

System development for the separate collection of biowaste and waste producer identification services for the purpose of producing soil conditioners

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The research project «CHOISE plus» aims to support the industrial research emphasizing on the empowerment of the circular economy application regarding the food value chain. CHOISEs' goals are as follows:

- To improve research activities enhancing the development of circular economy's application new market products and services in the area of the food value chain.
- To boost open innovation processes and improve inspired and innovative products, services and circular economy business models in food value chain.
- To create business growth roadmaps for the escalation of the production/sales of the circular economy's food value chain.

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GNOSI as a private company participating in CHOISE's plus project Open Innovation Collaboration for circular economy, is responsible to the development and implementation of a MIS system (Management Information System) regarding the separate compilation of bio-waste and the production of soil improvement products. This system concerns any Agency accountable for its own waste, for example a municipality who is responsible for the management and disposal of the waste in its administrative boundaries (households and businesses).

The proposed **Management Information System (MIS)** will be an information system used for decision making and the coordination, control, analysis, and visualization of information in a municipality. It will be a process guide, a manual which includes steps and flow charts for the Municipality staff, Municipality Administration, households and businesses. A commercially viable methodology will be developed concerning the separate collection of bio-waste and the production of soil improvement products with a combination of waste bins weighing, volume measuring and waste producer identification services. The results will be uploaded to an online platform invoking financial decisions on the part of the Municipality, as far as the Municipal Fees are concerned. The diversion and exploitation of biodegradable waste from landfill with the cooperation of waste producers (households and businesses) leads to the production of the soil improvement products. As a result, the economy of food and beverages is strengthened.

Source separation and waste producers identification

Vari Voula Vouliagmeni (VVV) and Korydallos Municipalities collect Biodegradable waste / Greens (pruning) (code 20 02 01 [3], [4] & [5]) from sidewalks with open vehicles, with or without grab, and loaders.

Table 1 : Biodegradable Waste in VVV and Korydallos Municipalities (year 2018)

Kind (Code)	VVV Municipality Quantity (tn)	Korydallos Municipality Quantity (tn)
Biodegradable from kitchens and dining areas (20 01 08)	14,65	0
Biodegradable waste / Greens (pruning) (20 02 01)	4.937,52	186,35

Since 2018 VVV Municipality distributes free of charge special brown bins for organic waste, equipped with Radio-Frequency Identification (RFID) tags, in order to collect the organic, or biodegradable, waste. Organic waste is collected and weighed two or three times a week and the results are uploaded in a database. [6]

Figure 1

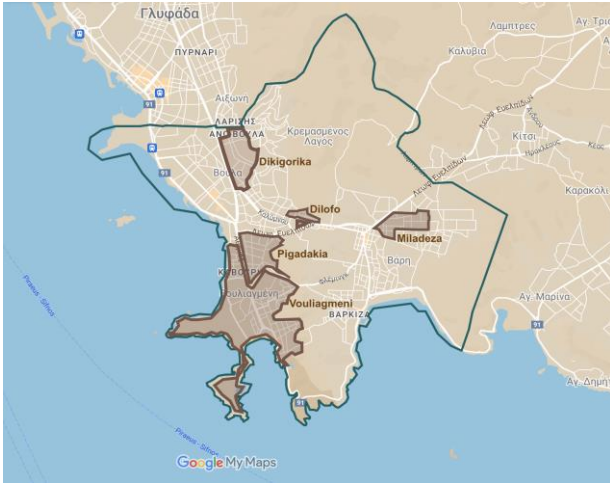
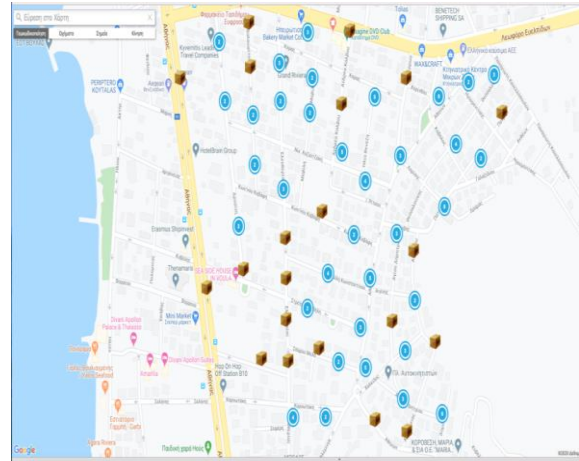


Figure 2



The application of the above methodology led to a spectacular increase in organic waste at VVV’s Municipality.

Table 2 : Biodegradable Waste in VVV and Korydallos Municipalities (year 2021 , [5])

Kind (Code)	VVV Municipality Quantity (tn)	Korydallos Municipality Quantity (tn)
Biodegradable from kitchens and dining areas (20 01 08)	436,63	0
Biodegradable waste / Greens (pruning) (20 02 01)	6.082,82	355,00

In contrast, in the Municipality of Korydallos, in which the above methodology (or something similar) was not applied, the separate collection of organic waste remained at very low levels

With the guidance of CHOISE plus a commercially viable methodology will be developed based on the above positive results and those imposed by Greek Law 4819/2021 (Integrated framework for waste management - Pay As You Throw) and Article 84 of Law 4685/2020 which defines as mandatory the new stream of biowaste (brown bins), for various businesses and mainly for mass catering businesses.

References

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