



CARBON CAPTURE AND EMISSIONS REDUCTION CASE STUDIES

The biggest global challenge of our time – the climate crisis – is primarily caused by excess carbon in the atmosphere which has been put there via human activities.

There is an urgent need to reduce carbon emissions and extract carbon. The below businesses received funding through the Mid Wales Challenge Led Launchpad programme to develop innovative carbon capture and emissions reduction solutions.

STEPHEN MILBURN, NELLIE TECHNOLOGIES

What is Nellie Technologies' product or solution?

Nellie Technologies develop and deploy innovative technologies in the fight to mitigate climate change.

The Launchpad funding was used to develop our prototype – Little Nellie – an innovative carbon capture product.

Little Nellie uses an organic bioreactor with a novel combination of additives, which is combined with a mechanical innovation to increase the efficiency of the bioreactor.

The technology can be used for direct air or point source carbon capture, for deployment on Nellie's carbon farm. This will involve the deployment of a scaled installation of the bioreactor which can capture carbon directly from the air.

For point source capture, Nellie can deploy their modular carbon capture units directly at industrial sites facilitating industry-leading sequestration rates.



Why is this development important?

Climate change is the biggest challenge facing the world right now. The solutions required to address that challenge cannot take five to ten years to develop and deploy. They must be accessible, affordable, equitable and available immediately. There is no time to waste when it comes to deploying this technology.

How have you benefited from the Mid Wales Launchpad funding?

The R&D funding accelerated the development and feasibility of our prototype, which we were able to complete in three months.

During this time, we had a lot of operational freedom, providing we adhered to the project plan which was submitted.

The programme allowed us to add two full time staff to our headcount, and, as well as the industrial and commercial experience they have gained, they have completed a raft of technical training courses.

We made full use of the world class facilities at AberInnovation, and our presence on-site has meant we have been able to form collaboration agreements with both Aberystwyth university and local farms and businesses.

Everything has been completed in the mid Wales region, and whilst most of it could have been done elsewhere, it certainly would not have happened so quickly.



TIM KEARNS, NEW JUICE

What is New Juice's product or solution?

New Juice is developing an alternative to transporting milk long distances in single use plastic packaging. We conducted a feasibility study to prove whether single use plastic containers can be replaced with reusable glass bottles, principally for university catering. The project also assessed the feasibility of setting up a micro processing dairy to reduce food miles by 200 to 300 miles per day.



Catering businesses are unable to use the standard reusable glass bottles, as they do not have sufficient labelling to adhere to food hygiene legislation for caterers. Part one of the feasibility study trialled using litre glass bottles for university catering facilities. These bottles were fully labelled to meet legislative requirements, with caps to indicate whole milk and semi-skimmed. The milk was still transported from Cheshire, but the glass bottles were collected in crates to be sent back and reused, meaning there was virtually no wastage.

The second part of the feasibility study was to assess the economic and commercial viability of setting up a micro processing dairy on the university farm, to facilitate the university milk being used on campus in the future. This could be built in a shipping container, which is classified as a temporary building which doesn't need to go through a full planning permission process so could happen as soon as further funds become available.

Why is this development important?

According to the UK's Department of Environment, Food and Rural Affairs (DEFRA), the movement of food around the UK accounts for 25% of all miles covered by heavy goods vehicles¹. For Aberystwyth University, milk used by catering facilities on campus is transported from Cheshire, a round trip of 200 miles. Meanwhile, the milk produced on the university farm is currently trucked 50 miles to another location in Wales.

Furthermore, catering businesses are constrained from adopting a more environmentally approach because they must adhere to food hygiene and labelling regulations. The project looked at finding solutions to both issues, to reduce use of single use plastic and carbon emissions associated with transport of milk. The economic and commercial viability of solutions is paramount, as carbon emissions solutions must make good business sense to ensure uptake and widespread change.

How have you benefited from the Mid Wales Launchpad funding?

The Launchpad funding was crucial, as it made it possible to conduct the trial and feasibility study.

Furthermore, the AberInnovation team were key to setting up the trial, by introducing us to the university catering and hospitality manager, who facilitated all three campus catering locations participating in the trial.

They also matched us with a placement student who was completing a masters in cow health and nutrition, so his knowledge of dairy farming was invaluable to us.

¹<http://www.i-sis.org.uk/FMAS.php>

