



Annual Report 2023

Compost / Biofertiliser
Certification Schemes

Contents

Introduction	3
A word from our Chief Executive	4
A word from our Chair.....	5
Compost Certification Scheme.....	6
Certified processes.....	7
Process by country	8
Scale of certified processes	9
Proportion of certified processes	10
Process types	10
Feedstock	12
Output, products and markets	14
Compostable packaging and liners.....	19
Biofertiliser Certification Scheme	21
Processes	21
Comparison of certified and non-certified processes in the UK.....	22
Input	23
Feedstock	24
Output	26
Markets.....	27
Scheme Developments	28
Research Hub 2023 Annual Report	31
About the Research Hub	31
2023 Project Selected	32
Projects Commenced.....	32
Continuing Projects	34
Research Funds	35



Introduction

Renewable Energy Assurance Ltd (REAL) carries out a range of certification and consumer protection activities. All these set and maintain high standards of operating practice, environmental improvement and consumer protection in the renewable energy and circular economy sectors, including in the areas of organics recycling, biogas, and bioenergy.

This report sheds light on the data collected during the course of the year. It also sets out REAL's work during 2022 to manage and develop the Compost Certification Scheme (CCS) and the Biofertiliser Certification Schemes (BCS), and to manage and develop the Research Hub.

Set up in 2006, REAL is a company limited by guarantee with the number 05720606. It is a wholly owned subsidiary of the Association for Renewable Energy and Clean Technology (REA), a leading trade association in the renewable energy and clean tech sector.

REAL works to ensure the schemes are robust and work for all relevant stakeholders, and in so doing, protects consumers of independently certified compost and digestate, and promotes the organics recycling sector.

Data was used from the beginning of January 2024 to reflect the status of the schemes during and at the end of 2023. The CCS and BCS sections provide an overview of the certified composting and anaerobic digestion processes and a summary of the operational data available to REAL. The Research Hub section provides a summary of the governance and operations, and an overview of the project selected in 2023. It also showcases details about the projects that commenced in 2023 and updates on ongoing projects, focusing on the impacts of this work. Finally, it presents information on funds available at the end of 2023.

Contact

Justyna Staff

Director of the Organic Materials Certification Schemes

justyna@realschemes.org.uk

Georgia Phetmanh

Head of the Organic Materials Certification Schemes

georgia@realschemes.org.uk

Oliver Dunn

Schemes Manager

oliver@realschemes.org.uk

Megan Muller-Girard

Research Hub Manager

megan@realschemes.org.uk

Duncan Craig

Policy Manager

duncan@realschemes.org.uk

A word from our Chief Executive

I have great pleasure in welcoming you to the 2023 Annual Report. It outlines the enormous body of work which the BCS and CCS Team carried out during the year.

The Team participated in discussions with the Environment Agency, England's environmental regulator, on updating the Quality Protocols that underpin both the BCS and CCS. We expect that work to be completed by the end of this year, with the updated scheme rules to follow swiftly.

The Terms and Conditions which underpin the work that the Approved Laboratories carry out for the Schemes were revised. The Team also re-tendered for an independent auditor for the laboratories.

The Team continued to strengthen the governance and transparency of the Schemes, holding a range of regular oversight meetings. It also hosted a range of webinars for Scheme Participants to help them optimise their participation in the Schemes.

Finally, the Research Hub continued to be very effective in funding research that underpins the work of the Schemes and ensures that any developments are based on solid evidence.

My congratulations go to the Team for all their hard work during the year.

Virginia Graham



A word from the Chair of CCS and BCS Technical Advisory Committee

Last year has seen a continuing national and global emphasis on environmental sustainability, in particular the need to use our scarce resources sustainably, avoiding waste wherever possible. There is an increasingly widespread recognition that resources should not be single use, but wherever possible, every effort should be directed to recycling the Earth's finite resources. Recycling of organic materials is one of the key elements of recycling and reuse which affects all of us and hence is a key component of this sustainable approach to resource use that we are all intimately involved with. Recycling organic materials through composting and anaerobic digestion provides pathways for a proportion of the recyclable organic materials.

In addition, where the products of composting or anaerobic digestion are applied to soil, they also contribute to other significant environmental goals, the maintenance or improvement of soil organic matter levels, and the commensurate improvement of soil physical conditions such as structural stability, increased porosity and increased resistance to erosion, through the addition of compost and digestate to soil as soil conditioners, and the reduction in the use of manufactured fertilisers through the application of digestate and digestate liquor to soil as a source of plant nutrients. To ensure that these applications are beneficial, the public must be assured that these materials are of high quality; the Biofertiliser and Compost Certification Schemes provide these assurances.

As in previous post-Covid years, the BCS/CCS Technical Advisory Committee continued to meet virtually. Last year, there was an increase in the number of webinars provided for Scheme participants. These have included guidance on sampling and understanding the testing provided by the Approved Laboratories. Attendance at these sessions has steadily risen and are very much appreciated by Scheme participants. The

CCS Producers' Forum and BCS Operators' Forum also continued to meet virtually, were well attended, and provided the opportunity to raise concerns which potentially impact their ability to produce certified products. A frequent discussion-point amongst compost and biofertiliser users is the need to reduce the quantity of physical contaminants such as plastic, metal, glass, and stones in the products they receive. There have been progressive improvements in contaminant levels in certified composts and biofertilisers and these are continuing. A high proportion of the feedstocks for both processes are provided by local authority collections for green or garden waste and food waste. Whilst local authorities make every effort to reduce the contaminant levels, they are acting as an intermediary between us, the public, and the Scheme participants. A key goal of the future, therefore, is to educate the public on what can be recycled through their garden waste and food waste, and what constitutes non-acceptable contaminant.

The Research Hub has continued to be a success story, with continuing submissions of high-quality research proposals. Two of the earlier projects moved towards successful completion; the project which addressed 'How the benefits of applying compost and digestate to soils can be accounted for under the Greenhouse Gas (GHG) Protocol' was successfully completed and the project Evaluation of the potential for improvement of the Residual Biogas Potential test and investigation of alternative test procedures for 'End of Waste' biofertilisers' was nearing completion.

As we move forward, it is increasingly important that the products resulting from the recycling of organic waste materials through composting and anaerobic digestion are of high quality and fit for purpose. The BCS and CCS ensure that the high-quality standards required of these materials are maintained.

Professor Stephen Nortcliff (Chair of the BCS and CCS Technical Advisory Committee)



Compost Certification Scheme

This scheme provides assurance to consumers, farmers, food producers, and retailers that quality compost derived from source-segregated biowaste, or source-segregated biodegradable materials is safe for human, animal, and plant health. Compost improves soil structure and health by increasing organic matter and the soils' ability to retain moisture and nutrients. Certification signifies that the compost was produced using an effective quality management system, providing assurance that the materials have a consistent quality, are safe and reliable to use, and are fit for purpose.

Certified processes

Certified composting processes across the UK and Republic of Ireland

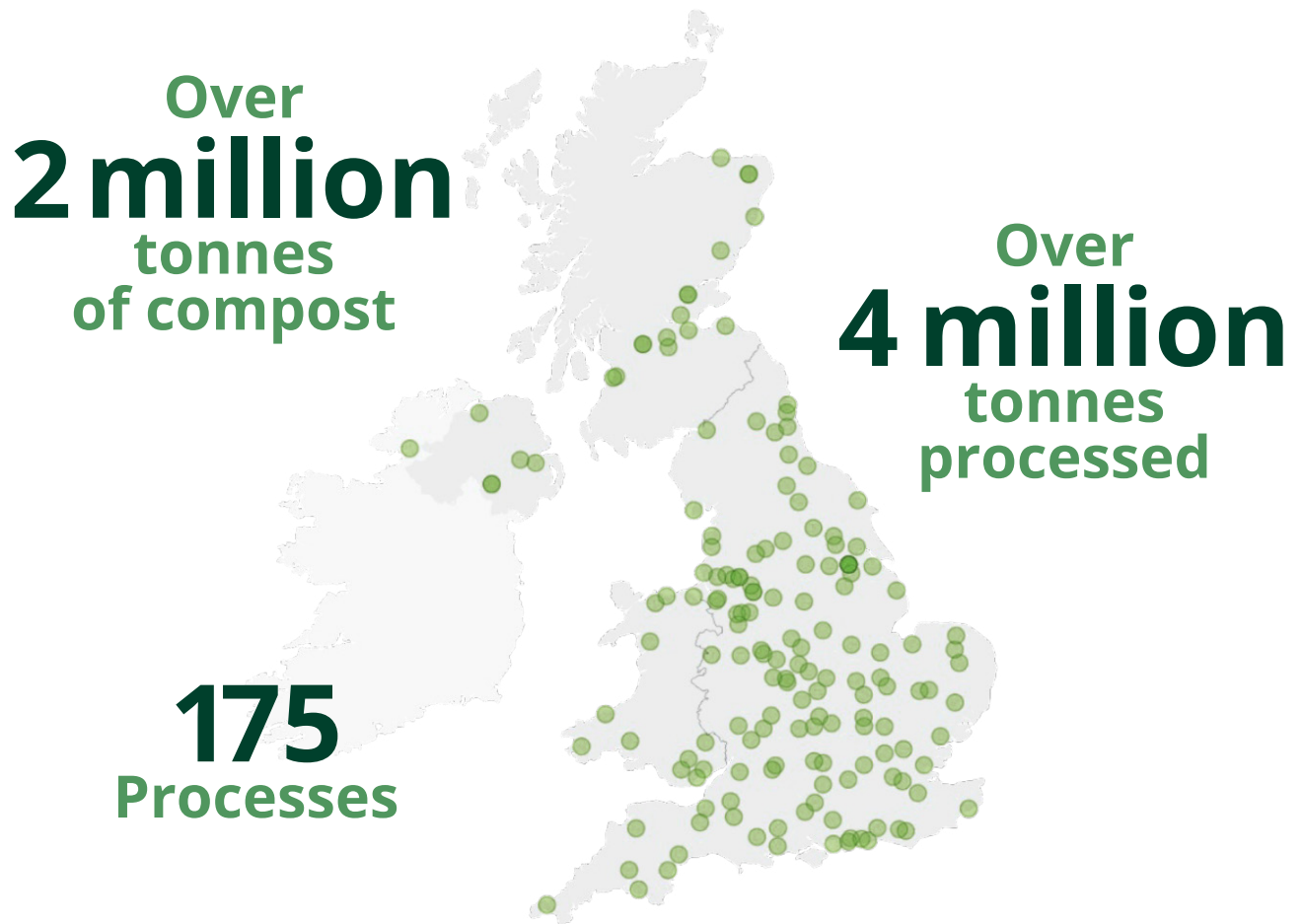


Figure 1 - A Map of the UK and Republic of Ireland with all CCS certified producers



Processes by country

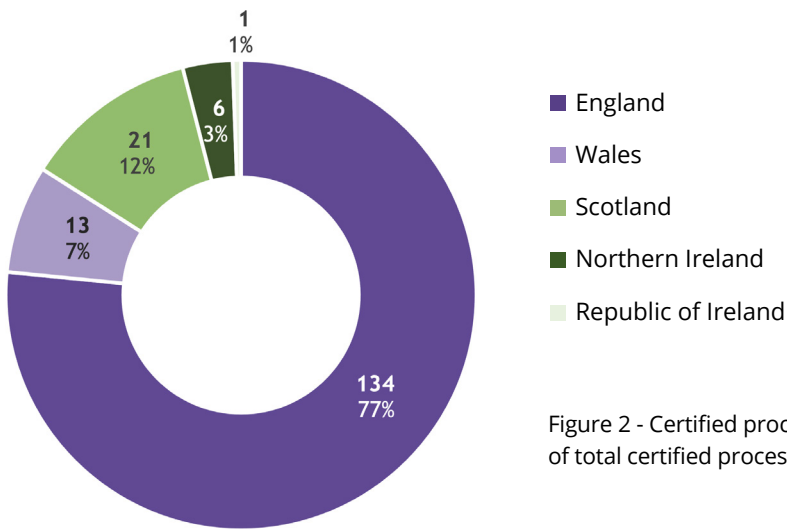


Figure 2 - Certified processes by country, as a percentage of total certified processes

By the end of 2023, there were 175 certified composting processes.

- The scheme certified 2 additional processes in Wales.
- Scotland, Northern Ireland and the Republic of Ireland went unchanged.
- There were 4 fewer certified processes in England than the previous year.

Approximately proportional to the number of processes per country is the total input tonnage per annum, with England accounting for 3.3 million of the approximately 4 million tonnes of material processed across all sites.

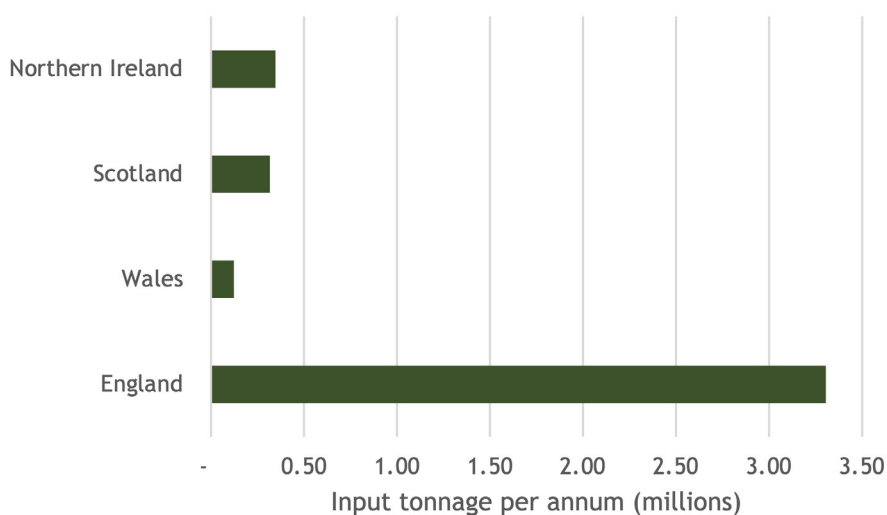


Figure 3 - Input tonnage per annum by country

In line with containing the majority of certified processes, England also processed a proportionally large majority of waste annually. Accounting for 80% of all feedstock by weight.

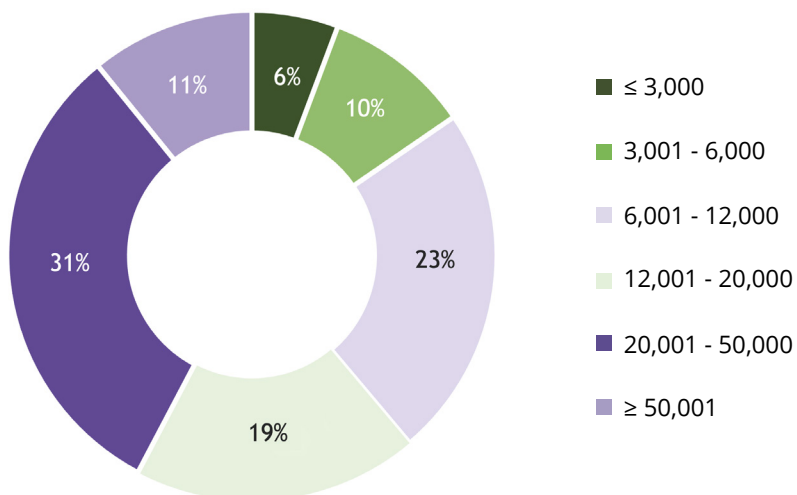


Figure 4 - Scales of process represented as bracketed groups of input tonnage per annum

The most common process scale is 20,001-50,000 tonnes per annum (tpa), accounting for 31% of total UK (and Republic of Ireland) tpa. The least common scale is the >3000 tpa category with only 6% of processes within this category. However, all categories have significant representation.

Proportion of certified processes

Data was collected from the environmental regulators on the permitted/licensed composting sites in each country of the UK to show the proportion of certified permitted sites by the end of 2023. The data is shown in the table below:

Country	Total no. of sites with permits for composting	No. of certified sites with permits for composting	% of certified permitted sites
Northern Ireland	5 (2 WML + 3 PPC)	5 (2 WML and 3 PPC)	100%
Wales	14 bespoke (waste or installation)	11 bespoke (waste or installation)	78%
England	240	127	53%
Scotland	16 (10 WML + 6 PPC)	10 (5 WML + 5 PPC)	67%

In addition to the certified sites with permits for composting, there were 2 other certified sites in Wales, 8 in England, and 8 in Scotland, with different types of permits or exemptions.

Process types

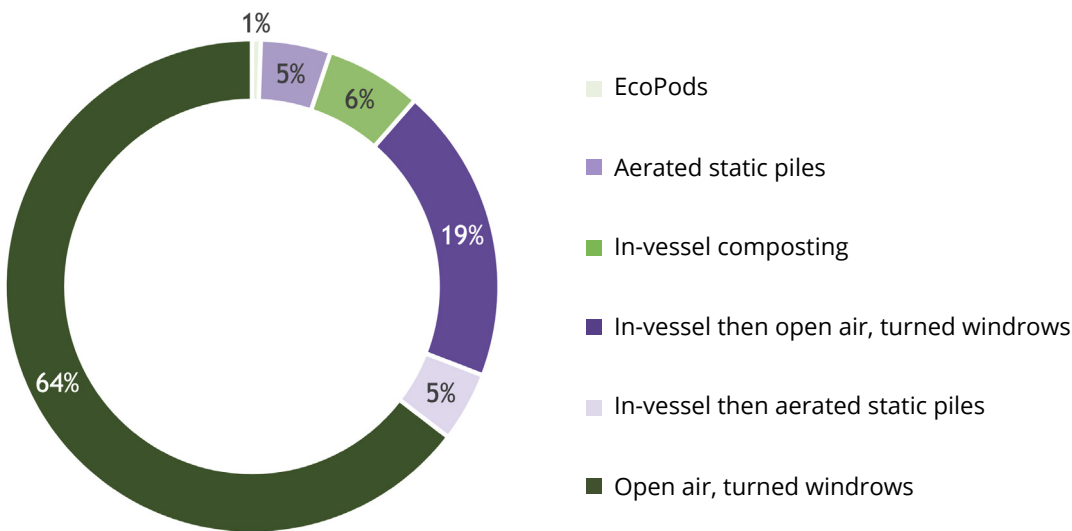


Figure 5 - Process types as a percentage of all certified processes

A total of 113 out of 175 (64%) composting processes were operated as open air, turned windrows. This is an increase of 1 percentage point from the previous year with 111 open air, turned windrows. The hybrid “in-vessel then open, air turned windrows” process is the second most common process type, accounting for 34 out of 175 (19%). Collectively, 83% of processes make use of open air turned windrow processing as a stage during the process or wholly. A further 11% of processes used in-vessel processing with other processing techniques and only 4% used aerated static pile processing, and 1% used EcoPods.

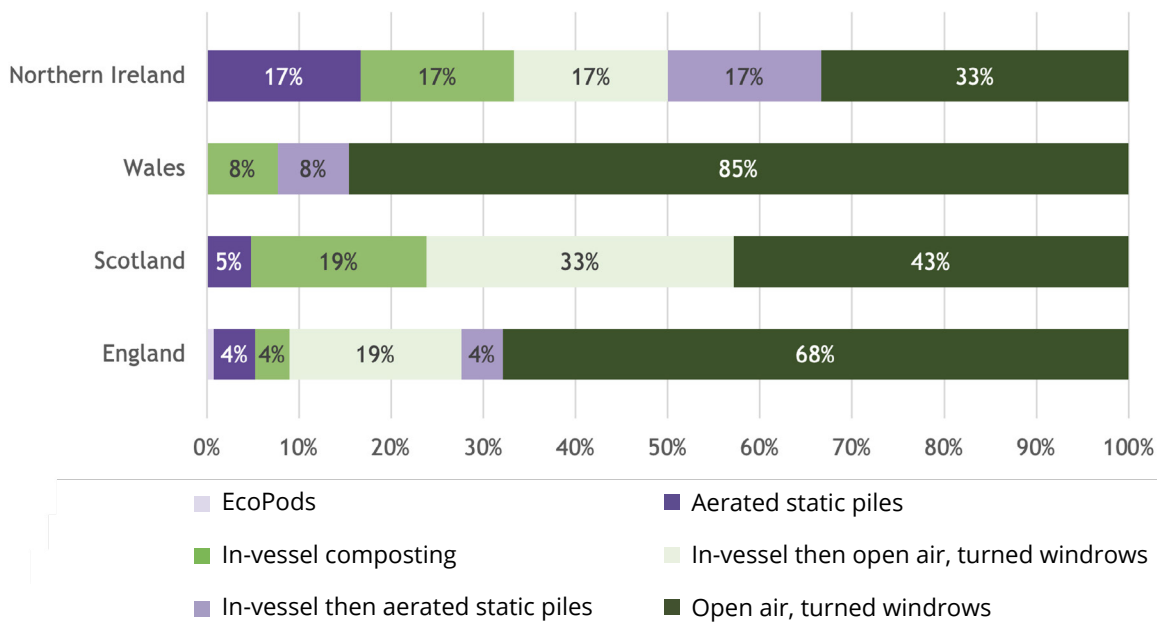


Figure 6 - Percentage of process types per country

A plurality of process types was present across all countries (save for the Republic of Ireland with only one certified process). However, the overall popularity of certified open air, turned windrow processes in the UK is also present within its constituent countries; wherein it is either the majority or largest minority in all four other countries.

Feedstock

Compost feedstock varies between sites but is generally comprised of green waste only (GWO) (grass cuttings, flowers, prunings, hedge clippings, and leaves). Permitted industrial and animal by-product (ABP) wastes like food waste are typically processed at in-vessel composting facilities. Feedstock types are categorised as green waste only or green waste mixed with ABP materials.

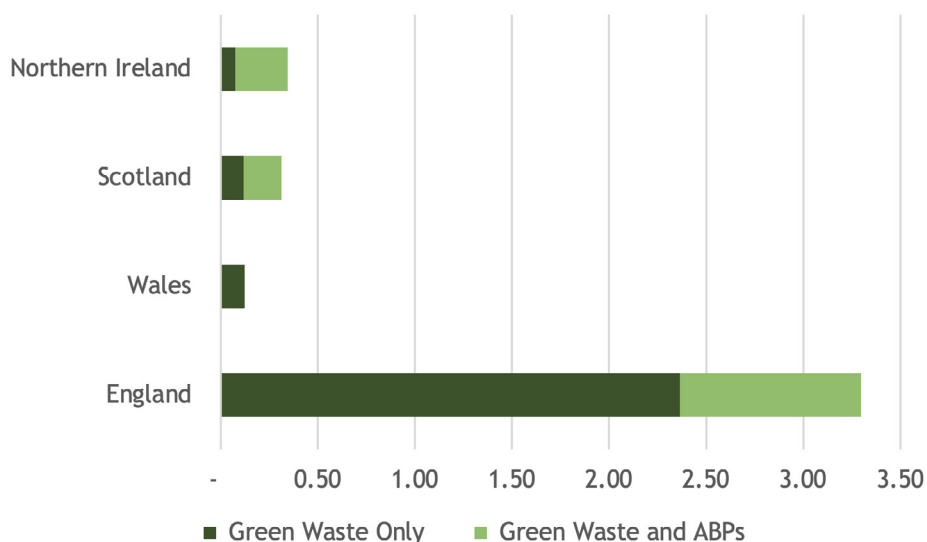


Figure 7 - Annual input tonnage per country (millions of tonnes) by category of feedstock material

Figure 8 shows the input tonnage (in millions of tonnes per annum) of materials that were being processed by certified composting sites in each country on an annual basis by the end of 2023 per feedstock category. The approximate total tonnage per country is also shown below:

Green waste only

England: 2,360,000 tonnes

Northern Ireland: 73,000 tonnes

Scotland: 121,000 tonnes

Wales: 123,000 tonnes

Green waste and ABP

England: 934,000 tonnes

Northern Ireland: 20,000 tonnes

Scotland: 195,000 tonnes

Wales: 272,000 tonnes

While Scotland and Wales process higher volumes of green waste and ABP materials, England relies on GWO for over two thirds of its annual feedstock tonnage for certified composting. Wales, uniquely, processes exclusively green waste feedstock, while Northern Ireland is the reverse, processing only green waste and ABP materials.

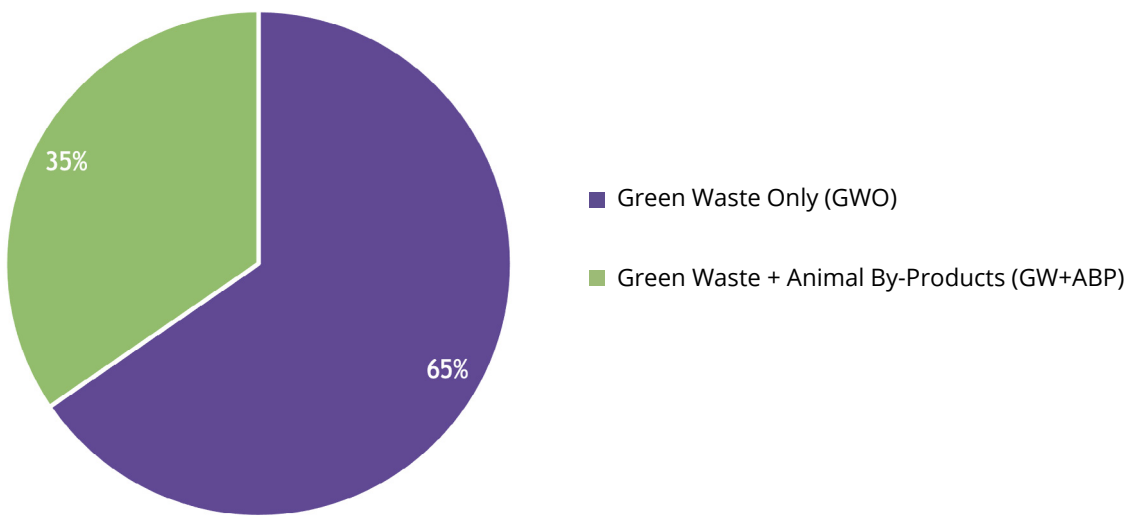


Figure 8 - Input material type tonnage as a percentage of total annual input tonnage

While three out of the five countries process GW+ABP as the majority materials for their feedstock, the overall majority of annual input tonnage across all certified processes is GWO due to the significant volumes of GWO processed by sites in England.

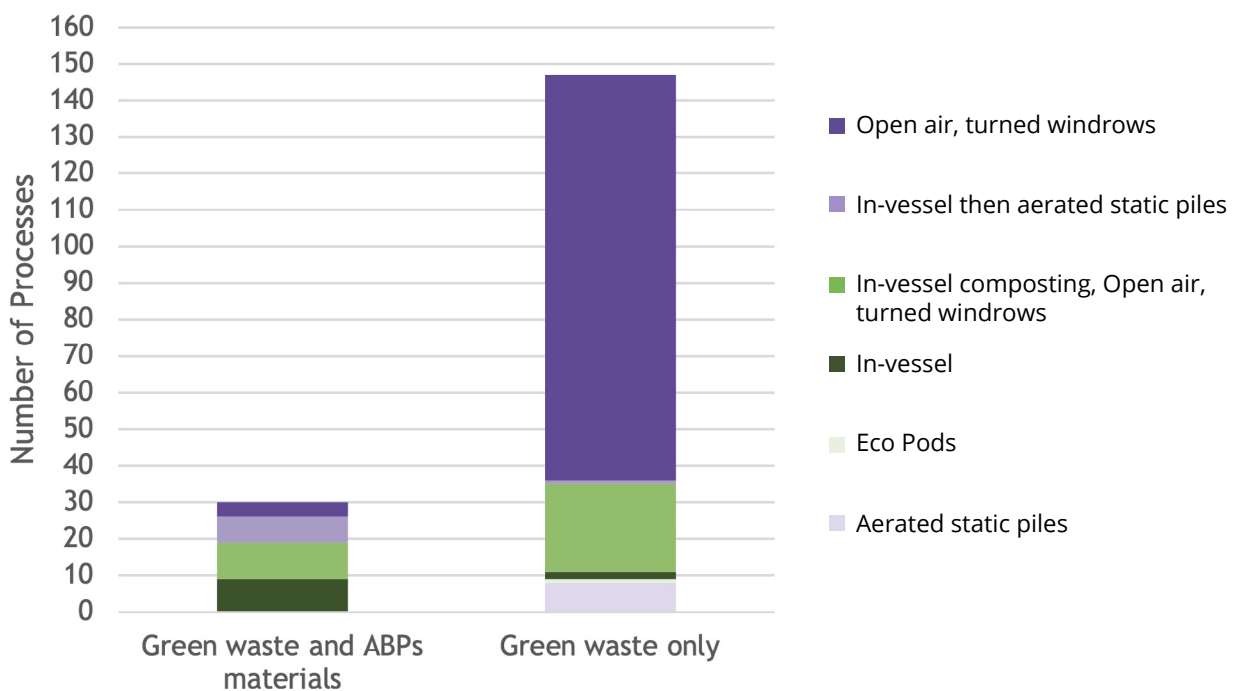


Figure 9 - Feedstock type by composting process

Open air, windrows accounted for the majority of green waste only processes, while in-vessel processing (in-vessel only or combined with other processing techniques) accounted for nearly 90% of all GW+ABP processes. Aerated static piles (without in-vessel) are used exclusively for GW only feedstock.

Output, products, and markets

Output

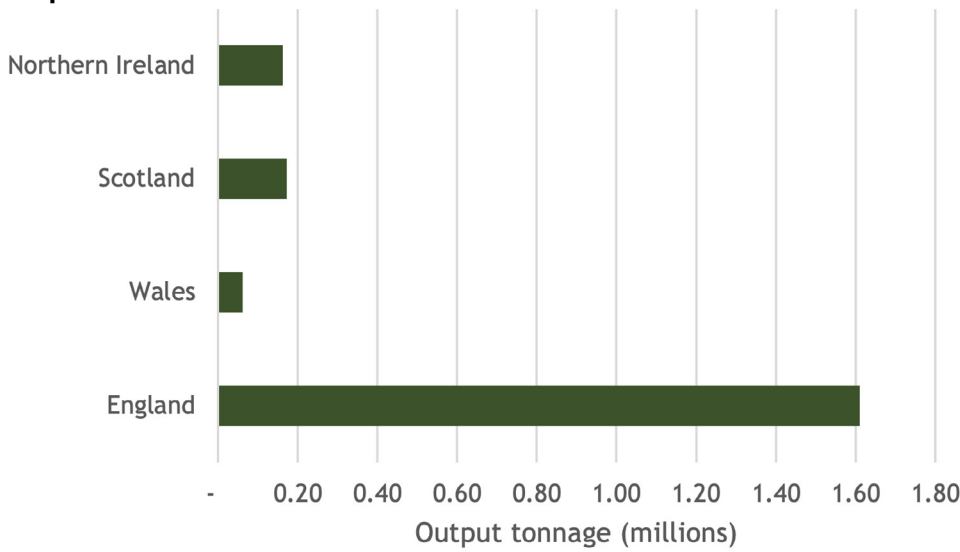


Figure 10 - Output tonnage per annum per country

England accounted for just over 1.6 million tonnes of the total 2 million tonnes of compost that was being produced annually under CCS; representing approximately 80% of all output. Scotland produced 173,000 tonnes of certified compost annually, accounting for 9% of the total output. Northern Ireland produced 162,000 tonnes, equivalent to 8% of total output. Wales produced 2% with 62,000 tonnes annually.

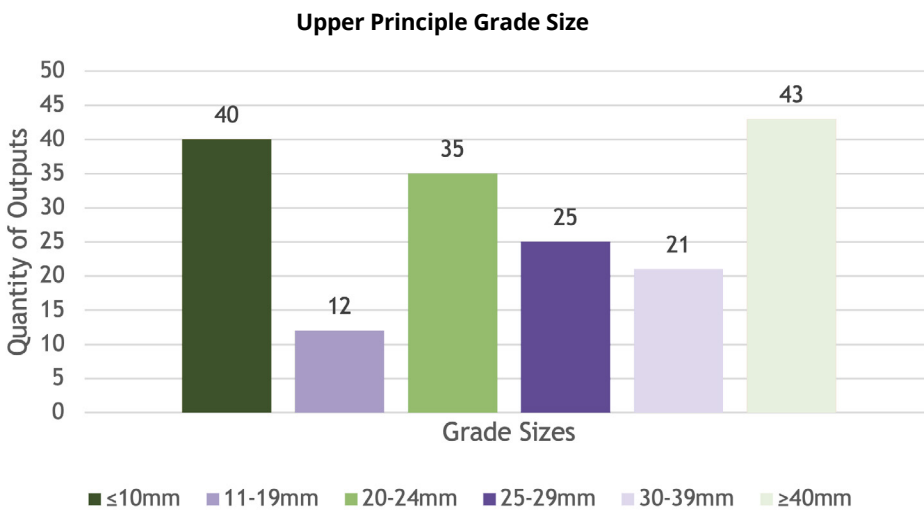


Figure 11 - Process outputs by principle grade size upper limit.

Figure 11 shows a large proportion of grades are fine grades, with 52 processes graded at 15mm or smaller. Not represented in figure 12, is that while 40mm is a common upper limit for grade size, it is often further broken down into 0-40, 10-40, and 25-40mm grades. Factoring this in, the most common range is 0-10mm.

Products

Product Type	Frequency in principle grade	Frequency in additional grades
Soil conditioner	170	95
Manufactured topsoil ingredient	1	0
Mulch	3	3
Growing medium ingredient	0	1
landscape blend	1	0
Total	175	99

Figure 12 - Product type frequency across principle and additional grades

Soil conditioner accounted for over 97% of all compost products within the principle grade, only dropping by 1 percentage point within the additional grades. Mulch is the second most common product type, but only accounts for 1.5% and 3% of principle and additional grades respectively.



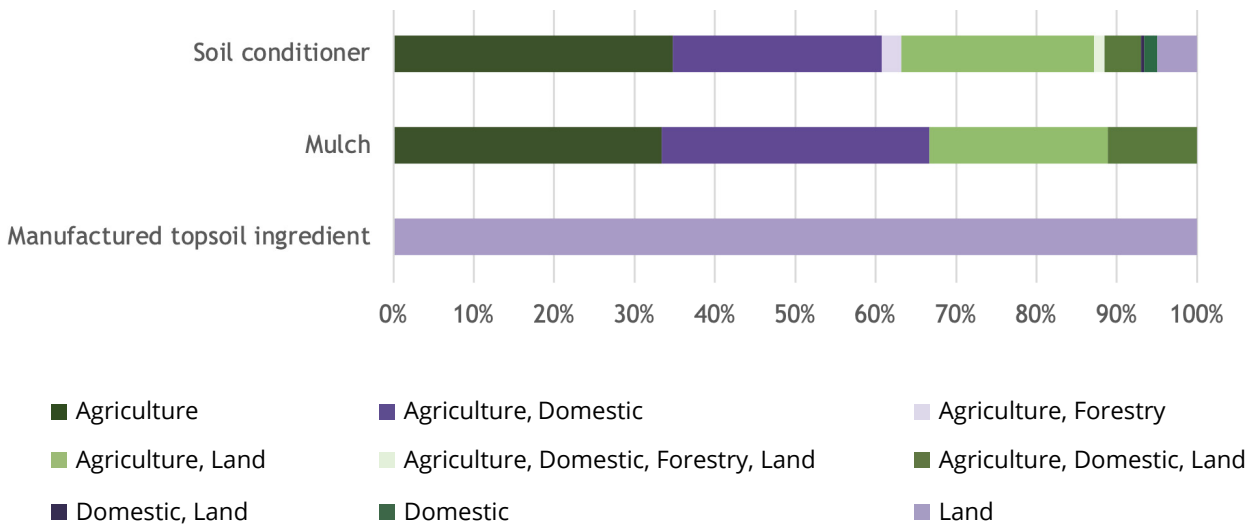


Figure 13 - The number of products supplied to each market sector per type as a percentage of the total number

Figure 13 shows the markets to which each product type is supplied. Naturally, soil conditioner was being supplied to the greatest variety of markets. While they are unique products, neither of the non-soil conditioner products supply markets that are not also supplied with soil conditioner.

Markets

The end market sectors for all certified compost was recorded throughout 2023. Markets are categorised as follows: "Agriculture and soil-grown horticulture", "Domestic or professional horticulture", "Land restoration and soft landscape operations" and "Forestry".

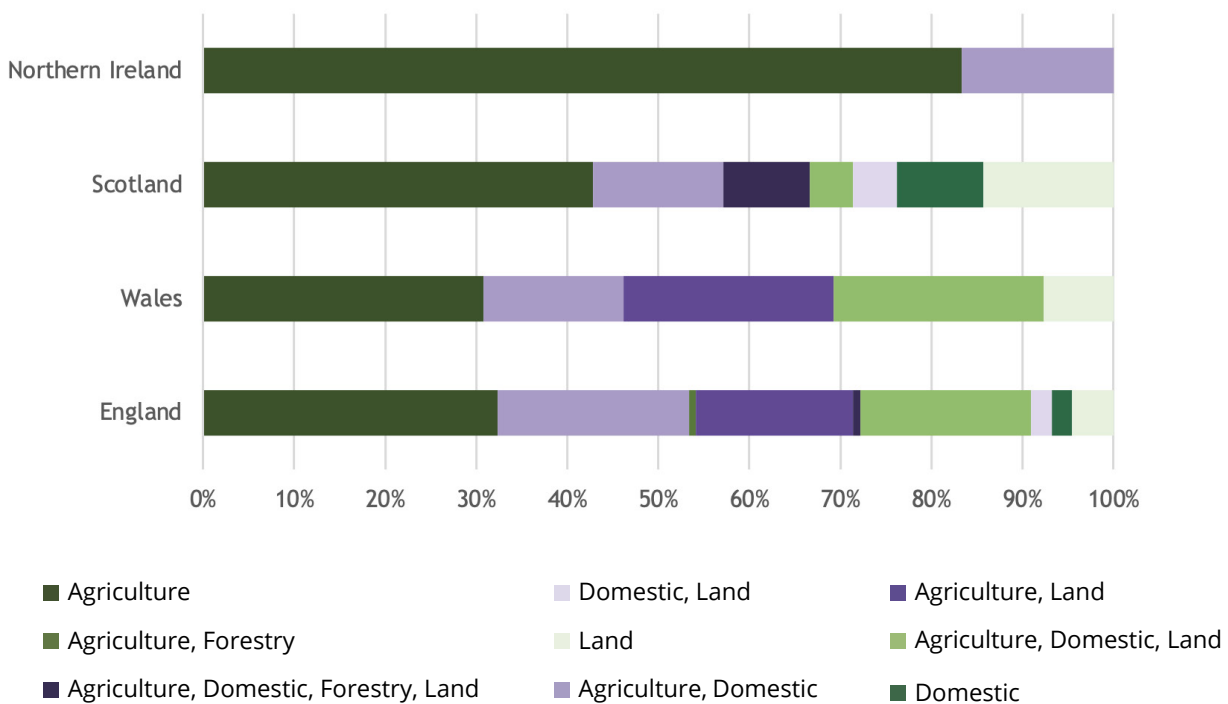


Figure 14 - The number of certified processes supplying to each end market as a percentage of the whole by country's market

Across all countries in the UK, agriculture-only markets account for either the majority or largest minority in all countries. However, there is a substantial plurality of processes supplying a more diverse range of markets than exclusively agriculture in England, Scotland and Wales; non-agriculture-only processes account for 65% of certified processes in England, 68% in Wales, and 50% in Scotland.

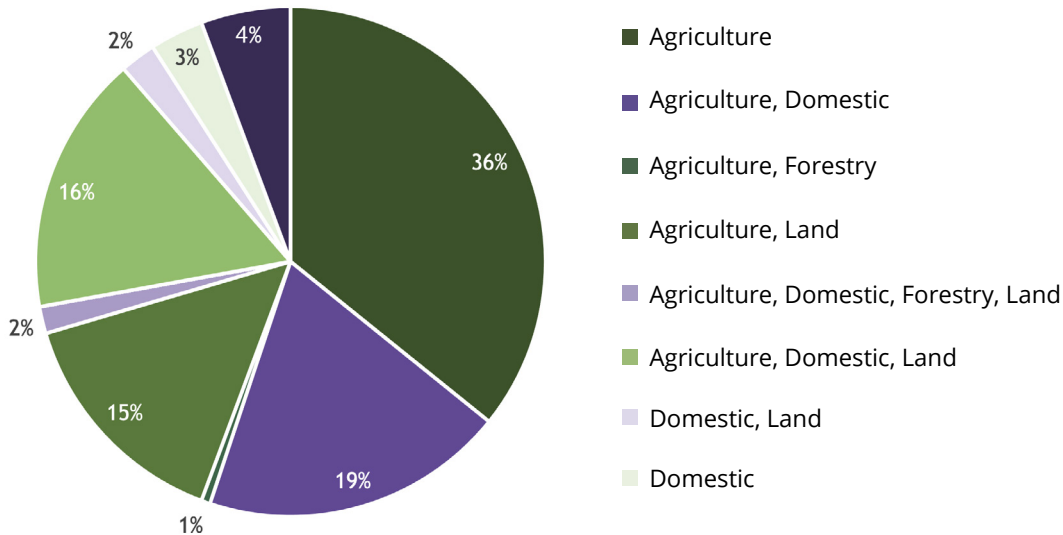


Figure 15 - Number of certified composting processes supplying to designated end market sectors

While agriculture as a stand-alone market accounts for 36% of the total, figure 16 reveals a significant diversity in market combinations. Agriculture combined with domestic horticulture and land restoration represents 16% of markets, while agriculture paired with just domestic horticulture comprises 19%, Agriculture and Land restoration sits at 15% alongside many smaller market combinations. Only 9% of processes do not supply agricultural markets in some capacity, but 64% supply at least one other market.

The data suggests that while agriculture is the largest market for compost, there’s a substantial presence of multi-purpose land use and market diversification across certified producers.



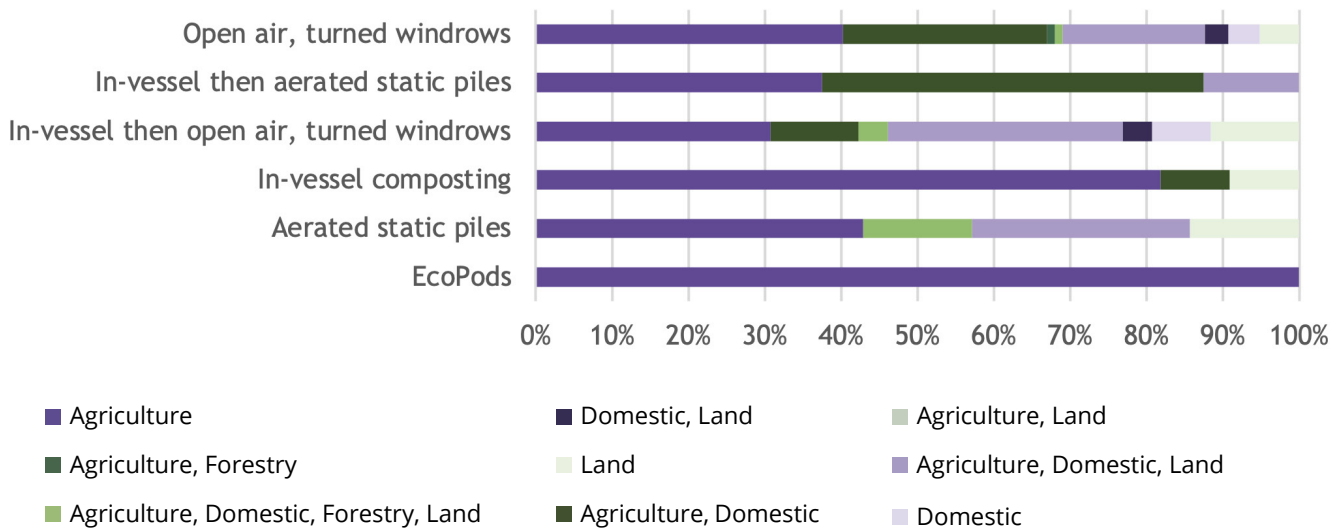


Figure 16 - The number of certified processes supplying to each designated market sector per processing type, as a percentage of the total

Eco pods supplied to the smallest range of markets, supplying to only one market. This is followed by In-vessel composting (IVC), and IVC then aerated static piles which both supplied to three different markets. Open air turned windrows and aerated static piles were the only process types that supplied compost to all four market sectors (agriculture, land, forestry, and domestic). Figure 16 suggests that the processing technique employed to produce certified compost does not dictate which market sector that compost will be supplied to, as all process types supplied to at least 3 markets (apart from Eco Pods which are a statistical anomaly).



Compostable packaging and liners

This section indicates the acceptance and use of compostable packaging and liners (compostables) by certified composting processes. Compost producers participating in the CCS can only accept compostables which are independently certified to BS EN 13432, BS EN 14995, and ASTM D6400 for industrial composability.

By the end of 2023, there were 28 certified processes collecting some kind of compostable packaging or lining. The types of compostables collected breakdown as follows:

- Compostable liners accepted: 15
- Compostable packing accepted: 5
- Liners and Packaging accepted: 8

Liners were most accepted, accounting for over 50% of processes that accept compostables. Processes which accepted only compostable packaging accounted for only 18% of compostables-accepting processes. This suggests that if a process is willing and able to accept packaging, it is likely that it is also willing and able to accept liners too. There is also a significant difference in which types of process accept compostables, and which types they accept, as seen in figure 21.

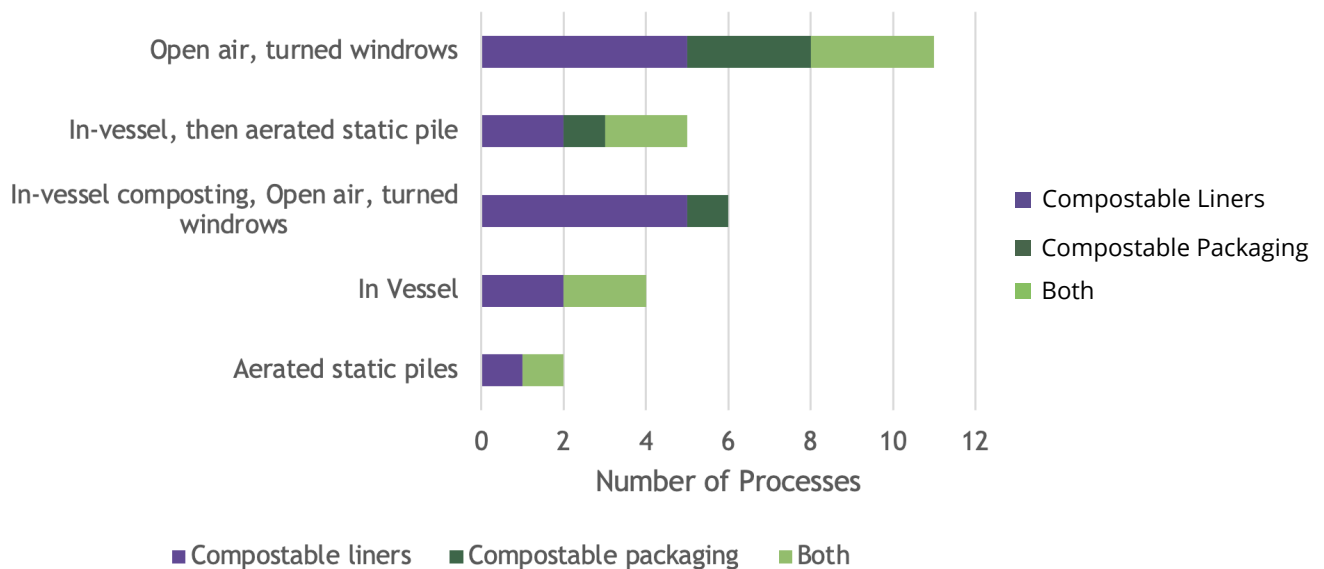
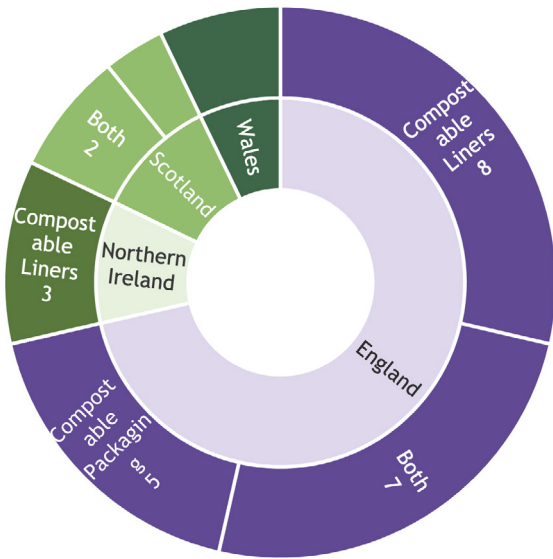


Figure 17 - Number of processes accepting compostables by process type

A higher number of open air, turned windrow processes were accepting compostables compared to the other process types. However, this may be simply a reflection of their prevalence as a process type.



While processes in England account for nearly 75% of compostables-accepting processes, as with figure 20. This is likely the consequence of the higher number of processes in England rather than a true higher acceptance rate in England.

Figure 18 - Compostables accepted by country



Biofertiliser Certification Scheme

This scheme provides assurance to consumers, farmers, food producers, and retailers that 'biofertiliser' produced from certified anaerobic digestion processes is safe for human, animal, and plant health. Biofertiliser is the name adopted for the digestate certified under the Biofertiliser Certification Scheme.

Digestate is a nutrient-rich organic fertiliser that can be spread to land to confer agronomic benefit to soil and improve its physical quality. Certification signifies that it was produced using an effective quality management system, which provides assurance that the materials are of a consistent high quality and are safe and reliable to use.

Processes

By the end of 2023, there were 106 certified BCS processes. The processes are distributed as follows:

- **England:** 78
- **Scotland:** 13
- **Wales:** 8
- **Northern Ireland:** 7



Figure 1 - All UK certified AD operators

Comparison of certified and non-certified processes in the UK

Data was collected from the environmental regulators on the permitted/licensed AD/biogas sites in each country of the UK to show the proportion of certified sites by the end of 2022. The data is shown in the table below:

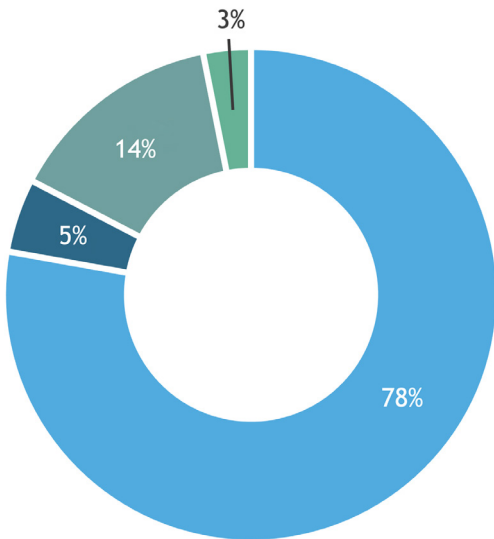
Country	Total no. of sites with permits AD/biogas	No. of certified sites with permits for AD/biogas	% of certified permitted sites
Northern Ireland	48 (43 WML + 5 PPC)	7 (5 WML + 2 PPC)	15%
Wales	11 bespoke (waste or installation)	8 bespoke (waste or installation)	73%
England	237	70	30%
Scotland	17 (16 PPC + 1 WML)	9 (8 PPC + 1 WML)	53%

In addition to the certified sites with permits for composting, there was 1 other certified site in Northern Ireland, 9 in England, and 4 in Scotland, with different types of permits or exemptions.



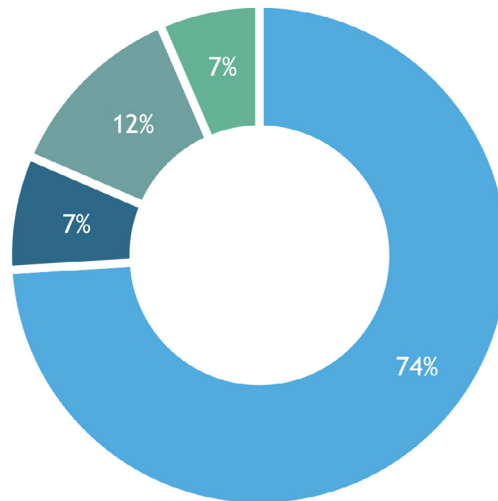
Input

These processes were receiving a collective **6.0 million tonnes** of input materials per annum, representing an 11% increase over last year's **5.4 million tonnes** of input material.



■ England ■ Wales
■ Scotland ■ Northern Ireland

Figure 2 - Annual Input tonnage by country as percentage of total input



■ England ■ Wales
■ Scotland ■ Northern Ireland

Figure 3 - Percentage of processes per country as a percentage of total number of processes

Unsurprisingly, there is a strong relationship between the total number of processes in a country and the tonnage of waste processed. Most processes are located in England (74%), which is also where most input materials are processed (78%). This trend follows or every country.

Feedstock

Feedstock materials processed by certified AD plants vary. Operators accept input materials from agricultural, municipal, commercial, and industrial sources. They also accept a combination of ABP and non-ABP materials, products, co-products, wastes, and residues. A combination of these input materials is common.

The input materials that AD plants process are categorised under the scheme as 'farm', 'waste' or 'other'.

Farm-fed plants are those processing over 50% agricultural feedstock e.g., manures and crops.

Waste-fed plants are those processing over 50% waste feedstock e.g., food waste.

Plants in the 'other' category are those processing over 50% non-waste/agricultural feedstock e.g., distillery by-products.

By the end of 2023, 86 plants fell in the 'waste' category, 14 in 'farm', and 5 in the 'other' category. As seen in figure 4, waste accounts for over 80% of process feedstock types.

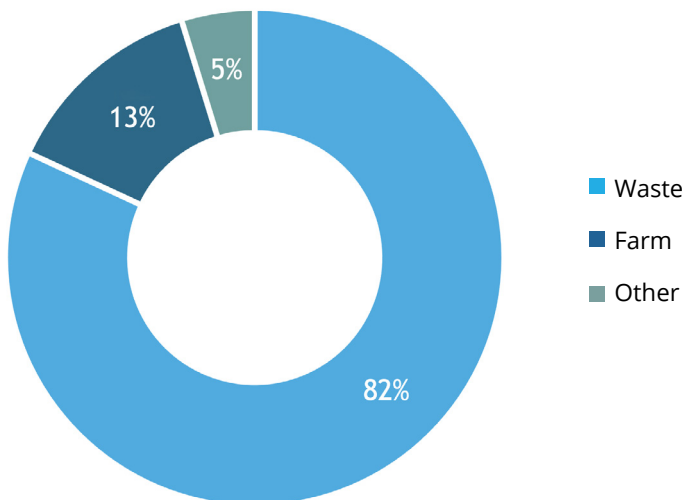


Figure 4 - Percentage of plant in each feedstock type category

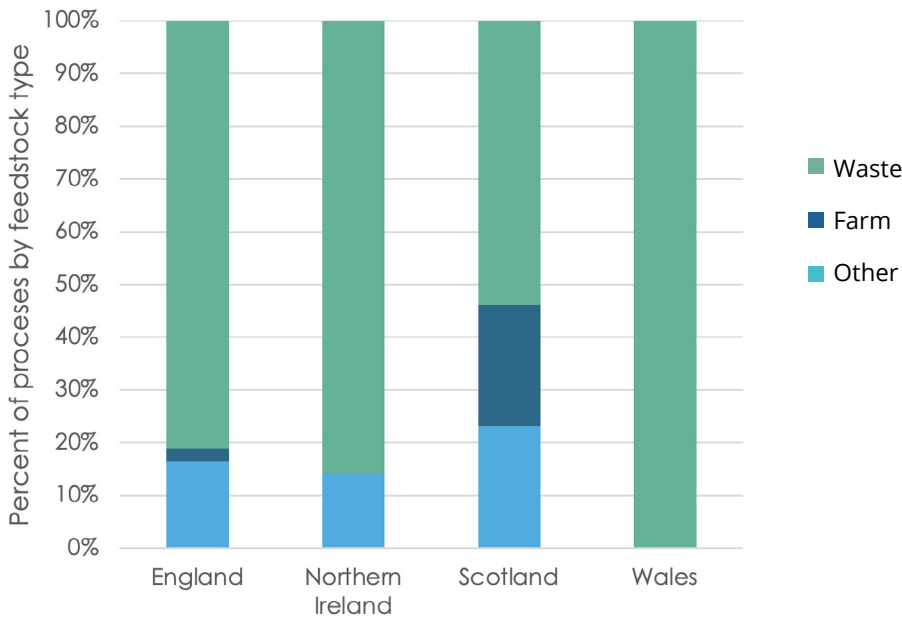


Figure 5 - Percentage of processes per country by feedstock type

“Waste” is either the dominant or sole feedstock type for every country, with “Farm” taking up a significant minority across all countries apart from Wales. Plants in the “Other” feedstock category show the most irregular usage, occurring almost exclusively in Scotland, but accounting for >20% of the plants in Scotland. This may be because a significant part of the “other” category is distillery bi-products, and Scotland has a larger than average alcohol distilling market compared to the rest of the UK.

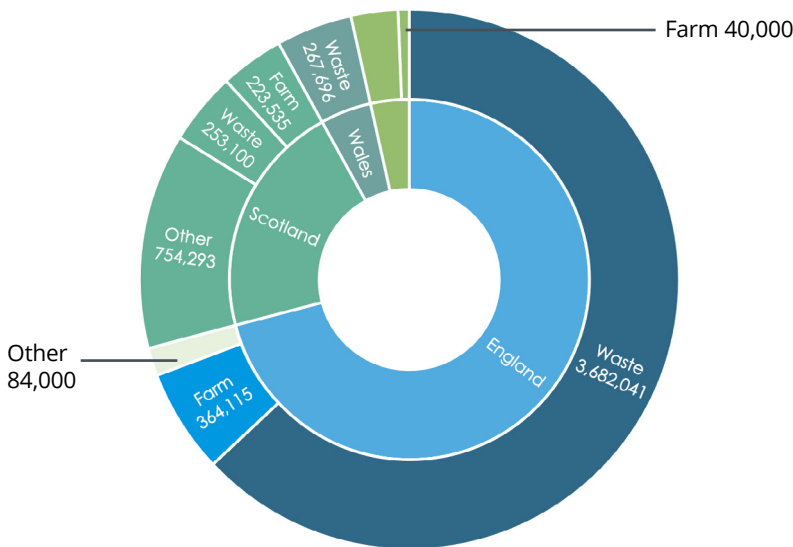


Figure 6 - Annual input tonnage by country and feedstock type

Figure 6 shows the total annual throughput per country broken down by feedstock type. In total, approximately 270,000 tonnes of organic waste materials were being processed annually by certified plants in Wales, 1.0 million tonnes in Scotland, 240,000 tonnes in Northern Ireland, and over 4 million tonnes in England. England and Northern Ireland’s feedstocks are majority waste, while Wales is exclusively waste. Scotland is unique in that it uses roughly equal quantities of waste and farm feedstocks, but the majority of plants fall in the other feedstock category.

Output

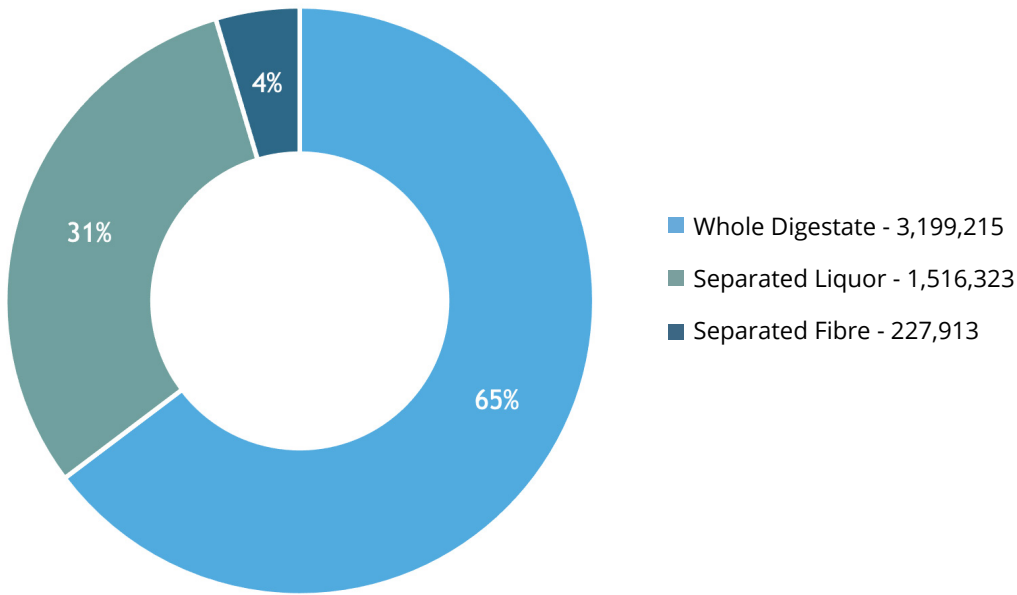


Figure 7 - Annual output tonnage by output type

Total digestate output across all countries was approximately 5.0 million tonnes per annum, representing a 10% increase in output tonnage over the previous year's 4.5 million tonnes. The majority of this growth came from a 300,000 tonne increase in Whole Digestate (WD) and a 200,000 tonne increase in Separated Liquor (SL), while Separated Fibre (SF) saw insignificant increase at this scale.

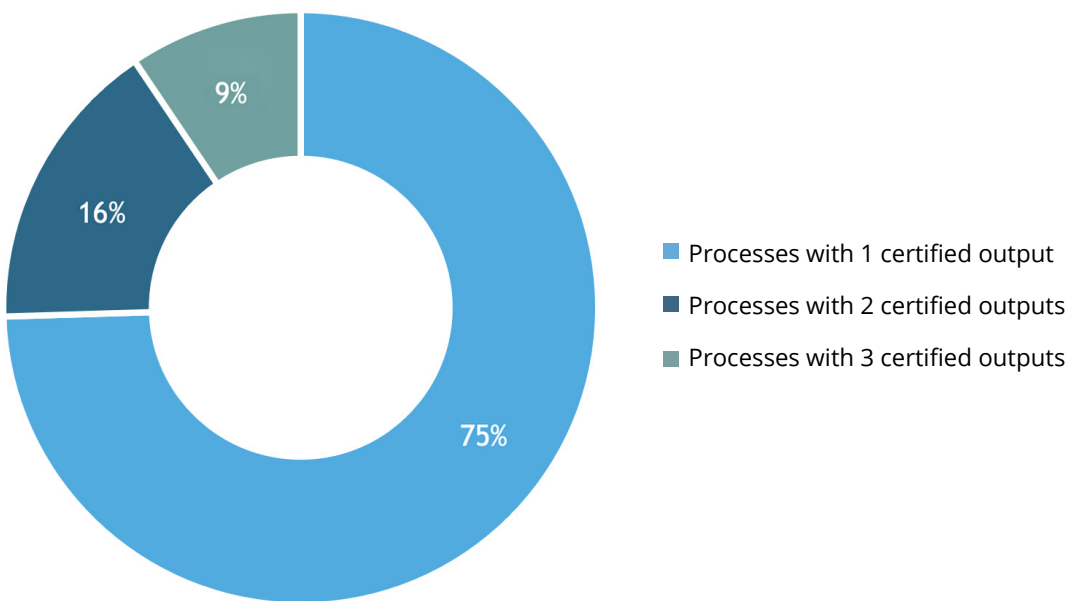


Figure 8 - Output diversity across certified AD processes

“Output diversity” is defined as the number of output types that a given process produces. Only 25% of processes have more than one certified output.

Markets

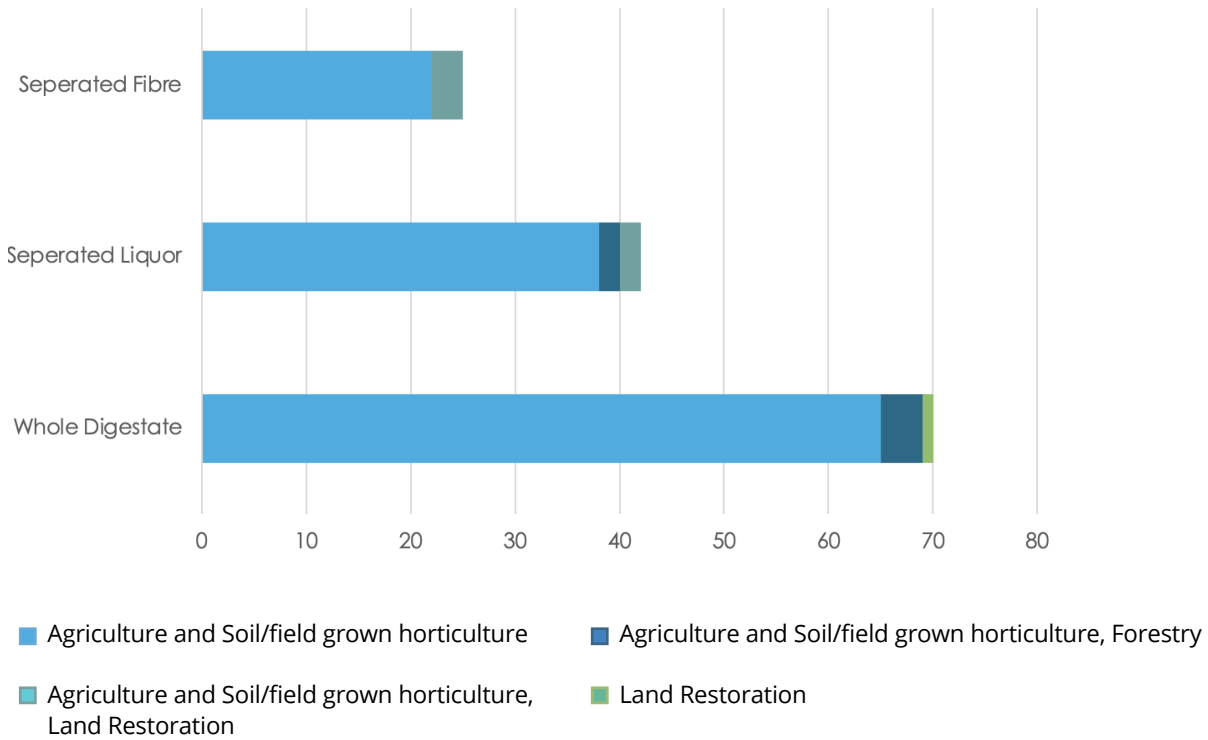


Figure 9 - Output types by end market

Figure 9 shows that in addition to being the lowest tonnage output, separated fibre serves the fewest types of market, not being used in forestry at all while forestry accounts for a significant minority of both whole digestate and liquor markets. If we scaled market types by number of processes, it would be expected that there would be 1 forestry market using fibre, suggesting that this absence is not just the result of the smaller scale of fibre production.

Scheme Developments

ADQP and CQP revisions

REAL continued its engagement with the Environment Agency (EA) in relation to the QP revision process led by the EA. As a member of the Task & Finish Group (T&FG) for the revision, REAL attended regular meetings and contributed to technical discussions with the focus moving to proposals near the end of the year. REAL submitted two proposals to the T&FG for consideration, in relation to output plastic limits and manure-based digestate. There was discussion among T&FG members around whether tighter plastic limits would lead to a higher failure rate, the importance of education around household waste recycling, and the need for data to inform developments for manure-based digestate.

The revision process has progressed into 2024 and REAL remains committed to ensuring a robust end-of-waste framework for CCS and BCS.

Scheme Rules Revision

Throughout 2023, REAL continued discussions with the Environmental Regulators and Certification Bodies around specific requirements in the Scheme Rules and proposals for the new version, including the reintroduction of remote auditing. During that time, REAL also updated the draft rules to include new requirements for producers looking to supply their material as a product in any country of the UK, with the schemes allowing certification to both End of Waste (England, Wales, and Northern Ireland), and End of Waste Scotland. This change was discussed with the United Kingdom Accreditation Service (UKAS) and the Certification Bodies prior to inclusion in the final draft version sent to UKAS for the formal review of the CCS Scheme Rules.

The revision process for both the CCS and BCS Scheme Rules has progressed into 2024 and REAL remains committed to maintaining accreditation for CCS.

PRT TWG and PRT Project

REAL's Plant Response Test Technical Working Group (PRT TWG) was convened for a series of meetings in 2023 to invite their input into the development of a project specification for the Research Hub-funded PRT project,

After not receiving bids through to open tender to appoint a contractor to deliver the PRT project (titled 'Plant Response Test Interpretation and Comparison: Investigating performance of the UK Tomato Plant Response Test and German Spring Barley Test on CCS Compost'), REAL took the decision to progress this project by appointing an independent contractor to develop the project specification based on the initial project proposal.

Meetings were held with the PRT TWG (comprised of producer representatives, as well as representatives from the EA and SEPA), to seek their views and suggestions on details within the project specification around the project aims and objectives, method or approach, and research questions. The project specification was then finalised and submitted to the Research Hub to tender for another external contractor to deliver the project according to the specification.

Joint REAL and Regulators Meeting

REAL held the first joint liaison meeting with all four Environmental Regulators in 2023. The meeting provided an effective platform for joint discussion around various topics including guidance issued by REAL to the Certification Bodies, the Scheme Rules (principally remote auditing), any relevant issues identified by Regulatory Officers, and further engagement opportunities.

Webinars for Regulatory Officers

Introductory webinars on the schemes and the Research Hub were developed and delivered to the Environmental Regulators and Regulatory Officers (EA, SEPA, and NIEA). The aims of the webinars were to introduce REAL and the schemes to Regulatory Officers, improve the awareness of the schemes amongst Regulatory Officers, and further open lines of communication between CCS, BCS, and the Regulatory Officers, which were strengthened during the pandemic with the introduction of remote auditing.

There was a good level of engagement during each webinar and REAL received positive feedback from the Regulators. It was a useful platform for introductions and provided a great opportunity for further engagement, while also providing an opportunity to understand some of the challenges that Regulatory Officers face in the sector.

PC&S Analyst Webinars

Webinars on physical contaminants and stones (PC&S) analysis were also developed and delivered to the CCS and BCS Approved Laboratories, as two separate events for staff undertaking the analysis. The webinars were developed off the back of a suggestion given in a previous WRAP report to ensure that analysts are appropriately trained on the implementation of the methods. The PC&S methods issued by REAL are labour intensive and require a high level of decision-making in the identification and classification of PC&S fragments. REAL developed these webinars for analysts to further give producers confidence in their results.

The engagement was very positive, and REAL considered further development of the webinars for 2024.

Laboratory T&Cs Revision

The Laboratory T&Cs were reviewed and revised near the end of the year through consultation with the Certification Bodies and Approved Laboratories. The most significant change introduced to the new version was around UKAS accreditation requirements. A limit to the number of samples a laboratory can test before they achieve UKAS accreditation for standard non-scheme tests was added to the T&Cs. The purpose of this is to encourage new laboratories to join the scheme, which will be both beneficial for scheme participants, and from REAL's perspective because it would open further opportunity for inter-laboratory trials and performance monitoring. Other more minor changes were introduced, partly to clarify the existing requirements.

Independent Laboratory Auditor Tender

REAL opened a tender in 2023 to appoint a new Independent Auditor to audit the CCS and BCS Approved Laboratories from the beginning of 2024. The contract with the Open University was due to expire at the end of 2023 after four years of auditing the laboratories. The team at REAL were grateful for all the work carried out by Graham Howell and his team.

REAL evaluated the tender responses received and held interviews prior to offering the contract to the successful tenderer. The contract was drafted towards the end of the year, then signed with the new laboratory auditor announced in early 2024.

Blog Posts

REAL introduced blogs to the CCS and BCS website in 2023 as a new communications initiative. The blog platform was formed to provide a space for REAL to share useful or interesting stories, research, and relevant work carried out by other organisations, with scheme participants. REAL could therefore share wider sector news and updates of relevance to scheme participants. Ideas for posts have been gathered through the CCS Producers' Forum and BCS Operators' Forum, along with other sources.

The first blog introduced the CCS Producers' Representative (Gregor Keenan) and BCS Operators' Representative (role shared between Jo Chapman and Tom Brown). The representatives outlined how they entered the industries and their roles in representing the views of producers.

Guidance for CCS Applicants

Following discussions with producers and Certification Bodies around the initial certification application process, a detailed guidance document for applicants was developed and published. This follows a similar structure to the equivalent BCS guidance document for applicants, which was developed and issued previously.

The document explains the procedure for achieving certification and includes a flow chart of the process. The aim of the guidance is to make the application process easier and clearer, and to update the information which was displayed on the CCS website. There are details on pre-requisites for certification, which organisations to contact at each stage of the process, and important information for producers to consider.



About the Research Hub

Who we are

The Research Hub provides research to support the organics sector and contribute to the development of the Schemes, Standards, and Policy Frameworks.

What we do

We fund research to support the following objectives:

- Maintain and improve the robustness of the Schemes (CCS and BCS) and related Standards (PAS 100 and PAS 110)
- Reinforce confidence in the compost and anaerobic digestion markets; and
- Contribute to development of new markets, including identifying barriers

How it works

Each year, we source research ideas via an open Call for Proposals. CCS and BCS participants are invited to feedback on proposals. Proposals are then evaluated by an appointed 'Research Panel' of organics sector professionals, considering industry feedback. We announce selected projects and appoint a contractor to deliver each project.

Research Hub funding is provided by CCS and BCS participants. Governance is provided by REAL.

New Project Selected

We kicked 2023 off with the annual Call for Proposals from January to March and were delighted to receive six compelling proposals which covered a range of timely and interesting topics.

In May we held a webinar to present the proposals and encouraged Scheme Participants to share their views on the proposals, which would later be considered in the formal evaluation and selection process.

The Research Panel met in June to shortlist the proposals and again in July to decide which of the shortlisted project(s) would be funded. After lively discussion and careful consideration of each proposal, the Research Panel selected the proposal entitled: ***Risk assessments updates for compost and digestate to inform Compost Quality Protocol and AD Quality Protocol revision.***

This project is intended to support the revision of the Environment Agency's End-of-Waste frameworks ('Quality Protocols') for compost and digestate, which is currently ongoing. As a component of the revision process, the EA has specified that the Risk Assessments for compost and digestate (last revised in 2019) shall be reviewed and updated to inform the revision of the Quality Protocol frameworks. The Research Hub will take this project forward in 2024.

Projects Commenced

Alongside the selection of this new project, we commenced work on two new projects selected the previous year (2022):

Developing a carbon accounting methodology for compost and digestate under the Greenhouse Gas Protocol.

We began working with AECOM on this project (formerly titled 'How the benefits of applying compost and digestate to soils can be accounted for under the Greenhouse Gas (GHG) Protocol') in June. The project had two key objectives:

1. To demonstrate to compost producers and AD operators the benefits of engaging with the GHG Protocol as a key step towards understanding their commercial activities within the global imperative to minimise climate-warming emissions
2. To provide guidance to operators on how to account for the production and application of compost and digestate under the GHG Protocol.

Carbon accounting and reporting continues to gain importance as governments, businesses, and consumers seek to understand the climate impacts of the activities they engage in and make efforts to reduce their emissions—but it can be hard to know where to start. The outcome of this project is a methodology designed to enable compost and digestate producers to conduct their own carbon footprint assessment using established carbon accounting principles and frameworks.

To ensure the project would be useful to industry, we ran a series of webinars on this project in November to introduce the project and collect composters' and AD operators' perspectives and questions about carbon accounting. These views and queries were later incorporated into the methodology report. The final methodology will be published in 2024.

Plastic contamination method assessment: Evaluating current mass-based method and possible alternative methods of assessment for plastics in compost and digestate.

We began working with Solidsense on this project in June. The project had three key objectives:

1. To assess the robustness and sensitivity of the current mass-based method for assessing plastic (physical contaminants) under PAS100 and PAS110.
2. To consider whether an area-based method for quantifying film plastics is operationally feasible and robust and whether it would be feasible to implement for PAS100 and PAS110 materials.
3. To investigate the feasibility of implementing microplastic analysis for compost and digestate on a research and development basis.

One key aspect of CCS and BCS is the contribution to soil health and quality, as demonstrated in part by a [2023 report published by the Schemes](#) which found that the vast majority of compost and digestate samples tested for certification purposes contained very little plastic contamination. We undertook this project to verify that the methods used to test for plastic contamination under PAS 100 and PAS 110 are fit-for-purpose and explore other potential methods in order to ensure that certified compost and digestate producers maintain their reputation for supplying high-quality products that continue to enhance soil quality.

The outcome of this project will be a report containing an evaluation of the current PAS-specified methods (which measure plastic fragments by mass) including scope to identify any potential areas for improvement. The report will also explore the potential application of an area-based method for film plastics and will investigate the potential to conduct microplastic analysis on compost and digestate samples. The final report will be published in 2024.

Continuing Projects

In addition to new projects, in 2023 we continued to work on more long-term projects.

- We enjoyed another year working with NNFC and Vital to keep our virtual **Organics Recycling Research Library** up to date with new information. The Research Library was launched in January 2021 and has continued to grow ever since. At the end of 2023, the Research Library contained more than 400 articles on composting and anaerobic digestion. To access this valuable repository of knowledge and research on organics, please visit www.realresearchlibrary.org.uk.
- We continued working with Aqua Enviro on our project on **Residual Biogas Potential Test Improvements and Alternatives**. This project aimed to understand the cause of test-related failures and invalid results, explore potential improvements to the method, and/or identify suitable alternatives. Aqua Enviro has conducted in-house testing of novel digestate samples as well as historical data analysis, modelling, and desk-based study to assess several potential approaches to mitigate testing-related issues. Work began on this project in May 2022 and the final report will be published in early 2024.
- Our project on **Plant Response Test Interpretation and Comparison** aimed to address challenges related to the Plant Response Test specified under PAS 100. The REAL PRT Working Group met three times in June and July to consider the best approach to deliver this project. It was determined that a Project Specification should be developed, and an external contractor would manage the delivery of work to REAL's specification. The specification was finalised in December 2023 and the project will be taken forward in 2024.

Research Funds

Funding for the Hub is generated through the Research Fee paid annually by CCS and BCS participants. The Research Fee is calculated according to the annual input tonnage (tpa) The funds are ring-fenced and the effective amount for future projects at the end of 2023 is approximately £250K.

More information about the Hub's operations, objectives, and funding can be found at www.realresearchhub.org.uk/about

To learn more about the Research Hub's work, please visit our website at www.realresearchhub.org.uk. To request access to any of our research resources, or if you have any queries, please email info@realschemes.org.uk.



In 2019 REAL achieved certification of its Quality Management System to the ISO 9001:2015 standard.

The ISO 9001:2015 standard is based on a number of quality management principles including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement. Using ISO 9001 helps ensure that customers get consistent, good-quality products and services, which in turn brings many business benefits.

The seven quality management principles are:

- customer focus
- leadership
- engagement of people
- process approach
- improvement
- evidence-based decision making
- relationship management.



Compost Certification Scheme (CCS) is part of Renewable Energy Assurance Limited.

Biofertiliser Certification Scheme (BCS) is part of Renewable Energy Assurance Limited.

REAL Research Hub is part of Renewable Energy Assurance Limited.

Registered in England and Wales | Company No. 05720606 | Brettenham House, 2-19 Lancaster Place, London WC2E 7EN