

Newsletter 4

"Utilising Pay As You Throw Systems and Autonomous Composting Units for Biowastes Management in Touristic Areas (BIOWASTE)"
a project co-funded by the European Union and National Funds of the participating countries

In this newsletter

It's time for results!

Each of the three involved municipalities have installed and are operating their **Autonomous Composting Units (ACUs)**.

In this newsletter we will present the results from the three municipalities and the relevant dissemination actions.

Quick Reminder

BIOWASTE project is a solid wastes source separation scheme, aiming mostly in the hospitality industry, as well as, small and decentralized communities, which organic wastes are in its core, with their onsite treatment to play an important and key role. It is implemented in the framework of **Interreg Balkan-Mediterranean** Programme.

Project Partners are:

Lead Partner



Municipality of Katerini, Greece

Partners



Municipality of Probitip, Republic of North Macedonia



Municipality of Yermasoyia, Cyprus



Hellenic Mediterranean University - Educational and Research Committee, Greece



University "Goce Delcev", Republic of North Macedonia

www.biowaste-balkanmed.eu



Municipality of Katerini, Greece

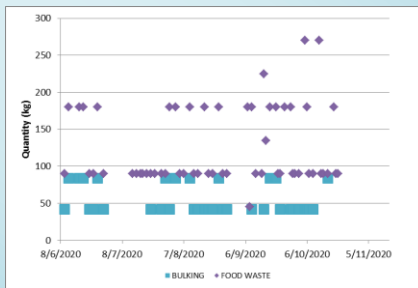
Two Autonomous Composting Units (ACUs) have been installed, one in Prosilio Community (a small residential community at Svoronos) and one in the General Hospital of Katerini.



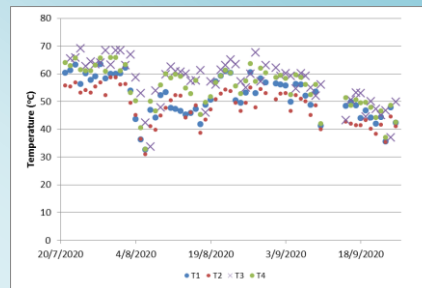
Installed Autonomous Composting Unit (ACU)



The municipality has organized an open info day with citizens participation. It should be noted that the presentation of the program aroused the intense interest of the participating residents from the three areas, so several of them not only took part in the dialogue that took place after the presentation but also stated in writing their participation in its implementation.



Food Waste and bulking where they added to ACU (Prosilio).



Temperature evolution during pilot composting at four locations along the ACU (Prosilio).

The temperature and humidity values achieved during the period of pilot operation of ACUs meet the optimum conditions of composting process treating fed in biowaste, following also ACUs optimum operational conditions.

From the collected data, during the operational monitoring period of the installed ACUs, it is identified that the required condition of 60 °C is achieved for at least 7 days during the thermophilic phase of the process for both installed ACUs. In overall ACUs operational period, took place certain adjustments of the operational conditions in order to maximize the composting process efficiency, following units manufacturer technical specifications. Additionally, the produced compost has high quality physical and chemical characteristics resulting an excellent fertilizer for agricultural use.

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Municipality of Yermasoyia, Cyprus

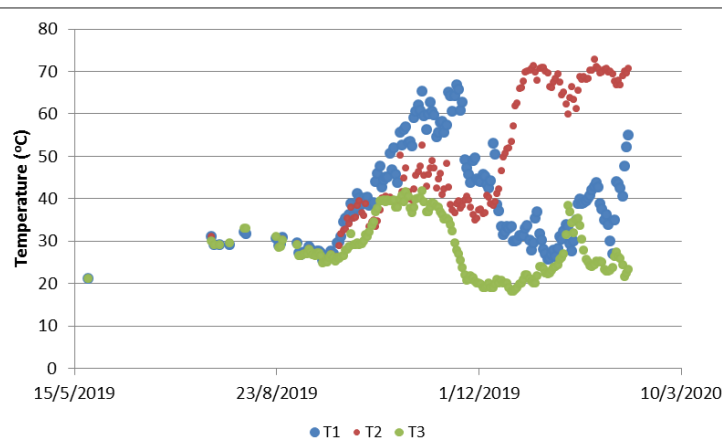
The Municipality of Yermasoyia has successfully proceeded with the installation of four ACUs in two pilot areas, one ACU in a Hotel (pilot 1) and three ACUs in three parks (pilot 2).

Monitoring of composting of bio-waste and green waste revealed that the process is typical of aerobic treatment of organic waste taking into account the evolution of temperature levels and the moisture content of the substrate during the pilot application. It has been observed that high temperatures are achieved for a sufficient time on the substrate to ensure the required hygienic conditions of the substrate. Correspondingly humidity and temperatures fluctuate favorably for the required aerobic conditions. In addition, in the samples tested, pH, organic matter and nutrients varied to satisfactory levels. Therefore, the application of sorting systems at the source of bio-waste is considered necessary for the management of bio-waste and the production of a product with very good characteristics.



Physical characteristics of the product

From the temperature data for the pilot study of the pilot application of composting of bio-waste it is estimated that the required condition of 60°C is achieved for at least 7 days during the thermophilic phase of the process (in the first part of ACU) for the ACUs. The temperatures developed during the pilot application of composting are in the range of optimum temperature values for the longest substrate residence time in ACU. According to the literature, this range is between 43-65°C.



Temperature evolution during the pilot application of composting at three points along ACU 511 (Park Kykladon)

Based on the environmental evaluation of the pilot operation, it has been concluded that composting practices, can help with: stabilization of landfill waste, reduction of the quantity of solid organic waste being disposed of, reduction of toxic and greenhouse gases released during the decomposition process and encouragement of the reuse of the final product in agriculture and gardening. The compost produced by the ACUs can act as a soil conditioner enhancing soil fertility.

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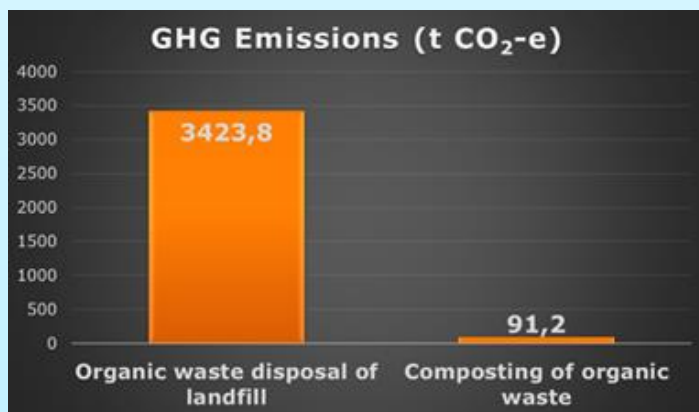
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Municipality of Probishtip, Republic of North Macedonia

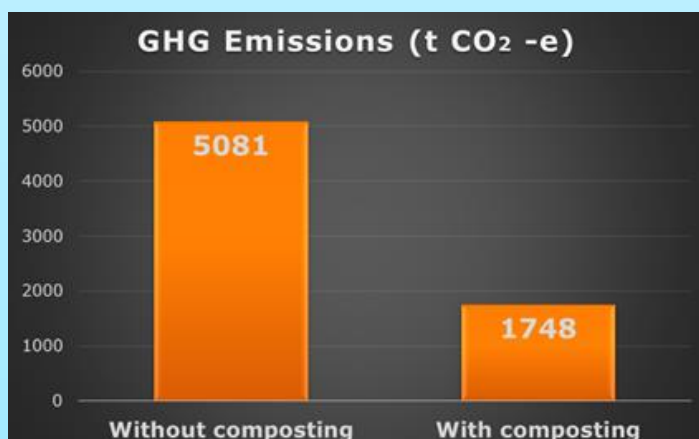
On behalf of the Probishtip Municipality there are two ACU’s, one in the center of the town and one in Kalnishte settlement. Moreover, bins with chips for the households and RFID readers are used, along with system for mass measuring of the bins and system for storage and data collection as well as vehicle tracking system with built-in GPS receiver for the public utility enterprise “Nikola Karev”.

Focus to the results

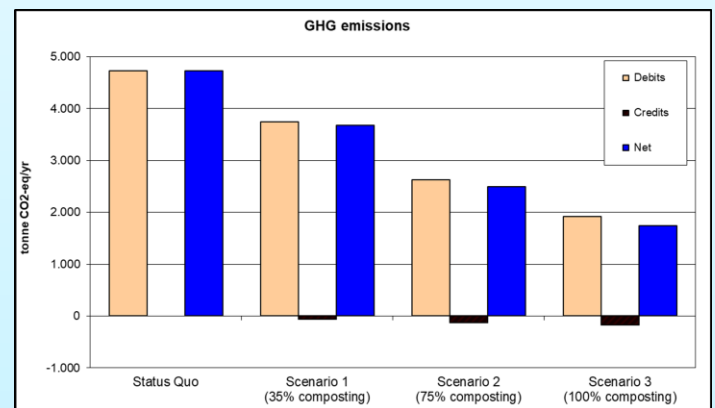
In the diagram below, comparison of greenhouse gas emissions during disposal and composting for Municipality of Probishtip is presented. There is the amount of the organic waste disposal of the landfill and the amount of the composted organic waste.



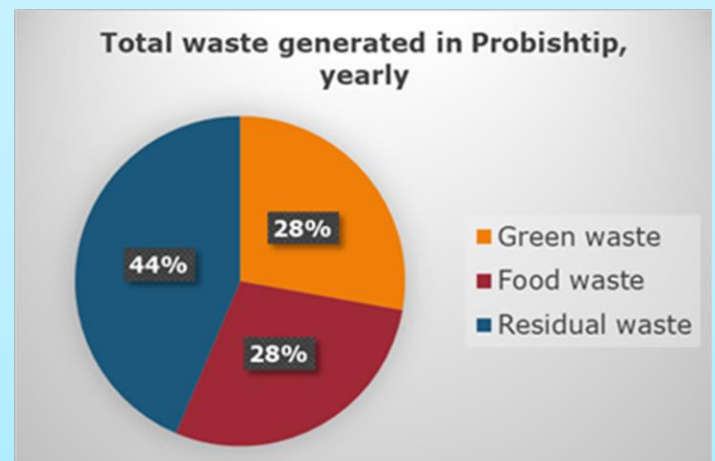
In the next diagram we can see the emissions of the greenhouse gas without composting and with composting. There is a difference in the numbers and the most important is that this can be even better if we continue with the composting processes.



The diagram below presents three scenarios starting with the 0 point or status quo and modeling if we compose 35%, 75% or 100% from the organic waste. The difference in carbon dioxide emissions in the air is obvious.



In Probishtip Municipality from the total waste 28% is green waste, 28% is food waste and the rest (44%) is residual waste.



A complete system has been developed and implemented, which enables:

- identification of the waste producer and measurement of the amount of waste, which each producer in the scope creates;
- generating data (routes, quantities, generating locations), which are necessary for more economical and efficient waste management at all levels.

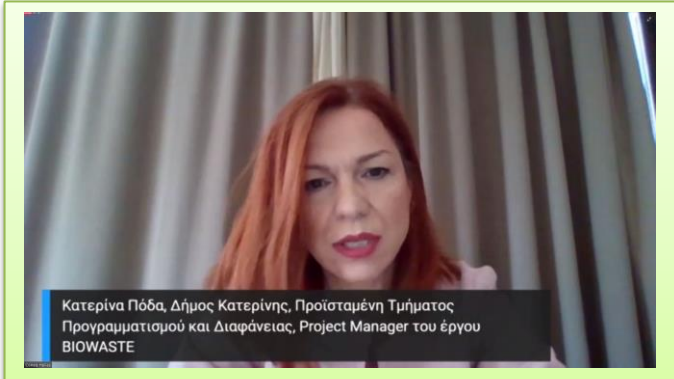
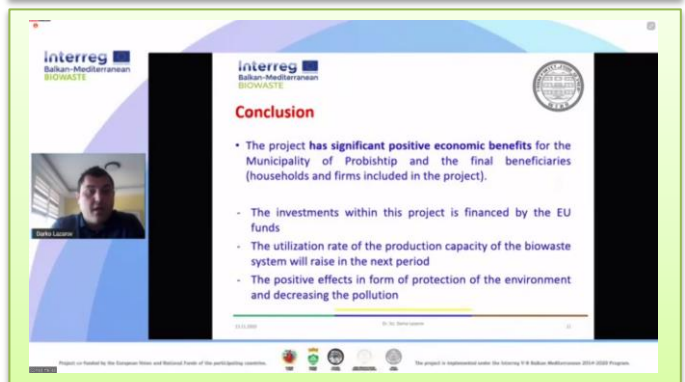
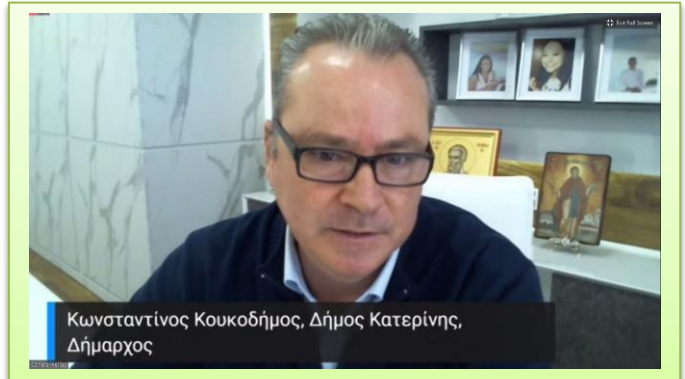
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Our project's results

The results of the "BIOWASTE" project were presented at an online event - webinar, on Monday 23 November 2020.

The event was included in the European Week for Waste Reduction 21-29/11/2020. The organization of the event was carried out by the Municipality of Katerini, in collaboration with the Technical Consultant PIERIKI ANAPTIXIAKI-Local Development Agency.



The systems installed within "BIOWASTE" project along with other projects related to waste management were presented at an online event - webinar, on Monday 6 November 2020, organized by the scientific partner of the project Hellenic Mediterranean University.



Our publications

BIOWASTE: Χρήση Συστημάτων «Πληρώνω όσο Πετώ» και Αυτόνομων Μηχανικών Κομποστοποιητών

Συντάκτες: Δρ. Ζαχαρούλης Κώστας Παναγιώτ. Αναπτυξιακή Α.Ε.-Ο.Τ.Α., Δρ. Μοραγκαλά Αγγελική-Ελληνικό Μεσογειακό Πανεπιστήμιο, Πόδα Κατερίνη-Δήμος Κατερίνης

Το έργο BIOWASTE είναι ένα πιλοτικό έργο εγκατάστασης συστημάτων διαχωρισμού στερεών αποβλήτων στην πηγή τους και επίσημα επεξεργασίας των βιοαποβλήτων ή οργανικών. Σχεδιάστηκε επίσης στον κλάδο της φιλοξενίας καθώς και σε μαγαζιά και επιχειρήσεις κοσμήτων, όπου και ο διαχωρισμός των βιο-

Στο πλαίσιο του έργου BIOWASTE τα προτεινόμενα συστήματα επιλέχθηκαν οι τρεις όγκους διαφορετικών χαρακτηριστικών. Με τον τρόπο αυτό, κρέμα (όπως α) απέτυχε ένα λειτουργικό σύστημα «Πληρώνω-όσο-Πετώ» (PAYT),

ΤΕΕ ΤΚΜ ΤΕΧΝΙΚΟ ΕΠΙΜΕΤΡΗΡΙΟ (ΕΛΛΑΔΑ) ΤΕΧΝΙΚΑ ΚΕΝΤΡΑ ΜΑΚΕΔΟΝΙΑΣ

Αρμόδια: Προσλή, Την Αρμερία, Μαρία στον κόσμο, Γιώργος, Ζωίτσα, Ελένη, Παύλος

14 Νοεμβρίου 2020

Η εμπειρία από το έργο Biowaste στον Δήμο Κατερίνης

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Σύμφωνα με τον οδηγό «48/2008/ΕΚ του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου για το σπινάκι και τη διαχείριση τους, όλες οι κάρτες μέλη θα πρέπει μέχρι το 2020, να διαθέτουν ένα κωδικό σύστημα (microchip) των βιοαποβλήτων τους σε κάθε είδατος ποσότητα για τον καθαρισμό. Στην Ελλάδα, το Εθνικό Σχέδιο Διαχείρισης Αποβλήτων (ΕΣΔΑ), έχει ορίσει τα ποσά από 40L για να μετρηθεί η επεξεργασία από το ποσότητα, χωρίς το τελεματικό σύστημα, οι αλλαγές στον τρόπο διαχείρισης των βιοαποβλήτων θα πρέπει να είναι σημαντικές, και καλλίως, χωρίς οι ποσότητες αποβλήτων. Οι αλλαγές που προτείνονται, όπως το έργο BIOWASTE αποτελεί ο εργαλείο αντιμετώπισης διαχείρισης των βιοαποβλήτων μεγάλων επιχειρήσεων, όπως (επιχειρήσεις, μεγάλες κοινωνικές ή και μικρές επιχειρήσεις) κοσμήτων, σε άλλους με τελεματικό σύστημα καθώς και οι κωδικούς κάρτες από κάρτα διαχείρισης τους.