Maximising the value of separate food waste collections

WORLD BIOGAS SUMMIT

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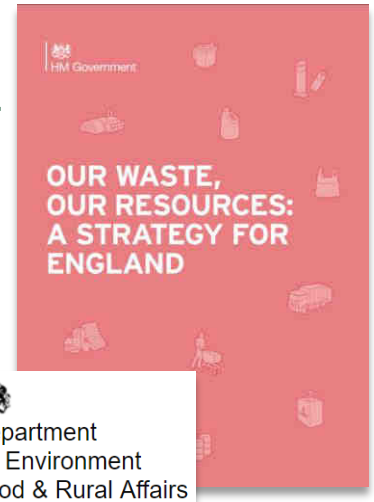
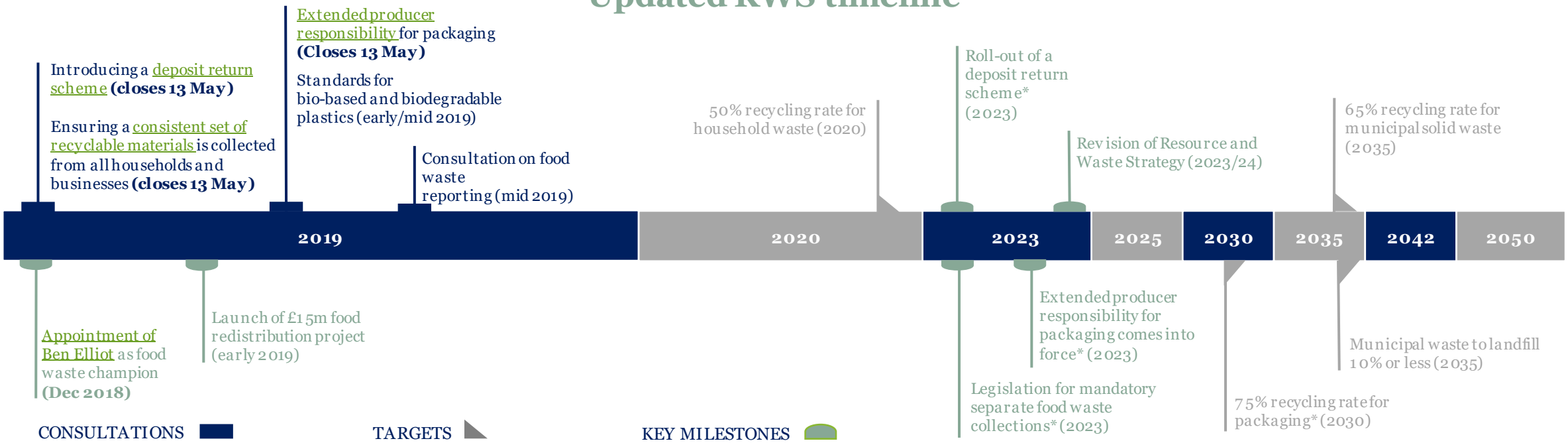
Defra's Resources & Waste Strategy (RWS)



- Consultation on consistent collections **closes on 13 May 2019.**
- **Separate food waste collections** are currently being addressed as part of the wider consultations on consistency of household and business collections.
- This is an **opportune time for industry to engage with the consultations** and ensure that the value of separate food waste collections is maximised.

Updated RWS timeline



Defra's 3 bin vision

1. Packaging

- Government will specify, through consultation, a **core set of materials** to be collected by all local authorities and waste operators*.
- **Ensuring consistency** in collections from households and businesses.
- Aim to **improve recycling rates** and ensure the benefits of recyclable materials are fully realised.
- Packaging producers expected to pay for the full net cost of collection and disposal of packaging.

2. Food Waste Collections

- Overarching commitment of working towards **eliminating food waste to landfill by 2030.**
- Subject to consultation, ensure that every household and appropriate business has a **weekly separate food waste collection from 2023.**
- Defra has stated it will fund the cost of **caddy bin liners**.
- **Anaerobic digestion (AD)** identified in the RWS as the 'best environmental outcome' for food waste that cannot be prevented or redistributed.
- Defra recognises the importance of ensuring quality standards of compost and digestate by **managing inputs.**

3. Residual waste

- Strive towards zero residual waste.

Co-mingling: We agree with Defra's proposal for universal, bi-weekly collections of garden waste to be provided free of charge. We do not propose any changes in instances where food and garden waste are currently co-mingled and sent to composting or dry AD facilities nor oppose these as a treatment option - local authorities should have this flexibility.

**We support local authority flexibility on separate collections for glass.*

Benefits of separate food waste collections

- Meets EU mandatory requirement to implement separate food waste collections by 2023*
- Works towards zero food waste to landfill by 2030 and reduced GHG emissions
- Enables UK and EU to meet recycling targets *(65% recycling rate by 2035)*[1]
- Results in cleaner packaging waste streams
- Sends organic carbon and nutrients back to soils
- Raises household awareness of food waste and can contribute to reduced food waste overall- helps meet DEFRA target to reduce food waste arisings 50% by 2030.

**Defra intend to meet this commitment post-Brexit.*

The BBIA supports Defra's vision for mandatory separate food waste collections.

Defra has set the direction of travel within the RWS.

DEFRA has to establish its position on the definition of food waste and preferred process for collection and treatment.

This will ensure food waste collections are implemented in a way that maximises socio-economic and environmental value.

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Macro issues we are all facing

- "Waste management system is not fit for purpose", Dave Lewis, CEO Tesco
- Exporting our waste to developing countries and failure to reach our own recycling targets of 50% by 2020- lack of UK infrastructure.
- Soil fertility and organic carbon are in decline.
- Plastic is contaminating every waste stream, soils, water and air.
- Human health jeopardised by air quality especially in South East UK.
- Climate change is racing ahead, renewable energy slowly (UK <20% by 2020).

Sector specific issues we are all facing- ENGLAND

1. Overall, food waste collections are a small percentage of potential (5x by 2025 to 2mn tons). Garden waste collections are established (4mn tons) but can grow to 5.7mn tons by 2025*.
2. Food and garden waste collections are all currently heavily contaminated by plastics, (second biggest source of microplastics to soil in Germany is from compost and digestate to soil).
3. At 5% overall contamination plastics going into composting/AD are same amount as plastics recycled in UK (circa 220,000 tons) and will grow as food waste collections grow. At 7.7mn tons potential we could be receiving 350,000 tons of plastics by 2025. You cannot compost or digest plastics**.
4. Use of compostable packaging by brands is growing quickly- how to treat these materials correctly and get paid and make a business from them?
5. Composters and AD are receiving no benefit from recycling compostable materials through EPR payments. Potential market 100,000 tonnes by 2025.

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*Source: Defra Statistics on waste managed by local authorities in England in 2017/18 (Dec 2018)

** Source: Based on cost calculations by the Renewable Energy Association (2018 calculations that removing contaminants, including plastics, costs composters between £21,000 - £100,000 per annum).

6. Food waste treatment in AD is producing negative value digestate outputs, i.e. is a net cost to AD plants.
7. PAS 100 compost and PAS110 digestate allow 1,000 + plastic carrier bag equivalent per hectare to go to soil and rarely is compost or digestate sold at a positive value*.
8. PAS contamination limits WILL be reduced in England by the EA.
8. Digestate storage in lagoons is causing ammonia emissions.
9. Digestate spreading to land is causing nitrate run off and soil quality deterioration.
10. And lastly, gate fees are unsustainably low (WRAP states fees are circa £26/tonne in UK compared to £50/ton in EU) yet incineration is paid £86/tonne. Incentives are going to decline for biogas.

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*Source: BSI PAS 100 compost and PAS 110 digestate standards in soil amendment and surface treatment

Do we have a vision for a better system?

Step 1. We need to have outputs that have value, can create income, have sustainable long term inputs to soil, are contamination-free: only suitable materials should be received by organics recyclers

Step 2. We need to make an AD industry that can survive decline in incentives and make income from its various waste streams and contribute its full potential for energy and heat creation

Step 3. We want an organics industry that is adding to environmental quality in all its activities and is not under attack for potential soil/air/water pollution.

Step 4. We need clean collection of food and garden/biowaste to ensure low contamination

Step 5. We want the economic and environmental value of what we do recognised and paid.

Defining food waste

The first step to getting the RWS into practice is to establish universal definitions of bio-waste and food waste, to ensure consistency in materials collected from households and businesses.

Bio-waste

Definition from **EU Waste Directive** – updated 2018[2]

- **"Bio-waste"** means biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants.

Article 22 states:

- Member States shall ensure that, by 31 December 2023 and subject to Article 10(2) and (3), **bio-waste is either separated and recycled at source, or is collected separately and is not mixed with other types of waste. Member States may allow waste with similar biodegradability and compostability properties (e.g. compostable bin caddy liners)** which complies with relevant European standards or any equivalent national standards for packaging recoverable through composting and biodegradation, **to be collected together with bio-waste.**

Food Waste

Definition from **EU Waste Directive** – updated 2018, and adopted by Defra in the RWS

- **"Food waste"** means all (as defined in Article 2 of Regulation (EC) No 178/2002 of the European Parliament and of the Council) that has become waste. This refers to **'food'** as any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans.

Implementing a process that maximises environmental and economic value of separate food waste collections

The Food Waste Coalition recognises AD as a preferred treatment option, as outlined in the RWS.

- **AD is an effective treatment for organic waste** that produces renewable fuel, heat or energy, and nutrient-rich digestate, which can be used as a fertiliser. AD is also favourable in terms of mitigating greenhouse gas (GHG) emissions that are associated with manure storage and waste disposal to landfill.[3]

- However, AD also has its **limitations**. Ammonia emissions arise through the storage and spreading of digestate to land.[4]

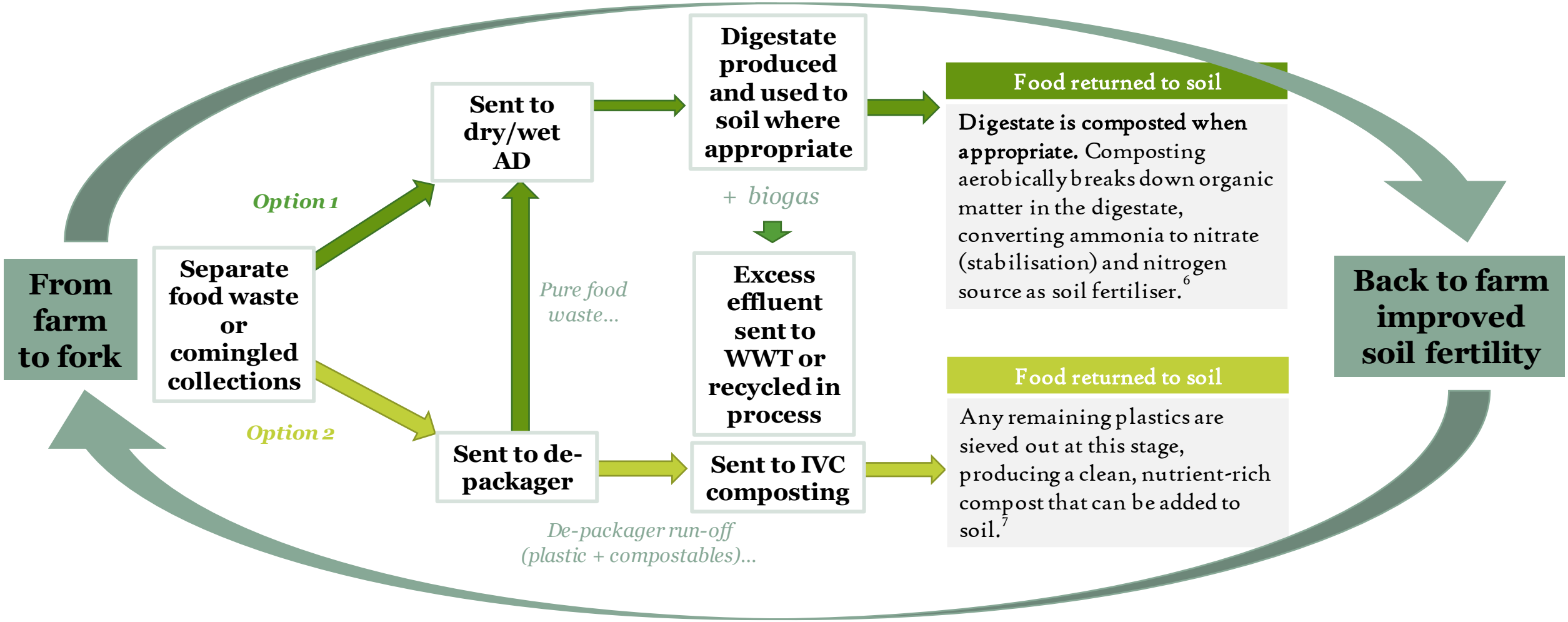
- We therefore propose an **integrated AD and composting system that retains benefits of AD while overcoming challenges.**

What does best practice look like for food waste collections and treatment?

- ☑ Food waste is collected in compostable caddy bags that do not have to be removed prior to treatment.
- ☑ Treatment that combines **AD and composting** in an integrated system improves the performance of both processes and maximises the value of the end product.[5]
- ☑ This means less food is wasted and more goes back to soil, **ensuring a fully circular approach.**

A proposal on process: an integrated AD and composting system

We propose two treatment options that retain local authority flexibility:



1 Benefits of AD and composting: Sending food back to soil

Soil erosion is one of the greatest threats that humanity faces with soil eroding at a rate of 24 billion tonnes a year.[8] Currently less than 2% of the valuable biological nutrients in food by-products and organic waste in cities is composted or otherwise valorised.[9]

Improves soil fertility by replenishing nutrients that are lost. Organic matter addition to soils has been shown to favourably impact crop yields, soil organic content, soil aggregate stability, and soil pH.[10]

Reduced plastic in feedstock results in higher quality input leading to better outputs: **higher quality biogas and compost** (more nutrients, less plastic).

Benefits farmers as compost provides: a higher value end-product with potential for additional income; increased nutrients to soils; flexibility in application and, reduced reliance on chemical fertilisers with no detriment to crops.

Supports international and UK priorities on land-use and agriculture.[11]

2 Benefits of AD and composting: Cleaner air

Approximately 6 million tonnes of food waste are sent to landfill and incineration in the UK each year.[12] AD produces less emissions than landfill or incineration but is still a contributor. Ammonia emissions released during the AD treatment process, storage and spreading of digestate account for approximately 3% of UK ammonia emissions.[13] Combining AD with composting can reduce some of these negative environmental impacts.

Reduced GHG emissions - more food waste gets properly treated and less food waste goes to landfill and incineration.

Reduced ammonia emissions - the combination of AD and composting means less digestate is stored and spread on farmland.

Both of these support the government's Clean Air Strategy 2019.

3 Benefits of AD and composting: Improvement of recycling and reduction of plastic waste

High levels of plastic contamination in food waste results in significant amounts of plastic waste in AD and composting plants.[14] The use of compostable caddy bin liners for food waste collections means less plastic ends up in AD/composting plants, more food waste is treated, and less plastics end up in soils. This would also ensure universal presentation across local authorities while retaining flexibility in choice of treatment process.

Higher recycling rates from separate food waste collections. Higher quality food waste collections offers potential to raise consumer awareness and reduce overall food waste. This supports WRAP's Reduction Roadmap for businesses to reduce food waste across their operations by 50% by 2030.[15]

Cleaner recycling - reduced contamination in mixed/plastics recycling and less food waste in residual bins.

Supports the RWS, 25 Year Environment Plan and Clean Growth Strategy
The combination of AD and composting aligns with Defra's commitment to continuing their work with the Environment Agency and WRAP on minimising plastic pollution in compost and digestate.

4

Benefits of AD and composting: Key Financial Considerations

Savings from clean collections

- Less waste to sort out and to incinerate at 5% of current volumes

Costs

- Waste effluent to WWT (?)
- Solid digestate to composting (£25/ton?)

Income

- EPR from recycling compostables
- Higher value outputs to soil
- Increased volumes to treat therefore increased income streams

Forget the end of waste criteria at your peril

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We recall the four criteria required in order for a waste to obtain end of waste status:

1. the substance or object is commonly used for specific purposes;
2. there is an existing market or demand for the substance or object;
3. the use is lawful (substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products);
4. the use will not lead to overall adverse environmental or human health impacts.

Further, when judging end of waste criteria, the following shall be taken into consideration:

Those detailed criteria shall ensure a high level of protection of the environment and human health and facilitate the prudent and rational utilisation of natural resources. They shall include:

(a) permissible waste input material for the recovery operation;

(b) allowed treatment processes and techniques;

(c) quality criteria for end-of-waste materials resulting from the recovery operation in line with the applicable product standards, including limit values for pollutants where necessary;

(d) requirements for management systems to demonstrate compliance with the end-of-waste criteria, including for quality control and self-monitoring, and accreditation, where appropriate; and

(e) a requirement for a statement of conformity.

European Commission: http://ec.europa.eu/environment/waste/framework/end_of_waste.htm

Recovery Without Harm:

- Waste Framework Directive, 'relevant objectives' set out in Article 13:

'…**without endangering human health and without harming the environment and in particular without:**

(i) risk to water, air, soil, plants or animals; or

(ii) causing nuisance through noise or odours; or

(iii) Adversely affecting the countryside or places of special interest.'

- Sludge (Use in Agriculture) Regulations set out prohibitions on use or supply of sludge:

'… and that the quality of the soil and of the surface and ground water is not impaired.'

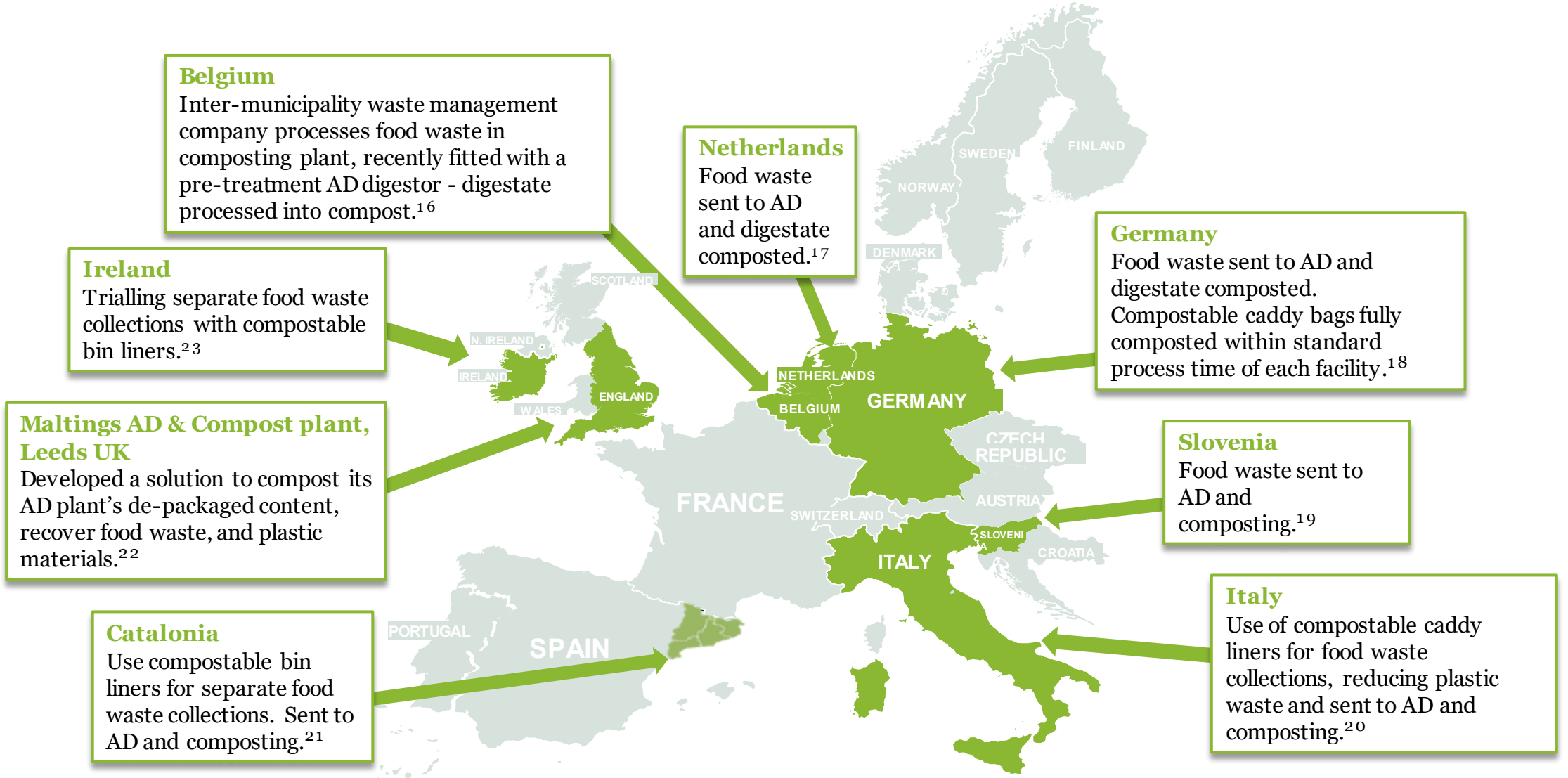
SOURCE EA UK MARCH 2019

Without harm ……to anyone or anything

Picture shows Pas 100 compost spread to agricultural land and where the landowner had to remediate the fields. In this case the tenant lost his farm.

Environment Agency

Where has the integrated AD and composting process worked before?



Belgium
Inter-municipality waste management company processes food waste in composting plant, recently fitted with a pre-treatment AD digestor - digestate processed into compost.[16]

Netherlands
Food waste sent to AD and digestate composted.[17]

Germany
Food waste sent to AD and digestate composted. Compostable caddy bags fully composted within standard process time of each facility.[18]

Ireland
Trialling separate food waste collections with compostable bin liners.[23]

Maltings AD & Compost plant, Leeds UK
Developed a solution to compost its AD plant's de-packaged content, recover food waste, and plastic materials.[22]

Slovenia
Food waste sent to AD and composting.[19]

Catalonia
Use compostable bin liners for separate food waste collections. Sent to AD and composting.[21]

Italy
Use of compostable caddy liners for food waste collections, reducing plastic waste and sent to AD and composting.[20]

Summary

- We support Defra's proposal to mandate separate food waste collections for households and businesses.
- We recognise and support that Defra identifies AD as the best environmental outcome for food waste.
- However, the environmental and economic value of separate food waste collections can be achieved also by combining **AD and composting in an integrated system where appropriate.**
- There are 2 viable options:
    1. **Food waste sent to AD and digestate is composted along with front end suitable packaging**
    2. **Food waste comingled with garden waste, or alone, sent to composting along with front end suitable packaging.**
- This supports a **circular economy approach** – AD and composting reduces soil, air and plastic pollution. Food and nutrients are returned to soil in a clean way.
- This also **reduces disposal costs** of de-packaged bags (relative composting fee of £49/tonne is less than £86+/tonne gate fees for incineration).[24]

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Plastics, food, waste, soil, air, water, energy, farming, human and animal well-being, everything is connected through the Bioeconomy

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