

REA written evidence to EFRA committee inquiry on Plastic Waste

21st February 2022

1. How compostables can help improve quality

Contamination is a significant and expensive challenge for the UK's organics recycling (Anaerobic digestion and composting) sector, costing the industry significant amounts to remove and dispose of contamination. Contamination in the UK is between approximately 1 and 20 % depending on the biowaste stream and many contracts for treating household and other non-packaged food waste streams allow up to 5 % contamination.

Our case study¹ analysing one of our AD members' data found they pay £156 per tonne to separate unsuitable-to-digest packaging and non-packaging items (e.g. liners) and the organic waste stuck to them, to wash what's extracted, press the washed items, transport those items to landfill and pay landfill gate fees. Currently compostable² packaging and non-packaging items are removed with the non-compostable ones because contamination by the latter needs to be front-end controlled and they do not have machinery – or worker resource for hand-picking - that removes these items but not the compostable ones.

Compostables are not counted as contaminants in rules on wastes arriving at and fed into composting and AD facilities and nor should they be. However, they are counted as contaminants if present in fully processed composts or digestates, and we continue to support this.

In appropriate applications compostables support higher quality compost and digestate outputs and reduce processing costs (because contamination by non-compostables goes down). In Italy, where compostables are used in food-relevant applications and their 6M tonnes per annum food wastes are collected in compostable bags/liners, average contamination is 3 % and this costs 90 - 120 million euros per year to remove and dispose.

Compostables in appropriate applications can:

- Reduce contamination in biowaste streams – reducing costs of removal and disposal.
- Increase yield and quality of composts and digestates.
- Contribute to gas yield (in AD) and microbial biomass (in compost / digestate).
- Reduce food contamination in the dry recyclable wastes stream (e.g. mechanically and chemically recyclable plastics).

¹ <https://www.r-e-a.net/resources/estimated-costs-of-managing-plastics-at-uk-organics-recycling-facilities/>

² In this document we use 'compostable' for brevity and mean the types of items referred to in section 3 unless stated otherwise.

Where composts and digestates are applied to soils they contribute to soil health and where those soils are used for cultivating crops, some of the crops and/or crop residues can be used to make raw materials for manufacturing compostable items. The addition of organic matter to soils can deliver many benefits include the amount of carbon that soils store.

2. How ready is the organics recycling industry and what needs to be done?

Compostable packaging & non-packaging products (e.g. respectively carrier bags and liners) can be composted in IVC facilities, or they can be fed into AD plants that are equipped to biodegrade them (either with a pre-treatment step or through the digestion process itself, for example high solids or dry AD systems). Alternatively, they can be removed at the front end of an AD site and sent for composting (if contamination is low enough).

A number of composting sites are successfully treating compostables, particularly in closed loop collections (e.g. from cafes/restaurants). These materials have been shown to break down effectively (see section 5). Contamination by non-compostable items puts some composters off accepting them as it is difficult to differentiate on site. More consistent applications, messaging and labelling for compostables and would help to reduce contamination and enable more facilities to accept compostables.

Many UK food-waste fed AD sites are front-end removing compostables along with contaminants and sending them to EfW or landfill. Some AD sites could install machines (such as autoclaves or grinders) to better enable them to process compostables through their systems. Existing food-waste fed AD plants should be adapted where technically feasible and incentive schemes and machinery grants need to support such adaptations; clear policy is needed to drive this.

Policy also should ensure new food-waste fed AD facilities – and any fed by co-mingled food and garden wastes - are able to biodegrade compostables. Systems that make wastes pumpable to digest them are likely to need more front-end processing capability than is typical currently and a 'back-end' composting phase for dewatered digestate solids. Other systems at the drier end of the AD spectrum are likely to need a 'back-end' composting phase.

The widespread capability to biodegrade compostable items in organic recycling facilities will enable simpler labelling of compostable items, simpler messaging to bin users (compared with the locally variable current situation) and reduce contamination by non-compostable plastics (in garden waste streams and non-packaged and user-unpackaged food waste streams).

3. Acceptable standards and need for independent certification

High percentages of the UK's AD and composting facilities that accept food wastes, and a significant percentage of composting facilities that accept plant/garden wastes, are operated as per End of Waste (EoW) rules. These rules enable waste-derived composts and digestates

to exit waste regulatory controls and thus be traded and used as products in specified markets.

Packaging and non-packaging items fed into facilities managed as per those rules **must be independently certified compliant with a specified standard; BS EN 13432, BS EN 14995 or ASTM D6400**. (The last of these is currently an option under the EoW composting rules and may become an additional option under EoW rules for AD, that are being revised this year).

Independent assessment and certification services are provided by DIN Certco (part of TÜV Rheinland), TÜV Austria, Renewable Energy Assurance Limited, the Biodegradable Products Institute and Cré Ireland. These certifiers' rules require product samples to be tested by independent laboratories. Certified products bear the certifier's certification mark and a certification code.

Thus, composting facilities operated as per EoW rules are allowed to feed in:

- Industrially **compostable packaging** products independently certified compliant with EN 13432
- Industrially **compostable plastic** products (likely to be non-packaging items) independently certified compliant with EN 14995 or ASTM D6400
- Industrially **digestible-compostable packaging** products independently certified compliant with EN 13432
- Industrially **digestible-compostable plastic** products independently certified compliant with EN 14995

The same is true for AD facilities operated as per EoW rules, with the current exception of products independently certified compliant with ASTM D6400.

There are also standards for home compostable packaging and non-packaging items and certification bodies who independently assess and certify item conformance to one or more of those standards. For brevity we have not included details but refer to home compostable items as HC elsewhere in this document. Industrially compostable items are abbreviated as IC and industrially digestible-compostable items are abbreviated as IDC.

4. Need for further controls on packaging and non-packaging products

Taking account of regulations, standards, independent certification schemes and the latest September 2021 version of the Green Claims Code, there is inadequate control of packaging and non-packaging products (including plastics) placed on UK national markets with claim they are 'biodegradable'. Numerous of such claims lack information about the natural and or human-controlled environment(s) in which the item is designed to biodegrade and on how to correctly dispose of it. In addition, the product owner's self-assessment of its conformity to a standard that sets pass/fail criteria relevant to the environment in which the item is designed to biodegrade may include errors, e.g. not assessing all manually separable components of product that are claimed to be compostable or not assessing all constituents (ingredients) in a product claimed to be compostable.

Many consumers and workers in relevant industries do not understand that a product labelled simply 'biodegradable' is unacceptable for feeding into composting or anaerobic digestion facilities and they do not know how to correctly dispose of it.

All packaging and non-packaging products must bear information on how to correctly dispose of them, in line with the waste management solution for which they have been designed. If designed suitable for mechanical recycling, chemical recovery or organic recycling, they also must bear information that enables independent checks, at least by professionals, on their compatibility with the waste management solution that corresponds with their disposal instructions. Small size products may need special provisions.

Until and unless a better solution is found and agreed, independently certified 'industrially compostable', 'industrially digestible-compostable' and 'home compostable' packaging and non-packaging items must respectively include their corresponding term as part of their labelling³. Information about them can legitimately include that they biodegrade in the biological waste management 'environment'/scenario in which they have been designed to biodegrade.

Any packaging item that is NOT industrially compostable, industrially digestible-compostable or home compostable must not be claimed or described in any way as 'biodegradable'. It does not have a waste management solution that would ensure it biodegrades in a biological waste treatment process. We believe 'biodegradable' packaging does not have a net beneficial role, even if labelled 'biodegradable' and bearing an instruction not to litter it; such products and claims should be banned.

Now we consider non-packaging items that are NOT industrially compostable, industrially digestible-compostable or home compostable. If any such non-packaging item is claimed 'biodegradable' the claim must also make clear in which human controlled and/or natural environment(s) it will biodegrade. Such claim must only be allowed if the item is independently certified compliant with a European or internationally harmonised standard that sets pass/fail criteria for the environment(s) in which it is designed to biodegrade. A good example is biodegradable plastic mulch film for use in agriculture and horticulture; BS EN 17033 specifies tests and sets pass/fail criteria for items designed for such use. DIN Certco is a certification body that independently assesses and certifies plastic mulch film conformity with this standard.

Labelling and claims about packaging and non-packaging items that are bio-based but not also industrially compostable, industrially digestible-compostable or home compostable (e.g. the bio-based PET 'drop-in' bottle containing a globally marketed fizzy drink), also needs consideration.

³ With the aim of supporting correct disposal of these items, UCL is currently researching labelling options, including some current certification marks, new symbol options and words. Their findings and recommendations will need careful consideration and discussion so that time-efficient checks on the item's independent certification continue to be possible.

As to which forms these needed controls should take, this is something we would be pleased to discuss with government. Given what we have seen to date, leaving the relevant industries to develop and adhere to their own guidance or codes of practice seems unlikely to be sufficient.

5. Do compostables compost?

We have provided some examples of studies and experiences with composting compostable packaging and non-packaging items.

Findings from Germany

The article 'Compostable plastic bags and anaerobic digestion – field trial in four German facilities' (published in the 2017 edition of the magazine Müll und Abfall) reports on degradation of biodegradable and compostable plastic bags (made of Mater-Bi® resin) certified compliant with the (British and) European standard EN 13432 (article document attached with this response).

Those bags were tested in four different AD-followed-by-composting facilities whose total processing timescales ranged between 5 and 10 weeks. Main degradation of the bags took place during the phase that composted dewatered digestate solids. 'At the end of the aerobic stabilisation phase [compost maturation], no compostable plastics could be found in any of the examined samples, i.e. the Mater-Bi ® material [bags] was fully degraded.'

Findings from Spain

A study by researchers at Spain's University of Alalá and Universidad Autónoma de Madrid on 'Microplastics identification and quantification in the composted fraction of municipal solid waste' (attached with this response) examined compost produced from biowaste collected via 'door-to-door' collection systems and 'street bin collection' systems, by five composting facilities over a five month period. The smaller composting facilities treating door-to-door collected biowaste 'produced compost with less plastic of all sizes' while compost produced by large facilities fed by street bin collected biowaste 'displayed the highest contents of plastics'. Five polymers represented 94% of the plastic items; polyethylene, polystyrene, polyester, polypropylene, polyvinyl chloride and acrylic polymers in order of abundance. 'No debris from compostable bioplastics were found in any of the samples, meaning that if correctly composted their current use does not contribute to the spreading of anthropogenic pollution. Our results suggested that the use of compostable polymers and the implementation of door-to-door collection systems could reduce the concentration of plastic impurities in compost from OFMSW [biowaste].'

Findings from the UK

There are also examples of successful composting of compostables in the UK. Some of our in-vessel composting members have been accepting and biodegrading compostable items at their facilities for many years. More recently, in 2018 REA reported on a trial showing successful in-vessel composting of food and compostable packaging waste in compostable bags, combined with food and garden wastes the facility normally processed (see <https://www.r-e-a.net/resources/trial-in-vessel-composting-of-compostable-packaging/>).

The UK has a network of circa 40 in-vessel/enclosed composting processes biodegrading separately collected biowastes that include food waste, with relevant conditions in their permits to operate and approvals to treat food wastes and which allow them to have a policy of feeding in compostable packaging and non-packaging items. More of them might do this if issues relevant to these items plus the confusion caused by items claimed just 'biodegradable' and lack of understanding that 'bio-based'⁴ items were sorted out.

The UK also has a network of circa 96 AD processes biodegrading separately collected biowastes that are likely to include food/beverage wastes; most of these are not currently geared up for biodegrading compostable packaging and non-packaging items on-site. The UK also has a network of circa 250 entirely outdoor composting processes (operated under environmental permits) for biodegrading garden/plant wastes; many of these could biodegrade compostable items if associated issues were sorted out and only a very limited and 'outdoor composting specific' sub-section of a Green List for compostable product formats and usage contexts were agreed and adhered to (see section 7).

In July 2013, WRAP published guidelines and a report on using compostables at 'closed venue' events. Their guide 'Working with Compostable Products: Key Lessons and Guidelines for Future Events' highlighted key lessons from experience in planning and managing the collection and composting of food and compostable packaging and non-packaging products at the venues for the London 2012 Olympic Games and Paralympic Games venues. It aimed to help the hospitality industry and organisers of UK and international events to understand how to deliver, measure and report more effectively on the management of biodegradable wastes that arise from events. WRAP's guide includes recommendations to promote inclusion of compostables of these types at future events.

WRAP's report 'Working with compostable products and packaging in closed venue events' describes the procurement, use and management of compostable packaging and non-packaging products in 'closed venue' events and uses the experiences gained from the 2012 London 2012 Olympic Games and Paralympic Games. (Both documents are downloadable from <http://www.organics-recycling.org.uk/page.php?article=2637>)

A news media story on outcomes (see <http://www.organics-recycling.org.uk/page.php?article=2507>) covered the fate of operational wastes (not also wastes from earlier periods when venues were being constructed/developed) leaving the venues. 'Exclusive use of SITA UK's MRF in Barking for 78 days from 1 July 2012 and a contractual requirement to track all waste to its end processes - which many businesses in the UK do not do - showed that the true reuse, recycling and composting rate [of operational waste] was 62 % by weight. (Ninety three percent of all [operational] waste collected from London 2012 venues was taken to this site.) Composting of food waste and compostable packaging and non-packaging (such as cutlery) recycled 17 % of the 10,173 tonnes of operational waste.'

⁴ 'Bio-based' items can be designed as 'drop-in' polymers for types already being conventionally recycled (e.g. PET) OR as industrially compostable items, for example.

Turning to negative feedback about compostables, WRAP's AD and Composting Industry Market Survey Report 2020 reported on management of biodegradable wastes and energy crops in England. Its section on composting included that 'just under half of [composting] operators [who responded to the survey] said that growth in the use of compostable packaging was having an impact on their businesses and made comments relating to this needing to be removed before or during composting.'

We comment that operators' perceived need to remove them may be driven by the presence of non-compostable items in 1) packaged food/drink waste streams (e.g. unsold items from food retail stores) and 2) food waste streams where the food waste has not been packaged or has been unpackaged by the food user, e.g. from households. Further, it's not clear how many operators who made those responses operate 'garden/plant waste only' composting processes, for which many compostable packaging product formats are unsuitable because they've been in contact with animal-derived food/drink and if subsequently composted the treating facility would need to be approved for treating animal by-products, e.g. an IVC facility. Outside WRAP's survey, before and since its publication some operators have communicated with us about items they believe they are 'compostable'. However, when we checked on-pack/on-line information it did not show that the items were independently certified compostable.

Regarding AD operators, WRAP's same report included that 'the majority of commercial site operators [those who responded to it] said that compostable packaging was having an impact on their businesses through increasing reject levels (and disposal costs) and causing problems in the AD process because it did not break down.' Our comments are that most UK operators run wet-AD plants (waste prepared for pumping in has 'low solids' content), and even those who accept food wastes do not have machines for sorting compostable packaging from non-packaging items (contaminants). Further, unless compostable items are autoclaved, ground or otherwise particle-size-reduced they may not significantly biodegrade in the digester. In other AD systems in some EU countries, the main biodegradation of compostable items occurs in a post-digestion phase which composts dewatered digested solids OR in a parallel composting phase for treating garden waste and compostable items (while the food waste is digested).

More generally, in packaging and plastics-relevant conversations with some stakeholders, their loose use of the non-interchangeable terms 'compostable' and 'biodegradable' and misunderstanding of 'bio-based' does not help. Further, we know from some operators' feedback to us that a key reason they do not solicit compostables is contamination by non-compostable plastics (which is relevant to garden waste streams and non-packaged food waste streams). Challenges in managing contaminants will persist until the issues of inappropriate 'biodegradable' products, inappropriate and vague claims/labelling about/on them, improvement in the labelling of compostable items, and bin user education on correct disposal has been tackled.

6. Benefit to compost/digestate from compostable plastics

- Less contamination, so less use of water and energy at AD sites when removing, washing and pressing plastic contaminants and less of it to transport to EfW or

landfill (composting sites: less use of energy and less rejected contaminants to transport)

Evidence: Consorzio Italiano Compostatori (CIC, the Italian Composting Consortium)'s continuous monitoring programme for assessing the quality of source-separated biowaste across Italy. 'When household food waste collections take place in conventional polyethylene bags the non-compostable fraction will be around 9 % (on a fresh weight basis). Their programme has also found that 'where collections use compostable bags, this fraction can reduce to 1.4 %' on a fresh weight basis. Reference: CIC Country Report 2017, p 34, <https://www.compost.it/en/publications/>

- More biowaste is fed in, supporting higher compost/digestate yields: e.g. food waste stuck to or inside compostable plastics (e.g. stuck to trays for hot ready meals and inside tea bags) is fed in. There's less contamination, so less food waste is dragged out with it.

Evidence: Another study by CIC monitored 27 organic waste recycling facilities and found that on average the amount of biowaste dragged out was 2.75 times the weight of the non-compostable items. Reference: M. Centemero, CIC (Italian Composting Consortium), Webinar 'CIC-Corepla 2019 - 2020 Study - Plastics and bioplastics in the organic recycling chain', 7th July 2020, Optimization of organic waste recycling, Summary of the results of the monitoring programme, p28, see <https://www.r-e-a.net/resources/plastics-and-bioplastics-in-italian-organics-recycling/>.

- Contributes to microbial biomass in the compost/digestate

Evidence: Compostable polymers are food and energy sources for microbes that decompose biowastes in composting facilities. The compostable plastics biodegrade into carbon dioxide, water and microbial biomass. Microbial biomass is part of what's in all composts.

In the case of biodegradable plastic agricultural mulch films, their biodegradation has been quantified by experienced Belgian laboratory test and consultancy service provider 'OWS'. The mechanisms of degradation applicable to compostable plastics in composting facilities are similar to those for biodegradable plastic agricultural mulch films in soils, though the rates of the different types degradation processes that occur do vary.

OWS has found that for 'soil-biodegradable polymer', 'on average 90 % of its organic carbon content is converted to carbon dioxide while 10 % is converted to [microbial] biomass'. Their expert statement includes that these polymers' [microbial] 'biomass yield is typically between 10 % and 40 % depending on the substrate which is converted'. They report it is not technically and analytically possible to quantify the polymer's organic conversion to [microbial] biomass precisely. Consequently, its conversion to carbon dioxide has for many years been the 'one and only parameter' for quantifying a material's (e.g. a plastic's) biodegradation.

The European standard EN 17033 on 'Biodegradable mulch films for use in agriculture and horticulture' requires that, in a lab-scale biodegradation in soil test, at least 90 % of the

plastic's organic carbon content is converted to carbon dioxide within 24 months. Similarly, the European Standard EN 13432 on requirements for industrially compostable packaging requires that, in a lab-scale biodegradation-under-composting-conditions test, at least 90 % of the plastic's organic carbon content is converted to carbon dioxide in a maximum of 6 months).

References: <https://www.european-bioplastics.org/ows-expert-statement-on-biodegradable-mulch-films/> and OWS Expert Statement on (Bio)degradable Mulching Films, downloadable from that webpage.

7. Appropriate product formats and contexts for using compostables

Industrially compostable, industrially digestible-compostable and home compostable items (here we use 'compostable' as a short-hand term for all of these) are not the solution for all plastic packaging and non-packaging product formats and contexts in which they are used. We support their use where they help bring more food, beverage⁵ or plant waste into biowaste recycling facilities or will reduce contamination by non-compostables. Examples are liners for kitchen caddies and food waste bins, lightweight carrier bags repurposed as kitchen caddy liners and food waste bins, fruit and veg lightweight bags, tea bags, condiment sachets, fruit and veg stickers, hot ready meal trays and food tray films.

Controls on the packaging and non-packaging product formats and contexts in which they are used may be necessary in future. We have contributed to content of WRAP's guidance 'Considerations for compostable plastic packaging'⁶ and A Plastic Planet's Red and Green and Red Lists for compostables in their working paper 'The Compostable Conundrum'⁷. There is more work to do to evolve these lists but if they continue to differ and if specifiers and manufacturers of IC, IDC and HC items do not confine themselves to Green List product formats and usage contexts we think government will need to impose adherence to a single, stakeholder agreed Green List.

Further, a very limited and 'outdoor composting specific' sub-section of a Green List for compostable product formats and usage contexts also needs to be agreed and adhered to, e.g. animal by-product regulations in effect prevent outdoor composting facilities' acceptance of nearly all compostable packaging items that arise from most food waste sources.

A separate Green List is needed for limited item formats, their use and subsequent biodegradation in the natural environment location where they have been used*; plastic

⁵ A Plastic Planet's 'The Compostable Conundrum' working document's Green List for compostable packaging and non-packaging items includes tea bags, plastic coffee pods, coffee pads and coffee filters. It's Red List recommending items that should NOT be compostable includes bottles; we agree. As far as we are aware, many stakeholders support using PET for bottles, collecting and recycling them. APP also suggests a systems change towards refill systems and concentrates which are diluted at home 'would be a better solution',

⁶ <https://wrap.org.uk/resources/guide/compostable-plastic-packaging-guidance>

⁷ <https://aplasticplanet.com/inspiring-change/projects/>

agricultural/horticultural mulch films are a key example. The European Commission is currently working on rules/standards/criteria applicable to biodegradable polymer coatings for mineral and organo-mineral fertilisers (they control nutrient release rates to plants).

*A UK Green List for items of these types must require that items on it are independently certified non-packaging items that comply with a relevant pass/fail standard – specified alongside the item in the Green List and agreed with environment protection regulators - for item biodegradation in a specific part of the environment. There also needs to be a control mechanism which ensures that items are not used for other purposes in parts of the environment covered by the Green List, and not used for other or the same purposes in parts of the natural environment not covered by the Green List or both.

Lastly, a stakeholder-involved process for reviewing and revising the Green Lists – for IC, IDC and IC items and separately for non-packaging items biodegradable in specific parts of the natural environment - would be necessary. Relevant industries could part-fund their revision and the environment protection regulators must be involved in Green List decision making; we believe that government should fund the environment protection regulators' time.

8. What is needed to make it work

- a) Liners and any pre-purposed bags used for collecting food waste from households must only be certified compostable ones (They can be made of compostable plastic, compostable paper, a combination of both or combination of other compostable materials⁸). The same applies to liners and any re-purposed bags used for collecting non-packaged and user un-packaged food wastes from public and business sector sources.
- b) The full range of material types used for making compostable packaging must be brought into the scope of the reformed EPR system (currently only cellulose-based ones are included); this can be done by specifying the relevant standards, requiring them to be independently certified compliant with at least one of these standards, and not carrying forward the 'cellulose-based' restriction in future guidance. Compostable packaging items should not have high modulated fees applied to them. Financial contributions from compostable packaging companies must be re-directed towards the collection of compostable packaging wastes and their biodegradation in biowaste treatment facilities; currently compostable packaging companies' contributions go towards the recycling of conventionally recyclable packaging, i.e. not to composting, AD and integrated AD and composting facilities.

⁸ BS EN 13432 does not specify material type, instead setting pass/fail criteria for the whole product's - or manually separable components of the product's - disintegration, biodegradation, acceptably low content of potentially toxic elements and ecotoxicity. It also requires that the resulting compost is not negatively affected as a result of feeding the packaging item into the beginning of the composting or AD+composting process.

- c) Industry needs access to funding to enable investment in infrastructure for existing food-waste fed AD plants, to enable them to process compostables.
- d) Design guidance and sufficient funding support is needed for new AD plants fed by inputs that include food waste fed plants so they are able to biodegrade compostables.
- e) We would like to discuss with government further controls on packaging and non-packaging items covering;
 - i. standards they must conform to,
 - ii. requirement they are independently certified compliant with their relevant standard(s),
 - iii. requirement they are adequately labelled so their conformity to their relevant standard(s) can be time-efficiently checked by professionals / suitably trained workers in relevant industries,
 - iv. requirement they bear clear and appropriate disposal instructions,
 - v. agreement that packaging that is industrially compostable, industrially digestible-compostable or home compostable can, in further information about these products, be described as biodegradable in those contexts (matching with the standard(s) which which they are certified compliant), and
 - vi. requirement that no other packaging items are allowed to be labelled or in any way claimed 'biodegradable'.
- f) Government consideration of the need for better developed and adhered to Green Lists for acceptable industrially compostable, industrially digestible-compostable and home packaging and non-packaging item formats and contexts of use and a separate Green List for very limited non-packaging item formats that are useful for supporting specific human activities in well-specified parts of farmed or cultivated land, land undergoing afforestation and perhaps gear used for commercial and hobby fishing purposes. Corresponding with item format and context of use, it seems essential the Green List specifies independent certification of item conformance to a relevant standard (setting pass/fail criteria) agreed with the environment protection regulators.
- g) Pre-treatment sites, treatment facilities and their permits need to change so that back-of-food retail store packaged food/drinks waste streams are depackaged and pre-treated separately (in space or time) from non-packaged/user-unpackaged household/public sector/business source food waste streams, during treatment prior to composting or digesting. An alternative needing further research is the efficacy, cost and feasibility of installing on-site machinery that sorts compostable from non-compostable items. Aspects of sorting machinery are included in a current UCL study and it seems likely there's more we could learn from experience in Italy. Incentive and grant schemes should be reviewed with a view to ensuring they support changes facilities would need to make.
- h) Compostable plastics with at least 30 % biobased* content should not be taxed under the plastics tax. This would give them a fair and equivalent exemption as plastics with 30 % recycled plastic content. (*Bio-based means derived from once living organisms that

have not been fossilised. Compostable plastics can consist of fossil-derived polymers, some are a mixture of fossil and bio-based polymers, while others have polymer content that is entirely bio-based. Compostable plastics are designed to biodegrade under composting conditions after their use, so it is not possible to directly recycle compostable plastics back into compostable plastics. Instead their organic recycling loop is a larger, indirect loop involving biological processes.)