
SYMBIOSIS Project

**Symbiotic Networks of Bio-Waste Sustainable
Management**

3rd Periodical report

Date:

February 2020

About the project

SYMBIOSIS promotes re-manufacturing, reuse and recycle, and transforms one industry's waste to another's raw material and/or fuel, to pave the way for a more circular economy for the regions, where waste is eliminated and resources are used in an efficient and sustainable way. The direct beneficiaries of Symbiosis project will be the 'producers' and 'users' of bio-wastes that include a large number of companies and agro-industries inside the cross-border area. The common platform of SYMBIOSIS project will meet the 'offer' with the 'demand' of bio waste creating synergies and business opportunities providing new solution for exploitation of bio-waste. Scope is the real matching of those companies and the sign of cooperation agreements among them. Moreover, the local authorities responsible for waste management will conduct pilot testing for the exploitation of urban and agro-waste and will develop their Action Plans for bio-waste management and separate treatment. Last but not least, experts will conduct studies on the environmental and economic impact of the project to the participated regions.

Main target

The project main objective is to set up an integrated, sustainable, bio-waste management and trading scheme between the partner regions of Western Macedonia in Greece (former pref. of Florina) and the municipality areas of Bitola and Novatsi in Republic of North Macedonia following the Industrial Symbiosis concept. SYMBIOSIS will develop symbiotic networks bringing together companies and stakeholders from all business sectors, aiming to improve cross industry resource efficiency through material trading and sharing assets in an environmentally sustainable way.

Specific objectives

- To set-up a cross industry resource efficiency through organic material trading and sharing assets;
- To create industrial sustainable networks especially in the agro-food industry;
- To achieve maximum efficiencies in energy and water use;
- To have a reference point where the demand will meet the offer of bio-waste materials in CBC area;
- To improve the local policies on the management of bio-waste streams and tackle this issue individually following the directions of the EU policy for less bio-waste to the landfills and better utilization for other uses;
- To improve the environmental benefits by reducing the bio-waste streams that were disposed into landfills;

- To generate tangible social benefits to local communities by better use of bio resources from the food industry in favor to social activities;
- To improve the cooperation among sectors and businesses in cross-border area thus improving the local economies and boosting entrepreneurship;
- To support the local economies by safeguarding raw materials or fuel coming from bio-waste;
- To promote job creation in the regions into question by exploring the trade opportunities and using the waste as a resource.

Project partners

PARTNERS	PARTNER TITLE	COUNTRY
LB	Public Enterprise KOMUNALEC Bitola	The former Yugoslav Republic of Macedonia
PP2	Waste Management of Western Macedonia DIADYMA SA	Greece
PP3	Public Enterprise for communal works KOMUNALNA HIGIENA Novaci	The former Yugoslav Republic of Macedonia
PP4	INNOPOLIS - Centre for Innovation and Culture	Greece
PP5	Movement for Environment MOLIKA DOM Bitola	The former Yugoslav Republic of Macedonia
PP6	NTUA (National Technical University in Athens)	Greece

Actions

3rd project meeting

P.E. Komunalna Higiena – Novaci held the 3rd Kick off Meeting in Bitola on 14th and 15th of October 2019. On the meeting, mayor of the Municipality of Novaci, Kuzmanoski Ljube said: The benefit of preserving the environment will be great, for which we all need to do our best. The Municipality of Novaci, as a leader in the use of European funds, knows how important the cooperation between our country and

neighboring country - Greece is. That is why now and in the future we will be available for the implementation of successful projects for the benefit of the citizens of both countries. Another project of this program is currently being implemented in the Municipality of Novaci. We will continue to use the funds from the European funds in the next period 2021-2027.

At the presentation of the project, Pande Bogoevski, director of P.C.E. Komunalec-Bitola also said: We will distribute the bins for free to the households in order for them to start selecting the waste. Organic waste will then be processed in the composter from 14 to 28 days, and instead of landfill waste we will receive high quality organic fertilizer - compost that we will use in our nursery. So for the first time in our region, waste is no longer waste but a resource. Deputy Minister of Local Self-Government, Dejan Pavleski was also present at the 3rd Kick off Meeting. In addition to the meeting between the project partners, the entire equipment procured through the project by the partners from North Macedonia was promoted and presented. The participants in the conference also visited the Meglenci landfill is also located some of the equipment of the P.C.E. Komunalec -Bitola, procured through the project.

The partners discussed the implementation of the project and the actions that have taken place so far as well as the future actions and events that will take place until the end of the project. Moreover, a visit was made to the field where the partner Public Enterprise KOMUNALEC Bitola, guided the other partners in the landfill area. A demonstration of the new equipment took place. The new equipment is going to be used for the storage, collection, transport and final treatment/composting of organic waste (composting machine, tractor, garbage truck, organic waste bins). Below there are some photos of the meeting (link: <https://symbiosisproject.eu/3rd-project-meeting-in-bitola/>)

Figure 1 Third project meeting in the field



Figure 2 Third project meeting



Figure 3 Equipment



Greek area partners' actions

On September 5th, 2019 the green shredder of green waste were received in order to cover the needs of the project by DIADYMA (link: <https://symbiosisproject.eu/892/>). Also, a compost unit was installed towards the last quarter of 2019 in DIADYMA's facilities. The pilot implementation was started and will have duration of 6 months.

Figure 4 The Green Shredder for green waste



Figure 5 Pilot implementation of the compost unit in Florina



By October 2019, INNOPOLIS provided data for the report on the biowaste streams in Greek area and by November 2019, published the fourth e-newsletter with information towards project stakeholders about the project progress (link: <https://us18.campaign-archive.com/?u=40f91692fb642e20fba644086&id=0d0b74a8ac>). By December 2019 symbiosis platform was ready (developed by NTUA) (<https://platform.symbiosisproject.eu/>), the local stakeholders were registered and all the partners were involved in this action. The registration was held with private interviews by completing the questionnaire (link: <https://symbiosisproject.eu/questionnaire/>) and then were transferred into the platform. Symbiosis platform will continuously be updated. By December 2019, DIADYMA also prepared a report about similar cases of symbiotic networks in Europe, in order to set a base for the platform, identify the needs of companies and inspire the future match-making among the stakeholders. In January 2020, INNOPOLIS published the 5th newsletter (link: <https://us18.campaign-archive.com/?u=40f91692fb642e20fba644086&id=62afb78a2d>) and NTUA prepared a training material for local stakeholders in order to use the platform that will be continuous updated. On February 13th and 14th INNOPOLIS organized 2 training meetings (in city of Florina & city of Thessaloniki respectively) for the use of the platform and all the local stakeholders was invited (link: <http://www.innopolis.org/symbiosis-2-%ce%b5%ce%ba%cf%80%ce%b1%ce%b9%ce%b4%ce%b5%cf%85%cf%84%ce%b9%ce%ba%ce%b5%cf%83-%cf%83%cf%85%ce%bd%ce%b1%ce%bd%cf%84%ce%b7%cf%83%ce%b5%ce%b9%cf%83-%ce%b1%ce%bd%ce%b1%cf%86%ce%bf%cf%81/>). In those meetings NTUA explained the use of platform and gave useful information about the match-making of stakeholders.

Figure 6. Training meeting in Thessaloniki



Also in the dissemination hub of the official website; helpful articles were published in order to communicate information to local stakeholders and public (link: <https://symbiosisproject.eu/waste-to-energy-in-europe/>, <https://symbiosisproject.eu/report-on-circular-economy-advantages/>).

Republic of North Macedonia area partners

By December 2019 MOLIKA completed the printing of fridge magnets and waste bin stickers.

Below there are some photos:

<p>СИМБИОТСКИ МРЕЖИ ЗА ОДРЖЛИВО УПРАВУВАЊЕ СО ОРГАНСКИ ОТПАД www.symbiosisproject.eu</p>	<p>ВКЛУЧИ СЕ И БИДИ ДЕЛ ОД АКЦИЈАТА ПОЧИСТО, ПОЕКОНОМИЧНО, ПОЗДРАВО, ПОУБАВО</p> <p>    </p>
 <p>ОРГАНСКИ ОТПАД</p>	
<p>Interreg - IPA CBC    CCI 2014 TC 16 ISCB 009 SYMBIOSIS PROJECT BUDGET: 898.858,33 € Project co-funded by the European Union and national funds of the participating countries</p>	<p>КУПУВАЈ ПАМЕТНО, СОРТИРАЈ ГО ОТПАДОТ И РЕЦИКЛИРАЈ</p> 

<p>ВКЛУЧИ СЕ И БИДИ ДЕЛ ОД АКЦИЈАТА ПОЧИСТО, ПОЕКОНОМИЧНО, ПОЗДРАВО, ПОУБАВО</p>	
<p>Interreg - IPA CBC    CCI 2014 TC 16 ISCB 009 SYMBIOSIS СИМБИОТСКИ МРЕЖИ ЗА ОДРЖЛИВО УПРАВУВАЊЕ СО ОРГАНСКИ ОТПАД WWW.SYMBIOSISPROJECT.EU</p>	 <p>ОРГАНСКИ ОТПАД</p>
 <p>КУПУВАЈ ПАМЕТНО, СОРТИРАЈ ГО ОТПАДОТ И РЕЦИКЛИРАЈ</p>	

The third part of the project activities is related to the pilot operation of the composting equipment. An external expert will monitor the operation of the composter for six months by using different mixes of waste (make use of at least three different mixtures of municipal solid waste, agro-waste, manure etc.). The expert monitors and records the level of implementation of the procedure for primary waste selection, quantities and types of bio-waste collected within the project targeted area (Pelagonija Region). He also monitors the operation of the installed bio-container, i.e. the processes regarding the use of the shredder and the loading unit. In the same time, the expert records the quantities used within composting procedure, entering the bio-composter chamber where they are aerated, agitated and mixed with the incoming fresh waste by different mixing techniques. At

least three different mixtures of municipal solid waste and agro-waste, sewage sludge, manure etc. will be used. The expert will work seven months: 1-month preparational actions & 6 months full operation of the bio-container. At the end of the pilot operation, the expert will deliver reports on the procedures implemented, operation of the equipment and results of the pilot bio-waste treatment. In parallel with the pilot operation of the equipment, a technical study on composting in the Bitola region is prepared.

The Technical Study on Composting in Bitola Region is developed upon results gained from project activities regarding the capacities and types of bio-waste available in Pelagonija Region and will enclose the following chapters:

- a) Conceptual design of bio-waste treatment
- b) Development of the main project and defining location requirements
- c) Technical specifications of composting equipment
- d) Forecast of investment costs.

The study will be used as a tool for identifying a suitable location for a large scale (industrial) composting facility which could be built if technical and financial aspects of the operation of installed pilot (small scale) composting facility are positive. The study will identify procedures for obtaining the building permit and planning the financial structure of the investment. This study will ensure the continuation of the action, i.e. project sustainability.