

What bio-based feedstocks can the pre-pilot facility process?

In the anaerobic digestion processes:

Food waste, agri-food processing side streams and residues, animal by-products that can be spread on land, herbaceous green waste, grass or crop toppings, animal slurries, poultry litter and waste-waters.

In the pyrolysis processes:

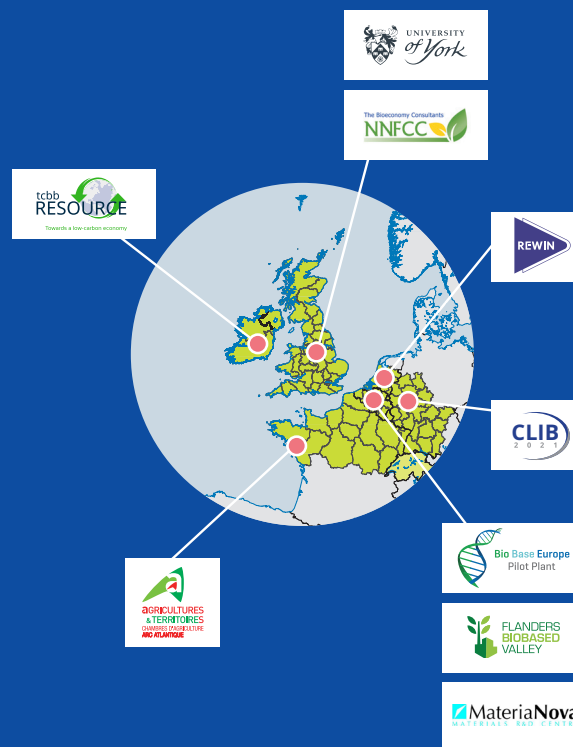
- Municipal refuse derived fuels (RDF)
- Construction and demolition wood wastes (materials that cannot be spread on land)
- A separate pyrolysis process for resource recovery from used tyres and plastics is available

End-users and how they will benefit from it:

- End-users are based in Ireland, Northern Ireland and across the NWE region
- The **target groups for the two pilot lines include:**
 - SMEs and start-ups
 - higher education and research groups that wish to test and **demonstrate processes beyond lab-scale**
 - industry organisations that are seeking new routes to **recover value from bio-based side-streams**

The integrated pre-pilot will be of benefit to the following SME sectors: dairy-processing facilities regarding low-temperature, high-rate anaerobic digestion wastewater treatment; cheese producers regarding whey by-products for functional foods and nutraceuticals; apple and other fruit processors (fruit pulp/pomace); brewers; marine resources and forestry.

Project area and project partners



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**BioBase4SME facilitates:
Pilot bio-innovation facility for
anaerobic digestion and pyrolysis
in Ireland**

Integrating processes, integrating regions

Why a pre-pilot bio-innovation facility for Ireland?

Irish innovators generate significant outputs that can contribute to developing a biobased economy. However, the vast majority of such outputs are generated at bench scale at present. No facilities were available (in a single location) to test innovations at **commercially relevant scale** or to start process designs to examine how individual technical innovations will fit into commercially relevant production systems.

The BioBase4SME project **recently consolidated a suite of anaerobic digestion and pyrolysis kits** in the one centralised host facility –**all under the one roof**. With this comes the potential to also **integrate** the anaerobic digestion and pyrolysis processes. The BioBase4SME investment in the pre-pilot facility offers facilities for innovators to start the development process (from TRL3/4 up to TRL5/6), thus **increasing the impact from Irish innovation**.

With the development of the integrated pre-pilot facility through BioBase4SME, Ireland will have a series of publicly-owned demonstration technologies consolidated under the one roof. **Anaerobic digestion technology will be integrated with pyrolysis scale-up technology.**



What tests can now be performed in Ireland

With the consolidated suites of **anaerobic digestion** and **pyrolysis** kits come the opportunities to carry out the following tests:

- anaerobic digestion and pyrolysis tests
- testing new processes in relevant **real-life conditions**
- feedstock analysis
- Biomethane Potential Tests (BMP tests), testing and scale-up for nutrient recovery
- testing of **suitability of sludges** for pyrolysis
- **energy recovery** through pyrolysis for those side streams that cannot be land-spread and that are not suitable for anaerobic digestion

demonstration
test-bed
scale-up
de-risking
pre-pilot
testing at scale



Anaerobic Digestion capabilities in more detail

tcbb RESOURCE works with collaborating companies who provide **feedstock pre-treatment units** including maceration and has access to

Bio-Crack® electro-kinetic disintegration **equipment for higher gas yield.**

Our collaborating commercial parties and sub-partners NUI Galway and the University of Limerick have access to biomass pre-treatments and can carry out **enzyme hydrolysis pre-treatments.**



Pyrolysis capabilities in more detail

We have **two pyrolysis test lines** for use as appropriate to the type of pyrolysis process and outputs sought:

- i) gaseous energy and char
- ii) bio-oil and char

Pyrolysis of organic bio-based materials

Pyrolysis can be used to:

- take the energy value out of organics (eg municipal waste)
- remove bio-hazards (by heat treatment) from animal by-products that can be land-spread (eg poultry litter)

