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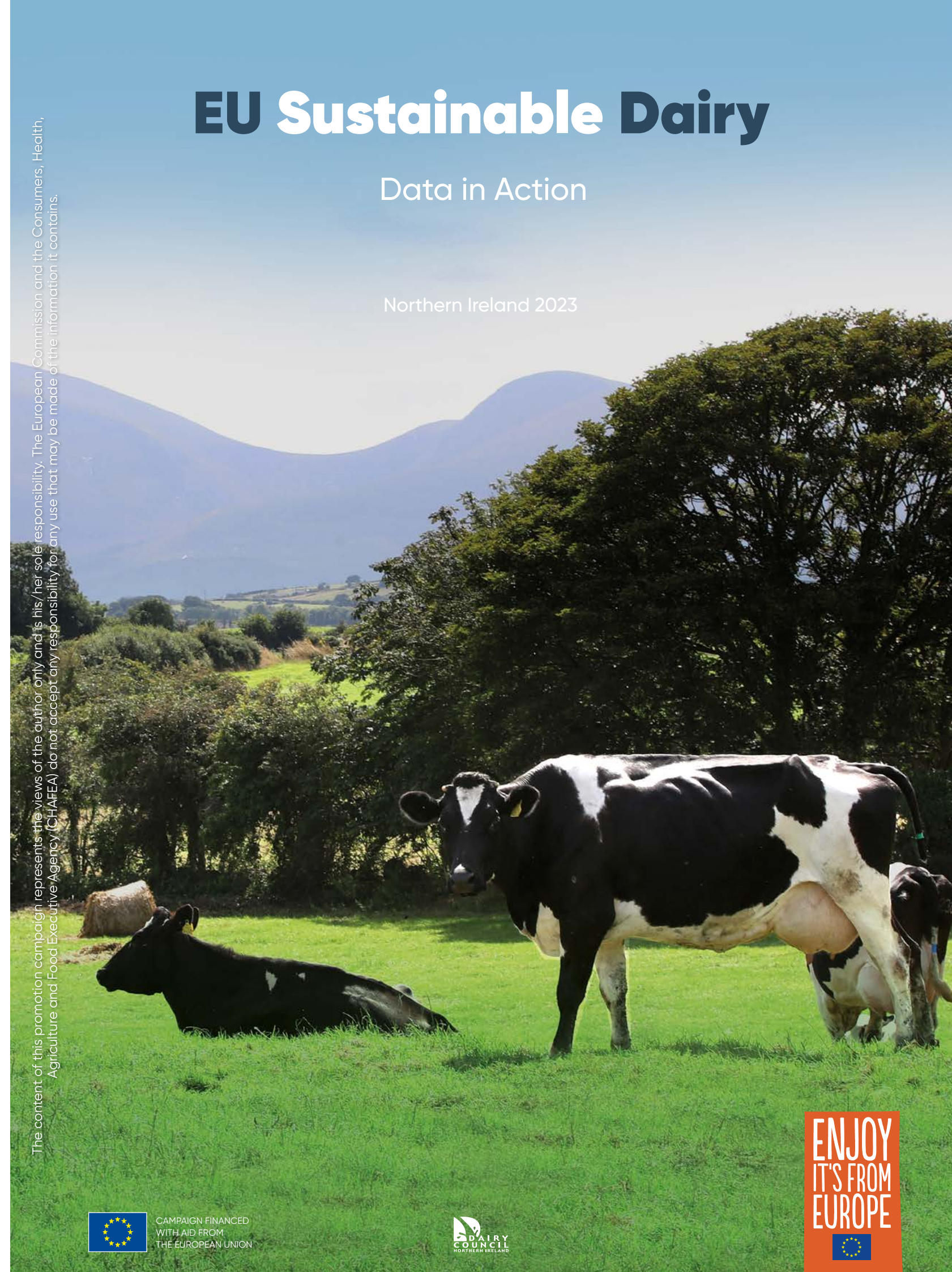


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# EU Sustainable Dairy

## Data in Action

Northern Ireland 2023







## Foreword

As we end the final year of the EU Sustainable Dairy Programme, my first as the new Chief Executive of the Dairy Council for Northern Ireland, it provides an opportunity to reflect on the strides the sector has made and the considerable challenge that lies ahead.

The dairy sector in Northern Ireland makes a huge contribution to the local economy, worth almost £1.5 billion annually and sustaining the livelihoods of around 3,200 dairy farming families and over 2,200 employees of dairy processors around Northern Ireland, producing nutritious, high quality and affordable food with our farmers acting as custodians of the natural environment.

The outlook is positive for the future sustainability of the sector. Our farmers and processors are following evidence-based guidance from the Department and from knowledge and research institutions such as CAFRE and AFBI, investing in new technologies and implementing new processes all with the aim of being more sustainable.

There remains a considerable amount of work to be done to fully realise the contribution that our sector plays to the wider societal sustainability – especially in relation to on farm carbon sequestration and storage and there is still a lot to be decided on future agricultural policy and how farmers are to be rewarded

for the efforts they make to improve biodiversity and on farm sustainability.

There are also targets in place for the processing businesses that bring the dairy products to market, and our processors have made significant efforts to work more efficiently including sending less to landfill and harnessing sustainable forms of renewable energy.

There doesn't need to be a trade-off, both sustainability and profitability should, and can, live in coexistence.

The EU Sustainable Dairy Programme is a European funded multi-country programme from the European Milk Forum (EMF), which includes the Dairy Council for Northern Ireland. For the past six years, and in conjunction with colleagues across Europe, we have endeavoured to share research, facts and solutions to both paint a picture of, and demonstrate, the work being done across the sector to create a more sustainable dairy sector.

This Fact Book has been produced in conjunction with the EMF and with financial assistance from the European Union. The EMF 'Sustainable Dairy' initiative is co-ordinating a new and informed dialogue with key stakeholders on the environmental actions being taken in six European countries. We are grateful to the EMF and EU for their support as we highlight the positive contribution that the dairy sector is making towards the environmental sustainability agenda in Northern Ireland.

Challenging decarbonisation targets have been set through the Northern Ireland Executive's Climate Change Act and 'Path to Net Zero' Energy Strategy, as well as exciting opportunities through the DAERA Green Growth Strategy and Department for Economy 10X Economic Strategy. It's important when we talk about targets and emissions that we don't lose sight of the fact that the dairy sector is made up of families, who are the backbone of rural communities across Northern Ireland.

New figures from DAERA show the great strides that the sector has made to lower its carbon footprint whilst retaining economic profitability. In the past 33 years we have seen the carbon intensity of milk production decrease from an average of 1,927 grams of CO2 equivalent per kilogram of Energy Corrected Milk (ECM) in 1990 to 1,214 grams in 2021, with milk production expanding by 92% in that time frame. This demonstrates that the sector is very much up to the challenge and the will and resilience is there to work towards reasonable and achievable targets.<sup>1</sup>

As the world continues to face the challenges of climate change, the growing influence of capturing and using data and adopting new technology across many sectors, including the dairy sector, are some of

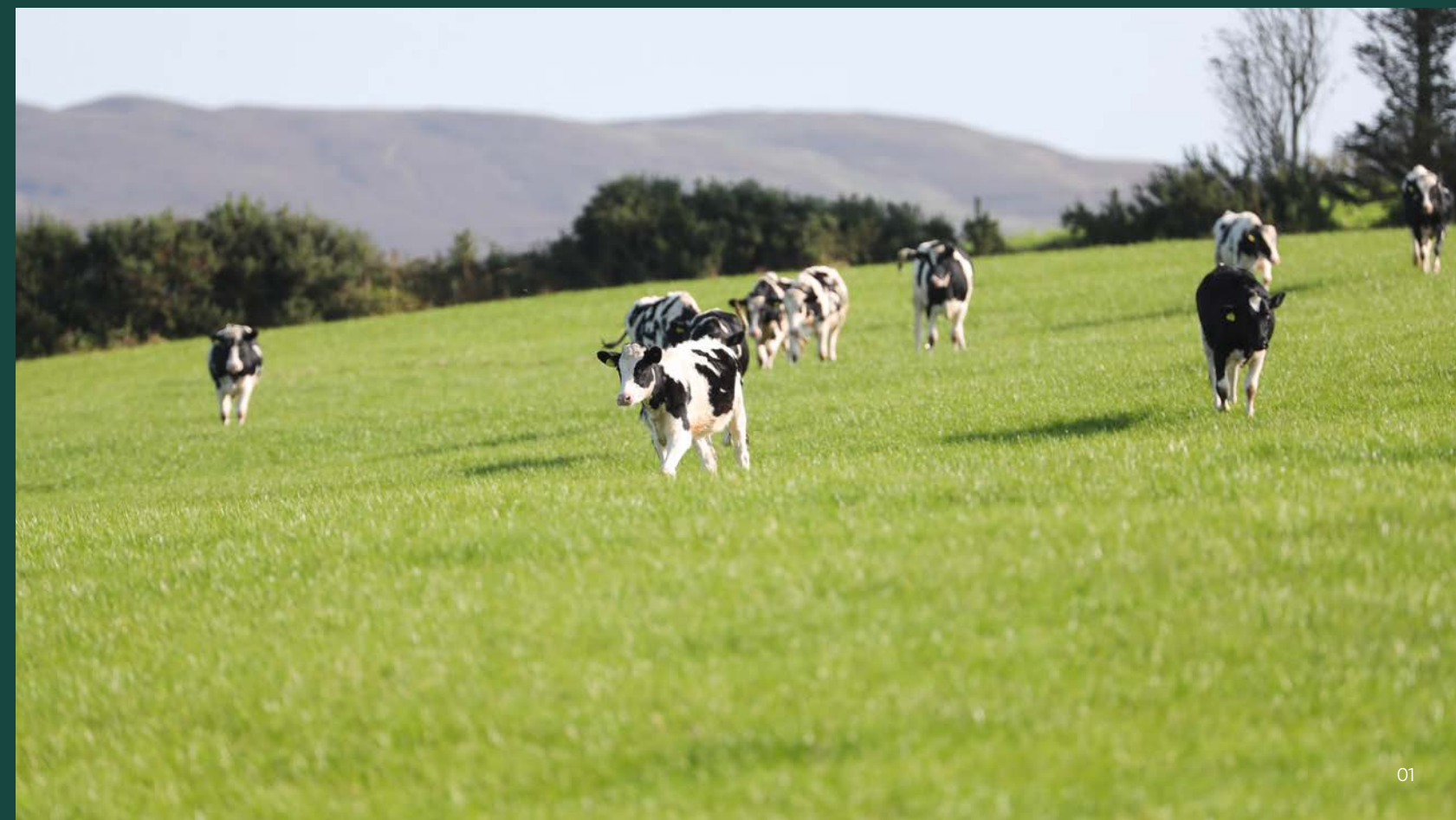
the most important tools in our arsenal when it comes to tackling climate change. A shared problem calls for a shared solution, working collaboratively with Government, scientists, dairy processors and farmers will make agriculture more environmentally sustainable whilst also boosting productivity, efficiency and ultimately profitability.

The theme of this year's programme is Data in Action. Integrated data from the farm can lead to better decision making in respect of animal welfare, herd and land management, milk yields and a range of other aspects of sustainability on the farm. It will allow farmers to make better informed decisions, identify risks and identify alternative approaches to improve their ecosystem.

This Fact Book has been compiled with the support of a number of local partners; in the Department for Agriculture, Environment and Rural Affairs (DAERA), the Royal Society for the Protection of Birds (RSPB), College of Agriculture, Food and Rural Enterprise (CAFRE) and a number of milk producers and individual farmers.

**Ian Stevenson**  
Chief Executive of the Dairy Council for Northern Ireland

<sup>1</sup> DAERA's NI Carbon Intensity Indicators 2023: <https://www.daera-ni.gov.uk/publications/northern-ireland-carbon-intensity-indicators-2023>







## Government targets: At a glance...

Whilst there are agriculture specific targets, not all the sector's emissions fall neatly in to one silo, there are a number of overarching Executive policies that impact some or part of the dairy supply chain.

### Climate Change Act (Northern Ireland) 2022<sup>2</sup>

- 100% reduction in net zero greenhouse gas emissions by 2050
- 48% reduction in net zero greenhouse gas emissions by 2030
- 80% of electricity consumption from renewables by 2030
- 70% of waste recycled by 2030
- introduction of carbon budgets and climate action plans
- establishment of a 'just transition' fund for agriculture
- establishment of Northern Ireland 'Climate Commissioner'.

### Green Growth<sup>4</sup>

The draft Green Growth Strategy is the Northern Ireland Executive's multi-decade strategy, balancing climate, environment and economy in Northern Ireland.

One of the key commitments is to develop NI's first Climate Action Plan, which will set out how we will achieve the carbon budget for the period covered by the Plan and meet the emission reduction targets as set out in the Climate Change Act.

The overall aim is to improve people's lives through the creation of green jobs and a cleaner environment.

### Path to Net Zero Energy Strategy<sup>3</sup>

The 'Path to Net Zero' sets out the NI Executive's vision for secure, affordable and clean energy

- **Energy efficiency;** deliver energy savings of 25% from buildings and industry by 2030
- **Renewables;** meet at least 70% of electricity consumption from a diverse mix of renewable sources by 2030
- **Green Economy;** double the size of our low carbon and renewable energy economy to a turnover of more than £2 billion by 2030.

### 10X Agritech<sup>5</sup>

'10X' is the Department for Economy vision for a decade of innovation in the Northern Ireland economy. The concept embraces technology and innovation as a way of delivering a better economy, concentrating on our core strengths and industrial sectors.

Agri-tech is identified as a priority sector in 10X, emphasising the focus on innovation and value-added solutions for the Northern Ireland agriculture sector.

<sup>2</sup> [https://www.daera-ni.gov.uk/articles/climate-change-act-northern-ireland-2022-key-elements#:~:text=Targets-,The%20Climate%20Change%20Act%20\(Northern%20Ireland\)%202022%20\(Act\),in%20net%20emissions%20by%202030](https://www.daera-ni.gov.uk/articles/climate-change-act-northern-ireland-2022-key-elements#:~:text=Targets-,The%20Climate%20Change%20Act%20(Northern%20Ireland)%202022%20(Act),in%20net%20emissions%20by%202030)

<sup>3</sup> <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Energy-Strategy-for-Northern-Ireland-path-to-net-zero.pdf>

<sup>4</sup> [https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Green%20Growth\\_Brochure%20V8.pdf](https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Green%20Growth_Brochure%20V8.pdf)

<sup>5</sup> <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/10x-economy-ni-decade-innovation.pdf>





Chapter 1.

# Policy Perspective – **DAERA**



In Northern Ireland, the Department of Agriculture, Environment and Rural Affairs (DAERA) is the government department with policy responsibility for the competitive development of the agri-food, fishing and forestry sectors of the Northern Ireland economy, environmental functions and for Northern Ireland's Sustainability Strategy.



The overarching aim of the Department is to develop an agri sector which pursues increased productivity, is environmentally sustainable, displays improved resilience and which operates within an effective functioning supply chain.

### Farm Support and Development Timeline\*

	2023	2024	2025	2026...
Soil Nutrient Health Scheme	Zone 2	Zone 3	Zone 4	
Ruminant Genetics	Ruminant Genetics Programme			
Farming for Carbon	Livestock Dietary Emission Challenge Fund Carbon Benchmarking Programme			
Farming for the Generations	Pilot Programme		Full Programme	
Knowledge & Innovation	Continuation of existing Knowledge Transfer Schemes		New Knowledge and Innovation Programmes	
Farming with Nature	Pilot Programmes			Full Scheme
Beef Sustainability Package	Beef Carbon Reduction Scheme			
	Suckler Cow Scheme			
Horticulture	Horticulture Sector Growth Support Scheme			
	Innovation Encouragement and Support Measure			
Capital Investment Measure	Continued Delivery of Farm Business Improvement Scheme		Capital Investment Scheme	
Farm Sustainability Payment	Continuation of Basic Payment Scheme to end of 2024		Farm Sustainability Transition Payment	Full implementation of Farm Sustainability Payment
Supply Chain Measure	Supply Chain Schemes			

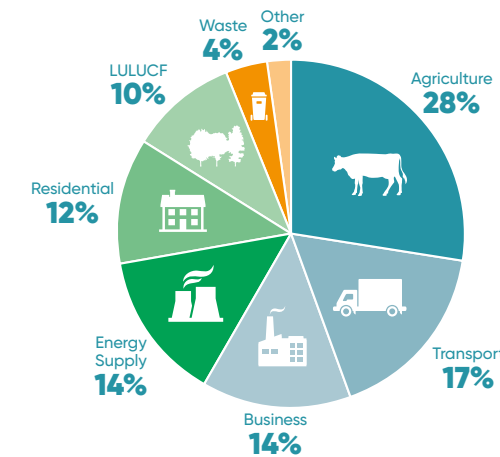
\* Subject to legislative and business case cover

In addition to legislation such as the Climate Change Act, DAERA is actively developing a range of other strategies and frameworks including Green Growth and the Future Agricultural Policy Framework.

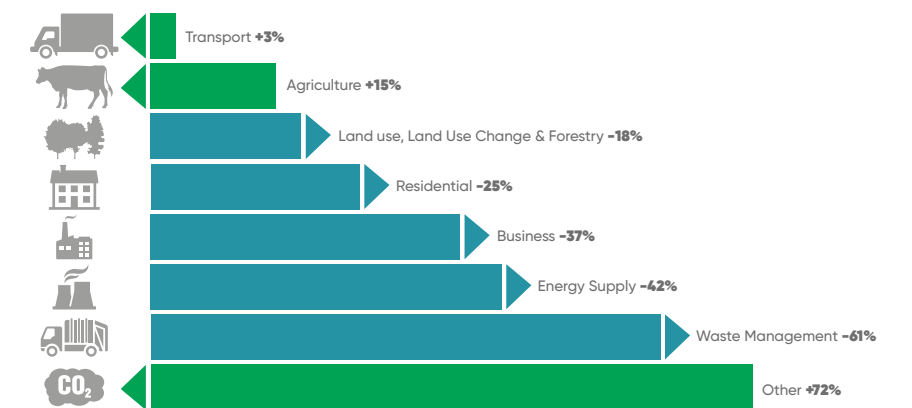
The climate action plan contains a variety of responsibilities on the agriculture sector in Northern Ireland relating to emissions from livestock, soils, stationary combustion and off-road machinery. Emissions are also affected by the number of livestock, quantity of fertiliser and intensity of farming activity.

### Agriculture Sector – Current Emissions

Agriculture was the largest emitting sector of NI greenhouse gas emissions in 2021



Energy Supply delivered the largest reduction in total emissions from 1990 to 2021 (-2.2 MtCO<sub>2</sub>e)



\* Other consists of Public and Industrial processes

In order to meet some of the targets set in the Climate Change Act, there are short term actions required in respect of adopting new and improved breeding, feeding and management practices in order to reduce greenhouse gases. DAERA will assist and incentivise farmers to adopt carbon reduction actions into their central management.

### Carbon Reduction Measures

Agricultural Measures	Land Use, Land-Use Change and Forestry (LULUCF)
Reductions in numbers of older beef cattle (age at calving, replacement rate, age at slaughter)	Afforestation
	Agroforestry
Reductions in numbers of older dairy cattle (age at calving, replacement rate)	Peatland rewetting
Feed additives and feed formulation	Soil carbon
Legumes and herbs/reduced fertilisers	Hedgerows
Breeding and genomics	
Urease inhibitor fertilisers	
Blomethane from waste	



DAERA supports a number of data related programmes which help local farmers take better informed decisions across a range of issues. These include the Soil Nutrient Health Scheme, the Ruminant Genetics Programme and the Carbon Benchmarking Programme.

Farmers will be required to participate in some of these initiatives as an eligibility condition of future support payments.

### Carbon Benchmarking

This industry-led carbon benchmarking of all farms across Northern Ireland is a vital tool in allowing farmers to understand their own emission levels, and how they compare to other farms across Northern Ireland. It is also supported by knowledge transfers which helps farmers reduce emissions and establishes a baseline from which to measure and evaluate progress at individual farmer, sectoral and regional levels.

### Ruminant Genetics Programme

This is another industry-led programme which aims to increase the annual rate of genetic gain in the ruminant livestock sectors, including dairy. The objective is to drive productivity, resilience, animal welfare and environmental gains.



DAERA is promoting knowledge transfer and is developing a range of innovation programmes to help support farmers adopt genetic improvement programmes.

An integrated data platform will also provide:

- Comprehensive benchmarking services
- Genetic/genomic evaluations
- Information from ear tissue DNA samples to:
  - (a) Establish accurate parentage (automation of sire and dam identity)
  - (b) Deliver genomic evaluations for all dairy and beef animals.
    - earlier identification of superior genetics
    - improved accuracy of selection indexes
    - identification of non-phenotypic traits, e.g. maternal traits, methane emissions, animal health.

### Soil Nutrient Health Scheme

The Soil Nutrient Health Scheme provides a baseline for pH, key nutrients, and carbon, both below and above ground. This information can lead to a range of improvements in respect of the environment, nutrient use efficiency and assist in decisions around carbon mitigations.

The scheme also assists farmers to achieve environmental sustainability.

### Investment scheme

This scheme has been developed in order to support innovation, to drive the increased use of new technology, better nutrient management and reductions in GHGs, ammonia and nitrates emissions as well as improve water quality.



### Farming with Nature

This Departmental vision recognises the significant opportunities that exist for farmers and land managers to make positive contributions that can deliver better environmental outcomes.

The Farming with Nature Package is designed to support farmers across all land types to make substantial contributions to environmental improvements and sustainability, while continuing to pursue increased productivity and improved resilience within an effective functioning supply chain.

In developing the scheme, a number of principles were established:

- Schemes must be scalable and strategically focussed in terms of their objectives, delivering environmental outcomes at a landscape scale, recognising ecological connectivity.
- Environmental payments will, as far as possible, seek to recognise and reward the public goods provided by farmers and land managers.

- A move to outcome-based schemes, designed to be delivered by farmers using the knowledge and expertise that they have acquired to achieve the desired outcomes. However, activity-based prescription actions may still have a place in future scheme design.
- Schemes may be incentivised to encourage participants to work collaboratively, with assistance from facilitators and advisers.
- Robust monitoring and evaluation of scheme performance will be essential to ensure that the desired outcomes are being achieved.

The overall DAERA package encompasses a number of bespoke support schemes, depending on land type managed. It is envisaged that over time, levels of funding will move from the Resilience Payment to the Farming with Nature Package as momentum builds and it will form the central plank of agricultural support.

The aim of Farming with Nature is to ensure that the environment becomes both an enterprise and a profit centre on farms.



### Farming for the Generations

In many cases, farming is a family business, with farms passed from generation to generation. Succession planning can be a difficult and emotive issue for many farm businesses though, and the aging profile of the sector in Northern Ireland has also become an additional challenge.

The Farming for the Generations programme aims to assist famers with their succession planning; respecting the retiring farmer, helping to develop business planning and also supporting those who are stepping up to run the business through capacity building, training and mentoring programmes.

Other aspects of the programme will support study and work abroad schemes







Chapter 2.

# A **Farmer's** Perspective



## Case study 1: A Farmer's Perspective



John Oliver farms 250 acres of SDA land alongside his wife, Sarah, in the North Sperrins. Formerly a suckler and sheep farm, dairy conversion took place in 2015 and the farm now supports 120 spring calving cows. The upland aspect of the farm is managed in a regenerative style, and this along with a hazel plantation, provides a home to a multitude of wildlife species.

Mark Blelock farms on 270 acres in Aldergrove, Crumlin, and Ivy Farm has been in the family since 1918. The farm operates a high input forage-based dairy herd of 145 cows with an average annual milk yield of 10,500 litres per cow and milk solids output at 810 kg per cow.

Mark is a former President of the Ulster Grassland Society, the former Chair of the Dairy Council NI and he is currently a member of the UFU dairy committee.



David Thompson farms at Glentimon Farm in Sion Mills on over 200 acres. The herd comprises of 140 three way cross Holstein, Scandinavian Red and Jersey cows, producing over 8,000 litres of milk on average per annum with milk solids at 4.3 per cent fat and 3.4 per cent protein. David formerly worked as a policy officer with the Ulster Farmers Union before returning to full time farming.



### **“It's hard to be green if you are in the red”**

When policy makers set challenging emissions targets, it is the 3000 plus dairy farms across rural Northern Ireland that need to deliver them, putting strain and pressure on families and budgets as important decisions need to be taken to safeguard the future of both the environment and the business.

All three of our featured farmers have taken steps over the past year to enhance sustainability within their farming system, in an attempt at improving the efficiency of their business and as a means to restore the work / life balance on the farm.

David in particular has taken steps to ensure that he can leave the farm at 17:30 in the evenings in order to have a normal work / life balance, using contractors and implementing a block calving system.

The scale of the environmental challenge was clear to all three of our local farmers, but they also outlined the importance of profitability being a key driver of change alongside environmental sustainability and productivity.

Whilst acknowledging the 'low hanging fruit' and win-win decisions that can be taken to reduce emissions in the short term, some more fundamental changes will be costly and may require significant government assistance if farms are to remain viable.

Working in collaboration with agricultural advisors and departmental officials will help to ensure that the policy approach is the right one, and in turn help to create more sustainable farm businesses throughout Northern Ireland.

*“There is nothing that I don't think is deliverable.”*

Mark Blelock



## A Farmer's Perspective

Mark has focussed on efficiencies over the past twelve months; reducing waste and seeking energy savings in order to help combat rising costs and challenging market conditions.

David has been looking at labour efficiencies, has been able to reduce his levels of concentrates whilst producing similar milk yields and has explored the expansion of a wetland area on his land.

John highlighted the point that what's happening on the farm today will have been influenced by plans and decisions taken over a year previously so having the best available information to hand when making such decisions is vital.

The three farmers have found the collection and use of data helpful in helping provide an evidence base for better decision making on their farm. The three farmers spoke about how easy some of the data collection can be, but how useful it is, especially when working alongside CAFRE advisors to interpret some of the more complex information.

A common theme emerging from the discussion is how the changing landscape around agricultural and environmental policy and the cross-cutting programmes on carbon, soils and genetics which are being rolled out are sometimes difficult to navigate.

*// There is a big job of communication involved in this for farmers. //*

David Thompson

A key message from the panel was that information and education is vital in order to ensure farmers understand what support is available for them to meet targets, and what various schemes are in place to assist them in that journey. The panel also felt that this would help reassure farmers and landowners about why they need to share data and what it is being used for.

There was also concern expressed about the cost of change, a lack of understanding about how long a lead in time is required for decision making and the need for certainty and longevity in public policy.

Making the wrong decisions can have far reaching consequences, so taking the right decisions is critical and the only way to achieve this is to work in collaboration and partnership with policy makers.

*// I take a very proactive approach – ranking sustainability on the same level as profitability. //*

David Thompson



## A Farmer's Perspective



It is clear that sustainability is not only about the environment, but also the economic and social side of farming. Our three farmers believe that new technology can help achieve a better work life balance on dairy farms and improve how their business operates.

The changes required over the coming decade present a significant challenge to farmers, but many of these changes come at a cost. The three farmers discussed what support from government and industry will be most needed in order to develop the next stage of their farm's sustainability journey.

The Sustainable Dairy programme was singled out as being a useful opportunity for discussion and understanding around sustainability.

It is clear that agricultural advisors are trusted primary advice sources for farmers and small business owners. Therefore, farmers need to work with them to learn about sustainability initiatives that can help them to improve both environmental and economic sustainability.







Chapter 3.

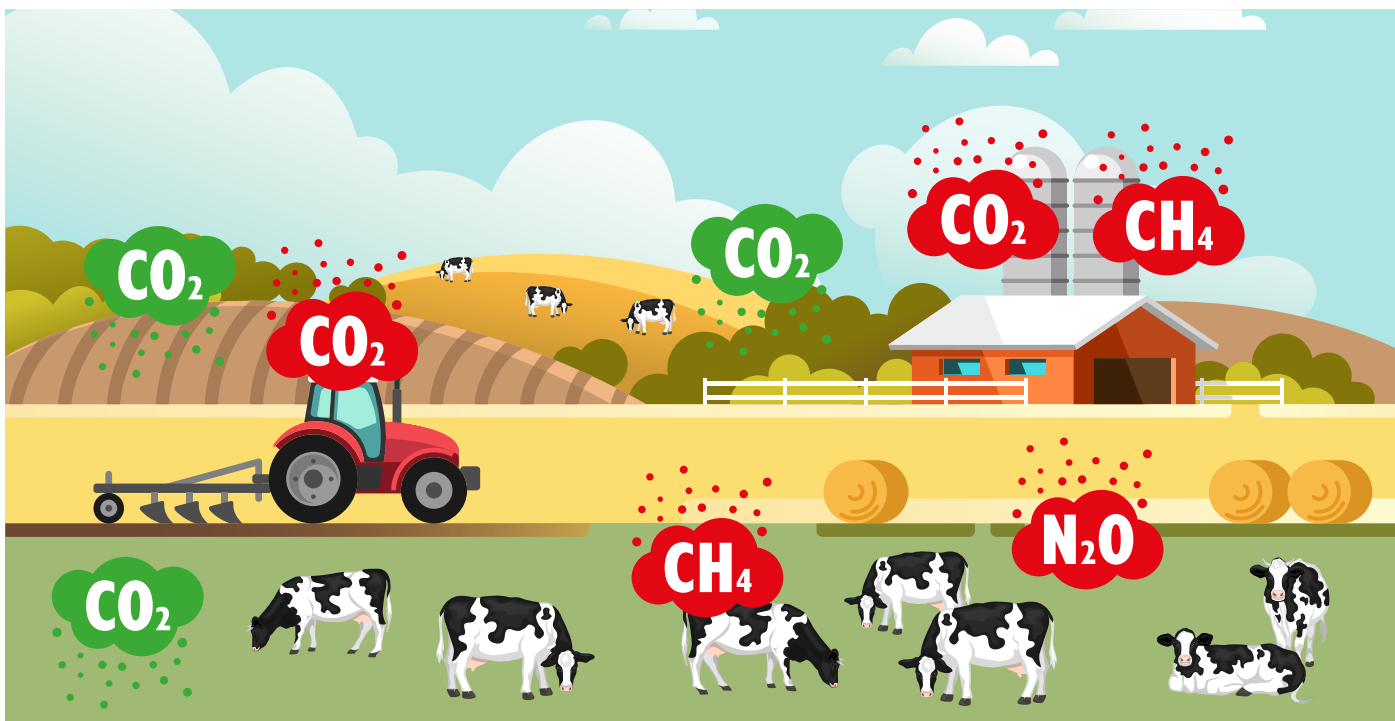
# Arc Zero Programme



# The Arc Zero Programme



ARC Zero started as a European Innovation Partnership (EIP) operational group made up from a coalition of seven farms from across Northern Ireland, including two dairy farms, as well as industry partners such as AgriSearch, Devenish, Queens University Belfast and Birnie Consultancy. The Programme is led by Professor John Gilliland OBE.



The farms are varied in terms of their climate, output and geography, and spread across Northern Ireland. At the beginning of the project none of the participants had a full understanding of their baseline numbers in respect of GHG emissions, carbon stocks in soil or the carbon stocks in trees and hedges, or how they would compare to benchmarked averages.

### Aim of the project

The initial aim of the project was to measure and manage carbon flows at an individual farm level in order to empower farmers to make positive change towards carbon zero farming and has now expanded to include soil health assessments for these farm systems.

ARCZero defines Net Zero on a farm as the gross annual Greenhouse Gas emissions, less gross annual carbon sequestration and adjusted for renewables and waste management systems.

ARCZero produces accurate, individual, whole farm carbon balance sheets and takes precision measurements of on-farm carbon stocks (soils, trees and hedges) combining them with the results of a whole farm Lifecycle Analysis calculator. This allows an accurate creation of a baseline greenhouse gas position.

Each of the seven commercial farms in the project consortium were required to:

- Supply output and input data for use in Scotland's Rural College (SRUC) AgReCalc calculator
- Undertake GPS soil analyses covering pH, P & K (7.5cm depth) as well as carbon content and bulk density (30cm depth)
- Be subject to LiDAR survey and analysis to identify above ground Carbon storage and routes of overland flow

The AgReCalc analyses were to be undertaken at both the beginning and the end of the project, to see if positive change has taken place and if so, by how much. These Lifecycle Analysis results were then added to the carbon stock results to create a Net farm carbon balance for each farming business.

By assessing future management practices and identifying the most impactful behaviours, the project intends to inform how farms across Northern Ireland can accelerate the move towards net carbon zero farming, improve the efficiency of their farm and in turn improve profitability.





### Soil

Prof Gilliland explained that without measuring the soil, it cannot be managed properly, therefore after ARCZero's formation, the first action was to baseline all seven farms, in particular their soil, its fertility and its soil organic carbon stocks.

Earth worm populations, soil visual assessments, soil respiration rates and levels of bacterial and fungal communities were assessed and compared, with the help of Wageningen University & Research student, Ricardo Buffara.

The conclusion of this initial investigation on the Gilliland farm demonstrated that a land use which has diversity at its core, with grazing animals eating this diversity and inoculating the soil microbiome through the returned faeces, gave the richest soil biology and highest soil carbon stocks.

*“The study also showed that when farms' carbon positions are calculated on their net carbon position, offsetting emissions against carbon sequestration, most farms demonstrate positive results, with some already beyond net zero.”*

### Conclusions from initial investigations

At ARCZero's conference in June 2023, the group shared their findings from the original three-year EIP study. This showed that when farmers are given precise information about their own farm, they make positive changes and actively work towards reducing their GHG emissions and increasing their carbon stocks. The study also showed that when farms' carbon positions are calculated on their net carbon position, offsetting emissions against carbon sequestration, most farms demonstrate positive results, with some already beyond net zero.

The options explored by the ARCZero farms for both mitigation and building carbon stocks included improving efficiency, genetics, age of slaughter, cow size and animal health. It also included improving soil pH, improving nutrient uptake and growth of clover, as well as increasing the use of legumes and multi species swards. Finally, the participating farms looked at installing renewables, reducing the use of nitrogen fertiliser and planting trees and hedgerows.

### What's next?

The initial funding for the project was provided from the Northern Ireland Executive and the EU, but ARCZero has recently been awarded £3.5m from the Carbon Innovation Fund, so they can repeat this investigation across all seven farms, to see if these findings are replicated, and to confirm that good soil health lies at the core of circularity within the farm gate.

ARCZero Chair John Gilliland and Vice Chair, Patrick Casement, assisted in the drafting of Northern Ireland's Sustainable Agriculture Land Management Strategy, which in turn led to the Northern Ireland Executive investing £45m into a Soil Nutrient Health Scheme. This scheme measures the soil in every field across the whole of Northern Ireland over a four-year period.

For anyone interested in learning more about ARC Zero they can visit <https://www.arczeroni.org/>







Chapter 4.

On **Farm** Case **Study**:

# **Data** as a **Driver** for **Better** Decision **Making**



## McCormick Farm, Kingsmill, Co. Armagh



The McCormick farm is approximately 200 acres, including conacre, and is situated in Kingsmill, Bessbrook, just north of Newry. The farm includes around two acres of wetland which is home to a variety of local wildlife.

A fourth-generation farmer, Darren McCormick is responsible for the day to day running of the farm. Darren was one of the last students on the agriculture degree course at Queen's University Belfast, graduating in 1995 then moving to work on dairy farms in New Zealand and Australia, before returning home to run the family farm in partnership with his father Raymond, who is responsible for the dry stock and his mother Elizabeth for feeding the calves. Darren also relies on a relief milker helping in the parlour a few times a week.

The herd comprises of more than 150 Holstein-Friesian cows, milking twice a day and the farm operates a traditional grazing platform with cattle out in the summer months, housed at night and buffer fed silage.

Calving usually takes place in Autumn and Spring, and Darren rears his own replacement heifers with cows calving at 24 months, with approximately 40 replacement heifers each year. Artificial insemination is used with sexed semen on the main herd and Darren is considering implementing a synchronisation programme.



Under the Nitrates Directive, the farm is derogated, and it is stocked at around 250kgs n/ha.

CURRENT HERD PERFORMANCE	
Cows milking	150
Butterfat %	4.68
Protein %	3.37
SCC	184
TBC	7

The McCormick farm is in many ways quite traditional, but Darren understands the need to adapt and embrace new methods to collate and analyse data on his farm. Recognising changing consumer demands, government targets and the need to safeguard profitability, Darren has plans to collect more data on his farm and use this to assist decision making in the management of his land.

Darren is currently exploring opportunities to use digital technology to monitor herd nutrition and plans to take part in the DAERA genetic profiling programme to determine which cows should supply replacement heifers.

Darren recognises the need to ensure that farming is both environmentally, as well as financially sustainable, and is keen to adapt in order to meet new targets and consumer demands in the marketplace.

The McCormick farm was one of the first 50 farms in Northern Ireland to take part in the carbon benchmarking programme, a programme that provides farmers with information on emission levels, and how their farm compares with others. Using this information, farmers can then take evidence-based decisions on how to reduce their CO<sub>2</sub> levels, understanding which mitigations would be appropriate and how they improve

their overall performance, both in terms of sustainability and critically profitability.

Having recently participated in the Soil Nutrient Health Scheme, Darren received a soil and LiDAR analysis of his farm and surrounding areas, detailing where the most likely nutrient run-off areas are.

The analysis also revealed the Ph, P, and K levels on the farm, giving him a better understanding of how he compared against the optimal levels and equipping him with the information needed to take better informed decisions about when to apply lime and the impact it is likely to have.

Knowing that his soil nutrient levels were indeed at an optimal level allowed Darren to cut his artificial fertiliser use by half, resulting in both environmental benefits as well as financial savings for the farm.

Darren has already taken other steps to reduce his emissions; he had ensured that slurry is applied using a dribble bar, fields are reseeded with a high sugar grass mix and he stitches nitrogen-fixing clover into his swards to feed the grasses and reduce the need for artificial fertilisers further.

LED lighting was also installed to replace traditional bulbs in the milking parlour and sheds in order to conserve energy and a plate cooler is used to lower the temperature of the milk, therefore using less water and improving energy efficiency.

Darren is also planning to invest in solar panels in order to power the farm through renewable energy, with the potential to sell back to the grid should enough be generated during the summer months.

Water management is also important, with rainwater collected from the shed roofs and stored in a tank for washing the milking parlour. A robot scraper is also in use in the cubicle sheds and collecting yards, reducing labour and improving productivity levels.





Chapter 5.

# **RSPB** guidelines on **Biodiversity**



The Dairy Council for Northern Ireland has teamed up with the Nature Friendly Farming Network, RSPB and its member organisations in order to publish 'A Short Guide to Nature Positive Dairy Farming', launched at the annual Dairy Symposium on the 22nd of November 2023.

This report is the first of its kind, a collaborative piece of work which provides a comprehensive roadmap towards nature friendly practices within the dairy sector.

The Dairy Council has been working with RSPB NI over the last year, to develop these guidelines for dairy farmers.

The sector commands a substantial portion of Northern Ireland's agricultural land, providing a unique opportunity to champion nature-friendly initiatives across the network of some 3000 farms. As responsible guardians of the land, dairy farmers can play an active role in tackling the ongoing decline in farmland biodiversity, and this project outlines some of the key steps that can be taken.

By identifying what farmers are already doing, a series of practical measures have been developed to allow farmers to enhance biodiversity on their land, creating positives for both the farm and the environment.

// *Being involved in the whole process has been a game-changer for me. The involvement of RSPB NI and the project partners has given me a real understanding of what's living and growing on my farm and how we can make things better for both our land and wildlife that call it home. Farmers like us, we're ready to roll up our sleeves and do our part to bring nature back into our farms. But we can't do it alone; we need the government's support to make these changes on a big scale. //*

Drew McConnell, Farmer

### About RSPB

The Royal Society for the Protection of Birds (RSPB) is the UK's largest nature conservation charity, inspiring everyone to give nature a home. Together with their partners, the RSPB protects threatened birds and wildlife so our towns, coast and countryside will teem with life once again.

The RSPB play a leading role in BirdLife International, a worldwide partnership of nature conservation organisations.



# The report at a glance...

There are many aspects of the report that will be familiar to dairy farmers, and indeed measures recommended that have featured in this or previous Fact Books.

- ✓ Dairy farmers are encouraged to maintain and improve existing habitats or create new ones, to maintain and create ditches, and to create flower and seed-rich habitats on their land.
- ✓ The report details how wet ditches can provide ideal spawning areas for amphibians and how wildflowers provide pollinators with nesting sites and an important food source.
- ✓ DCNI has been encouraging the maintenance or creation of high-quality hedgerows as a carbon mitigation for many years, and the report highlights the myriad of benefits such as slowing runoff, increasing soil water retention, reducing soil erosion, and improving water quality.
- ✓ It also highlights the importance of hedgerows for wildlife, the preservation of biodiversity, flood risk reduction and to ensure better protection for ecosystems.
- ✓ Farmers are encouraged to ensure wildlife corridors are in place and that they optimise slurry applications as well as implementing good grassland management systems, practicing conservation, rotational and deferred grazing, having low-input grassland and multi-species swards as well as conducting a whole-farm soil analysis.
- ✓ Clover in pasture has also been identified as having a positive effect on carbon sequestration and enhancing biodiversity and improving forage quality. It also results in reduced inorganic nitrogen inputs and reduced losses to the environment.
- ✓ The implementation of buffer strips to protect watercourses and the avoidance of applying nutrients to areas of high-water flow are also suggested, as is the use of integrated parasite management.
- ✓ Finally, the report recommends that farmers create wet features and use constructed wetlands to collect and treat dirty water, as well as providing nesting opportunities for birds.



// *This work has been so well-received by the dairy industry and farmers, who want to take steps towards managing their farms better for nature. We have helped illustrate the art of the possible for nature, even on our most intensively farmed land. The project has helped identify a set of practical actions all dairy farms can take to help turn the tide on nature's decline. We believe, with the right policy tools and support, the dairy industry can become leaders in Nature Positive practices. //*

Dr Jonathan Bell, Head of Land and Sea Policy at RSPB NI





Chapter 6.

# Conclusions and Reflections



# Harnessing the power of data

*As has been illustrated throughout this Fact Book, in the ever-changing landscape of agri-food, data has emerged as an invaluable tool across the supply chain enabling dairy farmers and dairy processing companies alike to optimise their operations and navigate through the complexities of a dynamic market.*

By harnessing the power of data, we have shown how dairy farmers in Northern Ireland have taken decisions to improve their practices, enhance animal welfare, boost sustainability, profitability and still meet the demand for high quality and nutritious dairy products.





## Conclusions and Reflections



Processors are now using their network of dairy advisors to disseminate the learnings from these various programmes and are putting in place their own incentives to encourage farms to help them meet their climate targets and continue to meet customer expectations.

The RSPB, through an innovative partnership with the Dairy Council for Northern Ireland, farmers and processors, has also pointed to the steps that farmers can take to increase biodiversity on their land, often through very simple and inexpensive adaptations.

As the sector continues to evolve, the collection and analysis of data from various sources, including soil nutrient samples, animal sensors, milk quality testing, and farm management software, will provide dairy farmers with a comprehensive understanding of their cattle and farm management operations.

This in turn allows them to take timely, informed and ultimately cost-effective decisions that improve efficiency and productivity, whether that be in respect of energy usage, feed, breeding, milk yield or identifying risk of stress or disease amongst cattle.

The importance of data in dairy farming extends beyond operational efficiency and market responsiveness. Data can also be used to demonstrate sustainable practices and environmental stewardship.

Tracking metrics such as feed conversion efficiency, water usage, and carbon emissions, enables farmers to demonstrate their commitment to environmental sustainability, enhancing consumer confidence and potentially opening new market opportunities.

There is little doubt that awareness and use of available data sources have greatly improved over the course of the dairy sustainability programme. Our milk producers have all developed comprehensive sustainability plans for their businesses, dairy farmers understand the need to adapt, and consumers and officials alike recognise the steps we have already taken to address climate change concerns.

Over the course of the past six years we have examined various themes; *'Safeguarding our Resources'*; *'Combatting the Carbon Challenge'*; *'From Research to Practice'*; *'Energy Efficiencies and Innovations'*; *'Sustainability in Practice'*; and finally this year's theme of *'Data in Action'*.

You can see all six fact books and other materials on the Dairy Council website.

The sustainability challenge facing the dairy sector is significant, but so too is the opportunity as the global demand for sustainable dairy nutrition grows. Through continued research, collaboration and adaptation we can successfully help farmers to become more economically and environmentally sustainable as they provide essential nutritious food for the world.

