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1 Introduction on bio-waste management in the UK

The UK has a total population of 64.5 million inhabitants (2014) and is made up of four separate nations: England, Northern Ireland, Scotland and Wales. Each is responsible for setting its own waste legislation and policy.

Northern Ireland, Scotland and Wales each has legislation that specifically promotes food waste recycling, whilst England primarily relies on a voluntary Food Waste Recycling Action Plan.

2 National concept/strategy on bio-waste management

2.1 Legal framework

NATION	MAIN REGULATIONS, POLICIES AND INITIATIVES
England	<p>Government Review of Waste Policy in England (2011)</p> <ul style="list-style-type: none"> ■ Set out a number of aims to reduce waste, including reducing avoidable food waste. No targets were set ■ Waste Prevention Programme for England (2013) ■ Set out a number of waste prevention initiatives ■ No targets set <p>Waste (England and Wales) Regulations 2011</p> <ul style="list-style-type: none"> ■ Requires any business or public body which generates, handles or treats waste to apply the waste hierarchy; and ■ Requires them to collect waste paper, metal, plastic and glass separately from 1 January 2015 <p>Food Waste Recycling Action Plan</p> <ul style="list-style-type: none"> ■ Voluntary initiative, led by WRAP, to increase both the supply and quality of household and commercial food waste to the food waste recycling industry
Northern Ireland	<p>Delivering Resource Efficiency - Northern Ireland Waste Management Strategy (2013)</p> <ul style="list-style-type: none"> ■ Set out a number of policy and legislative proposals <p>The Food Waste Regulations (Northern Ireland) 2015</p> <ul style="list-style-type: none"> ■ Came into force on 14th February 2015 ■ Require the separate collection and subsequent treatment of food waste ■ Requires district councils to provide receptacles for the separate collection of food waste from households ■ Places a duty on food businesses producing in excess of 5kg of food waste per week to present food waste for separate collection ■ Places a duty on businesses to ensure food waste is not deposited in a lateral drain or sewer ■ Prohibits the landfilling of separately collected food waste from 1 April 2015
Scotland	<p>Scotland's Zero Waste Plan (2010)</p> <ul style="list-style-type: none"> ■ Overarching policy document ■ Sets a 70% recycling target, with a minimum of 5% sent to landfill by 2025 <p>Waste (Scotland) Regulations (2012)</p> <ul style="list-style-type: none"> ■ Requires local authorities to offer a food waste recycling service in non-rural areas from 1 January 2016 ■ A ban on material collected for recycling going to landfill or incineration ■ A ban on municipal biodegradable waste going to landfill by 1 January 2021
Wales	<p>Towards Zero Waste (2010)</p> <ul style="list-style-type: none"> ■ Overarching policy document ■ Sets target to recycle at least 70% of waste by 2025 (businesses, households and the public sector) ■ Promotes food waste collected separately to be managed in anaerobic digestion facilities <p>Waste (England and Wales) Regulations 2011</p> <ul style="list-style-type: none"> ■ Requires any business or public body which generates, handles or treats waste to apply the waste hierarchy; and ■ Requires them to collect waste paper, metal, plastic and glass separately from 1 January 2015 <p>Waste (Wales) Measure (2010)</p>

	<ul style="list-style-type: none"> ■ Sets in law a requirement that every Welsh local authority must meet an annual recycling target. This rises to 70% by 2025
UK	<p>Courtauld Commitment</p> <ul style="list-style-type: none"> ■ A voluntary agreement, led by WRAP, aimed at improving resource efficiency and reducing waste within the UK grocery sector <p>Hospitality and Food Service Agreement</p> <ul style="list-style-type: none"> ■ A voluntary agreement, led by WRAP, to support the sector in reducing waste and recycling more

2.2 Waste management programs and strategies

See above table.

In addition, the following are in effect:

	ENGLAND	NORTHERN IRELAND	SCOTLAND	WALES
Landfill allowances (biodegradable municipal waste)	Relies solely on landfill tax as fiscal mechanism to reduce landfilling of BMW Former Landfill Allowances Trading Scheme [LATS] was scrapped in September 2013	A landfill allowances scheme (LAS) is in place in each of these three nations. It requires waste disposal authorities to limit the amount of biodegradable municipal waste that they send to landfill.		
Landfill tax rates* (non-inert waste)	£ 82.60 in 2015/16 £ 84.40 in 2016/17 £86.10 in 2017/18	£ 82.60 in 2015/16 £ 84.40 in 2016/17 £86.10 in 2017/18	Collected by Revenue Scotland Set at same rate as rest of the UK, but may change in the future	£ 82.60 in 2015/16 £ 84.40 in 2016/17 £86.10 in 2017/18
Key organisation promoting waste reduction & recycling	WRAP	WRAP Northern Ireland	Zero Waste Scotland	WRAP Cymru

2.3 National standards and technical guidelines (collection, treatment and use)

In the UK, all operations where waste is recycled, stored, treated or disposed of, require an environmental permit or a licence. This is a complex area, whereby each of the four nations of the UK have their own legislation and environmental regulator. The overall aim of the permitting/licensing regime is to ensure that waste management facilities do not cause pollution of the environment or harm to human health.

In England and Wales an **environmental permitting system** is in force; complex facilities are generally required to have a 'bespoke permit', whilst simpler facilities need a 'standard permit'. Both Scotland and Northern Ireland operate a **waste licensing system**.

All permitted/licensed facilities are required to have a 'technically competent person' on-site. Technical competence is demonstrated either through individual managers gaining a nationally recognised qualification (through the CIWM/WAMITAB Operator Competence Scheme) or by the company signing up to the ESA/EU Skills Competence Management System.

Small scale operations, such as community composting schemes and some anaerobic digestion facilities, can generally operate under an 'exemption', meaning they are not subjected to the onerous permitting/licensing requirements. Notably, on-farm anaerobic digestion plants that only digest energy crops (that this, they do not handle materials defined as 'waste') do not need to register for either an exemption or a permit/licence. There is therefore no need to have a technically competent person on site.

Persons or organisations that transport waste (other than their own) must register as a waste carrier, broker or dealer.

All organisations that handle, transport, store and treat animal by-products fall under the relevant Animal By-Products Regulations. There are separate regulations in each of the four nations of the UK; all implement the EU Animal By-Products Regulation. Registrations and approvals in England, Scotland and Wales are dealt with by the Animal and Plant Health Agency; it is the Department for Agriculture and Rural Development in Northern Ireland.

2.4 Quality Assurance Scheme (QAS) and National Quality Assurance Organization (NQAO)

Both compost and digestate benefit from a national standard in the UK, called a 'Publicly Available Specification' (PAS) published by the UK's standards setting body, the British Standards Institute (BSI).

- Compost PAS 100 - Specification for Composted Materials, published in 2011
- Digestate PAS 110 - Specification for whole digestate, separated liquor and separated fibre derived from the anaerobic digestion of source-segregated biodegradable materials, published in 2014

The PAS is an industry specification; it is not a British Standard and is non-statutory. Their aims are to:

Develop good operational practices

- Provide end-users with minimum product quality assurances
- Help develop sustainable markets
- Specify in contracts with municipalities
- Protect the environment

Both specifications set limits for contaminants and require independent third-party certification. They require operators to maintain a quality management system and to provide evidence of consistent process management, including laboratory test results and evidence that contaminant limit levels have not been exceeded. Certified compost producers can use a certification mark.

Both the Compost Certification Scheme and the Biofertiliser Certification Scheme (for digestate) are run by the Renewable Energy Assurance Ltd, a subsidiary of the Renewable Energy Association.

Although the compost and digestate specifications provide assurance about the quality of the product, they are not sufficient for the regulatory authorities to deem it as non-waste. England, Northern Ireland and Wales developed a set of end-of-waste criteria called a 'Quality Protocol' which aims to set criteria for the material to be fully recovered, so that it ceases to be classed as a waste and can be freely marketed as a product. Notably, the quality protocols are not recognised in Scotland, as they have separate, but similar, rules.

The quality protocols require detailed record keeping, only allow the use of certain input feedstocks and restrict the market sectors to which the compost or digestate can be applied.

3 Source separated collection of bio-waste

Over the past decade there has been a substantial increase in the number of local authorities (municipalities) collecting food waste from households, with a 26% increase in the number of properties served between 2011 and 2012 across the UK (corresponding to a 29% increase in the quality of food waste

collected). In 2012, over five million households had a separate food waste collection; equivalent to almost 20% of all households.

Within England in 2014, a total of 3.9 million tonnes of organics (food and green waste) was sent for recycling (composting and AD); equivalent to almost 18% of the total household waste collected, and 42% of recycled waste. The recycling of household food waste almost doubled between 2010 and 2014, totalling just under 0.3 million tonnes in 2014.

Across the rest of the UK, in 2014/15 the following quantities of organic (food and garden) wastes were recycled (through composting and/or AD):

- Northern Ireland, 0.17 million tonnes of organic waste were composted;
- Scotland, 0.37 million tonnes; and
- Wales, 0.30 million tonnes.

Despite these increases, in 2012 only 0.54 million tonnes of household food waste were collected for recycling, with just under 4 million tonnes collected in the residual waste stream. Some local authorities collect food waste separately, whilst others co-collect it with green (garden) waste. Notably, in Wales, 95 % of local authorities offer a separate food waste collection service.

The increase in household food waste collections has been driven, in part, by financial considerations due to restricted local authority budgets, and the implementation of alternate weekly residual waste collections. In addition, WRAP, has invested significant resources in researching and providing guidance for local authorities.

The majority of food waste generated by the Hospitality and Food Service (HaFS) sector was landfilled. Data for 2013¹ and ² indicate that 0.1 million tonnes of food waste (12%) was sent to composting/AD.

4 Bio-waste treatment (recycling, material/energy recovery)

The recycling of organic wastes in the UK has increased substantially over the past 15 years or so, primarily in response to targets placed on local authorities to divert biodegradable waste from landfill to meet the Article 5 targets set in the EU Landfill Directive.

1

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/482255/Digest_of_waste_England_-_finalv3.pdf

2

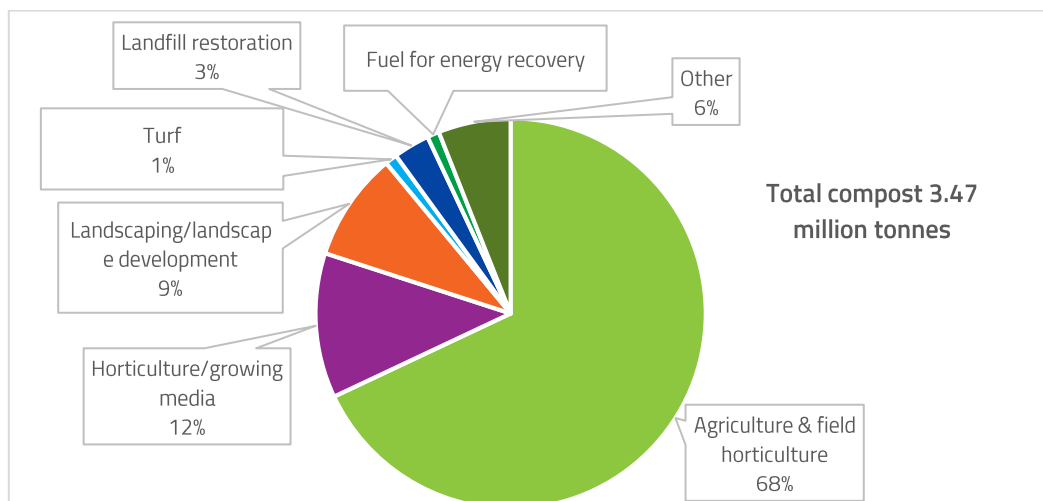
<http://www.wrap.org.uk/sites/files/wrap/Overview%20of%20Waste%20in%20the%20UK%20Hospitality%20and%20Food%20Service%20Sector%20FINAL.pdf>

The composting sector is mature and the latest WRAP survey³ indicate that there were 330 permitted facilities in 2015 composting 5.92 million tonnes (2014), with about 70% of the input waste coming from municipalities and comprising primarily green wastes.

The anaerobic digestion sector has grown substantially over the past five years: there were an estimated 259 AD facilities in 2014 processing 5.26 million tonnes of feedstock. This provided 238 MWe of generating capacity. The majority of feedstock processed in 2014 was food waste (1.8 million tonnes, 35%), followed by crops (1.4 million tonnes, 26%), other waste (1.1 million tonnes, 21%), manure/slurry (0.74 million tonnes, 14%), and crop waste (0.21 million tonnes, 4%).

5 Application and market

Data for 2012⁴ indicate that agriculture accounted for the largest market sector for compost:



An estimated 4.5 million tonnes of digestate was produced in 2014. In 2015, over 2.4 million tonnes of PAS 110 digestate was certified at 42 AD facilities; this would be applied to agricultural land.

6 Expected trends and developments

The UK sector faces an uncertain future due to Brexit. The national governments in Scotland, Wales (and to a lesser extent in Northern Ireland), are pursuing progressive policies promoting separate bio-waste collections and treatment, with the focus on anaerobic digestion. England has tended to follow a voluntary approach.

³ Organics Recycling Industry Status Report 2015 (2017) Waste and Resources Action Programme <http://www.wrap.org.uk/content/organics-recycling-industry-status-report-2015-0>

⁴ <http://www.wrap.org.uk/sites/files/wrap/ASORI%202012.pdf>

The landfill tax remains high, so there is an economic incentive to divert wastes from landfill disposal. Uncertainties about renewable energy subsidies are constraining development of the AD sector.

7 Contacts and sources of information

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Annexes (Please attach any regulation, directive on bio-waste, fertiliser etc. of your country)

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About Carbon Clarity

My work centres around the recycling of biowaste and the emergent circular economy. I offer consultancy, technical writing/editing and training services, with a particular focus on the composting and anaerobic digestion sectors.

