ composting implementation, using bio-wastes with standard composition, will result to the compost production in a shorter time than conventional. The product will be stabilized and qualitatively upgraded with known beforehand composition. The physicochemical properties of the produced compost will be predetermined by appropriate blending of raw materials (bio-waste).
(iii) Addition of suitable components to the in vessel composting unit will result in the retention of odors and the concentration of the leachates in a separate batch, thus minimizing the environmental impact.
(iv) Potential clients will be able to choose whether to buy (with a view to providing them with consulting services at the same time) or to rent the system only for the time that the cultivation or processing activity produces bio-waste. In this way, the cost to the users is greatly reduced and the cost of composting to a large percentage of potential users is economically feasible.

(v) By choosing to rent, users will not buy a system that will be unused for a long time. They will only pay for the time they use MOBI-COMPOST.
(vi) When clients rent the system, our company will be responsible for its successful operation. Customers who choose to purchase the system, intending to settle it at their different farm field locations during the year, will have the option of being provided with advisory services from our company.

The individual parts forming the MOBICOMPOST system are:
(i) Bio-waste separator. Different types of separators will be used in each crop or processing process.
(ii) a bio-waste shredder with different shrinkage levels. Various shred equipment will be used with different shrinkage specifications, depending on the type of the input bio-waste and the preferable physico-chemical specifications of the produced product.
(iii) In vessel composting unit. Three (3) alternative types of units will be used, with a volume gradient from 5.000 lt to 15.000 lt. Full control and adjustment of the temperature and humidity of the material will be possible with the use of appropriate sensors and automation. Important will be the existence of components especially for the retention of odors and separate storage of composting leachate.
(iv) Packaging unit. At this part of the MOBI-COMPOST, unripe compost will be packed into sacks in order to ripen and transformed to fertilizer or soil conditioner. After packaging the material, the MOBI-COMPOST unit will be carried to another site (farm, processing plant or urban green area).
(v) computerized system (hardware and software) for the determination of the blends' proportion, depending on the physio-chemical composition of the input bio-waste and the desired standards of the final product.
The steps of the process for developing MOBICOMPOST system are:
i) Qualitative and quantitative determination of available raw materials (bio-waste) and an assessment of spatio-temporal concentrations for each type of bio-waste.
ii) Determination of the final product's technical specifications.
iii) Determination of the detailed specifications for the parts that constitute the MOBI-COMPOST unit and the alternative options for each of them.
iv) Design and construction of experimental micro in-vessel composting units
v) Optimizing the operating procedures of the micro in-vessel composting units. This process will help the company determine the operating conditions (temperature-humidity) of the in-vessel composting unit for each blend of bio-waste and for each desired final product.
vi) Capturing the flow diagram of the portable modular MOBI-COMPOST unit.
vi) Obtaining a patent for the MOBI-COMPOST unit.

The implementation of innovation is at the stage of experimental proof of concept (TRL 3, according to the General Annex G of the working program). Micro in-vessel composting units have been manufactured at the composting plant of the company and experimental composting to different blends of bio-waste are implemented. Laboratory measurements are made both to the physical and chemical characteristics of the raw materials (bio-waste) and, also to the characteristics of the final compost products. Experimentation in addition to the quantitative and qualitative composition of blends, also concerns the different temperature and humidity conditions during the composting process.

(b) Methodology
The actions to be taken for the implementation of the comprehensive feasibility study, are:
(i) Technical feasibility study. Laboratory analyzes of the physical and chemical characteristics of the raw materials (bio-waste from different plant species and food processing by-products) will be carried out. Then, based on the results, decisions will be made regarding the blends to be used. Micro-composting experiments will be carried out, in order to determine the optimal temperature and humidity conditions for composting each type of bio-waste and the appropriate blends.
(ii) Technological feasibility study. A detailed recording of the bio-waste produced in each crop, processing activity and urban greenery will be made. Based on the potential quantities of bio-waste and the composition of the blends that will have arisen from the technical feasibility study, a dimensioning of the mechanical parts will be conducted. All possible combinations in order to set up the modular unit MOBI-COMPOST will also be defined. Accurately determination of the cost for each part will be achieved.
(iii) Market feasibility study. Based on cropland data of the Ministry of Agriculture and the using Geographical Information Systems techniques, potential customers will be identified and mapped in the areas of interest. In addition, a mapping of the spatial concentration and the potential of the food processing

activities that are potential customers will be carried out. Regarding urban greenery, the land will be mapped using remote sensing data. Greek Municipality authorities will be categorized as first or second priority markets depending on their total area of urban greenery.

Regarding the marketing of the produced products, all the fertilizers' wholesalers and their trading products will be recorded. They will be categorized as first or second priority markets, depending on the types of fertilizers they trade. Companies with products competing or complementary of the produced compost will be recorded as second priority prospective customers or potential competitors.

In order to achieve the company's expansion into foreign markets, companies that are active in the production and sales of compost products will be investigated in northern European countries.
The MOBI-COMPOST system apart from the Greek market will also be targeted at the markets of other EU countries with emphasis on northern European countries. The lack of phosphorus in the agricultural lands of these countries, combined with the new EU regulatory framework for bio-waste recycling fertilizers and the extensive usage of composting in these countries, constitute a major business opportunity for the company.
A further advantage is the potential of the stakeholders rent the unit and therefore produce high quality compost from the bio-waste of their crops or their processing activities by-products.

1.4 Ambition

Ambitions to be achieved in phases 1 and 2 of the project are:
The design and construction of the first portable, modular and variable volume, bio-waste composting plant.
The development of a composting plant that archives the shortest composting time in large bio-waste volumes. Despite the reduction of the processing time, the standards of the final product will be compatible with the European Fertilizer Quality Label.
The development of a composting process that provides significant economic benefit through the reduction of composting management costs (shorter composting time, in situ composting).
The production of customized soil conditioners and fertilizers with specs tailor made, according to the crops' needs, the soil quality and the climatic conditions.
Construction of 10 MOBI-COMPOST units during the first 5 years, which will be available for renting, with expected revenues of € 240.000 / year.
Financial leasing of 80 MOBI-COMPOST units during the first 5 years of the business plan implementation.
Sale of 40 MOBI-COMPOST units during the first 5 years of the business plan implementation.
Production of 2.000 tons bulk compost the first year. The projected increase in production and sales is expected to be 20% per annum during the first 5 years.
Sales of 10.000 compost packages in the first year of operation with an expected annual sales growth rate of 10% per year for the first 5 years.
Certification of 2 portable composting units to produce organic compost.

2. Impact

2.1 Expected Impacts

a) Users/Market

Potential users - customers are divided into 3 major categories and the respective problems that will be resolved are:
(i) Farmers. They need to purchase inexpensive fertilizers to fulfill specific soil nutrient deficiencies. Using MOBI-COMPOST (rental or purchase), they will be able to use their crop’s bio-waste to self-produce fertilizers suitable for their cultivations (with predefined standards). Small-scale farmers will save money from the fertilizer purchase by renting MOBI-COMPOST. They should pay for the system's use during the period that their crops produce bio-waste (eg pruning season), with no initial investment cost. Large-scale growers will acquire a system (either purchasing it, or use finance leasing), and they will be able to self-produce a significant proportion of the large quantities of fertilizer. It is estimated that in 4-5 years they will have full capital amortization.
One more problem to be solved is the disposal of bio-waste produced by crops. Farmers usually either combust them (resulting in a significant smoke production and high environmental impact) or soil incorporation (resulting in the recycling of pluripotent diseases). The second one has as a direct consequence the increased pesticides use. The use of MOBI-COMPOST will effectively address the above problems.

(ii) Companies that process food and produce a large volume of bio-waste in a very short space of time, need to remove bio-waste from production sites at the lowest possible cost. By renting MOBI-COMPOST they will be charged a small amount annually and solve the problem bio-waste disposal problem.

(iii) municipalities with large green urban areas face immediate need for transporting the produced bio-wastes (pruning, leaves, etc.) from those areas to waste disposal plants fully separated from other wastes. Apart from separation costs, they also have significant costs for transporting and depositing bio-waste. Large volumes of these bio-wastes produced in small spaces (usually urban parks) and in a short time window. Municipalities' composting plants using standard open withdraws method face the odor problem (that is very important in urban areas) and the leachate problem (that need special handling) because they significantly are a burden for the environment. Using the renting MOBI-COMPOST option, municipalities will solve the specific problems because of the in-situ separation and composting. It will result to significant cost reduction due το the minimizing of bio-waste volume transported to waste disposal plants.

The profit for users (in relation to the current situation), to invest in MOBI-COMPOST is:
(i) Farmers. They spend a lot of money on the fertilizer purchase. By implementing the self-production of qualitive fertilizers (MOBI-COMPOST use) they will have important cost reduction.

(ιi) Food processing companies have substantial costs for the transportation and deposition of by-products to compost production plants or waste disposal constructions. Using MOBI-COMPOST they will spend less money, while at the same time they solve the by-products' disposal problem.

(iii) Municipal authorities encounter great expenses for bio-waste (pruning, cut grass, etc) separation. Furthermore, transporting and depositing them in landfills is an important expense. By renting MOBI-COMPOST they will spend less money and they will have fertilizer available to use at the public and private gardens.

The use to a great extent of MOBI-COMPOST will have the following benefits in terms of protecting the environment, combat climate change and disseminating the idea of recycling to the society:
Innovation of MOBI-COMPOST is an environmentally beneficial solution in the context of the circular economy. Moreover, it gives the opportunity to all interested parties, to implement low cost composting procedures, with simultaneously economic exploitation of bio-wastes, since they converted into a value-added product. Implementation of MOBI-COMPOST will significantly reduce the volume of burned bio-waste or transported in landfills. The use of fertilizers produced by the composting process will significantly reduce the import need for chemical phosphate fertilizers in EU countries.
The fact that the composting process is being implemented in easily accessible locations will define MOBI-COMPOST plants as examples of good environmental practices and possibly visited places for students and in general by interested people.

The estimated size and growth prospects for the major markets are:
(i) Farmers. Crops with significant commercial interest are these adjacent to the urban fabric and producing high volume of bio-waste. Indicative crops of considerable interest during the pruning season are olive groves and vineyards. In Greece, but also in other countries (mainly Mediterranean) there are great cultivated areas close to urban areas, ~~so~~ thus the size of the potential market is very large. Regarding the market maturity, Greece is still not very mature (since a large percentage of farmers are not familiar with composting), while in other European countries the market is much more mature with more environmentally-friendly growers.

(ii) Food processing enterprises. Indicative activities that are of great interest are wineries and olive oil mills. Both have a large production of by-products (bio-waste) in a short time window (1-2 months each). The potential market size is large in Greece, as well as, in other European countries. The maturity of this market may not be at the desired level, however there is significant need for these enterprises to dispose their bio-waste with the lowest possible cost.

(iii) Municipality authorities. In Greece and in other European countries there are too many cities with large urban green areas. Maturity of this market is at a good level because:
(a) there is a great need to minimize the volume of bio-waste
(b) several composting efforts are already implemented in many municipalities.

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The MOBI-COMPOST project addressed to the European market and especially in the northern EU part. The data that define the above mentioned as an attractive market segment and indicate that there are significant success prospects, are:
(i) Great public acceptance of the waste recycling process.

(ii) Based on widespread implementation of composting and use of compost products is anticipated that there an increased need for composting cost reduction. This is the comparative advantage of MOBI-COMPOST innovation in relation to existing composting methods.

(iii) Agricultural land in northern Europe is deficient in phosphorus. This results in the increased imports of phosphorous chemical fertilizer. The development of an extensive composting plants network, that will produce organic fertilizers with standard specifications (one of them will be the available phosphorus), constitutes a significant business opportunity.

The most important competitors are: Composting companies, wholesalers and importers of phosphorus chemical fertilizers.

The solutions to address the competition are:
(i) Reduced prices for MOBI-COMPOST rental.

(ii) Reduced wholesale prices of MOBI-COMPOST products (organic fertilizers). This is possible due to low production costs.

(iii) Production of fertilizers with fixed technical specs.

(iv) Dissemination to the public and the professionals of company's environmentally friendly profile.

The most relevant markets are: olive growers, wine growers, winemakers and organic farmers. Municipal authorities at cities with large population density and many urban green areas. Another relevant market is the fertilizer wholesalers for organic crops.

The most important obstacles to be overtaken by the company are:
(i) Circumvent to the farmers' belief that bio-waste must be burned or incorporated into the soil.
(ii) Dissemination of the conviction to the public that the predilection to circular economy products is useful for the public good.
(iii) Farmers' apprehension that qualitative organic fertilizers from composting are as commensurate as chemical fertilizers.

The targeted MOBI-COMPOST's end-users (as already mentioned) are farmers, food processing enterprises and urban municipal authorities. In order to approach them, door to door sales, conference presentations and other activities will be undertaken.
End-users of the produced organic fertilizer are farmers, organic growers and retail customers with increased environmental awareness. We can reach them with recourse to social networking, web advertising but also through partner sales channels.

The main stakeholders involved in the commercial exploitation are wholesalers of organic fertilizers and agro-sales outlets.

Outside Greece, the main commercial partners will be companies with composting experience, they must already have a volume customer base and a wide sales network for their products.

b) Company
The company has been active for many years in the maintenance of green projects and in composting works mainly in Greek municipalities). Innovation is the result of many years of experience and it is one of the most flexible solutions for the sustainable management of bio-waste for both crops and food processing sub-products and urban greenery.

The founder and owner of the company has great experience in composting, crop farming and urban management.

The cost of sales per installation is around the amount of € 30.000 and expected sales of 40 plants over time of 5 years, the estimated revenue is € 1.200.000.

Finance leasing, with a 5-year duration, is expected to yield € 1.500 / plant for the acquisition of equipment at the end of the 5-year period, while the lease will cost around € 6.000 / year and installation. It is estimated that there will be a finance leasing of 80 installations / year that will generate revenue of € 480.000 / year.

With regard to the rental services of the 10 mobile composting units to be constructed, it is estimated that the charge per 20 days rental (time required for the production of immature compost) will be € 2.000. The total time for installing, composting and uninstalling the system will be about 30 days, hence each system is anticipated to be used 12 times a year and give the company revenue of € 24.000 / year. Thus the 10 systems at 5 years will bring the company revenue of € 240.000 / year.

The market for soil improvers in the EU is € 400.000.000, with an estimated penetration of 0,1% of the highly competitive European market expected to be € 400.000 per year.

The planned growth of the company will yield employment growth with the creation of 10 new workforce positions, 4 agronomic positions, 2 administrative positions and 2 sales positions. Overall, it is estimated that it shall offer 18 new jobs to our company at a time of 5 years.

2.2 Measures to maximize impact

a) Dissemination and exploitation of results

With regard to the dissemination of MOBI-COMPOST, the following actions will be developed:
Firstly, a specialized multi-site site will be installed, presenting all the technical details of innovation.
Social networks will be also used:
(i) social media (facebook, twitter, youtube) for public awareness about innovation and its contribution to the cyclical economy and the protection of the environment.
(ii) a business and employment-oriented social networking service (Linkedin) to inform the potential users of the system.
Workshops will be organized in cooperation with agricultural associations, professional chambers and municipalities to raise public awareness on composting issues, as well as informing those responsible for the possibility of using and benefiting from the use of the innovative MOBI-COMPOST unit.

The abovementioned initiatives for Greece by our company and for the EU countries to be developed, the local distributors will undertake to implement the same actions tailored to the specificities of their country.

With regard to the utilization of Greece and the part of the rentals and sales of the MOBI-COMPOST units, the company will provide its own existing and new specially trained staff, attempting door-to-door briefing the potential customers and aiming at direct sales of services and products. For the sale of the final product will lead to agreements with fertilizer wholesaler merchants and agricultural suppliers who have their own sales network.
For the commercial utilization of innovation outside of the country, strategic partnerships will be sought with companies that will undertake the same commercialization model with Greece (with the necessary adjustments to the peculiarities of each country's market).

The implementation of the Phase 1 of SME Instrument's integrated feasibility study will help achieve the business aim as follows:
(i) The technical feasibility study will specify the crops, the processing activities and the cities that are the target market, in detail. Besides, the specification of blends and the spatio-temporal collection of bio-waste, in the above-mentioned activities, will narrow even more the target markets to defined spatially frames.

(ii) The implementation of the technological feasibility study will precisely specify ~~of~~ the initial cost of equipment and operating expenses investment. In this way, an accurate pricing of the services and a

determination of the available potential part of the market to rent or buy a MOBI-COMPOST system, will be specified.

(iii) The implementation of the market feasibility study will still record the potential customers and their characteristics, in detail. From the results of this section of the feasibility study, will arise the "specifications" of the prospective customers, to be used by the company's Nordic countries associates to apply the commercial model of the MOBI-COMPOST services and units in their territories.

b) Intellectual Property, knowledge protection and regulatory issues

Until now, no patent protection request for MOBI-COMPOST innovation has been submitted for. The company is considering submitting a request with the general idea of renting a movable modular composting system.

Once the technical feasibility study has been achieved, and since the precise quantitative and qualitative features of bio-derived blends meet the features of specific qualitative characteristics compost, will be processed the necessary steps to register some of the final products (compost) as a patent.

A research about relative patents, as far as the knowledge of the market, it is clear clarify that there is "freedom to operate" for this innovation.

A new EU Regulation classifies plant bio-waste to non-hazardous waste for which no specific licenses are required. The MOBI-COMPOST case, which will handle small bio-waste volumes and apply the closed-system process, does not require a licensing process. During the feasibility study implementation in Greece, in the frame of the market feasibility study, will be relative searches in the legal framework of the countries that will show an exceptional interest, regarding the composting process and the use of compost in crops.

3. Implementation

3.1 Work plan – work package and deliverables.

The proposed work plan consists of 7 Tasks. As described in detail at table 3.1.a, the Technical Feasibility study is about to be implemented first, to produce important data (as input) for the rest of the feasibility studies (market, administrative, etc). The economic viability study (business plan) shall ensure the viability of the innovative project MOBI-COMPOST. An extensive patent analysis search will be done, in order to ensure the “free to operate” for the project and identify patents’ opportunities.

3.2 Management structure and procedures (only to the extent relevant in single entity proposals)

FILIS ATHANASIOS (FILIS COMPOST), as the only member of the consortium, will ensure management of the Phase 1 project along with the management of external relations. FILIS COMPOST’ management team ensure that the project deliverable is met and according to schedule and to high quality. Commercial risks will be identified and mitigated.

3.3 Consortium as a whole (if applicable)

FILIS COMPOST will be the only member of MOBI-COMPOST consortium in Phase 1 project.

3.4 Resources to be committed

	Costs of the feasibility study / direct and indirect costs of the action	Total costs	Reimbursement rate %	Maximum EU contribution	Maximum grant amount
Form of costs	Lump Sum				
	50.000,00	71.429,00	70%	50.000,00	50.000,00

Table 3.1.a: Work package description

Work Package Title	**Feasibility Study**
Objectives are to (1) carry out technical, market, organizational, administrative feasibility studies and (2) generate a Business plan (economic viability study) for the development and introduction of the innovative modular and portable composting system (MOBI-COMPOST).	
Task 1. Technical feasibility study. Technical feasibility study. The detail components of bio-waste blends, the operational conditions of the in-vessel composting unit and the specifications of the produced fertilizers will be achieved during this part of the project. The results, will give detail information for the (Task 2) and (Task 4) procedures. It will also give information regarding the (Task 5) patent application for some of the produced fertilizers. **Task 2. Market feasibility study**. Market feasibility study. According to the output of (Task 1) blends, detail mapping of the potential markets in Greece will be addressed. Definition of the possible distributors' profile and the detail of the commercial policy for the EU markets will be achieved. **Task 3**. **Organizational - administrative feasibility study**. The definition of the scientific knowledge and skills of the personnel will be reported. **Task 4. Economic viability study – Business plan**. A detailed definition of total capital requirement and operational cost will be realized. Subsequently, the sales' prices of installation and rental costs will be determined. An estimation of the break-even and the ROI will be achieved in order to calculate the ιnvestment's viability. Marketing strategy will be also defined. **Task 5**. **Network Patent Analysis.** The technique will be used to confirm the freedom to operate in the targeting technology and market sectors. It will also arise the possible opportunities to patent some of the produced organic fertilizers. **Task 6. Dissemination and exploitation efforts**. This will conclude reports regarding: door-to-door sales schedule, social networks posts, project website, scientific presentations to conferences. **Task 7. Project management – coordination of deliverable and impacts**. As the only member of the consortium, FILIS COMPOST will take administrative responsibility for holding and maintaining the Risk log of the project and ensuring that all significant risks will be overcomed through the quality control procedures.	
Deliverable 1: Feasibility report, including: Technical, market, administrative feasibility report. Detail business plan. Network Patent Analysis report. (Month 6 of the project).	

Section 4: Members of the consortium

The only participant in the consortium is FILIS ATHANASIOS company.

Short company description

The company of construction and maintenance urban and suburban landscape of Mr. Filis Athanasios has been operating since 2001 in private and public works that are mostly located in Greece (West Attica). The company is mainly engaged in large-scale landscaping and greenery projects. Up to today it has undertaken and successfully completed more than 800 small and large-scale projects (private and public). In the company are occupied permanently 6 employees and occasionally, on a case-by-case basis, up to 12 employees.

The equipment that is available covers the full range of requirements for the construction and maintenance of green projects. The well-trained staff working in the company, the modern material and technical infrastructure, the company's even structure with secretarial support, accountancy and competition department and its collaborations with specialized units of production of plants, special laboratories, scientific consultants and external partners ensure high quality in its works.

The company is accredited with all the necessary international standards for quality assurance in its services (ISO 9001, ISO 14001, OHSAS 18001 etc).

The company has collaborated and still cooperates with public and private organizations in the shaping of their green areas, some of which are listed below: Municipality of Elefsina, TITAN SA, Municipality of Nikaia, National Road Fund, Agricultural University of Athens, Elefsina Port Authority SA, Attica Psychiatric Hospital, DIA Hellas, 112 Military Airport, Ssmart SA, Elefsina Hotel and others.

In response to modern environmental challenges for waste recovery, the company has been successfully operating in the field of composting plant biomass produced from landscape maintenance works. Specifically, the company carries out the construction and maintenance of green areas and the composting of the plant biomass wastes resulting from these works in the Municipality of Elefsina. From 2006 until today, dealing with the aforementioned project has acquired innovative know-how in the management of large-scale plant biomass waste.

Company’s multiannual experience in the field of construction and maintenance of green areas and in composting plant biomass wastes largely guarantee integrated and sustainable management in any large or small-scale private or public projects of the specific sector.

Curriculum vitae

The persons who will mainly involve in the project MOBI-COMPOST are:

Filis Athanasios (male). He finished his studies on 2001 at Agricultural University of Athens. He owns an MSc graduate on Plant production systems. He established the company “FILIS ATHANASIOS (FILIS COMPOST) since 2001. His main research interests are: landscape architecture, composting procedures, organic fertilizers, soil conditioners.

Tsiamas Fotios (male). He is an Agricultural Engineer, graduated from the School of Agricultural Products (Kalamata city Technological University) since 2010. He has considerable professional

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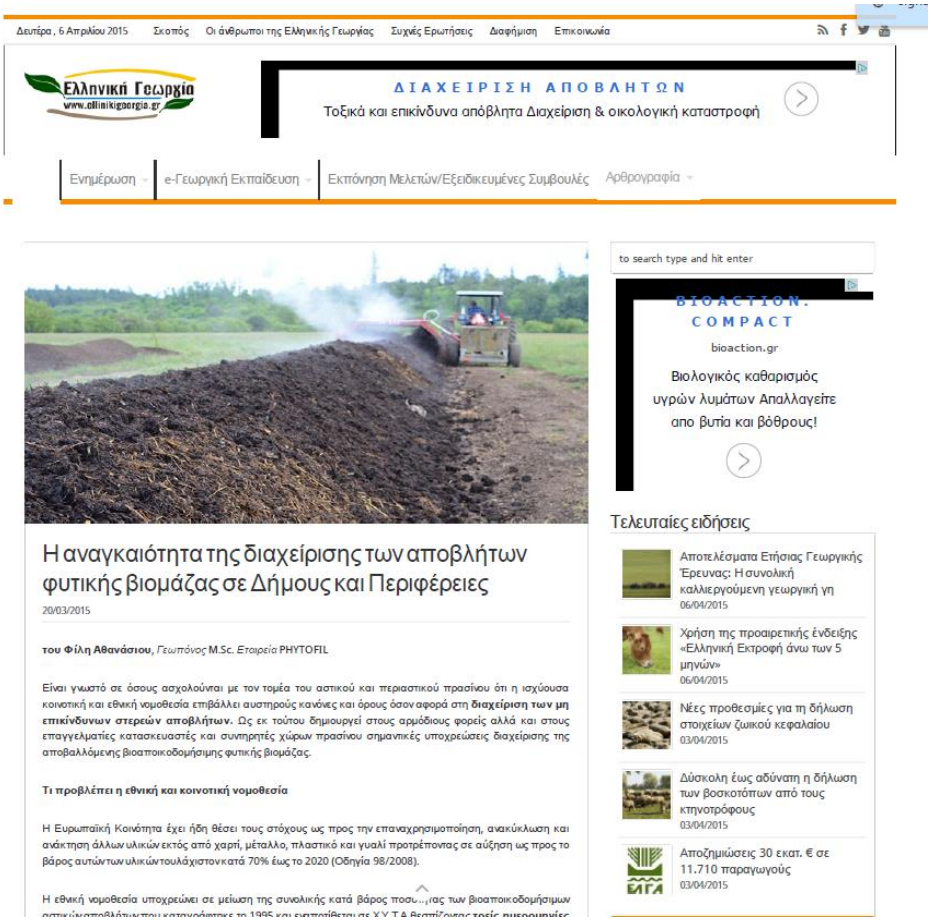
experience as a manager at urban and suburban landscape projects – composting procedures at many companies. He is occupied at “FILIS ATHANASIOS” company since 2015, as a quality assurance manager. His research interests are in the fields of: composting of bio-waste, soil condition improvement, landscape architecture.

Relevant publications

1. The necessity of composting plant biomass waste in municipalities and regions.

Author: Filis Athanasios.

Published to the agricultural scientific magazine “Elliniki Georgia” on 4/6/2015



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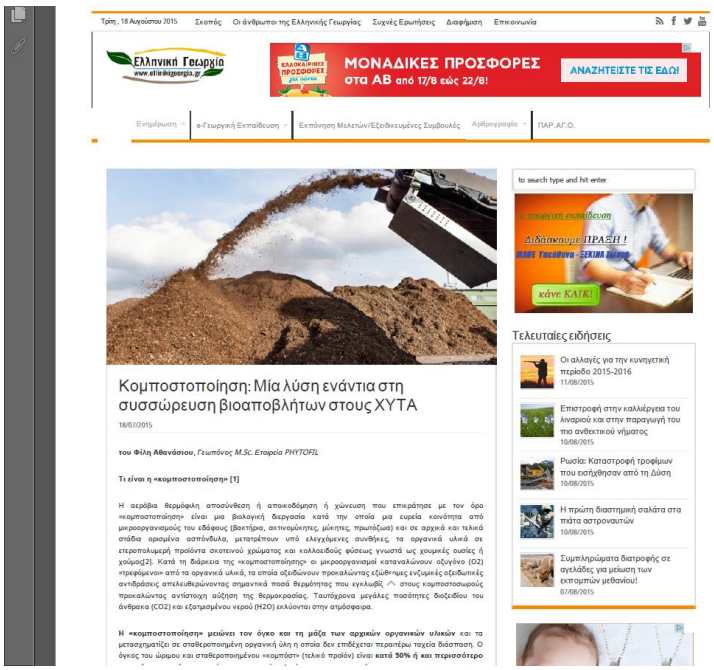
2. Production of qualitative compost from solid municipal waste
Author: Filis Athanasios.
Published to the agricultural scientific magazine “Elliniki Georgia” on 17/4/2015

3. Composting. An alternative to the accumulation of waste to landfills.
Author: Filis Athanasios.
Published to the agricultural scientific magazine “Elliniki Georgia” on 18/8/2015



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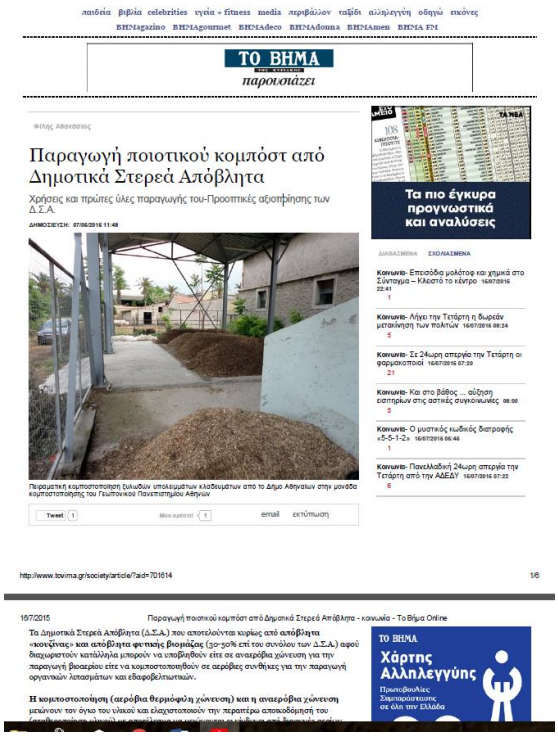
4. Production of quality compost from Municipal Solid Waste

Author: Filis Athanasios.
Published to daily newspaper “Vima” on 16/7/2015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Παραγωγή ποιοτικού κομπόστ από Δημοτικά Στερεά Απόβλητα

Χρήσεις και πρώτες ύλες παραγωγής του-Προοπτικές αξιοποίησης των Δ.Σ.Α.

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http://www.tovima.gr/society/article/?aid=701614

16/7/2015 Παραγωγή ποιοτικού κομπόστ από Δημοτικά Στερεά Απόβλητα - κοινωνία - Το Βήμα Online

ΤΟ ΒΗΜΑ Χάρτης Αλληλεγγύης

Relevant previous projects

No	Project title	Project owner	Year	Duration	Cost (€)
1	Composting bio-waste from green urban and suburban areas	Municipality of Elefsina	2015	6 months	64.206,00
2	Composting bio-waste from green urban and suburban areas	Municipality of Elefsina	2013	4 months	64.944,00
3	Composting bio-waste from green urban and suburban areas	Municipality of Elefsina	2012	4 months	64.944,00
4	Composting bio-waste from green urban and suburban areas	Municipality of Elefsina	2011	2 months	50.654,47
5	Composting bio-waste from green urban and suburban areas	Municipality of Elefsina	2010	2 months	42.676,37

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Significant infrastructure

1. separator of pruning

2. shredder for tree branches

3. compost inversion machine

4. Temperature sensors for compost

5. Humidity sensors for compost

4.1. Third parties involved in the project

Please complete, for each participant, the following table (or simply state "No third parties involved", if applicable):

Does the participant plan to subcontract certain tasks	Y
If yes, describe and justify the tasks to be subcontracted *Regarding the technical feasibility study, only the laboratory measurements for the physicochemical characteristics of the bio-wastes from pruning and the physicochemical characteristics of the produced organic fertilizer (compost) will be implemented to the Agricultural University of soils (Laboratory of Soils).*	

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Section 5: Ethics and security

5.1 Ethics

⚠ *For more guidance, see the document "How to complete your ethics self-assessment".*

If you have entered any ethics issues in the ethical issue table in the administrative proposal forms, you must

- submit an ethics self-assessment, which
  - describes how the proposal meets the national legal and ethical requirements of the country or countries where the tasks raising ethical issues are to be carried out;
  - explains in detail how you intend to address the issues in the ethical issues table, in particular as regards:
    - research objectives (e.g. study of vulnerable populations, dual use, etc.)
    - research methodology (e.g. clinical trials, involvement of children and related consent procedures, protection of any data collected, etc.)
    - the potential impact of the research (e.g. dual use issues, environmental damage, stigmatisation of particular social groups, political or financial retaliation, benefit-sharing, misuse , etc.).
- provide the documents that you need under national law (if you already have them) e.g.
  - an ethics committee opinion;
  - the document notifying activities raising ethical issues or authorising such activities

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Ethics supporting documents

Regarding the project MOBI-COMPOST, there are no Ethics issues that must be considered during the implementation of the project.

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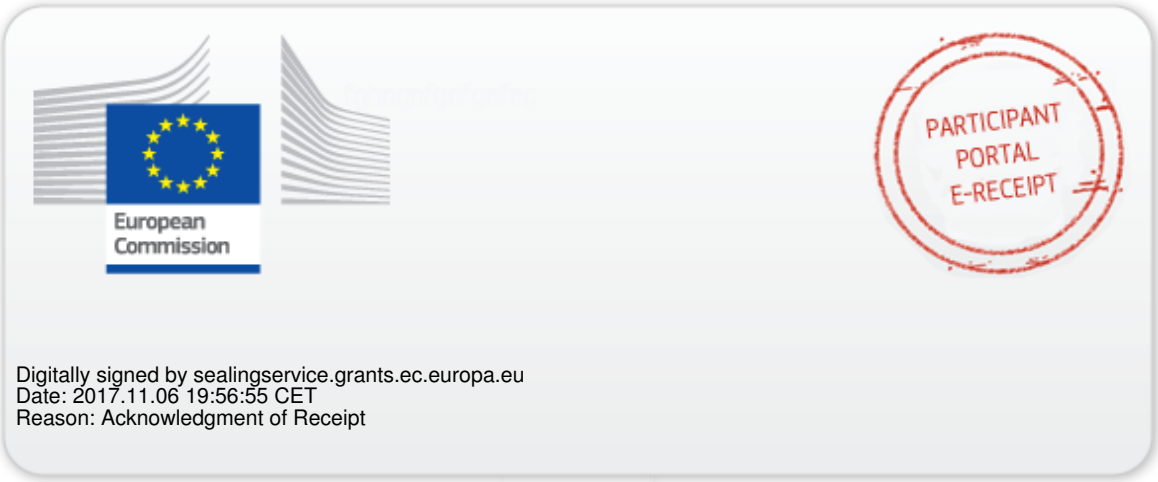

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