

The UK's Industrial Decarbonization Acceleration Program

Scaling up energy-efficient
solutions at the heart of industry

May 2023

WASHINGTON | CORE



Introduction: McKinney and the Carbon Trust

Washington CORE recently spoke with Paul McKinney, who has spent nearly 30 years working on programs to accelerate the decarbonization of numerous industrial sectors. Paul has spent 22 of those years at the Carbon Trust, where he is the Associate Director. The Carbon Trust is dedicated to accelerating the transition to a decarbonized future, through a variety of activities that bring together businesses, governments and financial institutions to unlock collective change across different sectors. Paul has substantial experience in the design and implementation of UK-based programs involving energy efficiency, in collaboration with the government, innovators and major firms. One of the main programs he manages is the Industrial Energy Efficiency Accelerator (IEEA), a competition-based UK government program that is designed to identify innovative and scalable energy efficiency solutions that can benefit a broad range of applications and sectors.

Carbon Trust: Mission

Ever since its inception, the mission of the Carbon Trust has been to further the transition to a low carbon economy. It was originally established by the UK government in 2001, but is now an independent, mission-led organization with over 500 experts globally. Its work over the last two decades has included providing interest-free loans to small and mid-size enterprises (SMEs), serving as an industry accelerator for offshore wind, carbon foot printing services, and green finance programs.



Speeding up Green Technology Adoption

The Carbon Trust delivers the Industrial Energy Efficiency Accelerator (IEEA) on behalf of the UK Government's Department for Energy Security and Net Zero (DESNZ) to accelerate adoption of green technology in the industrial sector. The program has received £11.7 million in funding for the four phases of the project so far. The Carbon Trust is primarily responsible for designing the program, running the competition, assessing the progress, monitoring the projects and disseminating the results.

About 80% of the applicants to the program are consortia, which often involve a larger industrial firm and SME, with the former providing a demonstration site, and the latter generally being the technology developer. About half of the projects include a university or technology institute. The map below shows the wide range of project technologies and sectors that the IEEA is supporting.

IEEA's Technologies and Sectors

Technologies	Sectors
Energy storage	Aggregates
Heat Recovery	Data centres and motor manufacturers
Effluent clean-up	Laundries and landfill gas sites
Motors	Solid waste treatment and recovery
Alternative materials	Cement
Process control & optimisation	Paper making
Heating and polymer flow	Rubber and plastics
Waste processing	Water and animal waste
Lower temperature cleaning & Boiler controls / sensors	Food and drink



Source: IEEA presentation by Paul McKinney

Scalability

The Carbon Trust aims to maximize the likelihood that selected projects are scalable, which is reflected in the competition design, project management approach and selection criteria for projects. For example, selection criteria seek out proposals meeting a minimum Technology Readiness Level (TRL) that show a potential for significant energy savings, as well as those which may be applicable to a wide market and are representative of the processes that are being used in industry. These criteria are technology-agnostic, and companies offering a diverse range of industrial technologies have applied for each phase of the program.

Results

Phases 1 and 2 of the program funded sixteen projects in total, most of which have made good progress. Most of the technologies were demonstrated at an industrial site, and several have now reached the commercialization stage. Quite a few of these projects have achieved dramatic energy savings, including:

Matrix Moulding Systems: This project involved the application of ultrasonics to plastics injection molding to improve the flow of polymer and thus reduce waste and energy costs associated with heating. It achieved energy savings of 29% and has been the subject of interest across a wide range of plastics companies.

Evergreen Water Solutions: This project sought to address the costly and energy intensive process in wastewater treatment that relies on centrifugation. The project developed and demonstrated a unique “screw press” technology that has yielded energy savings of up to 80%.

First Mover Advantage

The program has revealed some of the challenges with innovation and the interaction between innovators and funders, such as the need to reassure investors that while progress does not always proceed along a straight path, the projects can be successful if they persevere. Furthermore, some projects may not proceed as expected. For example, sometimes the industrial partners requested to use an alternative demonstration site rather than the site that was originally proposed. The program can be more challenging to run than early-stage research, given the need to focus on technologies that are widely applicable, and the need for project partners to collaborate effectively despite often being very different types of companies.

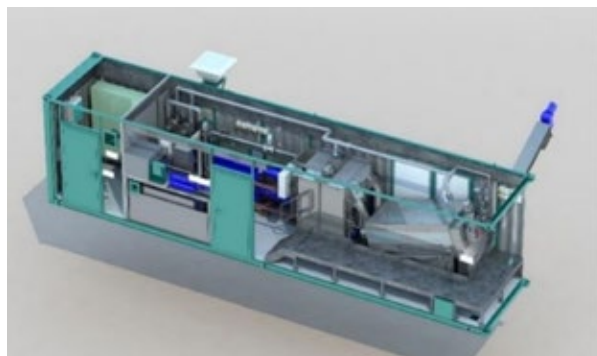
A common perception in the area of technological innovation is that the “first mover advantage” may not be so advantageous, since often the first mover will make costly mistakes that future innovators can avoid. However, the experience of the Carbon Trust IEEA program has demonstrated substantial advantages among the companies that participated, as they have built up their material knowledge about the technology and how to deploy it ahead of potential competitors.

Complete Soniplas system – ready to install



Source: Matrix Moulding Systems¹

Container 3D Design approved by United Utilities



Source: Evergreen Water Solutions (EWS)²

The UK's Green Technology Competitiveness

The UK has certain advantages in innovating around green technologies due to its development of an integrated approach involving many different organizations and sectors. For example, the IEAA is part of a larger initiative, the DESNZ Net Zero Innovation Portfolio (NZIP), illustrating the high level of cooperation between the public, private, and third sectors.³

Recently, Mr. McKinney has noticed that incubators and accelerators in the green technology space have been receiving increased funding, as well as more assistance with navigating intellectual property and other commercialization issues.

Public-private collaboration between the government and private sector innovators enables a higher degree of risk-taking that would otherwise be more difficult for publicly-traded companies and startups to undertake on their own.

Future Plans

Currently, the Carbon Trust has teams that work with businesses to measure, manage and reduce emissions towards net zero targets. They also work with the public sector and have regional offices around the world to offer geographically tailored approaches.



Paul McKinney

Paul is an experienced program and project manager, with nearly 30 years' experience in the low carbon arena. He currently leads two major programs: (i) The Industrial Energy Efficiency Accelerator on behalf of DESNZ which is stimulating the development and demonstration of innovative technologies in UK industry and; (ii) The collaboration and evaluation support activity for the DESNZ Heat Pump Ready program which supports the development and demonstration of optimized heat pump technologies, tools and deployment solutions.

Endnote

¹ https://assets.foleon.com/eu-west-2/uploads-7e3kk3/48218/mms-ieea-case_study.1ecae3eb9f05.pdf

² <https://assets.foleon.com/eu-west-2/uploads-7e3kk3/48218/ews-long-case-study.a69a727ae467.pdf>

³ <https://www.gov.uk/government/collections/net-zero-innovation-portfolio>



Author: Sean Chappell
Senior Research Analyst

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