

# NET ZERO

& AGRICULTURE IN THE NORTH EAST

*A guide for local authorities*



## AGRICULTURE IN THE NORTH EAST



**The NFU's North East region stretches from Sheffield to the Scottish borders, covering a land area of over a million hectares.**

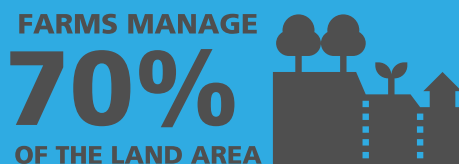
With four National Parks, five Areas of Outstanding Natural Beauty and 615 Sites of Special Scientific Interest, the region encompasses many of diverse and valuable landscapes. More than 16,000 farm holdings manage 70% of the land area across the region.

The farming industry is worth £3.2bn to the regional economy and employs more than 40,000 people (Defra, 2020). The region is characterised by grazing livestock (737,850 hectares) and cereal production (482,620 hectares), but is also home to sizeable pig, poultry and horticultural businesses.

Large areas of farmland across Yorkshire and the North East are designated as 'disadvantaged' or 'severely disadvantaged' with uplands accounting for roughly 60% of the land area. Permanent pasture - an excellent carbon sink - accounts for 37%.

Farming accounts for up to 30% of businesses in rural uplands and 15% in rural areas (Defra, 2019), and is therefore an important income source for the region.

## NORTH EAST FARMING FIGURES



## AGRICULTURE & CLIMATE CHANGE

**The North East region is no stranger to the impacts of climate change. With milder winters and more frequent extreme weather events, local businesses and communities are experiencing the negative impacts of climate change first-hand.**

Three major flooding events hit the region in 2019/20, together having a severe impact on crop production, with prolonged flooding potentially killing valuable crops and compromising land for long periods of time. In the livestock sector too, flooding affected grazing land and winter fodder production as well as putting animals at risk of drowning. As a result, the development of regional integrated water management plans is vital.

### **How has the industry responded?**

Agriculture is the only industry that is both a source and sink for GHG emissions. That is why the NFU has set the ambition of achieving Net Zero by 2040 through a range of measures that fall under three broad pillars:

- Productivity measures
- Carbon storage on farms
- Renewables and the bioeconomy

Farmers across the North East are keen to play their part, and local authorities can help by adopting a range of approaches that support their work to produce sustainable food whilst promoting their net zero ambitions.



For more information about flooding, please read our [\*\*Water Management Strategy\*\*](#).



## WORKING WITH LOCAL AUTHORITIES - COLLABORATION IS THE KEY TO SUCCESS



**Developing and maintaining good working relationships with local authorities is essential for farmers and growers across the North East if they are to successfully produce sustainable food, support the rural economy and promote their net zero ambitions.**

Clear, long term and multi-sector plans are essential to address climate change and to achieve the required outcomes, they should involve stakeholders in a collaborative effort. Planners in particular, have a key role in helping farmers and growers meet their environmental obligations and build businesses fit for the challenges ahead. It is crucial they are represented and consulted as planning policies are developed and that local plans are transparent with regard to liabilities, restrictions and regulations.

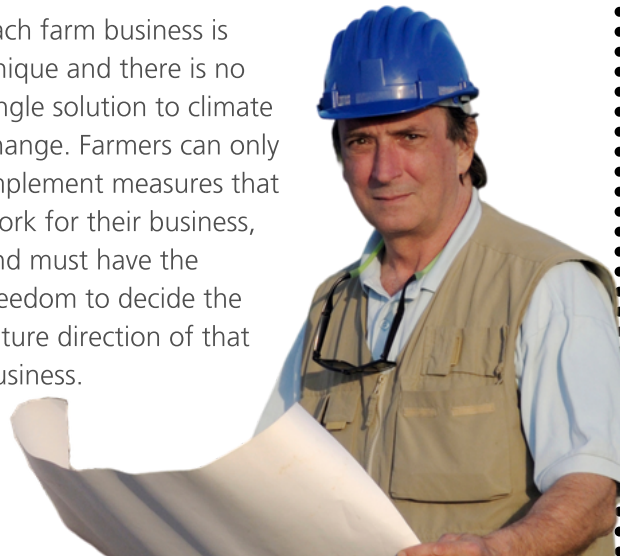
The drive to achieve net zero GHG emissions is a key theme for national, regional and local policy development. It is important to understand how different net zero strategies link together, but also be aware of other policy developments affecting the farming sector such as the ambition to deliver increased levels of biodiversity and establish local nature recovery networks.

Following the UK's departure from the European Union, UK farmers are facing unprecedented changes, both in terms of how they are able to build profitable businesses and meet the nation's environmental aspirations - through a new Environmental Land Management Scheme (ELMS) currently being developed by government.

Currently up to 80% of Farm Business Income (FBI) comes from direct payments in the North East, and it can account for up to 56% of incomes in Yorkshire. With direct payments being phased out by 2027, and continuing uncertainty around the detail of ELMS, farmers need flexible agreements and solutions now more than ever.

Local authorities can also provide invaluable support for their local farm businesses by promoting and paying a fair price for locally produced food and encouraging a healthy, balanced diet across local communities.

Each farm business is unique and there is no single solution to climate change. Farmers can only implement measures that work for their business, and must have the freedom to decide the future direction of that business.



The NFU's goal is for agriculture in England and Wales to reach

**net zero**  
greenhouse gas  
emissions by 2040

**In England, National Parks and AONBs hold**



**18%**  
of the total farm  
labour force in  
England



**28%**  
of the breeding  
beef herd



**37%**  
of the  
sheep flock



Current  
woodland cover  
in England is

**10%**

 **NFU**

## NORTH EAST LIVESTOCK PRODUCTION



**Livestock production is a key part of the region's agricultural output, whether on the extensive upland areas that make up approximately 60% of the region or the lush lowland pastures.**

Nationally, 61% of the value of the UK's agricultural output comes from livestock (Defra, 2019). Sheep and cattle are reared across 57% of the farmed area in the North East and 33% of farmland in Yorkshire (Defra, 2019).

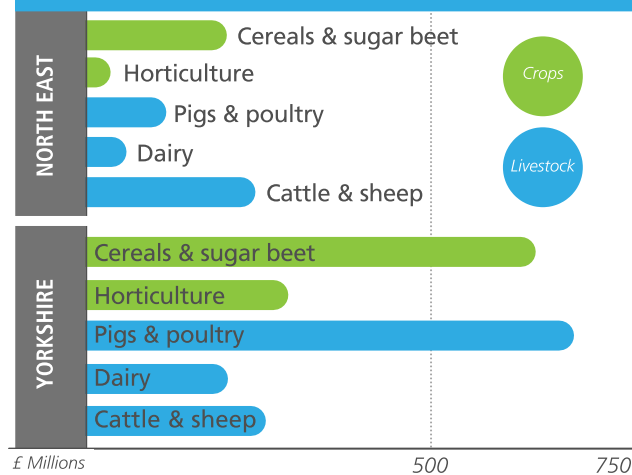
The livestock industry is sometimes criticised for its negative impact on GHG emissions. However, red meat production is not the same across the world and the UK prides itself on being home to some of the most sustainable livestock farming systems in the world. As a result, British beef boasts a GHG footprint that is 2.5 times lower than the global average.

Farmers in the North East are at the forefront of sustainable livestock production - which forms the backbone of farming in upland areas. 65% of the region's farmland is only suitable for growing grass and cannot be used for crop production due to its topography and thin, stony soils.

1/2

**GREENHOUSE GAS EMISSIONS FROM UK BEEF ARE ABOUT HALF THE GLOBAL AVERAGE**

### AGRICULTURAL OUTPUT



### LOCAL AUTHORITIES CAN...



- Support the local economy by encouraging public procurement of high quality local produce.
- Support local farmers markets to encourage shortened supply chains.
- Continue to help educate the public about local food production & availability.
- Continue involvement in regional and national frameworks and groups, for example Local Enterprise Partnerships, flooding and coastal committees, local food groups and Local Nature Partnerships.

## + CASE STUDY: JOHN RENNER

John Renner is a Northumberland livestock farmer, rearing Aberdeen Angus suckler cows and Mule and Innovis tups on his 500-acre farm. John prides himself on his sustainable farming systems achieved thanks to the high efficiency of his herds, alongside his exceptional animal health and welfare.

Working with his vet, John's animal health and vaccination plan helps him achieve high health status as well as minimising his carbon footprint. This approach helps him achieve 98% calving every year. Fed on a nutritious grassland diet, his calves achieve growth rates of up to 1.5 kg per day.

John combines his sustainable farming practices with careful environmental management, increasing the number of hedgerows on the farm, improving his soils and introducing grass margins around his arable fields to protect watercourses and provide a valuable habitat for wildlife. He also monitors and records everything on his farm, taking a whole-farm approach to deliver a sustainable farming business.



Education is another key aspect of the Renner's business, with an on-farm education facility that has welcomed 12,000 members of the public - all eager to learn where their food comes from.



## NORTH EAST ARABLE PRODUCTION



**Arable crops are significant in the region, producing 17% of the nation's wheat, 19% of its barley and 15% of its oilseed rape (Defra, 2020). GHG emissions from arable production have significantly reduced over the past 20 years (Defra, 2017), but are still significant to overall agricultural emissions as a result of the soil processes and fertiliser use involved.**

UK soils store around 10 billion tonnes of carbon, equivalent to 80 years of annual UK GHG emissions (Environment Agency, 2020). Soils can also store three times as much carbon as the atmosphere and are equally important for food security, with UK food self-sufficiency currently standing at 64%.

With 70% of land area in England used for farming, farmers recognise the importance of soil health. Healthy soils increase crop yields, reduce GHG emissions and provide greater resilience to climate change.

As a result, North East farmers have been prioritising the protection and management of soils through their crop rotations, making informed choices about cultivation methods, and trialling the use of 'minimum tillage' techniques.



### LOCAL AUTHORITIES CAN...



- Soils are extremely complex and we need to know more about how soil management can help combat climate change. Further investment in soil science, research and innovation is needed, exploring issues such as soil health, crop varieties and plant breeding. Collecting reliable and robust data using new technologies such as drones, satellite imagery and DNA sequencing can help.
- Support the development of long-term, collaborative approaches for managing soils and peatland at a local level.
- Ensure these approaches are sustainable but also prioritise farming and food production. A one size fits all approach must be avoided – with decisions made at local level.
- Help farmers improve their technical skills to enable efficient working practises, e.g through a greater exchange of knowledge on a local and national scale to increase farm resilience and sustainability.

## + CASE STUDY: THE TEMPLE FAMILY

Paul and Michael Temple are mixed farmers based in Driffield, Yorkshire. Their 541-acre farm has a 220-strong suckler herd, over 100 hectares of winter wheat, alongside oilseed rape and grass silage. The farm is characterised by clay loam over chalk soils, which are free draining but hold moisture. Paul identified the opportunity to improve soil health and increase resilience to weather extremes, so moved to a 'no till' system and purchased a direct drill.

By using a direct drill, the soil is not mechanically disturbed, as occurs during traditional ploughing. This results in reduced soil damage, allowing organic matter to increased, and the cost of production to decrease.

The farm is now into its fourth full year of direct drilling, which as well as reducing GHG emissions, has also helped the farm reduce its production and labour costs. Paul and Michael further support this by regularly taking soil samples across the farm to monitor soil health.



## HARNESSING RENEWABLE ENERGY



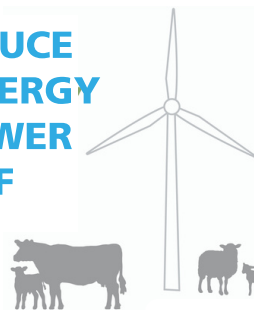
**Modern, forward-looking farmers are integrating energy and food production to build businesses that are both environmentally sustainable and economically viable. Renewable energy production has indeed become part of the agricultural growth agenda.**

Diversification into low-carbon renewable energy services of all kinds offers farmers and growers stable and predictable returns, making their agricultural businesses more resilient with a broader portfolio of enterprises for the next generation of farmers.

Renewables already account for over a quarter of UK electricity production and it is estimated that farmers own or host over half of the UK's solar power and anaerobic digestion capacity, as well as the majority of wind power. They also play a significant role in the supply or fuelling of renewable heat.

Defra statistics show that 18,600 farms have so far implemented renewable energy sources into their business. In the North East, farmers and growers are primarily implementing wind and solar PV to deliver low-carbon electricity. This allows them to reduce their carbon footprint, cut electricity costs, and achieve an additional income source.

**FARMERS PRODUCE  
RENEWABLE ENERGY  
THAT HELPS POWER  
AN AVERAGE OF  
10 MILLION UK  
HOMES**



### LOCAL AUTHORITIES CAN...



- Renewable energy infrastructure can provide numerous benefits, but should not be to the detriment of food production. Farmers must also be able to take on renewable diversifications of their own accord.
- Planning stages can be challenging for those wanting to implement renewable energy solutions for their farm businesses. A clear and transparent planning system must be in place and accessible to all farmers and growers.
- If grants or funding are being provided, the agreements and contracts must be fair and simple for farming businesses.

## ⊕ CASE STUDY: THE WELFORD FAMILY

Andrew and Joe Welford are dairy farmers based in Cleveland. Their 320-acre farm has 270 Holstein cows with 16 acres of winter barley. In the early 2000s, Andrew recognised the need to make changes on the farm to reduce GHG emissions.

The family started their climate friendly journey in 2008, installing a wind turbine to produce 10kw of power - the first in the North York Moors National Park. Next was a heat recovery unit in the milking parlour to recover the heat from the milk and generate hot water, which as well as saving energy, also reduced running costs. Installing a solar thermal unit, with a 50% grant, complimented this approach.

In 2015 the farm installed solar panels on a new cattle shed with a south facing roof - producing 50kw of power. Further panels were also fitted to an older shed with an east/west facing roof. Although less productive than if south facing, they still produce 40kw of power.

With their renewable installations up and running, and with a focus on their herd efficiency, the family is now almost wholly self-sufficient in energy, exporting their surplus generation to the grid when appropriate.





## THE CONTRIBUTION OF FARM TREES



**With trees often considered the ultimate carbon sequester, farmers face increasing pressure to plant more. There are over a million hectares of woodland on agricultural land (Defra, 2019) but the government aims to plant a further 30,000 hectares of trees by 2025. Farmers will be crucial in delivering this target.**

Putting the right tree in the right place can deliver a wealth of benefits for water quantity and quality, biodiversity, productivity and carbon storage. But planting trees is a permanent land use change that presents several challenges including contracts, payments, and farm tenancy agreements. Significant time and investment is also required.

While trees are important, farmers must be able to decide whether large scale planting suits their farm business and they must be rewarded for their long-term commitment. Good management of on-farm woodland should be positively incentivised.

The Big Farm Tree Planting is a regional project delivered by the NFU, alongside the Woodland Trust, that has provided 5000 trees free of charge for 500 NFU members - to be planted as a single trees in the landscape or small plantings.



### LOCAL AUTHORITIES CAN...



- Whilst planting trees is important to combat climate change, involvement must be something farmers choose to do. We encourage a collaborative approach.
- Farmers must be adequately rewarded for the long-term commitment involved. It must be clear from the outset who will benefit e.g. have access to carbon credits.
- 30% of farms are tenanted in the North East and 15% of farms are wholly tenanted in Yorkshire, therefore land managers may have difficulty entering into long-term contracts.
- Sourcing British-grown saplings is important to encourage domestic production.
- Bringing existing woodland back into management should be incentivised and prioritised over new woodland planting.

## + CASE STUDY: STEVEN CRABTREE

Steven Crabtree is a third-generation livestock farmer. He farms approximately 1000 hectares over six sites in Malhamdale, Wharfedale, Littondale and the Washburn Valley, all of which are in National Parks or Areas of Outstanding Natural Beauty. Steven has been implementing a range of measures to reduce on-farm GHG emissions, including the installation of solar panels and biomass.

Over the last ten years, Steven has also planted in excess of 40,000 trees on his farmland. Before embarking on his plans, he identified areas of his farm that were less productive, such as steep slopes and areas which were being heavily eroded.

As well as delivering GHG reductions and carbon sequestration, the decision to introduce more trees onto his farm has had a wealth of other benefits such as reducing soil erosion and improving the welfare of his herds. In addition, the trees have delivered benefits for flood alleviation and water management in the Aire Valley.

Introducing more woodland has not only provided the numerous benefits associated with tree planting, it has also complimented the farm's other measures such as use of renewable energy and rotational grazing to help the business become more environmentally friendly.



## FUEL USE ON NORTH EAST FARMS



**Fuel use accounts for approximately 11% of total agricultural GHG emissions (Defra, 2018). However, fuel to power agricultural vehicles is critical to farm businesses and maintaining food production.**

The NFU has responded to the government's consultation on bringing forward the end of the sale of new petrol, diesel and hybrid vehicles from 2040 to 2035, or earlier 'if feasible'.

We highlighted that while there are opportunities arising from the promotion of electric vehicles (EVs), such as EV charge points being located at farm shops or possibly adjoining farms that have 3-phase electricity near village communities, the lack of rural charging infrastructure could have serious negative impacts on farm businesses and the rural economy.

In the longer term, electrification of agricultural machinery could contribute towards the NFU's net zero aspirations by helping to reduce emissions. We strongly support a continued role for high biofuel blends like E10 ethanol and B20 biodiesel - something that would also support the region's fledgling biofuels industry.



### VEHICLES ON UK ROADS

The number of farm vehicles on UK roads is modest



100-150k



650k



4m



32m

### LOCAL AUTHORITIES CAN...



- Currently there is insufficient charging infrastructure in many rural communities to viably support electric vehicles. The NFU is calling on local and national government to scale up its investment in delivering the infrastructure necessary to support the move to electric vehicles.
- Although there have been strides forward in the efficiency of agricultural vehicles, it is not currently commercially viable to move to electric alternatives. For this to be viable in the future, local authorities need to help promote and accelerate the demonstration and introduction of electric and hybrid tractors and continue research and development into these solutions.

## + CASE STUDY: ROSS WILSON

Ross Wilson is an organic livestock and arable farmer based in the Ingram Valley, Northumberland. His family's 2,000-acre farm is home to 1400 sheep, 100 cattle, 1,500 prime lambs and 100 deer, with the farm ethos focused on achieving the highest possible environmental and welfare standards.

Although Ross gives small amounts of concentrate feed to some of the breeding stock (deer and triplet ewes) during pregnancy, all other livestock are pasture-fed and outdoor-reared. Protecting the farm's ecosystem is at the heart of the business.

Ross and his family have been implementing a range of strategies to reduce their GHG emissions: using carbon footprint calculators, installing solar panels and improving their productivity.

As part of this, Ross has changed his car from diesel to electric and reduced the engine size of other farm vehicles to make them more fuel efficient. He has also reduced the number of tractors on the farm from three to one to reduce on-farm fuel use, whilst still running a viable farming business and not reducing his stocking levels.





## NFU NORTH EAST



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