



Project update: GreenShed Phase 2

June 2024



GreenShed

Low carbon beef / Sustainable / Circular farming

Dear <<First Name>>

You are receiving this update on the pioneering as you are a part of the UK Agri-Tech Centre ecosystem.

An Introduction to GreenShed

GreenShed aims to produce a solution for the livestock farming sector to reduce its greenhouse gas (GHG) emissions, while improving productivity. The shed is designed as an integrated low carbon, circular farming and vertical farming system that utilises waste cattle products to power a methane capturing system to yield low-carbon produce (meat, vegetables, and fruits).

Backed by the UK Government, the GreenShed project has received nearly £3 million from Department for Energy Security and Net Zero (DESNZ) and is currently the only system to have capabilities which capture and remove methane from housed cattle. If implemented across the sector, this could allow for a 50% reduction in GHG.

Across the three-year project, you will receive project updates and be the first to hear about the key milestones on the journey to achieve net zero. You can access previous newsletters about the project and its activities on the project lead SRUC's GreenShed [web page](#).

In this fourth newsletter, we bring you a progress update on the GreenShed build, an account of a site visit by project funders DESNZ on 23 April, followed by an update on the creation of the GreenShed Stakeholder Interest Group.

[Find out more](#)

GreenShed at the Royal Highland Show

GreenShed will be among the projects being showcased at the SRUC stand (stand 177) at this year's Royal Highland Show (20-23 June) at Ingliston, Edinburgh.

Visitors to the SRUC stand will learn more about the facility, with the help of a LEGO model. Come and say hello!

Podcast



GreenShed podcast, hosted by SRUC's podcast channel.

Listen to the latest episode, 'A farmer's view of GreenShed' with Farms Partnership Coordinator, George Baikie, for a discussion on the project from a farmer's viewpoint.

[Listen here](#)

Progress update - building the GreenShed System

The GreenShed construction and installation began in 2023 at SRUC's Easter Howgate farm, supported by project partners University of Strathclyde, UK Agri-Tech Centre, No Pollution Industrial Systems Ltd, Galebreaker Agri, Organic Power Ireland and Saturn Bioponics.

Within the GreenShed system, there are four core technologies:

- High-volume air recirculation / conditioning / sterilisation system, aligned with a novel solution to capture methane from the shed.
- Micro-anaerobic digester (AD) with built in feedstock pre-treatment to improve efficiency, producing combustible biogas from manure and waste feed.
- Novel ultra-lean combined heat and power (CHP) engine for combustion of biogas and methane-rich air.
- Vertical farm to utilise low-cost, low carbon and nitrogen fixing outputs, returning oxygen-rich air to the shed.



Visualisation of the finished GreenShed system.

In recent months, there has been significant progress made towards the system build and the installation of value-adding modules (e.g., the vertical farm polytunnel), as well as subsequent testing and commissioning.

The time-lapse pictures below show just how far the project has come, and with completion of final tie-ins, the fully operational GreenShed demonstration system, will be onstream very soon.



Build progress from July 2023 - April 2024

Project funder DESNZ visits project site



Tour attendees standing at the GreenShed site.

On 23 April 2024, representatives from SRUC and project partners welcomed a delegation from the funder DESNZ to the GreenShed site. This visit enabled DESNZ to see progress of the project build and hear from project partners about how their technologies play a crucial role in the GreenShed system.

Backed by the UK Government as part of the UK's Net Zero Innovation Portfolio (NZIP), the research being conducted will have a significant impact on initiatives mitigating greenhouse gases in beef production, driving change across the sector.

The site visit was followed by a working lunch, during which delegates heard presentations from Gavin Lavery of the University of Strathclyde on GreenShed's digital twin development and application work, and Dr Jimmy Hyslop of the UK Agri-Tech Centre, who is leading the project's supply chain engagement activities.



Tour delegates viewing shed internal air conditioning ducting by No Pollution and Galebreaker's ventilation tubes and membrane system.



The Containerised Combined Heat and Power (CHP) and AD system from Organic Power Ireland.

The GreenShed Interest Group (GSIG)

To bring the GreenShed system to market on beef farms, it was recognised that additional input from adjacent service providers aligned with commercial beef production was necessary. Consequently, a GreenShed Interest Group (GSIG) was established in October 2023 consisting of stakeholders from various sectors within the beef production chain at the farm level.

The purposes of the GSIG are:

- To provide the GreenShed project with insights, solutions, and metrics from stakeholders external to the project but aligned with beef supply chains and have both UK and international experience in these areas.
- To engage with these stakeholders early before commercialisation to facilitate future interactions.
- To understand and address concerns, reservations, and enthusiasms from stakeholders prior to commercialisation.
- To gather practical input and operational wisdom from producers, beef value chains, assurance bodies, levy organisations, and the financial investment sector to bring this exciting concept to the commercial marketplace.

The plan for 2024 is to conduct primarily virtual meetings at approximately two-month intervals. This approach aims to leverage the expertise of various individuals and organisations actively engaged in the UK beef industry. A total of 20 organisations have agreed to participate as GSIG members and include representatives from levy bodies to farming operations, farm assurance bodies through to government and financial institutions.

The first two GSIG meetings took place on between February and April 2024. The first featuring a project overview delivered by Prof Carol-Anne Duthie, Head of SRUCs Beef and Sheep Research Centre, while work package lead representative, and beef supply chain expert Dr Jimmy Hyslop from the UK Agri-Tech Centre, outlined the objectives of the GSIG.

The overall areas of work envisaged for the group are:

- Amendments to production protocols and records flow from farm to the meat trade.
- Amendments to farm assurance schemes and standards to incorporate GreenShed facilities.
- Economic and financial issues including Government grant support schemes.

Wide ranging discussions during the first two GSIG meetings has led to several critical issues being raised around the concept and its practical application, including:

- Management and verification of consumer sensitivities in relation to animal welfare.
- Quantification of GreenShed's capacity to reduce GHG emissions to the atmosphere.
- Whether reductions need to be considered purely from a beef production perspective, or from that of a whole farm system, and as such part of a larger narrative.
- How different supply chains might define a 'GreenShed animal' relevant to themselves and their markets.
- The financial costs and rewards necessary to ensure that GreenShed developments are seen as economically viable options for producers in a commercial environment.
- The need for GreenShed to be sensitive to, and nimble in its appeal, in a changing green-financing landscape.

Continuing our conversation with the GSIG members and being able to capture such a wide range of expert thoughts and advice is critical – not only to ensure the project's success but help strengthen the commercialisation and uptake of the GreenShed concept going forward.

Feeling inspired? We want to hear from you!

Contact the UK Agri-Tech Centre at info@ukagritechcentre.com



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