Agri-food in Eastern England

An Investment Opportunity

NEWANGLIA
Local Enterprise Partnership for Norfolk and Suffolk

CAMBRIDGESHIRE & PETERBOROUGH COMBINED AUTHORITY

Greater Lincolnshire
Local Enterprise Partnership

Introduction

Eastern England is 'Britain's breadbasket', the country's main source of fresh and healthy foods and ripe with business and investment opportunities. The region grows almost a third of the UK's crops, including nearly half of our home-grown vegetables. It is also a major centre of food processing, including over half of the UK's fish processing. Supporting more than 150,000 jobs, the food chain in the Eastern England is underpinned by the most significant food logistics sector in the UK.

Central to our success is a passion for innovation and an outstanding research base – at the forefront of crop and plant research globally, we are also forging ahead with developments in robotics and digital food supply chains.

Our research excellence enables spinout businesses to thrive and we are leading the plant-based food agenda – innovators including Plant and Bean, Oatly and Novo Farina are developing healthy, plant-based foods and ingredients, working alongside established plant-based brands like Quorn.

Our farming businesses have international reputations, from the long tradition of sustainable agricultural innovation of the Holkham Estate to the high technology carbon neutral approach of Dyson Farming and large-scale fresh produce farming at scale at G's Fresh.

The UK's leading region for controlled environment agriculture, the region is leading the development of new glasshouses and vertical farms in the UK.

The region is a major centre of UK food processing. British Sugar, Adnams, Kettle Foods, Cranswick, Youngs Seafood, Walkers, Pipers Crisps, Branston, and Moy Park are among our leading brands, and many other national and international brands have significant processing facilities here – including Birds Eye, McCains, and 2 Sisters.

The region is the single most important focus for export and import of food in the UK. It is the key place where nutritious food is produced and plays a vital role in global-leading research, innovation, and logistics to enhance productivity, drive the transition to net zero, deliver the levelling up agenda, and support Global Britain. The UK depends on the Eastern England for its food and drink.

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Growing and processing the UK's food – the numbers...

Agricultural output £5.1billion in 2019, a quarter of the English total.

33% of England's crop production including:

- **96%** of sugar beet
- **57%** English vegetables
- **45%** English potatoes
- **31%** English oilseed rape
- **30%** England protein crops
- **30%** English wheat
- **30%** English ornamental plants and flowers
- **31%** English seed crops.

16% of English livestock production, worth £1.6billion in 2019 – including 30% of English pig production and 39% of English poultry.

The Fens has half of the UK's Grade 1 soils, with over 90% of the Fenland soils Grades 1 or 2; Lincolnshire alone accounts for 25% of grade 1 arable land; and 80% of Norfolk and Suffolk's land is Grades 1, 2 or 3.

More than 50% of all UK fish processing is in Grimsby, worth over £2 billion per year. Cluster supports 65 processors and with linked distribution companies employs more than 10,000 staff.

Food chain supports more than 150,000 jobs across the region.

Working together

As a region, we will:

- Collectively promote major inward investment opportunities in the region's agri-food sector, including through the High Potential Opportunities (HPOs) DIT has designated within the region.
- Build additional outstanding and innovative collaborative innovation programmes with national and international impact supported by our globally significant agri-food research.
- Spearhead investment into the six Food Enterprise Zones in the region, ensuring support for food sector growth across our major industry clusters.
- Work with our UK leading renewable energy sector to lead the delivery of Net Zero food chains.
- Lead the development of sustainable agriculture, simultaneously feeding Britain and protecting and enhancing our natural capital.
- Maximise the innovation potential of our world-leading expertise in food and plant science and agri-food robotics.

To unlock the full potential of our agri-food sector, we will work with government to:

- Promote the vital role this region plays in feeding the nation and to secure the investment needed to unlock further growth potential across the sector.
- Lead transformational projects which help deliver the transition to Net Zero, meeting UK and global needs.
- Secure support to enable the sector to tackle energy and water infrastructure challenges, including water storage and renewable opportunities such as bioenergy and Solar PV.
- Secure investment in phase 2 of the CERES agri-tech translational programme to create a permanent regional programme to commercialise agri-food science and technology.
- Build on the region's Agri-Food Robotics Centre for Doctoral Training partnership with further funding to support applied innovation and adoption of automation to deliver a step change in labour productivity.
- Spearhead a mission-based approach to lead the agri-food robotics agenda to meet UK industry demand by 2030, growing an export-orientated cluster in agri-food automation and robotics which delivers highly skilled, high paid jobs.

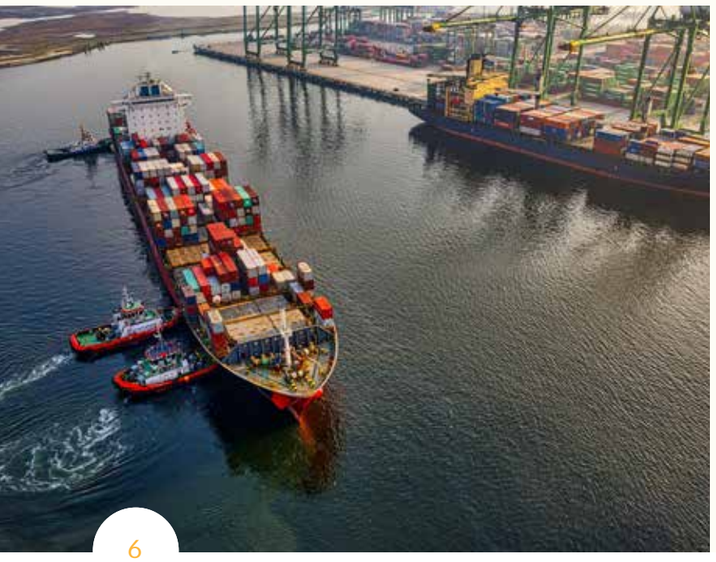
Food gateway to the UK and the world

A major food logistics sector supports the region's agriculture and food manufacturing sectors. Specialisations include ports services, cold chain storage and distribution, freight forwarding, shipping and warehousing automation technologies.

The UK's largest container port is the Port of Felixstowe, which links UK businesses with 165 countries beyond the EU and handles 60% of the UK's trade with Asia. The UK's largest bulk port is Grimsby and Immingham. These two ports will enhance their overall offer for the sector through their Freeport status. These ports are supported by additional agri-food port infrastructure in Boston, Great Yarmouth, Ipswich, King's Lynn, and Lowestoft.

These connections are also supported by regional assets such as Spalding's food logistics hub, the A14 Corridor, major facilities at Peterborough and food processing sites located across the region. The UK's largest food logistics cluster is based in Spalding, from where over 1,200 lorry loads of food leave for UK and international markets every day. Felixstowe has the biggest and busiest intermodal rail freight facility in the UK connecting the port with 15 inland terminals in the Midlands and North. New Border Control Posts in Spalding, at Felixstowe and at the Humber Ports, mean that goods can be cleared quickly for international trade.

As the focal point of the UK's food logistics system, we are also an attractive location for enabling businesses such as For Farmers and Frontier Agriculture.



Case Study

Trusted Bytes is a £2.9m project led by Lincolnshire food and logistics businesses and the University of Lincoln and includes HMRC and FSA as partners, to ensure that digitised food supply chains facilitate post Brexit trade by creating transparent and compliant and trusted food data interchange.

Food Enterprise Zones

Across the region, there are six Food Enterprise Zone (FEZ) sites at different stages of their journey, with three sites in Lincolnshire, two in Suffolk and one in Norfolk. Each site has a distinctive specialism and collectively they offer unparalleled growth and business support opportunities for inward investment.

1 **Europarc III in Lincolnshire** is an established FEZ focusing on seafood and value-added food processing sectors, with the Humber Seafood Institute on site.

2 **Central Lincolnshire FEZ site** has an approved local development order covering 30 hectares with a focus on building on the area's agri-food cluster with an established anaerobic digestion plant to provide renewable energy, specialist food supplement producer Park Acre and Woldgrain's central storage facility.

3 **The South Lincolnshire FEZ at Holbeach** is at the heart of the UK Food Valley and focuses on agri-food technology. By the end of 2021, it will house the National Centre for Food Manufacturing (NCFM) in a new Centre of Excellence for Agri-Food Technology and the headquarters of the Lincolnshire Institute of Technology with a FEZ Hub Building opening in spring 2022 to accommodate 30 SMEs. The first phase of business units is now pre-let and the FEZ is now moving onto phase 2.

4 **The Food Enterprise Park** on the Greater Norwich FEZ site at Honingham, Norfolk is growing at pace. With a major regional milling facility already on site, the Broadland Food Innovation Centre is under construction alongside a major vertical farm development, both due to open in 2022. Close to the UK leading food research cluster in the Norwich Research Park, the new facilities will offer a regional food innovation support programme, to maximise the potential of the region's businesses.

5 **The Stowmarket Enterprise Park** located at Gateway 14 Business Park in Stowmarket, is a key site in the ambitious plans for Freeport East, with huge potential for innovation, processing and logistics growth and development.

6 **The Orwell Food Enterprise Zone** near Ipswich in Suffolk includes leading regional food retailer Suffolk Food Hall, nationally celebrated food and farming tourism attraction Jimmy's Farm, and Wherstead Park, headquarters of the Eastern England Co-op, a major champion of local and sustainable food.

Leading global agri-food research and innovation

Eastern England is at the forefront of crop and plant research with important innovative spinout companies in alternative proteins, and research into disease-resistant and more nutritious varieties of crops.

Our strengths in fresh fruit and vegetables, and in ensuring we grow the healthiest and most productive varieties, are vital to UK health.

The Norwich Research Park is at the core of Norfolk and Suffolk's global offer as Europe's largest single-site for Plant Science, food, and health. It comprises 3,000 researchers and clinicians and 150 science and technology businesses which collectively work to research, develop and commercialise new scientific products.

Key institutes include:

- John Innes Centre: Independent, international centre of excellence in Plant Science, genetics and microbiology.
- Quadram Institute: at the forefront of the interface between food science, gut biology and health.
- Earlham Institute: focused on exploring living systems by applying genomics, computational science, and biotechnology to answer biological questions and generate enabling resources.
- The Sainsbury Laboratory: working on the science of plant-microbe interactions, delivering solutions to combat plant diseases and enhance breeding.

Norwich Research Park's John Innes Centre and The Sainsbury Laboratory have been awarded £1m from UKRI to progress plans to update their world-leading research facilities for the 21st century with a new state-of-the-art, zero-carbon plant and microbial research hub on the Norwich Research Park.

DEFRA agency the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) in Lowestoft has recently received £16m investment in a new centre for its world class work in marine science. Seafish, based in Grimsby, is the DEFRA arm's length body for the fishing and seafood processing sector in the UK.

The Cambridge Crop Science Centre is a partnership between the University of Cambridge's Department of Plant Sciences and NIAB focusing on translational research in crops with real-world impact. This builds on NIAB's long history as a centre of plant science and global crop trials centre. Linking this with the depth of plant science research at Cambridge University, through the new Crop Science Centre will enable new areas of work to be delivered.

The University of Lincoln delivers advanced, multi-disciplinary research and innovation across the entire food chain, providing cutting edge solutions to improve the sector's productivity, sustainability, safety, and resilience, while enabling new product development. The National Centre for Food Manufacturing is leading UK food chain innovation in areas such as new technologies for faster, lower energy cooking and cooling or how robotics can be applied to food processing and distribution to improve efficiency.

The region is home to many other national research and knowledge exchange organisations including for example the Agricultural Engineers Association (AEA), Agricultural Industries Confederation (AIC) and the British Society of Plant Breeders (BSPB).

Case Studies

- *Tropic Biosciences on the Norwich Research Park are developing high-performing commercial varieties of tropical crops which promote cultivation efficiencies and health – major developments in bananas, coffee and rice are underway.*
- *Olympus Automation Limited (OAL) Group have worked with the University of Lincoln to develop and commercialise steam infusion cooking, cryogenic cooling and the use of robots to facilitate production processes which are more efficient and productive.*

Forging a new digital future for the agri-food sector

Eastern England's outstanding expertise in agri-tech is supported by capabilities in enabling technologies such as machine learning and artificial intelligence, data analytics, robotics, and sensors.

The region has the UK's largest AI cluster in Cambridge. There are game-changing capabilities for agri-food businesses on offer at Adastral Park through BT's global R&D headquarters and the Innovation Martlesham cluster. These range from 5G technologies and satellite applications to robotics and drones, demonstrating the sheer breadth of opportunities for the sector – and reflected in the AI and quantum technology High Potential Opportunity with DiT.

Our world-leading research in big data for agri-tech supports development and integration of new technologies in sensors, machinery, and other devices in agriculture to inform agricultural management, increase productivity, and reduce environmental impact.

Lincoln Agri-Robotics is the world's first agricultural robotics global centre of excellence, incorporating the Lincoln Institute for Agri-Food Technology and the Lincoln Centre for Autonomous Systems. The University has the largest group of agri-food robotics experts in Europe. It is also developing expertise in digital food chain technologies, including running the national Internet of Food Things network+, bringing together UK-wide expertise.

Greater Lincolnshire's growing food digitisation and automation business cluster combined with a rapidly growing research and innovation group has led to a Department for International Trade High Potential Opportunity (HPO) in automation in food processing.

Case Studies

Saga Robotics, which has been in Lincoln for about 5 years, has completed a series of projects with the University. In 2020 it raised 9.5 million euros in a Series A funding round and now has 35 staff and customers both in the UK and internationally for its robots which are initially focused on automating the production and harvesting of fruit.

The region's businesses, universities and research centres are already bringing our regional strengths on digital food chains together through regional collaborative projects, including:

- The EPSRC Centre for Doctoral Training (CDT) for agri-food robotics is an advanced training centre in agri-food robotics aiming to create the Worlds' largest cohort of Robotics and Autonomous Systems (RAS) specialists in food and farming. Managed by the University of Lincoln, in collaboration with the University of Cambridge and the University of East Anglia, it has £6.9m of funding to support 50 PhDs, all co-sponsored by industry.
- CERES is an agri-tech translational partnership managed by the University of Cambridge and including University of East Anglia, University of Lincoln, NIAB, John Innes Centre, Rothamsted Research and UKRI. Its £4m translational investments from 2018-21 have already led to 12 IP assets, 13 technology licences, 4 spinouts and 16 new research collaborations.
- The University of Cambridge and Quadram Institute at Norwich Research Park are core partners of EIT Food – Europe's leading food innovation initiative working to make the food system more sustainable, healthy, and trusted.

Our innovation ecosystem is supported by Agri-Tech E, the longest established and largest networking body for agri-tech in the UK, including innovative farmers, producers, scientists, technologists, and entrepreneurs.

Supporting the transition to net zero

Eastern England is developing sustainable and environmentally sensitive farming systems which enable the protection of biodiversity at the same time as delivering productivity.

The region is home to the largest continuous area of lowland peat in the UK - a vital carbon-rich ecosystem, as well as nationally important wetlands and coastal landscapes.

The region's farms are playing a key role in preserving fragile and important habitats for future generations and our trailblazers in sustainable agriculture include –

- Burgess Farms, the largest UK supplier of organic root vegetables
- The Holkham Estate, historically a global agricultural pioneer in the 18th century, leads the way in improving soil health through crop rotation and combines productive agriculture at scale with conservation management of one of the UK's iconic coastal landscapes.
- Dyson Farming, using agri-tech innovation and precision farming to minimise inputs and champion carbon-neutral farming.

The Broads launched the first farmed environment schemes in the late 1980s which became the blueprint for environmental management in the UK and Europe.

A new generation of Environmental Land Management Scheme (ELMS) pioneers and innovative natural capital projects are leading the natural capital agenda through ELMS pilots from the Humberhead Levels in Lincolnshire to river catchments in Norfolk and Suffolk. Water Resources East is taking the lead both in water management at a regional scale and in using nature-based solutions to protect and enhance our natural capital.

Controlled environment agriculture – in greenhouses or vertical farms, enables resource-efficient year-round production of high-quality crops and can help meet the growing global demand for sustainable food.

In a world first, two of the largest greenhouses in the UK at Trowse, Norfolk and Ingham, Suffolk are warmed by residual heat from nearby water recycling centres. This £120m investment by the Bom Group will grow more than 20 tonnes of tomatoes per day – 12% of the UK crop, and pioneers an approach to heating greenhouses with global potential.

In Lincolnshire, the area of glasshouses is doubling, with the UK's largest glasshouse development in the last decade, at Bridge Farm Spalding, creating 75 acres of glasshouses for cut flowers, pot plants, salads and pharmaceutical crops. In Boston, Dyson Farming opened an automated 15-acre strawberry production glasshouse in spring 2021 with energy from anaerobic digestion which is the most technically advanced in the world.

Eastern England is seeing the largest investments nationally in vertical farming. The largest vertical farm in the UK in Scunthorpe, the Jones Food Company, is majority owned by Ocado. At the Food Enterprise Park in Norfolk, work has started on an even larger vertical farm, with ambitious plans for cutting edge crop production, automation, and AI.

NIAB's Eastern Agri-tech Innovation Hub at Hasse Fen near Soham develops new products through recycling crop and food waste and improving resource use efficiency in the horticulture and fresh produce supply chains. The Hub is equipped to run as a field/test station, where NIAB works with businesses to carry out commercial scale pilots.

Lincolnshire's food logistics cluster is pioneering the reduction of carbon footprints in the cool chain and transport, with new cold stores and through decarbonising food transport vehicles. A proof of concept project, led by the University of Lincoln, to demonstrate how food refrigeration can be matched to grid supply to optimise the use of renewable energy has been used by Tesco.

Eastern England is a leading area for onshore renewables including animal waste biomass installations, with a third of the national capacity in two large plants at Thetford and Eye power stations. The region includes multiple Anaerobic Digestion (AD) plants, from Brewer Adnams who process waste food and drinks to a large concentration of on farm and food chain AD plants in Lincolnshire, with enough power output to meet the needs of the city of Lincoln.

Diet and health

Eastern England is at the centre of global innovation and research to improve physical and cognitive health through diet. It hosts world leading academic research centres and businesses working at the intersection between plant science and health.

The region produces 57% of the UK's vegetables, with major investments increasing this figure and a strong fresh produce processing and trade sector ensuring that this nutritious food is distributed around the UK.

The Norwich Research Park has a unique blend of expertise in this area – with the Norfolk and Norwich University teaching Hospital (NNUH) working alongside food and health research experts at the Quadram Institute, to carry out cutting-edge work on the implications of gut health on conditions such as cancer and dementia.

The region's globally renowned Plant Science expertise offers a major commercial opportunity to develop nutritious food products, and is the focus of a new High Potential Opportunity with the Department for International Trade in Norfolk and Suffolk. Norwich Research Park is working on a range of ready-for-market products, including new pea varieties that help stabilise blood glucose levels, dietary carbohydrates that reduce viral and bacterial gut infections and disease, and juices enhanced with antioxidants. Spinout companies like the Smarter Food Company are developing products using nutritionally-enhanced broccoli to enhance healthy diets.

The research expertise in Norfolk and Suffolk is complemented in Lincolnshire by the largest concentration of plant protein production in the UK, with major pea and bean processors such as Greenyard (which also has a production facility in Kings Lynn in Norfolk), HMC and the UK pulses division of international ADM.

In March 2021, Europe's largest plant protein factory was opened in Boston by Plant and Bean on a 65-acre site, creating 500 jobs. Princes also invested £80m in their Long Sutton processing unit in 2020, to expand their plant protein capacity and Branston are investing £6m in a new potato protein plant in 2021, with further developments planned.

This is the region leading the development and production of healthy foods and paving the way to a healthier longer life for all of us.

Compiled by New Anglia LEP, Greater Lincolnshire LEP and the Cambridgeshire and Peterborough Combined Authority representing the Eastern England agri-food sector - agriculture, food, drink and horticulture and their associated value chains.