Call for Evidence to support the near elimination of biodegradable waste to landfill: Questions

May 2023

When responding to questions without a free text box, please put a cross against your answer. Where there is a free text box, please use this to give us as much information as you can. Where possible, please provide links to supporting evidence or data. Where data is numerical, i.e. data related to the composition of mixed wastes, please can you share this in a spreadsheet (.xlsm, .xlsx, or .csv format) in as granular data as possible. For example, if you own or operate more than one landfill site and you are willing to do so, please do share data for each site.

Please submit all data on an annual basis where possible, including the year the data are drawn from. If you are able to, please include detail on the methodology, including granularity used and any limitations on the data.

Please return your completed response to residualwaste@defra.gov.uk

The Association for Renewable Energy and Clean Technology (the REA) is a not-for-profit trade association, representing British renewable energy producers and clean technology and promoting the use of renewable energy in the UK. It has around 550 corporate members, making it the largest renewable energy trade association in the UK. We have member forums covering Organics, Green Gas, Landfill Gas and Energy from Waste (amongst others) who are interested in this call for evidence. More info available at www.r-e-a.net.

About You

Q1. Would you like your response to be confidential? Please refer to the information on confidentiality and data protection at page 5 of the CfE document.

No

Q2. If you have answered 'Yes' above, please give your reason.

Q3. What is your name?

Jenny Grant

Q4. What is your email address?

jenny@r-e-a.net

Q5. Which of the options below best describes you? Please tick only one option. If multiple categories apply to you, please choose the one which best describes you and which you are representing in your response. (Required)

- Academic or research
- Business representative organisation/trade body
- Charity or social enterprise
- Community group
- Consultancy
- Distributor
- Exporter
- Individual
- Landfill operator
- Local government
- Unitary Authority
- Waste Collection Authority
- Waste Disposal Authority
- Other local government body
- Non-governmental organisation
- Product designer/manufacturer / pack filler
- Retailer including online marketplace
- Waste management company
- Other (please provide details)

  Trade Association

Q6. If you are responding on behalf of an organisation, what is its name?

The Association for Renewable Energy and Clean Technology

Landfill Allowance Trading Scheme

Q7. Does your organisation/authority have in place an active policy to minimise or avoid the landfilling of biodegradable waste?

Yes
No
Not applicable

If you are happy to do so, please can you provide a copy, or details of this policy.

Q8. If you do actively divert biodegradable waste from landfill, how is this waste treated?

Our members do. We have members who run organic waste treatment facilities who take biodegradable waste and compost or anaerobically digest it and produce valuable soil improvers, ingredients for growing media, mulches, biofertilisers and renewable energy.

In addition, the REA includes members involved in energy from waste and Advanced Conversion Technologies (ACT) which also utilise waste biogenic feedstocks in the production of multiple energy vectors, including (but not limited to) power, low carbon fuels (such as rDME and sustainable aviation fuels), hydrogen and green chemicals. These will play an important role in the decarbonisation of hard-to-treat sectors.

Finally we also have Biomass Power generators who use waste wood as a feedstock, for low carbon electricity generations and which in the futuer when combined with carbon capture and storage could lead to negative emissions.

Q9. If you do not have an active policy, does your organisation/authority have any plans to implement policies or actions to divert biodegradable waste from landfill?

Residual waste treatment

Q10. Do you manage biodegradable waste?

Yes
No
If your answer is no, please go to the next section entitled 'The mixed waste codes'.

Q11. If you do manage biodegradable waste, what proportion (%) of this waste do you usually send to:

	0-20%	21-40%	41-60%	61-80%	81-100%
Incineration with energy recovery					
Incineration without energy recovery					
Landfill					
Anaerobic Digestion/composting					
Other treatment (please state below)					

Q12. If applicable, can you describe any factors or issues that influence your choice of biodegradable waste disposal routes?

Q13. If you do not routinely send your waste to landfill, how often do you use landfill as a disposal method where there is no alternative option?

Never
Sometimes (less than monthly, but at least once a year)
Often (monthly)
Very often (more than once a month)

Q14. What are the circumstances in which you have used or would consider using landfill as a contingency or emergency disposal option?

Q15. If there are seasonal fluctuations, including seasonal novelty wastes, that impact your waste disposal options, do you have any evidence as to the quantities and composition of these wastes, as well as how they are treated and coded before being disposed of in landfill?

Q16. If you manage biodegradable waste, how often do you send waste for inter-UK disposal in landfill (i.e. from England to Scotland, Wales, or Northern Ireland)?

Never
Sometimes (less than monthly, but at least once a year)
Often (monthly)
Very often (more than once a month)

Q17. Are there specific circumstances that influence decisions to send biodegradable waste for inter-UK disposal?

Lack of available treatment capacity in England
Existing contracts
Cost effectiveness
Other (please state)

The mixed waste codes

Q18. Do you have any evidence or data that details the composition of the 20 03 01 and 19 12 12 waste codes dating from 2011 onwards/that is less than 10 years old?

Yes
No

If yes, please share the evidence and/or data

Q19. Do you have a view on why significantly more 19 12 12 waste is sent to landfill than EfW?

Yes
No

Please provide information or evidence to support your view.

We understand that 19 12 12 is the code that is used for waste trommel fines which could be why there are greater quantities of this code sent to landfill.

REA members have reported that 19 12 12 is also the code used for residual food grade plastic packaging that is left over from the mechanical treatment of the food waste in the front-end of the AD process. This waste is characterised by high calorific value and high moisture content. These properties make the material less desirable to EfW operators as it is not within their ideal properties for feedstock. This is then reflected in the price offered which is high. When sending this material to landfill we understand that operators are allowed to apply to discount the water content of waste for landfill tax. This is resulting in landfill being the cheaper option for disposal of this material for some operators. Some operators (but not all) have a commitment to not send material to landfill which results in different economic impacts on operators.

Proximity of the landfill versus EfW may also be an influencing factor for some operators due to the high cost of haulage which may result in landfill being the cheapest option.

Q20. Do you know of any innovations, solutions or ideas as to how mixed wastes could be treated or sorted, or existing sorting improved, to remove biodegradable material from these waste streams?

Yes
No

If yes, please share details, including any information as to why these innovations or solutions are not already widely adopted if applicable.

High performing separate collections need to be prioritised and these need to be supported by an effective education and communication campaign alongside sufficient resources to ensure that the public are using their recycling services properly. Getting the biodegradable material out of the residual waste stream at the source is the best way to ensure that the biodegradable content of mixed waste streams is minimal. Separate collections themselves are insufficient, they need to be backed by sufficient funding for comprehensive education campaigns and a duty of care on the householder to put the correct waste in the correct bin.

Previous studies have shown the importance of on-going well-designed communications to achieve the desired results, i.e. increased participation. This study of food waste collections in Ireland looked at the effectiveness of different communications and the source of the messaging and the impact this had on householder participation in food waste recycling: https://www.mywaste.ie/report-on-the-food-waste-recycling-pilot-project/ . They clearly showed that provision of an education programme, a kitchen caddy and compostable bags to households resulted in:

- the participation and capture of organic waste at least doubling on average – with the highest capture levels in the areas with caddies and liners;
- a reduction in the level of contamination in Brown Bins and the lowest levels of contamination in the areas with compostable liners – so they seemed to not only avoid use of conventional plastics but also reduce the level of confusion; and
- a reduction in the amount of organics in residual waste bin.

It is imperative that any behaviour change campaign is properly funded to maximise the impact.

There are various approaches that must be considered to encourage householders to present high quality materials for recycling, including the provision of incentives. These should be back by a more simplified sanction regime making it less cumbersome and more likely to be used for householders who persistently present contaminated materials for recycling.

If LAs were required to report publicly on the end destination of household recycling, this would help increase public confidence and participation in the services. A recent study by INCPEN (https://incpen.org/lack-of-information-on-what-happens-to-recyclates-after-collection-risks-undermining-public-confidence-in-recycling/) identified provision of information on what happens to recycling after collection as the top positive influence on public confidence in recycling at home in Wales. There is a need to make this more visible to the householders so they realise the impact of their actions.

UCL is part-way through trials on a hyperspectral imaging system for identifying and classifying compostable packaging/non-packaging items (made of PLA, PBAT, palm leaf derived packaging or sugar cane derived packaging) and non-compostable plastics (PP, PET, LDPE). This, together with a physical, machine sorting capability would be useful at food waste fed AD sites, at food+garden

waste fed composting sites, at garden/plant waste composting sites and at MRFs (we recognise that on-site practicalities and system costs are other issues that would need to be addressed). UCL's findings include that any dark colour tints (added during product manufacture) affected how accurately the system identified the test item pieces. It was 100 % accurate when detecting (transparent/opaque/pale looking)) plastics with 'low contamination' (by what seems to be composting site particles) and 67 % accurate when detecting plastics with 'high contamination'. For more info see https://www.frontiersin.org/articles/10.3389/frsus.2023.1125954/full

We are aware of an REA member who is exploring the potential of pyrolysis reactions to convert the fibre screenings material (from their food waste AD sites) to biochar. Using temperature and pressure the material is thermally degraded and broken down. This approach has not been adopted more broadly because commercial scale pyrolysis is only beginning to become available on the market.

More broadly it should also be noted that where it may not be economically or physically possible to separate waste streams, then energy from waste and advanced conversion technologies do still provide capacity to deal with waste that cannot be dealt with elsewhere. Such systems are expected to provide valiable capacity to treat mixed wastes and produce a range of energy products, useful to the decarbonisation of hard-to-treat sectors.

Waste Fines

Q21. Do you have any evidence or data that details the composition and sources of the waste code 19 10 04: fluff-light fraction and dust from shredding of metal-containing wastes?

Yes
No

If yes, please share the evidence and/or data

Q22. Do you support the establishment of a specific waste code(s) for waste fines?

Yes
No

Please explain your view, including evidence or data to support your view if available.

Establishment of a separate waste codes for waste fines would give increased visibility of these materials and enable greater analysis to be undertaken on what happens to them. Re-classification would need to be nationwide to ensure devolved nations also use the same codes in the event of any cross-border transfers and recording. Waste fines are also generated from construction and

demolition wastes so consideration is needed if these are coded under the same code or separately – we think they should be coded separately because biodegradable fines from residual waste streams will have different properties and need to managed differently from mineral-based fines from C&D sector sources and wood-based fines from C&D sector sources (e.g. some sources would generate fines from woods that have previously been treated with preservatives, insecticides, paints, laminates or other coatings)

We note that some forms of advanced conversion technologies are also able to utilise waste fines, and a clear separate waste code could be valuable for directing feedstock to such systems.

Any changes to waste codes would need to be backed by guidance and communication to ensure that operators are aware of the appropriate code and there is consistency across the industry.

The introduction of new codes would mostly likely require a permit variation. Depending on the volume of waste from these particular streams it may not be worth the costs for the permit holder to vary the permit so may result in the material needing treated elsewhere – which could lead to treatment capacity questions. In addition, the current timeframes within the Environment Agency for permit variation is significant, with members reporting 9 months or more before applications are allocated to an officer to start the assessment process. If new waste codes are introduced, then there also needs to be sufficient resources to process the resulting permit variations or some sort of admin style change agreed with shorter timescales and minimal costs.

Q23. Do you have any evidence or data to support or oppose the use of separately engineered cells for the landfilling of waste fines only?

Yes
No

If yes, please share the evidence and/or data

Q24. Do you have any evidence or data to support or oppose the introduction of waste acceptance criteria that sets stringent controls on the amount of sulphur bearing waste present in waste fines?

Yes
No

If yes, please share the evidence and/or data

Identification of biodegradable waste and enforcement of policies

Q25. Would you recommend a particular method by which biodegradable waste could be identified prior to disposal at landfill?

Please share any evidence or data that supports your recommendation

Any method that is used has to be well defined, with clear guidance on how identification must be carried out.

Q26. Are there, in your opinion, any avoidant behaviours or unintended consequences that may occur as a result of using a particular method of identifying biodegradable waste?

Please share any evidence or data that supports your view

Municipal and non-municipal wastes received at landfill

Municipal waste

Q27. What are the barriers to using alternative treatments for the materials shown in Table 1 of the CfE document other than landfill?

Please share any evidence or data that explains your view.

20 03 07 Bulky waste

19 05 03 Off-specification compost

Off-specification compost may be off-spec for a range of reasons and could be suitable for other uses such as application to land – depending on its properties. The current regulatory regime for spreading these materials to land requires testing of the material and land to which it is applied. If agricultural benefit can be demonstrated without any adverse environmental effects, then off specification compost should be permitted to be used on land (in the right place, at the right time and in the right quantities) in accordance with good practice guidance. Off-spec compost made from source-separated biodegradable wastes is allowed to be spread on a range of land-use types, subject to regulator assessment and approval as described above. Its spreading on land is a permitted use rather than an alternative treatment and we are not aware of this being a problem, although alternative treatments could enable better environmental outcomes.

Off-spec Compost-Like-Output - derived from biodegradable fines mechanically separated from residual waste and composted in those MBT facilities that host this type of bioprocess – is allowed to be used for land restoration and land remediation, provided its use results in agricultural benefit or ecological improvement and it is used as per the waste deployment conditions approved by the regulator. Its spreading on land is a permitted use rather than an alternative treatment and policies that minimise future growth in CLO production would alleviate current annual pressures to find sufficient landbank for it.

20 02 01 Biodegradable waste

This waste stream should be collected separately for composting (or dry anaerobic digestion).

Quality of biodegradable waste can be a challenge to enable it to be properly treated through other options higher up the waste hierarchy, e.g. composting or anaerobic digestion. Garden and park waste should continue to be treated through composting (or dry anaerobic digestion); it should only go to landfill if contaminated beyond what is allowed in biowaste treatment permits and on-site decontamination cannot suitably 'clean' it up.

In England, Standard Rule permits have introduced physical contaminants limits (e.g. for glass, metal, non-compostable plastics, non-compostable multi-material composite items, and pieces of other man-made objects as ceramics) for feedstock acceptance, these are 1% w/w contamination for open windrow composting of garden waste. For bespoke permits the level of physical contaminants is required to be reduced to As Low As Reasonably Practicable prior to biological treatment. In addition to these input limits, there are limits on the amount of physical contaminants permitted in certified (end of waste) compost and digestates. (In addition, the Environment Agency uses these EoW limits when assessing applications for spreading waste-status composts and digestates – the operator must show how any concentration higher than EoW physical contaminant limits can still result in the compost / digestate bringing agricultural benefit or ecological improvement when used.) This is to protect the soils to which they are applied.

Our members report a range of levels of physical contaminants in incoming garden waste loads. Removal of this contamination on site - to enable the production of a quality output - costs time and money both for the removal of physical contaminants (before, during and after the biological treatment process) and for the subsequent transport and disposal of the removed physical contaminants.

20 03 03 Street cleaning residues

Street cleaning residues have been shown to have high levels of certain polycyclic aromatic hydrocarbons (PAHs) which can make treatment through organics recycling difficult. Composted street leaf sweepings are

not suitable for agricultural or horticultural use but may be suitable, as a Compost-Like-Output, for less sensitive uses such as in the redevelopment or reclamation of previously developed land. Please note that the Compost Quality Protocol – adhered to by numerous composters in England, Wales and NI who treat source-segregated biodegradable wastes - excludes 'road sweepings and gully waste' from the biodegradable waste types it allows composters to feed in under the description 'Biodegradable waste' coded 20 02 01.

20 01 08 Biodegradable kitchen and canteen waste

This waste stream should be separately collected for composting or anaerobic digestion.

Similar to garden and park waste (20 02 01), physical contaminants in biodegradable kitchen and canteen waste can be a challenge for the organics recycling industry. As long as this contamination is acceptably low, then food waste should not be landfilled but should be treated through anaerobic digestion or composting to enable the production of renewable energy, biofertilisers, soil improvers, mulches and bulky substrates for use in growing media.

A range of physical contaminant types have been found in separately collected biowastes, these being broadly classified as glass, metals, non-compostable plastics, non-compostable multi-material composite items, and pieces of other man-made objects such as ceramics.

Physical contaminants in wastes received at AD and composting facilities in the UK cost significant amounts to remove and send to disposal (typically landfill) or suitable recovery facilities (typically EfW facilities). Based on informal feedback to the REA in recent years, rejects (physical contaminants and non-target waste types) are between approximately 1 and 20 % w/w, depending on the biowaste stream type. Many contracts for treating household and other non-packaged food waste streams have until recently allowed up to 5 % w/w presence of non-target materials and physical contaminants (the total for both types).

REA's December 2020 published case study analysing an AD member's data found this operator was paying £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. This operator removes compostable packaging and non-packaging items together 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 just the non-compostable items. This operator does not have a waste reception hall configuration that would enable them to pre-treat LA food wastes that arrive in compostable liners separately from other food waste streams that include non-compostable packaging and non-packaging products.

This AD facility's total annual cost for removing (£75,000), washing and pressing (£35,000), and transporting and paying gate fees for landfill disposal (£219,570) of unsuitable-to-digest packaging [and liners] was £329,570. This waste represented just 7.3 % of the 23,000 tonnes of food wastes delivered to the facility per annum.

We also flag existing, alternative-to-landfill, composting of compostable packaging and non-packaging products. (If requested, we can provide you with a list of the regulator and organics recycling industry accepted standards. Each product must be independently certified compliant with at least one of them and where we use the term compostable below we mean independently certified. N.B.: products that only comply with, are 'self-certified' compliant with or independently certified compliant with only one or more standards that are NOT one or more of 'our' accepted standards are not allowed to be fed into EoW-compliant composting or AD processes in the UK and not allowed to be fed into English composting or AD processes that produce waste-status composts or digestates.)

Compostable packaging and non-packaging products used for containing or in conjunction with food and beverages should continue to be treated at Animal By-Products approved composting facilities. The following is from the Compost Quality Protocol's Appendix B on allowed waste inputs:

1) where co-collected with food wastes that fit the 20 01 08 code's description, compostable products use the same waste code, 20 01 08;

2) where compostable packaging contains former foodstuffs at the point of disposal, e.g. unsold food arising from food retail stores, that waste stream can be coded 20 03 01 'mixed municipal waste'; and

3) where compostable products are collected as a 'dry' waste stream and they include at least some compostable packaging product formats, this stream could use the most appropriate waste code and description in the 15 01 section in CQP Appendix B, e.g. this could be 15 01 05 for composite compostable packaging.

(Food-contact compostable packaging and non-packaging products could in future be treated at ABP-approved 'dry-AD' facilities that have a following composting phase, any ABP-approved AD facility that has an on-site ABP-approved full composting process or, for compostable products made from successfully autoclave-trialled materials, at any ABP-approved AD facility that has a pre-digester autoclave.)

20 01 38 Separately collected wood

19 12 07 Wood from mechanical treatment

Such material can be used in biomass power sites utilising waste wood for low carbon electricity generation. This is a fairly established sector in the UK, however, they currently lack a route to market for the retrofitting of carbon capture and storage that can lead to negative emissions. Ensuring

that smaller scale waste wood biomass projects can be eligible for the power BECCS business model will help address this barrier.

19 12 10 Combustible waste (refuse derived fuel)

RDF can be used in Energy from Waste and Advanced Conversion Technologies (ACT) which utilise waste biogenic feedstocks in the production of multiple energy vectors, including (but not limited to) power, low carbon fuels (such as rDME and sustainable aviation fuels), hydrogen and green chemicals.

Key barriers to deployment of ACT systems include:

- Clear permitting arrangements bespoke to ACT. Gasification and pyrolysis systems are typically treated the same as incineration despite being a very different technology.
- Stable policy support for delivery of ACT system under the RTFO and Hydrogen Business model. This will also be helped under government delivery of SAF and ZEV mandates.
- Lack of recognition of renewable fuels (like rDME, a low carbon LPG substitute) within heat decarbonisation policy where it could play an important role off the gas grid and within industrial applications, replacing gas or oil.

Q28. Do you have a view on how government could help support alternative treatments for this waste?

Yes
No

If yes, please share the evidence and/or data

Every effort should be made to remove biodegradable wastes from the residual / mixed waste streams and enable them to be properly treated as high up the waste hierarchy as possible, for example through technologies such as composting and anaerobic digestion.

Some waste feedstocks, may also be appropriately sent to treatment in advanced conversion technologies where able to produce products that can decarbonise hard to treat sectors.

Education and landfill tax escalator
Alongside the reforms to waste collections, Government should fund a nationwide education campaign to ensure there are sufficient resources available for local authorities to communicate to householders regarding the requirements. In our answer to question 20 we have provided information about the positive effects on participation that an effective communication programme has. In addition to this, REA supports the continuation of the landfill tax escalator to incentivise alternative treatment and make landfilling of these materials economically

unattractive. This should be put in place in the advance of any ban to facility these materials being treated elsewhere. Revenue from the landfill tax could be used to fund research into the best alternative treatments for some of the harder to treat waste streams.

Government should also look to ensure that ACT is supported through government energy policy, recognising the role it can play in treating biogenic waste streams, including those which are hard to separate. Such systems can deliver a range of products that can contribute to the decarbonisation of hard to treat sectors. The promotion of such technologies should be done in a way that does not negatively impact established recycling processes.

Q29. Do you have any evidence or data that can help identify the materials and sources of the waste codes shown in Table 1 of the CfE document that denote 'biodegradable waste' and 'Off-specification compost'?

Yes
No

If yes, please share the evidence and/or data

Oversize from the composting process (19 05 01 and 19 0 02) has been coded wrongly in the past, either as 19 05 99 or 19 05 03. There is approx 800 ktpa of compost oversize that arises annually in the UK, some of it is landfilled and whether or it's not landfilled in future, this should be data-visible and count towards the target for diverting biodegradable wastes from landfill.

In the case of certified compostable packaging and non-packaging products, the REA could supply Defra with information on independent certifiers' certification marks, certification code formats and other aspects of labelling that can help identify them. We have named in answer to qu 27 some of the relevant waste codes. Another is 15 01 02 for compostable plastic packaging.

These are other packaging waste codes included in the Compost Quality Protocol's Appendix B (so allowed to be fed into a CQP compliant composting process, providing it has all other necessary permissions, e.g. ABP approval for compostable packaging on 'catering waste' or 'former foodstuffs' and the waste type is included in the facility's permit to operate);

- 15 01 01 for paper and cardboard packaging (with CQP condition it has no non-biodegradable coating or preserving substance),
- 15 01 03 wooden packaging (with CQP condition it has no non-biodegradable coating or preserving substance), and
- 15 01 09 for textile packaging (with CQP condition it must be entirely natural fibres).

Bulky waste

Q30. Do you have any evidence or data on how much non-POPs containing biodegradable bulky waste is sent for disposal in landfill?

Yes
No

If yes, please share the evidence and/or data

Member comments welcome

Q31. How can government support the movement of these materials for treatment further up the waste hierarchy?

Non-municipal waste

Q32. Do you have any views, evidence or data that explains why the materials shown in Table 2 of the CfE document are sent to landfill as opposed to alternative treatment higher up the waste hierarchy?

Food effluent and biodegradable industrial sludges

The REA encourage DEFRA to consider how the utilisation of waste water could be better promoted and incentivised, in order to make the most of 658,000 tonnes per annum of food effluent and biodegradable industrial sludges identified in the consultation.

Such material can be processed in both anaerobic digestion and advanced conversion technology sectors. Funding to help facilitate such use should be considered, either as a separate support mechanism or as part of existing incentives.

This should include collaborating between OFWAT and DEFRA to advance suitable regulatory frameworks for using this waste in energy processes. This can include setting targets, incentivizing investment, establishing quality standards, and ensuring compliance with environmental regulations.

Non-inert fines

Mixed residual waste

The current waste management practices involve sending waste to energy-from-waste (EfW) facilities or landfills, with a small portion

exported. However, due to a lack of waste treatment infrastructure, some waste still ends up in landfills.

We note that Advanced gasification holds significant potential for addressing landfill-bound waste, although such systems are not well supported. Advanced gasification offers a solution by efficiently processing non-homogeneous waste streams with varying compositions. It can convert mixed waste into valuable resources like syngas, biofuels, or heat energy.

Implementing advanced gasification at smaller decentralised levels, would decrease the dependence on landfills for non-homogeneous waste. This technology provides a viable alternative that recovers valuable resources from mixed waste.

Miscellaneous combustible

Commercial and industrial paper and card

Commercial/industrial food; abattoir waste

Q33. How can government support the movement of these materials for treatment further up the waste hierarchy?

REA supports continuation of the landfill tax escalator to incentivise alternative treatment and make landfilling of these materials economically unattractive. This should be put in place in advance of any ban to facilitate these materials being treated elsewhere.

Government should also carefully consider the interaction with the planned inclusion of Energy from waste combustion emissions in the UK ETS so that this does not introduce an incentive for more waste to go to landfill instead of energy recovery. There are many areas of implementation of inclusion in the UK ETS that are still to be resolved and we look forward to continuing to engage with Defra and the UK ETS Authority on these issues, including via the further consultation planned for later this year.

Government could also consider how the waste hierarchy itself could be made more detailed. For example, innovative processes such as advanced conversion technologies and chemical recycling, arguably sit in a ‘grey’ area between recycling and recovery. Appropriate promotion of innovative waste treatment pathways could help ensure materials are pushed up the hierarchy, as long as this doesn’t negatively impact established recycling processes.

Q34. Do you have any evidence or data that details the composition of materials within each category of waste received at landfill as listed above and their origins/sources?

Yes

No

If yes, please share the evidence and/or data

Q35. Do you have any evidence or data that details the composition of the mixed non-municipal waste code:

19 02 03 – premixed waste composed only of non-hazardous waste

19 08 01 – Screenings

Q36. Do you have any evidence or data that details the origins/sources of these two waste codes?

Yes
No

If yes, please share the evidence and/or data

The five key biodegradable materials recommended for elimination from landfill by the Climate Change Committee

Q37. Are you aware of any barriers to expanding the list of separately collected wastes that are prohibited from disposal at landfill (or incineration) without some form of treatment process to include wood, card, textiles, food, or garden waste?

Yes
No

Please explain your answer.

REA supports expanding the list of separately collected wastes that are prohibited from disposal at landfill. However, we are still awaiting the implementation of the waste collection consistency reforms and we note there's only 3.5 years until beginning of 2027 so Government should support extra technical assessor resource and allow priority assessment of planning applications and environmental permit applications for extra capacity at AD, composting and AD+composting sites or applications for new sites of these kinds.

Government should also consider the following, further prioritisation of applications for AD / composting / AD+composting facilities;

1) highest priority to facilities that produce digestate/compost that meets end of waste criteria (source-segregated food waste, garden waste or food+garden waste inputs have been organically recycled),

2) second highest priority to facilities that produce digestate/compost that remains subject to waste regulatory controls (source-segregated food waste, garden waste or food+garden waste inputs have been organically recovered), and

3) third highest priority to the bioprocessing parts of MBT facilities that produce Digestate-Like-Output or Compost-Like-Output from, mostly, biodegradable fines mechanically sorted from residual waste streams.

AD, composting and AD+composting facility applications should be given priority over any others for recycling wood, paper & card and textiles because food and garden wastes are relatively putrescible and contain higher concentrations of nutrient compounds; if landfilled untreated, they are likely to generate more methane per tonne in landfill than wood, paper, card and textiles.

Q38. In addition to the materials detailed in Q37, are there any other potentially recyclable wastes which, when separately collected, could be prohibited from being sent to landfill (or incineration) without some form of treatment process?

Yes
No

If so, please provide any evidence to support this, including details of alternative treatment of these materials

Independently certified (industrially and home) compostable packaging and non-packaging products are organically recyclable at commercial scale composting facilities, at suitably designed AD+composting facilities and at least some material types are suitable for autoclaving prior to AD. In the UK, according to Renewable Energy Assurance Ltd's October 2022 report 'Composting compostables in the UK', at least 14 are accepting compostable liners, 3 are accepting compostable packaging, and 7 are accepting both compostable liners and compostable packaging. There is a UK network of approx 40 composting facilities likely to be treating food wastes, so more of these could feed in and biodegrade used compostable products.

Prohibiting these compostable products from being landfilled or incinerated without a prior treatment process (that at least reduces their residual propensity to biodegrade) would reduce gasses per tonne they may generate after being landfilled and gaseous emissions per tonne they may generate if incinerated.

Examples of Defra policies that would help circular management of these (usually significantly) biocarbon-derived, compostable resources are:

- support for well-targeted uses of compostables (in terms of makes-sense product formats and contexts of use);

- recognition in Defra's waste management hierarchy that organic recycling of compostables, where they have been used in their targeted uses, is equivalent to non-organic recycling of non-compostable items (e.g. paper, cardboard, glass, metal and conventional plastics);

- exempting them from the plastics tax where they also contain at least 50 % bio-based content;

- an EPR system in which organic recyclers can continue to register as reprocessors of compostable items;

- support for higher-rate PRNs per tonne of compostables biodegraded (or an equivalent mechanism if the PRN part of the system is intended to be scrapped - their historic rate was just £0.75 per tonne);

- data on organic recycling of compostables within the EPR reporting system (relevant to near-future setting of modulated fees that will apply to obligated producers who place compostables on the market);

- incentive schemes for AD that encourage on-site capability to biodegrade compostable items; and

- labelling requirements that direct compostables into, at least, 'closed-environment' food waste bins OR that allow dedicated 'dry-compostables' collections in, at least, business-to-business arrangements.

Textiles municipal waste

Q39. Which of the two mixed waste codes (20 03 01 and 19 12 12) are most household and commercial municipal textiles landfilled under?

Q40. For textiles recorded under the 19 12 12 waste code, where does this usually come from, i.e., a Household Waste Recycling Centre (HWRC), or a Materials Recovery Facility (MRF)?

Q41. Can you provide any data on the biodegradable composition of textiles in the two mixed waste codes?

Yes
No

If yes, please share the data

Q42. Based on your experience, what is the general quality of textiles found in these two mixed waste codes? If you find there is a mix of quality, please detail a percentage against each category.

	0-20%	21-40%	41-60%	61-80%	81-100%
Very poor quality and contaminated – unusable					
Poor quality but not contaminated – in need of repair					
No view					
Good quality – usable but showing signs of wear/use					
Very good quality – like new					

Q43. Is there any difference, in your experience, between the quality and type of household and commercial municipal textiles waste?

Yes
No

Please explain your view

Q44. Do you have any suggestions for incentives government could introduce to divert textiles, particularly biodegradable textiles, from landfill and for treatment that offers better environmental outcomes in accordance with the waste hierarchy?

Q45. Should businesses be required to present textiles waste separately for collection?

Yes
No

Please explain your answer

Q46. In your experience, what would be the opportunities and difficulties associated with this?

Do you have any evidence to support your response?

Interaction with other waste policies

Q47. Based on your perspective, to what extent do you think that the government's committed policies, taken collectively, will achieve the near elimination of biodegradable waste to landfill?

- Not at all (no change in current situation)
- Somewhat (will divert some (less than half) biodegradable waste going to landfill, but not all)
- Will ensure that a significant majority (more than half) of biodegradable waste, for which there are alternative treatment options, is diverted from landfill
- Completely (will divert nearly all (more than 90%) biodegradable waste, for which there are alternative treatment options, from landfill)

Please explain your view

We cannot answer this question without government's consultation response on waste collection consistency requirements and full details of timing and details on the TEEP exceptions to the separate collection of garden and food waste. For this policy to be effective it must be fully matched by additional funding to cover local authority costs and for clear and ongoing communications to households and businesses. There are also risks that the inclusion of non-biogenic emissions from EfW combustion within the UK ETS, which we support, will make landfill more attractive as an end point for mixed waste materials. As well as running contrary to the waste hierarchy, this would increase the biodegradable material going to landfill, or at least the amount that would need suitable pre-treatment prior to landfill. The inclusion of EFW in the UKETS from 2028 therefore must be carefully designed given the interactions with other waste policies including requirements for near-elimination of biodegradable wastes going to landfill. If done correctly then we believe inclusion in the UK ETS will help sector decabonisation. In addition, interaction with support polices for carbon capture and storage (CCS) must also be considered in wider waste policy development. It remains unclear what the route to market for biomass waste wood electricity production with CCS will be, whether supported by the industrial carbon contract, the Power BECCS support scheme or the GGR business model. Interactions between CCS deployment should be carefully considered.

Careful consideration will need to be given to landfill tax rates and other policy levers to ensure this does not happen.

Q48. Do you have a view on alternative bio-recycling routes for the diverted biodegradable waste other than anaerobic digestion and composting in line with the government's priority uses for biomass?

Yes
No

If yes, can you provide evidence to support your view?

REA would support the development of a Resource Framework to enable cleaned up / decontaminated woody oversize from composting processes – those that treat only source segregated biodegradable wastes – to go to non-WID registered biomass facilities.

We also add that it remains difficult to respond to this question without the Government's Biomass Strategy, confirming the priority use framework, being published. We, however, support the use of waste wood in power production and such routes should be rewarded for the production of negative emissions when fitted with CCS, either via Power BECCS or GGR Business Models.

Use of waste wood in power production is currently considered in balance between waste arising and demand. However, it should be noted that such assets will start to come to the end of their existing contract arrangements from 2027, as the Renewables Obligation starts to come to an end. Government must give clear signals for how such assets should continue to operate in order to avoid the loss of this waste management capacity to deal with waste wood. This should include allowing such sites to apply for the Power BECCS business model from which they are currently excluded under 100MW threshold eligibility criteria.

Q49. Are there any instruments you could suggest that would be effective in eliminating biodegradable waste to landfill?

Yes
No

If yes, please can you explain your thinking, including what financial mechanism would be appropriate and how this could work

As previously mentioned, high performing separate collections of food and garden wastes are imperative in eliminating biodegradable waste to landfill.

Considering packaging products claimed 'biodegradable', 'oxo-biodegradable', 'degradable' or similar, but that aren't independently certified compliant with at least one of the UK regulator-accepted standards for the organic recycling sector: these are unsuitable for receipt at and feeding into composting, AD or AD+composting facilities and they add to on-site management and removal costs and can contribute to physical contaminants in composts/digestates or cause

losses in marketable yields of composts/digestates (as operators screen more finely). Their alternative disposal into residual waste bins and co-treatment with biodegradable fines composted or digestated at MBT facilities or leaving them on MBT facility conveyor belts for eventual EfW combustion, incinerator combustion without energy recovery or landfill is far from optimal. These should be banned.

Considering non-packaging products designed for use in one or more natural environmental compartments and claimed 'oxo-biodegradable', 'degradable' or similar: there is an EC court case due to report soon so Defra should consider its findings/decision.

Considering non-packaging products designed for use in one or more natural environmental compartments and claimed 'biodegradable': Defra should legislate to require that any such product; 1) complies with an environment-protection-regulator-accepted standard that sets pass/fail criteria relevant to the environmental compartment(s) in which the product was designed to be used, 2) its compliance with that standard is independently assessed and certified by an independent certification body and its certificate is renewed within the CB's required intervals, 3) claims on and about the product clearly name the environmental compartment(s) for which the product has a valid certificate (i.e. no more claims the product is 'biodegradable' because it's not clear in which context), and 4) the product's certified status is visible on the product* and in any printed and/or on-line resources used for marketing the product.

*Unless it is a product that meets a very small format definition that allows omission of a certification mark but still requires inclusion of the product's certification code.

Timing of policies to eliminate biodegradable waste to landfill

Q50. Do you have any thoughts or evidence as to how policy interventions could be sequenced so as to achieve the near elimination of biodegradable waste to landfill?

- Focus on municipal waste only
- Focus initially on municipal waste before expanding policies to non-municipal waste
- Focus on non-municipal wastes only
- **Focus on all biodegradable waste**
- Target specific wastes (municipal and non-municipal) now that can be diverted to alternative treatment
- Other

Please explain your answer

Policies should focus on all biodegradable waste. The environmental impacts of landfilling non municipal biodegradable waste are significant, and policies should cover all biodegradable wastes. Certainty of policy is important for businesses to secure investment. We need clarity and whilst the details can be refined there needs to be a firm commitment made to enable businesses to plan for the future.

Q51. Having considered the timing of other policies, are there circumstances that may arise as a result of interaction with these policies that you would like us to be alert to?

There may be interactions with policy being developed at EU level. This would include the provisions of the new EU ETS Directive, which require the European Commission to bring forward proposals by end July 2026 for possible inclusion of EfW non-biogenic emissions in emissions trading by 2028 – with a possible opt-out until the end of 2030 (ie effectively 2031). The government response to last year's UK ETS consultation confirms the inclusion of EfW within the UK ETS from 2028. So it is possible that the EU policy will change at much the same time as UK policy – but it is also possible that they will be out of alignment for several years. Inclusion of EfW within the UK ETS must consider interactions with policies to restrict biogenic material going to landfill in order to avoid unintended consequences that sees EfW sites from being disincentivised from utilising such material.

Depending on the outcomes (and possible other changes to landfill tax rates) there may be increased or decreased financial drivers to export waste, which would alter the composition of material going to UK landfill.

The introduction of the Zero Emission Vehicle mandate (starting in 2024) and Sustainable Aviation Fuel mandates (to start in 2025) are expected to increase demand for low carbon fuels. Production pathways for such fuels will include Advanced conversion Technologies utilising waste feedstocks, some of which maybe comprised of biogenic content, typically in the form of residual waste. Waste policy should be aware how introduction of these mandates could also help divert biogenic material from landfill.

We also note it is important that Government is aware of timing around which existing biomass power generation sites, some of which utilise waste wood, will be coming to the end of their existing contract arrangements with the Renewable Obligation. Contracts will start to come to an end 2027, at which point existing assets will need to consider whether to extend the life of their projects. biomass power generators currently divert 2.6 mn tonnes of waste wood from landfill per year, loss of this treatment capacity as they come to the end of their contracts must be considered. The next step for such sites is to install carbon capture and storage technology, however this is unlikely to be in place for such sites until the 2030s. A bridging mechanism to keep such assets operational is essential.

Q52. Notwithstanding your response to Question 50 above, in achieving the near elimination of biodegradable waste to landfill, do you have any evidence or thoughts of materials or waste codes that could be targeted before others, or should all biodegradable municipal waste be targeted at the same time?

Food and garden waste from household and food waste from businesses.

Q53. Are there materials that should be considered at a later stage or for exemption because there is no possible current or likely future alternative means of disposal for that waste?

Q54. Are you aware of any barriers to bringing forward implementation of policies to achieve the near elimination of biodegradable waste to 2026, taking account of necessary lead in times to prepare the sector?

Q55. Do you have a view as to whether we can and should seek to align biodegradable waste to landfill policy scope, timing and implementation in England to those being implemented across the UK?

Yes
No

If yes, please explain your view and provide evidence and data if available to support your reasoning.

Waste Infrastructure

Q56. How can government support the development of infrastructure required to manage biodegradable waste diverted from landfill?

Policy certainty will enable the market to react and build additional capacity where required. To enable the development of infrastructure to manage biodegradable wastes, Government should support extra technical assessor resource and allow priority assessment of planning applications and environmental permit applications for extra capacity at AD, composting and AD+composting sites or applications for new sites of these kinds.

Waste infrastructure policy must also integrate with energy policy that supports the deployment of Advanced Conversion Technologies (ACTs). Recognising the role, they have to play in developing products that will help the decarbonisation of hard to treat sectors, such as off gas grid heating, sustainable aviation fuels and hydrogen. Ensuring such systems are also considered part of the wate

management system and available for appropriate biodegradable waste diverted from landfill.

In terms of wider infrastructure development, we highlight the need to consider:

1) The need to ensure sufficient capacity of waste treatment facilities, including composting plants, anaerobic digestion facilities, Advanced conversion technologies, biomass waste wood plants and energy from waste installations.
2) Infrastructure must be fit for the future by being aware of innovative technologies and approaches to waste management. This includes facilitating the use of ACT and transport and storage of carbon connected to CCS. This requires long-term planning, anticipating future innovation and needs.
3) Sufficient collection and transportation infrastructure, which also facilitates the accurate separation of waste where possible.
4) Address regional disparities in waste collection and treatment process to ensure equal access to waste management capacity.
5) Ensure cross Whitehall alignment on energy and waste policy.

Q57. How do you consider infrastructure development might impact on the potential phasing in of policies to eliminate biodegradable waste to landfill?

Q58. Do you have a view on how government could support the prevention of biodegradable waste from arising in the first place?

Yes
No

If yes, please explain your answer

Soils to landfill

Q59. Do you agree that soils and mineral wastes are excluded from the scope of policies to achieve the near elimination of biodegradable waste to landfill (with other cross-government policies focussed on the prevention and reuse of soils and mineral wastes, where appropriate)?

Agree
Disagree

Please share your views and any evidence or data that supports your reasoning.

There should be separate policies concerning soil to incentivise and facilitate their re-use in appropriate applications. Soil is a finite resource and should be protected and re-used wherever possible.

Cost of achieving the near elimination of biodegradable waste to landfill

Q60. Are you aware of any potential costs that may arise as a result of the near elimination of biodegradable waste to landfill that should be taken into account?

Yes
No

If available, could you provide evidence to support your answer?

Q61. Do you envisage any unintended consequences that the government should seek to avoid when developing policies to achieve the near elimination of biodegradable waste being sent to landfill?

Yes

No

If yes, please explain your answer

Near elimination is important – rather than a complete ban. There needs to be contingency in place for EFW downtime, either planned or unplanned. Without landfill as a contingency, these plants will have to operate below full capacity. It is important that landfill is only used in circumstances where there are no other options for treating the waste elsewhere.

Any additional information of views to share

Q62. If you hold any evidence, data, views, or thoughts outside of direct requests for evidence, data and views contained in this document that you believe will help us in our ambition to achieve the near elimination of biodegradable waste to landfill, please add this here.

Supplementary section: The future of landfill

Q63. Would you be interested in taking part in any conversations around the future role of landfill and other topics relevant to landfill policy?

Yes
No

If your answer is yes, we will use the contact details provided by you when replying to this consultation.