

Collecting food wastes from hospitality units as part of the F4F Life Project: Quantity, Quality and Cost

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Abstract

Food waste is increasingly produced in line with economic development and population growth. Improper management of food waste creates human health and environment problems. During this study, the quantity and quality of food wastes produced in 4-star and 5-star hotels in the island of Crete, Greece was examined. In addition a cost analysis was conducted. A list of hospitality units in the area was created and a survey regarding their needs took place. This survey aim to evaluate: a) the existing source separation system of organic wastes, b) the storage conditions of these wastes, c) the deployed tools (bags, bins etc), d) the quality and quantity of the separated wastes (composition analysis), and e) the existing municipal wastes collection system.

Keywords: collection system, hotels, food consumption

1. Introduction

It is noticeable that the food and drink value chain in the EU causes 17% of our direct greenhouse gas emissions and 28% of material resource use, with our consumption patterns having global impacts, in particular related to the consumption of animal proteins and water use. When the environmental impacts of the life cycle of food waste are quantified, i.e. not only those linked to the management of food waste (transport, treatment, disposal), but also those generated during the other stages of the life cycle of food, before it becomes waste, it is estimated that food waste generates at least 170 Mt of CO₂eq each year, a figure that represents more than 3% of the total EU-27 emissions in 2010. Based on the US Environmental Protection Agency, in 2012 alone, more than 14 % of the total MSW produced in the country were characterized as food wastes or 35 million, with only two per cent diverted from landfills and incinerators for composting. In the EU it is estimated that 90 million tn of food wastes are produced every year, an equivalent of 180 kg per person. As an average EU

presents a better rate of utilisation in composting / anaerobic digestion than the USA, but in some countries and especially in the south, the majority of food waste ends up in landfill. In Greece for example, in 2013 more than 95 % of food wastes ends up in landfill, either directly or indirectly. Waste policy in the EU is implemented by the revised Waste Framework Directive (2008/98/EC) and the Landfill Directive (99/31/EC) and requires large waste diversion from landfills, especially for biodegradable waste, such as food waste, promotion of source separation, recycling and efficient energy recovery, while waste prevention is ranked as the highest priority. More specifically, the EU Landfill Directive (1999/31/EC) sets as target the progressive reduction of biodegradable municipal waste going to landfill, to 35% of the 1995 disposal level by 2020. For countries like Greece, it is clear that without successful long term waste prevention activities, achieving notable behavior change in the way people buy and use food, the treatment capacity required to handle food waste will need to increase by more than a factor of two as waste volumes continue to grow. In simple terms more money will be required and fewer results will be achieved. Waste prevention has been the paramount objective of both national and EU waste management policies for many years. However, limited progress has been made so far in transforming this objective into practical action. Neither the Community nor the national targets set in the past have been satisfactorily met, in Greece and generally in the Mediterranean region of the EU. Moreover, prevention measures are seldom considered as part of waste management and less effort goes into waste prevention than into its recycling and recovery, which are placed lower in the waste hierarchy. According to the European Commission (2011- Roadmap to a resource-efficient Europe) demand for food, feed and fibre may increase by 70% by 2050, whilst 60% of the world's major ecosystems that help produce these resources have already been degraded or are used unsustainably. Sustainable practices meet the needs of the present without

compromising the ability of future generations to meet their needs. Applying these concepts to food and feed production, nutritional sustainability is the ability of a food system to provide sufficient energy and essential nutrients required to maintain good health in a population without compromising the ability of future generations to meet their nutritional needs. Ecological, social, and economic aspects must be balanced to support the sustainability of the overall food system. Thus, food production is a main driver of environmental pressure in terms of land use, water consumption and greenhouse gas emissions and food waste contributes largely to loss of resources and inefficiency in the food chain. It is estimated that for each tn of eggs 3,300 m³ of fresh water are consumed where this value is five (5) times larger for each tn of beef and two times for each tn of pork meat (Mekonnen and Hoekstra, 2010). More simply, when food is wasted, the significant energy and material resources that go into producing that food are also wasted

Results

A list of 98 hospitality units, all of them 4 and 5 star hotels, was created (Figure 1). All hotels are found in the Municipality of Heraklion and the Municipality of Hersonissos, one of the largest touristic municipalities in the island of Crete, Greece. From these, four were selected to be served through the F4F project, mainly based on location (one in Hersonissos and three in Heraklion). Aim of the project was the collection of avoidable and unavoidable food wastes produced in the units, including the wastes produced during preparation of the meals. Bins were provided in the hotels to support their internal collection and transportation system, where the contractor responsible for the collection was responsible for providing the bins for the transportation of the food wastes from the hotels to the treatment site. The collection of food waste is still ongoing.

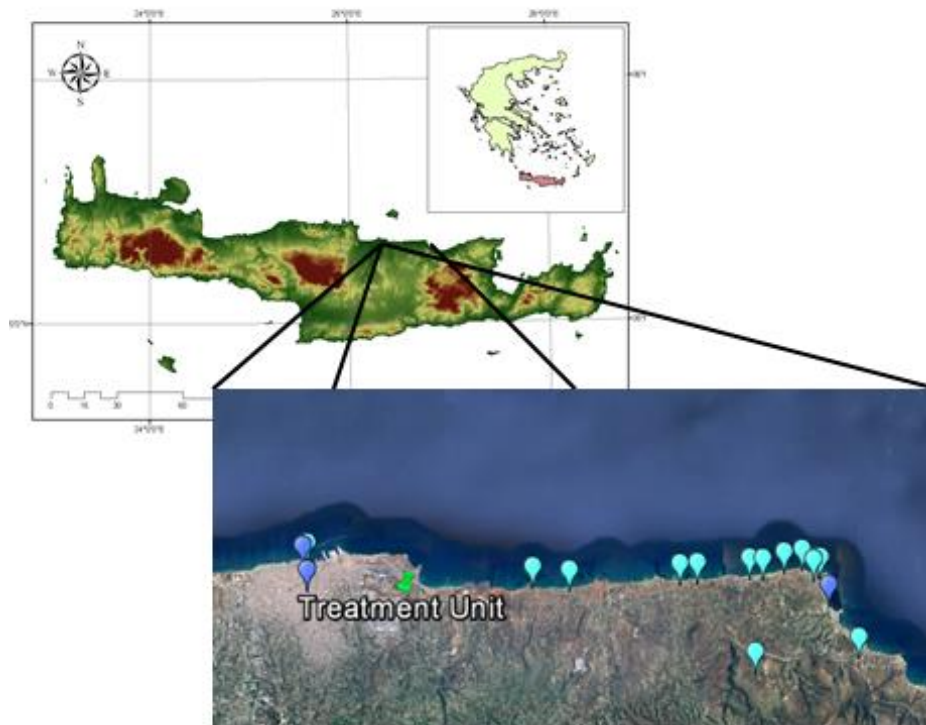


Figure 1. Location of a) five-star hotels (balloons) in the area, b) four selected hotels (blue balloons) and c) the pilot unit

More than 150 million people each year choose the Mediterranean Europe, meaning Portugal, Spain, France (South), Italy (South), Malta, Greece and Cyprus to spend their summer vacations. The great majority selects an organized hotel for accommodation and dines, on a daily basis, in all kinds of restaurants. It is estimated that each, in the average 10 days of vacations in the region, produce about 10 kg of food wastes (both avoidable and unavoidable), that could be collected separately. Respectively 1,500,000,000 kg of food wastes could be collected and managed separately under the strong Mediterranean sun in Europe alone.

2. Conclusions

Concluding all the above, the F4F process provides a tool that will allow tackling the following environmental issues:

- Food wastes ending up in landfill.
- Greenhouse gases emission related to producing, transporting, collecting, disposing and landfilling food and food wastes.
- Reduced wastes prevention actions.
- Reduced source separation and separate collection of wastes activities.
- Reduced recycling and reusing of food wastes.

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