

United Kingdom

Source Separation Trends In UK

With 73 municipalities in the UK now offering curbside collection of source separated organic waste, the UK is racing to meet EU Landfill Directives.

Tony Breton

THE past 15 years have seen significant investment and development of the biowaste collection and treatment industry in the United Kingdom (UK), which has gone from virtually zero to an industry worth over £160 million (264.6 million USD). Driving this investment have been a number of regulatory and fiscal measures such as the first set of Landfill Directive targets due in 2010.

Since 1999, the central policy driver for the biological treatment of biodegradable wastes has been the EU Directive 99/31/EC on the Landfill of Waste. The Directive places strict limits on the amount of biodegradable municipal waste (biowaste) that can be disposed of to landfill as well as introduces a requirement for pretreatment of all wastes prior to landfill. These increasingly restrictive targets require EU member states such as the UK to reduce the amount of biowaste going to landfill (based on 1995 levels) by 35 percent in 2006, 50 percent in 2009 and 65 percent in 2016. Due to its historic reliance (>80 percent) on landfill for waste disposal, the UK has received a four-year postpone-



Over the past few years, municipalities in the UK have increasingly switched to weekly separate collection of food waste, to achieve higher capture rates.

ment for each of these targets.

The Landfill Directive itself does not stipulate how these targets should be reached, and for many years there have been calls for a separate directive on biowaste. Proponents of the "Biowaste Directive" have long argued that without a legal requirement for separate col-

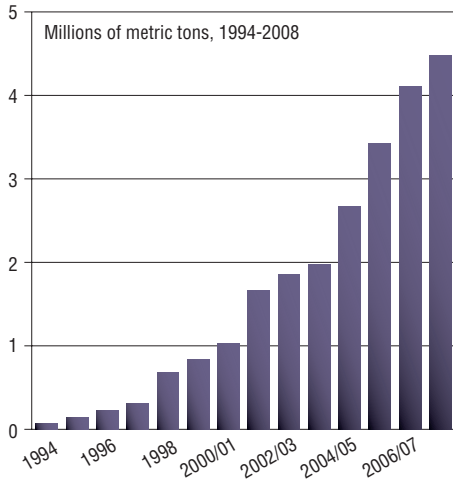
lection, and in the absence of any binding quality criteria for final products (composts and digestates), a huge opportunity to improve the quality of soil across the EU, whilst simultaneously addressing the landfill issue, is being lost.

Another key policy affecting the biowaste industry is the new European Waste Framework Directive (WFD), which sets the framework for waste management across the EU (compared to the Landfill Directive, which focuses on landfills). It was passed in November 2008 and contains some significant changes from its predecessor, including an article on biowaste. Specifically, Article 22 states: "Member States shall take measures, as appropriate, and in accordance with Articles 4 [the waste hierarchy] and 13 [protection of the environment], to encourage: (a) the separate collection of biowaste with a view to the composting and digestion of biowaste; (b) the treatment of biowaste in a way that fulfils a high level of environmental protection; (c) the use of environmentally safe materials produced from biowaste. The Commission shall carry out an assessment on the management of biowaste with a view to submitting a proposal if appropriate. The assessment shall examine the opportunity of setting minimum requirements for biowaste management and quality criteria for compost and digestate from biowaste, in order to guarantee a high level of protection for human health and the environment."

The Biowaste Directive is now gathering momentum, and at a meeting of the Council of Ministers held in June 2009, they endorsed the Commission's plans to run an impact assessment on a potential directive for biodegradable wastes. They also urged the Commission to consider measures encouraging waste prevention, separate collection of biodegradable waste and quality criteria for compost and digestate in any draft Directive they prepare. A draft Biowaste Directive could be proposed as early as next year.

Specific to the UK, in 2007 Defra (Department for Environment, Food and Rural Affairs) published its Waste Strategy for England, which includes in-

FIGURE 1. Growth of the UK composting industry*



*WRAP (2009) Market survey of the UK organics recycling industry - 2007/08

creased recycling/composting targets, with strong references to anaerobic digestion (AD), the promotion of separate collection of food waste, proposing possible landfill bans for a range of materials including biowaste, and discusses targeting commercial waste. Building on the strategy, the Anaerobic Digestion Task Force was established, and in July 2009 it published an implementation plan that sets out 46 key recommendations for a major increase in the adoption of the technology across a range of sectors (waste, water, agriculture). At the same time, the government published its renewable energy strategy, which sets a target of 31 percent of energy to come from renewables by 2020 and makes specific references to waste and AD.

Earlier this year the Welsh Assembly government published its proposed new waste strategy for Wales. This strategy is highly ambitious and is proposing zero waste to landfill by 2050, as well as high levels of recycling (a minimum of 70 percent across all sectors by 2025). It specifically targets biowaste, food waste in particular, with separate targets in the strategy, and favors AD of food waste over composting (and home composting). Scotland is expected to publish its new waste strategy later this year and the early indications are that it will follow the strong coordinated approach of Wales.

UK Biowaste Industry Developments

Municipalities are placing increasing emphasis on improved services for the

collection of biowaste, driven initially by recycling and composting targets, and more recently by the Landfill Allowance Schemes, escalating landfill tax (rising to £72 per metric ton by 2012/3, or 119 USD) and a range of new strategies. Given that all of the targets/allocations are based on weight, the majority of these schemes have specifically targeted yard trimmings. The growth and increasing popularity of centralized composting is reflected in Figure 1 and it is estimated that in 2007/8, approximately 4,000,000 metric tons of municipal waste and 500,000 metric tons of commercial food waste were separately collected for biological treatment (composting, anaerobic digestion) at 208 facilities, with the majority of the final composted products being utilized in agriculture.

In the UK, the most common curbside collection receptacle for yard trimmings is the wheeled bin. However, increasingly municipalities are offering residents the alternative of using certified compostable bags (EU Standard EN13432)

and reusable bags (woven polypropylene) without a container for yard trimmings. Subsequently, when looking to widen the availability of these curbside collection schemes, the use of bags is an increasingly common option. In addition, by offering a choice of receptacle it allows the public to decide how their waste is collected, which can encourage participation. However, according to a 2007 report from WRAP (Waste & Resources Action Programme), in areas where yard trimmings is a charged collection, the option of paying for bags can encourage the public to backyard compost more than if they have bin collection.

The early expansion of wheeled bin collections of yard trimmings shaped the initial collection systems for food waste. These schemes allow the addition of food waste to the yard trimmings, a service now offered by 66 municipalities across the UK. Whilst this is great progress, and seems to be a favorable option, the recently published "Evaluation of the WRAP Separate Food Waste Collection Trials," (June 2009) concludes that separate collec-

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tion of curbside food waste is a more financially and environmentally attractive option. Based on trials in 21 local authorities from 2007 to 2009, the report finds that collecting food waste separately on a weekly basis could increase the capture of food, and would help keep processing costs for food waste to a minimum (www.wrap.org.uk/fwct).

Without restrictions on residual waste collection frequency or capacity, there is little incentive for householders to put putrescible food into the same container as the yard trimmings, where it can stand for up to two weeks, and potentially cause odor issues. The food content of such mixed collections is typically in the region of <0.5 kg/household/week, which represents an extremely low level of capture and means a high level of biowaste remains in the residual waste.

The development of mixed food and yard trimmings collections has been accompanied by a rapid expansion of enclosed composting facilities. Following the introduction of the Animal By-Product Regulations in 2003, all biological treatment facilities treating category three animal by-products or catering waste must be fully enclosed and comply with strict process requirements. Such facilities have a much higher gate fee than traditional open-air windrow sites, with a median of £40 (66 USD) compared to £22.50 (37 USD) per metric ton. Consequently, disproportionately high quantities of yard trimmings are processed at a significantly higher cost.

Due to these higher processing costs and lower capture rates for mixing curbside food waste with yard trimmings, over the past few years there has been a rapid move towards weekly separate collection of food waste. Presently, 73 municipalities are either trialing or have rolled out such systems. This follows the system that has successfully operated in northern Italy for a number of years, and was used as the basis for the WRAP food waste trials mentioned above. Householders are typically provided with small kitchen caddies (5 to 10 liter buckets) and outdoor caddies (20 to 25

liter buckets). They have a separate cart for yard trimmings, collected every other week. All of the WRAP trials, and many of the municipal schemes, provide certified compostable liners such as those made from Mater-Bi® for the small kitchen caddy. Once full, the bag is tied, removed and placed in the outdoor container — the system is clean and user friendly. In its new guidance to local authorities on setting up food waste schemes, WRAP now recommends that at least at the start, liners are freely provided.

Typically, weekly separate collections, in comparison to mixed food waste and yard trimmings (not collected as frequently), achieve much greater

levels of food waste recovery: 2 to 3 kg/week/ household served (see Figure 2). Levels for schemes without the use of compostable liners are generally 50 percent lower.

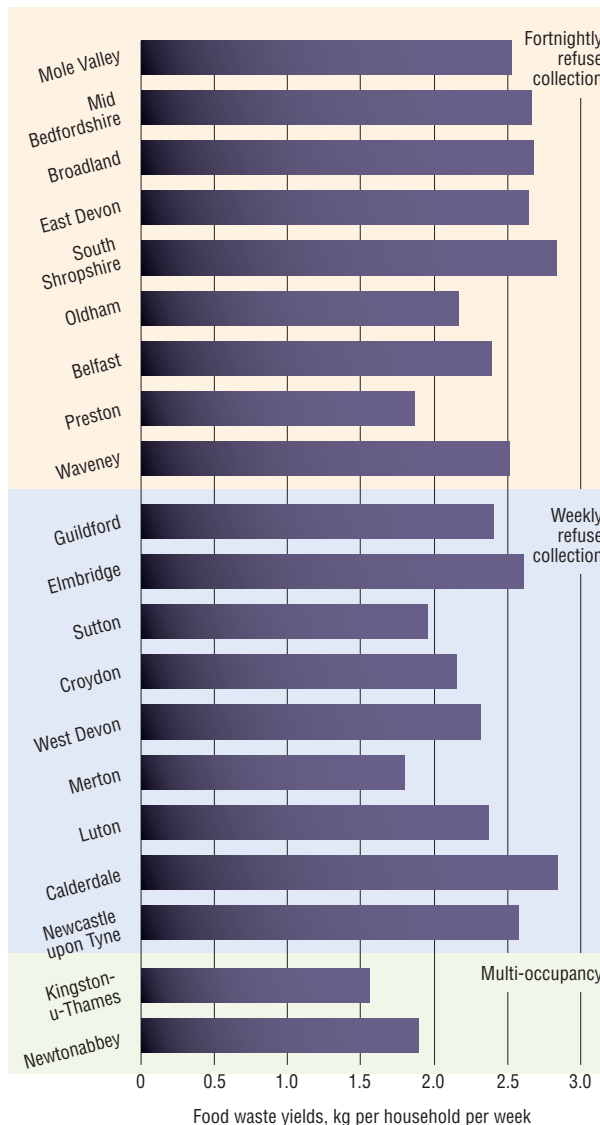
Collecting food waste separately can have additional benefits for the processor as it provides cleaner feedstocks and allows composters who also accept separately collected yard trimmings to mix the streams to attain the optimal carbon to nitrogen ratio. Excess yard trimmings can then be composted in outdoor windrows at lower cost.

Due to its highly putrescible nature, food waste is extremely suited to many anaerobic digestion (AD) systems, particularly the dry systems co-sited with composting plants, which are coming online in Europe. To date, AD has not been widely implemented in the UK, with only a handful of plants accepting municipally sourced biowaste, but as noted above this is likely to change over the coming years.

Future Outlook for the UK

Over the past 15 years the UK biowaste industry has undergone significant change and growth. Unlike many European countries, regulatory pressure and incentives have been relatively slow to be enacted, and are only now forcing the industry to diversify into the increasingly advanced systems that have been commonplace in Europe for the past decades. The lack of long-term planning may well result in the UK missing its Landfill Directive obligations. Two recent reports from Defra and the Audit Commission both suggest that without further urgent action the 2013 and 2020 targets will be missed. However, the current drive for separate collections of biowaste, combined with significant investment in composting and anaerobic digestion facilities, demonstrates that the UK biowaste industry is now thriving and will play an increasingly pivotal role in the nation’s drive towards a low carbon economy. ■

FIGURE 2. Average food waste yield per participating household per week for WRAP supported trials*



*Bridgwater E & J Parfitt (2009) Evaluation of the WRAP Separate Food Waste Collection Trials Updated June 2009

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