

Action C1. Monitoring of the impact of the project actions  
Deliverable C1.4. Qualitatively and quantitatively verification of the impact of the project actions during realization

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LIFE Project Number  
**LIFE15 ENV/GR/000257**

LIFE PROJECT NAME or Acronym  
**LIFE-F4F (Food for Feed)**



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**Annex Data**

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<b>Action:</b>	C1 Monitoring of the impact of the project actions
<b>Partner:</b>	ALL PARTNERS
<b>Deliverable:</b>	C1.4. Qualitatively and quantitatively verification of the impact of the project actions during realization

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## 1. Introduction

During the project's implementation and its actions realization, qualitatively and quantitative impacts have been verified. In the following paragraphs, both the quantitative and the qualitative verifications are determined for the project's actions during its realization.

The main purpose and target of the present deliverable concerns the development of a monitoring system and verification methodology in every crucial step of the project's progress.

## 2. Quantitatively verification

To ensure the quantitative verification of the actions and energies of the project, specific mechanisms were developed. These are the following:

- ✓ **Quantitative verification of the collected food waste.** For the action concerning the service of collection and management of the collected food waste from the units collaborating with the project, it was decided by the involved bodies to develop a system of recording these food waste quantities by the contractor. Under this system, the contractor's remuneration can be separate for the collection action and separate for the management of the collected food waste.

In other words, a control mechanism was developed, based on which the contractor is remunerated for the work he produces in each case separately and not horizontally.

**Regarding the food waste collection cost:** the refrigerator truck for the food waste collection is equipped with a weighing system to weight and record per unit (waste producer - hotel) the produced quantities, and thus the contractor to be paid based on the weight of the collected waste. All parameters affecting the collection cost were taken into account and a price (€) per ton of collected waste was determined.

**Regarding the food waste treatment cost in the pilot unit:** Within the pilot unit where the collected organic waste was treated, a recording weighting system per bin and unit was developed and any foreign material per bin and unit was recorded. According to this, the exact food waste quantity per unit that was treated and entered for processing within the pilot unit could be recorded. In this way, the control of the incoming quantities to be treated within the project unit was ensured, while at the same time the purity of the collected materials could also be quantified. With the development of this control mechanism, it was possible to verify the quantities of final product produced based on those entering the unit. This system is necessary and should be an operating guide in each relevant project and in each respective organic waste collection and management unit, as the quantity of the produced product can be accurately determined when the amount of food waste to be collected and managed is known.

- ✓ The optimum collection route system was also developed in order to be able to add new units in this route and to have the average cost per collection route. There is also a verification system developed among km and collection cost.

- ✓ There was a feedback with hotels (cooperative units – food waste producers) and a verification system also developed according to the number of beds and the produced per unit food waste. According to this, it is possible to accurately estimate the produced food waste production per unit according the number of beds/visitors. This number was estimated at about 0.5kg/bed (visitor)

### 3. Qualitatively verification

To ensure the qualitative verification of the actions and energies of the project, specific mechanisms were developed. These are the following:

- ✓ Different raw materials during the project's progress were used and evaluated. According to the trials that carried out with different materials a qualitative verification method was develop. More specifically, the physicochemical characteristics and the nutrition value was determined for the following materials: food waste from the hotels' kitchens with meat, food waste from the hotels' kitchens without meat, grocery waste (fruits and vegetables from supermarkets), and by-products from poultry slaughterhouses. The developed methodology is based on specific per kind of raw material quantities and thus it is possible to approximately estimate the quality of the final product All these analyses are presented in the project's reports and deliverables.
- ✓ The results that occurred from the trials in animals used the final product as a component of their diets. In this case, the verification methodology concerns the determination of required quantities of the final product that have to be incorporated in the feedstuffs in pet animals, pigs and poultry.

### 4. Conclusions

The aim of the development of this control mechanism was the ability to verify the quantitative and qualitative characteristics of actions that are crucial for the project's implementation. This system is required to operate in each project and in each respective organic waste collection and management unit.

For the possibility of implementing the project on a large scale, with the development of a commercial unit, the specific monitoring system and verification methodology is considered necessary. On the one hand the "waste producer" to actually pay for the collection and treatment of the of the quantities he produces (pay as you through system), and on the other hand, the entity responsible for the collection and treatment of this organic waste, should also be paid according to real data and the work it produces.