



World-first low carbon greenhouses in boost for UK agriculture;
£120m project will construct two of the country's largest greenhouses, warmed by waste
heat from water treatment facilities

Greencoat Capital, one of the UK's largest investor in renewables, announces the investment backed by major UK pension funds

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Highlights

- Ground-breaking sustainable greenhouses provide model for decarbonising agriculture and heat; reducing carbon footprint of produce by 75%
- 360 permanent new green economy jobs in Norfolk and Suffolk, and an additional 120 seasonal jobs
- Boost for UK food security; this development will be capable of producing 1 in 10 of the UK's tomatoes
- Largest heat pumps ever deployed in the UK. Benefitting from the Government's RHI scheme
- £120m investment from major UK pension funds, managed by Greencoat Capital
- Two state of the art greenhouses developed by UK pioneer Oasthouse Ventures will be some of the largest in the UK, covering 29 hectares (72 acres) in total, or approximately 47 international football pitches
- Innovative renewable heating solution solves a number of environmental challenges:
 - Greenhouses will be warmed via heat pumps using waste heat from water recycling centres. This displaces the conventional gas heating of commercial greenhouses
 - Water outflows from water recycling centres are thereby cooled to the benefit of river ecosystem
 - New Combined Heat and Power ("CHP") plant will be built to power the heat pumps. CO₂ generated by CHP plant is transferred into the greenhouses to further accelerate plant growth, and recapture a high proportion of the carbon
- Anglian Water to provide the project's source heat via two sites at Norwich and Bury St. Edmunds. ESB will construct the closed loop heat pumps and CHP, and manage the energy centre. BOM Group N.V will construct the glasshouses.

Greencoat Capital, the UK's largest investor in renewable energy, today announced a £120m project to construct two of the UK's largest greenhouses at two farmland sites near Norwich and Bury St Edmunds. In a world first, the advanced greenhouses will be warmed by residual heat from nearby water recycling centres owned by Anglian Water.

Decarbonisation of the heating and agriculture sectors has so far been disappointingly slow despite their enormous carbon output. These pioneering greenhouses make a significant step towards solving both problems at scale, reducing the carbon footprint of food produce by 75% compared to European equivalents and increasing UK food security.

Closed loop heat pumps will be used to transfer the heat from the water recycling centres to the greenhouses, and will have the additional benefit of cooling the facility's treated water outflow before it is returned to the environment.

Electricity for the greenhouse's heat pumps will be provided by a Combined Heat and Power ("CHP") plant, with waste heat from the CHP providing further warmth for the greenhouses. The gas-fired CHP plant's carbon emissions will be transferred into the greenhouses, raising the CO₂ levels and further accelerating the growth of the plants, and capturing the majority of the carbon.

The construction phase of the project will begin immediately, with completion expected in autumn 2020. Commercial-scale growers from the UK and the Netherlands have already committed to leasing the space.

The greenhouses will provide ideal growing conditions for a range of plants and vegetables requiring a high-heat, and relatively low-light environments such as tomatoes, cucumbers and peppers. Once operational, the greenhouses will be capable of producing more than 1 in 10 of the country's tomatoes, and will create 360 permanent new jobs.

Pension Investment

The capital for the project comes from a number of public and private pension funds in the UK, reflecting the growing trend of pensions managers seeking robust uncorrelated returns through direct investing into renewable infrastructure. Greencoat Capital now manages almost £2bn of private market pension fund capital through its various renewable infrastructure funds.

The greenhouse project is expected to generate predictable cash flows with CPI inflation protection at attractive risk-adjusted returns for the pension scheme investors, whilst supporting the economy, local communities, environmental goals, and food security.

Jobs

Once operating, the two greenhouses will create 360 permanent jobs in the local area, rising to 480 during high season.

Greenhouses

The greenhouses are among the largest ever constructed in the UK with each covering more than 13 hectares – larger than the Millenium Dome (O2 Arena) at 10 hectares.

Standing around 7m tall the large glass structures allow crops to grow vertically along guidewires, and do not require any soil, instead being grown hydroponically from nutrient rich water solutions. Once

in full production, they will be capable of growing more than 20 tonnes of tomatoes every day – 12% of the tomatoes grown in the UK.

Renewable Heat

Greenhouses are designed to capture and store solar radiation, thereby increasing air temperature and accelerating plant growth. In Europe, solar radiation alone cannot provide sufficient energy to reach optimal growing temperatures throughout the day, even in the summer. Most commercial greenhouses overcome this problem by using another heat source to increase temperature. This allows in-demand vegetables such as tomatoes to be grown year-round.

The majority of greenhouses use gas-fired boilers for this additional energy. Greencoat Capital's unique approach largely displaces these fossil fuel emissions by using waste heat from Anglian Water's nearby water recycling centres.

James Samworth, Partner at Greencoat Capital, said:

"We're very pleased to have achieved another innovative first in the UK renewable energy sector. Technology and cross-sector co-operation is continuing to unlock some amazing possibilities in energy and agriculture. We see considerable opportunity to invest in renewable heat in the UK, providing pensions investors with the predictable returns they require to pay beneficiaries, meanwhile reducing our carbon emissions as an economy."

Duncan Hale, Portfolio Manager at Willis Towers Watson said:

"We are delighted to be partnering with Greencoat Capital on this project, particularly as we are making best efforts to invest in the low carbon economy while still delivering the strong risk-adjusted cashflows our investors are after. This marks a step change in the decarbonisation of agri-business and heating, and we are proud to be supporting UK infrastructure with the assets we manage."

Dr Lu Gilfoyle, Head of Environmental Quality at Anglian Water said:

"It has been great to be involved in such an innovative project, helping to solve a number of challenges for Anglian. Removing excess heat from the river systems is a priority for DEFRA and ourselves, and it is fantastic to be able to put that heat energy to good use."

Andy Allen, Director at Oasthouse Ventures, said:

"Delivering a world first low carbon greenhouse system is hugely exciting for the small team who took this from conception, design and planning, to contracting and now construction. The environmental, social and political benefits of these systems are significant, and we look forward to further disrupting the traditional carbon heavy models of agriculture."

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Notes to Editors

Greencoat Capital

Greencoat Capital LLP is a specialist asset manager dedicated to the resource efficiency and renewable energy sectors. It has offices in London and Dublin and more than £4bn under management, making it one of the largest such fund managers in Europe. It was founded in 2009 and currently has fund mandates with segregated strategies in wind infrastructure, solar infrastructure and biomass.

Oasthouse Ventures

Oasthouse Ventures develops and scales businesses that have a positive impact on the world. The company both invests in existing businesses, and founds new entities in the pursuit of trends and opportunities it is passionate about, and that offer strong commercial returns.

Oasthouse is headquartered in Brighton, UK. It's existing ventures also include: GroVida - a Portuguese company developing growing and processing facilities for medicinal grade cannabis products; Sulus Solar - an American solar development company; Landstrom - a UK residential self-build property developer.

Anglian Water

Anglian Water supplies drinking water to 4.3 million customers across the East of England and collects and treats used water from over 6 million people. We operate within the largest geographical region of England and Wales.

Our ethos is 'Love Every Drop', because it's what we do. Every drop of water is precious and we believe it's everyone's responsibility to look after it. We're constantly discovering new ways to keep ahead of a changing world, by planning for the future, and exploring new ideas to meet our customers' individual needs today and tomorrow.

ESB Smart Energy Services

ESB is Ireland's foremost energy company and the largest supplier of renewable electricity. For more than 27 years, ESB has been supporting Britain's transition to a low carbon future by investing in flexible and renewable generation assets, including the UK's most efficient thermal power plant, wind and biomass technologies. ESB Smart Energy Services is a business line within ESB which offers businesses and developers large scale low carbon energy solutions to reduce emissions and energy usage, leveraging its core engineering and multi technology expertise.