



## COMPOST PRODUCTION IN EUROPE

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**Abstract:** Across the European Union, somewhere between 118 and 138 million tons of bio-waste arise annually, of which currently only about 40% (equivalent to 47,5 million tons per annum [M tpa]) is effectively recycled into high-quality compost and digestate. As up to 50% of municipal solid waste is organic, the bio-waste fraction plays an important role in recycling and the nascent circular economy. Implementation of separate collection of bio-waste in all EU member states as laid down in the Waste Framework Directive is a key for diverting organic waste from landfills and to guarantee that high-quality secondary raw materials (composts and digestate) are consistently manufactured, so that they can be placed on the European fertilizer market.

**Key words:** bio-waste, separate collection, recycling targets, quality criteria for compost and digestate

### 1. Introduction

The European Compost Network ‘ECN’ is the leading European organization promoting sustainable recycling practices, like composting and anaerobic digestion, with the aim to produce high quality compost and digestate.

In April 2019 ECN published a Status Report ‘European Bio-Waste Management’ [1] giving an overview of separate collection of bio-waste, its treatment and markets for recycled organic products across Europe. The overall aim was to update the ECN country reports and to obtain a consolidated overview of the state of play of bio-waste management across Europe. Together with the Working Group on Biological Waste Treatment of the International Solid Waste Association we set up a survey for data collection. Data from 18 European countries were obtained and analyzed. These data relate to the calendar years 2016 or 2017 and were compared with the EUROSTAT data released in 2016.

### 2. Compost production in Europe

According to the survey, in total 47.5 million tons of bio-waste is treated in 4.274 plants. The predominant bio-waste treatment process in Europe is still composting.

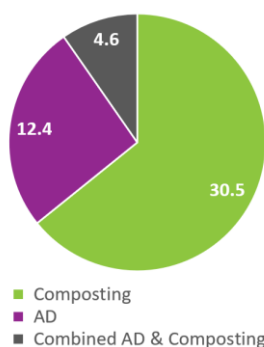


Fig. 1: Quantities of bio-waste composted and digested in Europe (tons per annum)

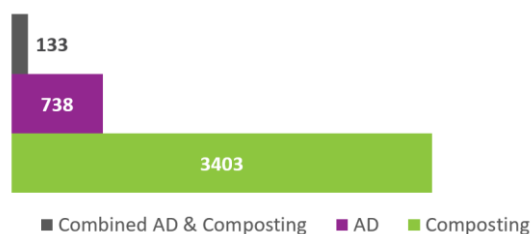


Fig 2: Number of composting and AD bio-waste processing plants

More than 3.400 composting plants treats 30.5 million tons of bio-waste, 12,4 million tons of bio-waste are anaerobically digested, and 4,6 million tons of bio-waste are treated in combined composting and AD plants.

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## 2.1. Treatment of bio-waste in European Countries

With 1.144 plants, Germany is the leading country in bio-waste management. With regard to the total amount of bio-waste treated per year and country Germany, with the highest population in Europe collects more than 14 million tons of bio-waste per year, followed by the UK with 8.9 million; Italy with 6.5 million, and France 4.6 million tons of biowaste. Besides Denmark and Sweden, in all countries, composting is the main treatment process for bio-waste. In Italy, anaerobic digestion of bio-waste is always combined with a post-composting step.

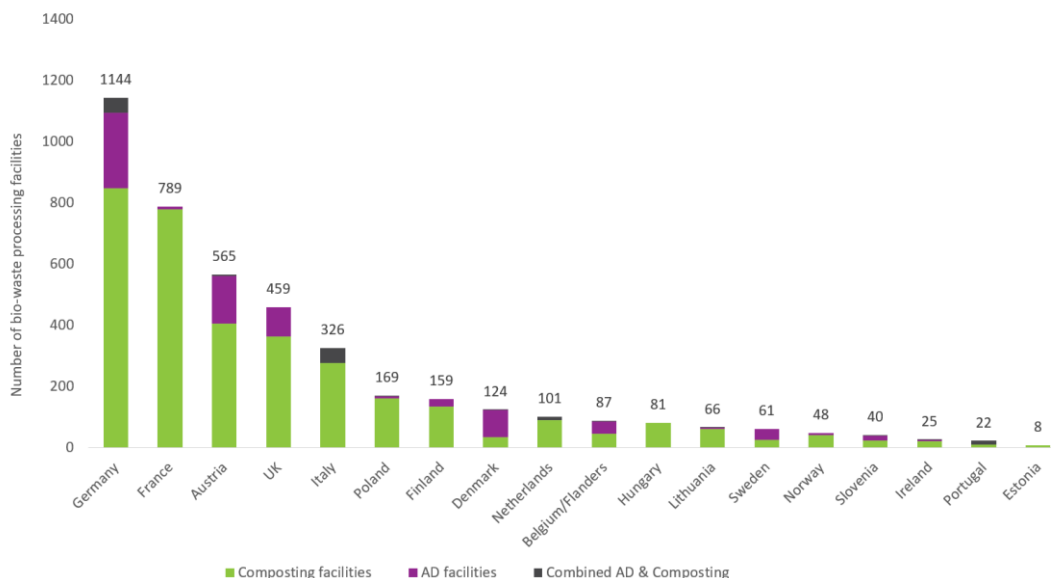


Fig 3: Number of bio-waste treatment facilities in each country

## 2.1. Potential of bio-waste

Comparing and analyzing these data with the estimated annual potential of 118-138 million tons of total bio-waste in Europe, as reported in the EU Commission's Communication on bio-waste [2], the separate collection and biological treatment of biowaste needs to be improved in Europe. Besides the amount of bio-waste from municipal waste, there is a huge amount - more than 40 million tons - of commercial and industrial bio-waste which can also be recycled in biological treatment plants.

## 3. Towards a Circular Economy in Europe

With the publication of the Circular Economy Package in 2015 [3] the EU has paved the way for better bio-waste management in Europe and for placing recycled bio-waste materials on the European market as products. The main objectives of the EU Circular Economy are to reduce the waste production in Europe, to promote recycling, to save primary resources, and to establish markets for secondary products. With the adoption of the revised Waste Framework Directive [4], Landfill Directive [5] and the EU Fertilizer Regulation [6] the legislative framework for achieving these objectives has been set. The main elements with relevance for improving bio-waste managing in Europe are introducing separate collection of bio-waste by 2023 in all member states, excluding mechanical biological treatment of municipal waste from recycling by 2027, and limiting the landfilling of municipal solid waste to 10% by 2035. With the revised EU Fertilizer Regulation, including harmonized European-wide end-of-waste criteria for compost and digestate, organic fertilizing products from recycled materials (compost and digestate) can be freely traded on the European fertilizer market.

## 4. Conclusions

With these legislative initiatives the way has been paved to develop a circular economy in Europe; taking the huge potential of bio-waste into account, the sustainable management of bio-waste will play a key role in making this happen.

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- [4] COM/2019/1009, “*Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003*”, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R1009>.

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