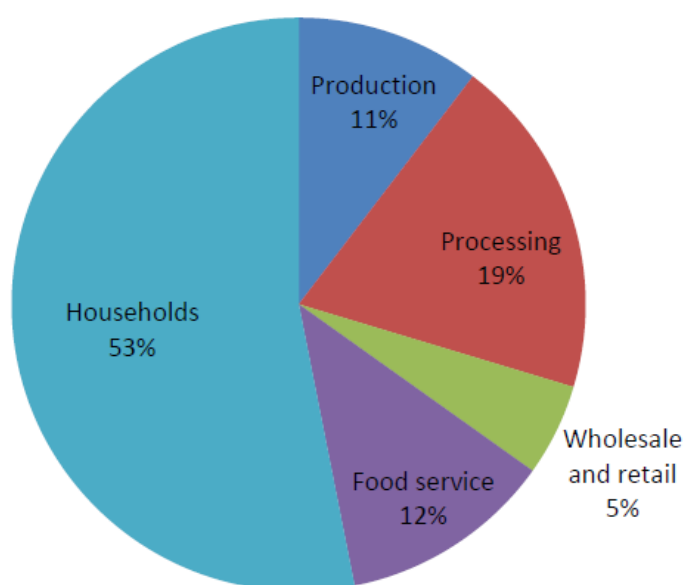


# Public Report for SEAI RDD/000157

## Food Waste in the EU and Ireland

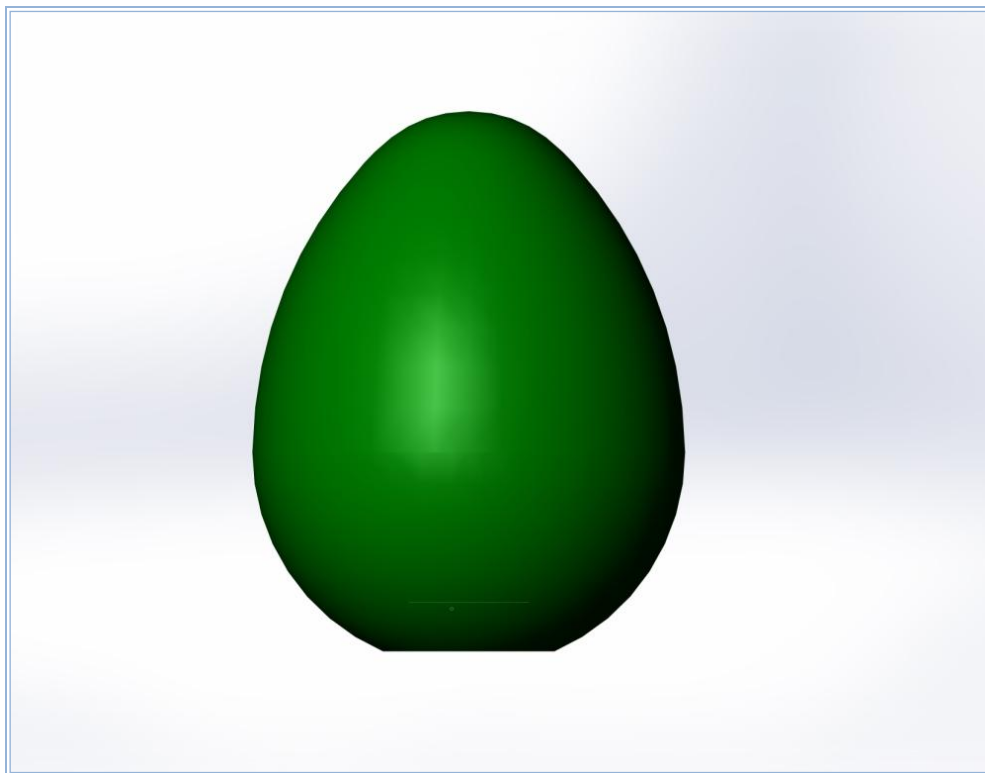
Studies completed by the European Union show that the majority of food waste that is generated in the 28 Member States is generated by households.



*Figure 1: Split of EU-28 food waste in 2012 by sector; includes food and inedible parts associated with food.*

It is estimated that each EU citizen produces approximately 92kg of food waste (food and inedible parts associated with food waste) per year. This equates 88 Million tonnes of food waste with 46.5 Million Tonnes being derived from households in the EU28 per year.

“MyGug” is a new Micro Scale Anaerobic Digester. The digester itself is shaped like an egg.



**MyGug**

MyGug is a complete Food Waste treatment system that fully integrates into a western household/small food business setting. It will operate in all weathers and climates from  $-20^{\circ}\text{C}$  in Northern Norway to  $+40^{\circ}\text{C}$  in Southern Spain. The system is fully enclosed so there are no smells or vermin issues.

All food waste produced in the household (both cooked and uncooked) is disposed of via a sink macerator and the waste is then pumped to the digester where it is digested. “MyGug” interfaces with the users smart device and gives feedback on the biogas volumes produced and food waste diverted from landfill/disposal.

There are a multiple of advantages to treating waste where it is produced both for the user and for the environment. These are outlined as follows:

1. Convenient and quick food waste disposal for the user
2. Environmentally friendly
3. No odour or vermin issues as the system is fully enclosed
4. Nutrient value of the food retained and reused locally in the form of liquid fertiliser
5. Use of biogas for cooking and heating (off-setting use of fossil fuels)
6. Reduced carbon footprint associated with the transport of waste
7. Reduced disposal costs for the user

8. Reduced energy/gas costs as biogas produced is used for cooking
9. No mixing of food waste with other municipal wastes (where there is no brown bin collection) resulting in zero contamination and emissions associated with segregation of wastes or landfilling

### **Background to “MyGugs” development**

In 2016 Kieran Coffey investigated the possibility of designing a micro scale anaerobic digester to treat household wastes. Kieran visited a number of sites<sup>1</sup> with small digesters and reviewed extensive literature on the subject. He also consulted with key advisors. Following this review it was concluded that a product of this type would be viable and in March 2017 an application was made for grant aid to the Sustainable Energy Authority of Ireland (SEAI) to partly fund the construction of a prototype. This application was successful and construction of the prototype commenced in August 2017. The prototype was completed by the end of 2017. It was then installed in a household setting where testing began in January 2018.



**MyGug prototype in a household setting**

“MyGug” has been performing exceptionally well in varying conditions and in all weathers with an average of 1.25kg/day during Testing and Report Period and up to 3.2kg/day of food waste being fed to MyGug (equivalent to 0.46 tonnes

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of food waste being diverted from landfill and/or disposal per year, with the potential to divert up to one tonne of food waste per year (i.e. Prototype Mini Egg Digester size shown above)).

Since April 2018 the average food volumes have increased to 1.98kg per day with an average biogas production of 348L/day.

There are societal benefits as well as user benefits including:

- Reduced CO<sub>2</sub> emissions associated with reduced waste truck movements
- Reduced CO<sub>2</sub> emissions from reduced processing of wastes (i.e. Processing & segregation of wastes)
- Reduced CO<sub>2</sub> emissions as biogas generated replaces fossil fuel derived natural gas
- Reduced CO<sub>2</sub> emissions from reduced truck movements for delivering gas cylinders
- Reduced CO<sub>2</sub> emissions as liquid fertiliser replaces fossil fuel derived fertilizers
- Reduced CO<sub>2</sub> emissions as no requirement for industrial composting facilities
- Reduced CO<sub>2</sub> emissions as no transport requirement for compost
- Nutrients are recycled rather than being disposed of in a landfill. There are also known to be N<sub>2</sub>O reductions due to anaerobic digestion of wastes and slurries. Nitrous Oxide (N<sub>2</sub>O) has a green house gas potential 310 times that of CO<sub>2</sub>.<sup>2</sup>

Kieran Coffey  
28<sup>th</sup> June 2018

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