



Bio-Waste Recycling in Europe Against the Backdrop of the Circular Economy Package

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1 Introduction

Across the European Union, somewhere between 118 and 138 million tonnes of bio-waste arise annually [1], of which currently only about 25% (equivalent to 30 million tonnes per annum [M tpa]) is effectively recycled into high-quality compost and digestate. For the most part, organic waste is still landfilled within Europe, leading to the release of uncontrolled greenhouse gases. As up to 50% of municipal solid waste is organic, the bio-waste fraction therefore plays an important role in recycling and the nascent circular economy.

2 EU Circular Economy Package

Publication of the European Circular Economy Package by the EU Commission in December 2015 [2] paved the way for a resource-efficient society and sustainable recycling industry across Europe. In addition to setting out an action plan [3], the proposal [4], [5], [6], [7] also suggested revisions to key EU waste legislation with the aim of avoiding, reusing and recycling more waste in the future.

2.1 Amendment to EU waste legislation

Proposals for amendments to waste management legislation include revisions to the EU Landfill Directive (1999/31/EC), the EU Waste Framework Directive (2008/98/EC), the Packaging and Packaging Waste Directive (94/62/EC), the End of Life Vehicles Directive (2000/53/EC), the Batteries Directive (2006/66/EC) and the Directive on Waste Electrical and Electronic Equipment (2012/19/EC). The main aim of these revisions is to prevent waste arising in the first place, and then to promote its recycling in order to save resources within Europe. The following elements and targets are intended to help:

- A new target of 65% of municipal waste to be recycled by 2030;
- A new target of 75% of packaging waste to be recycled by 2030;
- A reduction on the landfilling of municipal waste to a maximum of 10% by 2030;
- A ban on landfilling separately collected waste;
- The promotion of economic instruments to reduce waste disposal;

- The introduction of simplified and improved definitions and harmonized calculation procedures for recycling rates in the EU;
- The introduction of measures to promote product re-use;
- The promotion of economic incentives for producers to market more environmentally friendly products; and
- Support for recycling and recycling systems (e.g. packaging, batteries, electrical and electronic equipment and vehicles).

2.1.1 Compulsory separate bio-waste collections

Of particular relevance to the future development of bio-waste treatment in Europe are the proposed changes to the EU Landfill Directive, namely:

- to reduce the landfilling of municipal waste to 10% by 2030, and
- a general ban on the landfilling of separately collected waste.

As bio-waste is the largest fraction of Europe's municipal waste stream (comprising, on average, 37% by weight) [8], the 10% landfill target can only be met through sustainable bio-waste management, including composting and anaerobic digestion.

The proposed ban on the landfilling of separately collected waste needs to be viewed in the context of proposed amendments to the Waste Framework Directive. What is essential is the amendment to Article 22 'Bio-waste', where proposed revisions will oblige Member States to introduce the separate collection of bio-waste as far as is technically, ecologically and economically feasible. Notably, the separate collection of bio-waste is a prerequisite to ensure compliance with quality standards for compost and digestate, as well as contributing towards attaining the 65% municipal waste recycling target. In addition, Member States will be required to introduce appropriate incentives to achieve waste prevention and recycling targets. The introduction and increase of landfill and incineration taxes are intended to contribute to the recycling of waste in accordance with the waste hierarchy.

In conjunction with the promotion of recycling, markets for secondary raw materials need to be created. The amendment to Article 6, 'End-of-Waste Status', will empower the Commission to adopt delegated acts defining detailed criteria for end-of-waste status for certain waste streams. Where necessary, these criteria must include limit values for contaminants in secondary raw materials in order to avoid possible adverse environmental effects. With regard to bio-waste, the Commission envisages establishing harmonised quality standards for compost and anaerobic digestate in the revised EU Fertilisers Regulation.

2.2 Revisions to the EU Fertilisers Regulation

In March 2016, the Commission published a proposal for revision to the EU Fertilisers Regulation [9] with the objective of placing secondary raw materials on the EU fertiliser market in order to protect primary raw materials. It aims to enable recycled organic fertilisers and soil improvers (composts and digestate products) access to the EU internal market so that they can compete on an equal level with mineral fertilisers.

The proposal sets out criteria covering safety, quality and labelling that all fertiliser products must meet so that they can be freely traded throughout the EU. In addition, quality requirements for specific raw materials for the production of fertilisers, soil improvers and growing media are specified in the annexes.

For compost and digestate products, these specific requirements are based on the JRC Report 2014 (End of Waste Criteria for Biodegradable Waste Subjected to Biological Treatment) [10]. In addition to requirements covering the production process and product quality, only separately collected organic waste is permitted as input materials for composting and anaerobic digestion.

The proposals also define a list of component material categories (CMC), of which compost is CMC 3 and non-energy crop digestate is CMC 5. Specific labeling requirements are also set out for product function categories (PFC), which are subdivided into fertilizers, soil improvers, growing media, liming materials and biostimulants. Manufacturers of these product groups will need to demonstrate that their products comply with environmental and health requirements (limit values for physical and chemical contaminants) in order to display the CE mark on their products. In addition, compost and digestate products manufactured from waste must be subject to external quality control, which is recognized by each Member State through a conformity assessment.

In order to avoid creating additional barriers to the marketing of established secondary raw materials in national markets, the Commission envisages optional harmonization of the revised Regulation. This means that compost and digestate manufacturers can decide whether to label their products with the CE mark: they can either freely trade their CE-marked products on the internal market in accordance with common European rules, or simply market their non-CE marked products according to national rules.

3 Bio-Waste Recycling in Europe

The overall aim of revisions to European waste management legislation is to promote the prevention and recycling of waste. Despite this, the majority of municipal waste generated in Europe is still disposed of through landfilling (31%) or incineration (26%), with less than half (43%) recycled [4]. According to the European Environment Agency (EEA 2013) [8], the recycling of glass, paper and cardboard, metals and plastics has increased in recent years. On the other hand, there has been no corresponding increase in bio-waste recycling.

Using EUROSTAT municipal waste data [11], and assuming that about 40% of municipal waste is bio-waste, this means that somewhere in the region of 96 million tonnes of bio-waste is created every year across Europe. A recent survey by the European Compost Network indicated that in 2014 only about a third (30 million tonnes) of this was separately collected and composted and/or digested. Notably, these figures exclude the significant quantities of food residues (41 million tonnes) [12] which are produced industrially during food manufacture.

3.1 Expansion of separate bio-waste collections

Large differences exist in the provision of separate collection and treatment capacity for bio-waste across Europe. Countries such as Austria, Switzerland, Germany, the Netherlands, Flanders (Belgium), Sweden and Norway, have relied upon separate bio-waste collection and treatment systems for over 15 years, whilst countries, such as the UK, Italy, Finland, Ireland, Slovenia, Estonia and France have made significant advances during this period. On the other hand, considerable potential for expansion remains in a number of countries such as Bulgaria, Greece, Croatia, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Spain, Czech Republic, Hungary and Cyprus.

In some instances, countries with established bio-waste collections rely predominantly upon composting green waste, leaving further potential for separate household food waste collections. Similarly, studies in regions where established separate bio-waste collections have been in place for many years, indicate that a high proportion of bio-waste (60-70 kg per inhabitant per year) remains within the residual waste stream [13]. Both therefore suggest further potential for expansion.

3.2 Treatment of bio-waste in Europe

Based on surveys carried out by the European Compost Network, approximately 30 million tonnes of separately collected bio-waste is composted or digested annually in about 3,500 treatment plants across Europe. Green waste accounts for more than 50% of this bio-waste, which is processed in more than 2,000 composting plants. Composting predominates over anaerobic digestion for the bio-waste stream, resulting in over 90% of food and green waste being processed into compost.

There is also considerable potential for expansion, which will have a positive impact on the labour market. Assuming that an additional 60 million tonnes of municipal bio-waste could be collected and composted/anaerobically digested across Europe, up to 50,000 [14] new jobs in Europe could be created. This is particularly relevant in areas of high unemployment, such as southern Europe, where bio-waste treatment capacity is currently small and the potential significant. Sustainable bio-waste management could also be used to strengthen rural areas, regardless of whether agricultural anaerobic digestion or composting plants are built.

4 Perspectives on bio-waste treatment in Europe

Implementation of the proposed changes to the Waste Framework Directive is urgently required to achieve sustainable environmental management systems across Europe. In order to ensure that high-quality secondary raw materials (composts and digestate) are consistently manufactured, clear, unambiguous guidelines are required, mandating the separate collection of bio-waste, without any 'ifs' or 'buts'.

The European Compost Network welcomes and supports the discussion currently underway within the European Parliament [15], whereby MEPs are proposing the separate collection of bio-waste by the end of 2020 in all Member States and to set a 65% municipal bio-waste recycling target [16]. This will be of particular relevance to Member States that have yet to meet their biodegradable



municipal waste landfill diversion targets; incentives need to be created so that Member States can invest in a sustainable circular resource economy.

To ensure that a credible resource policy is established in Europe based on saving primary resources and replacing them with secondary raw materials, harmonized EU waste and product legislation is required. Against this background, ECN welcomes [17] the initiative of the Commission to revise the EU Fertilisers Regulation. After many years of debate, this will finally define EU-wide quality standards for composts and digestate products, allowing these bio-based secondary raw materials to be produced without distorted competition in the EU market as soil improvers, organic fertilisers and growing media. ECN is actively involved in these discussions, and we will continue to follow and influence the ongoing discussions in the Council and Parliament.

5 About ECN

The European Compost Network is a European-wide member organization with 70 members from 28 European countries. ECN represents 22 organic waste organisations (quality assurance organisations for compost and anaerobic digestion products) from 14 European countries, 25 companies that recycle and market bio-waste, 9 environmental organisations working on the sustainable treatment of bio-waste, 11 research institutes and 3 environmental authorities. In total, ECN represents more than 3,000 experts and plant operators who process more than 30 million tonnes of bio-waste per year into high-quality composting and digestate products. The European Compost Network supports both national and European legislation with the objective of promoting the recycling of organic waste and the sustainable use of organic recycling products. For more information: <http://www.compostnetwork.info>

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