

# The Environmental Impacts of Transforming Food Waste to Animal Feed via Solar Drying

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## Abstract

It is estimated that 90 million tonnes of food waste is produced every year in the EU from all sectors of the food provision chain (180 kg /person). In order to address the management of food waste generated by the catering businesses, an EU-based partnership has been formed in order to implement the Life+ F4F (Food for Feed) project. The project mainly aims to evaluate, through a pilot-scale demonstration, an innovative and simple technology, and a low-emission process that enables the safe transformation of food waste, mainly from hotels into animal feed. The manuscript presents the environmental impacts of the entire process required to transform the separated food wastes into animal feed utilizing solar drying. The scope of the study includes the infrastructure and the operation of the pilot drying unit. More specifically:

1. Excavation works and construction of the presorting unit and the drying greenhouse; construction of an underground tank for wastewater collection in addition to the hydraulic and electrical infrastructure of the presorting and solar drying units.
2. Infrastructure of the drying greenhouse: metallic structure, polycarbonate greenhouse covers, a transfer belt, a pump for the transfer of the mashed material, a submerged pump for wastewater. Moreover, the solar collectors, the floor heating pipes needed for drying and two refrigerating units.
3. Operation of the presorting unit and the drying greenhouse: the electricity and water use required for the operation will be assessed. The results of the impact assessment indicate that the major environmental burdens of the solar drying unit are generated by the electricity required for the operation of the solar drying unit.

**Keywords:** Life cycle assessment, food waste, solar drying, animal feed, hospitality.

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