

Independent Strategic Review of the Northern Ireland Agri-Food Sector



Sir. Peter Kendall

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FOREWORD

I have been completely energised by my conversations with the NI agri-food sector over the last six months. There is passion, purpose and a sense that this is a game-changing moment for the sector. A moment for it to come together and be – literally, in some cases – the powerhouse that drives green growth in Northern Ireland.

If NI agri-food can see its way through this current period of turbulence – the immediate aftermath of Covid-19 and Brexit – it is small enough, with its ‘everyone knows everyone-ness’, to do something extraordinary. Data-driven, creating efficiencies and embracing innovation across a genuinely single supply chain and with a great, collective story to tell about the safety, provenance and sustainability of its food.

However, there is no escaping the challenges. They are massive, whether we look at the carbon and environmental footprint of the sector, its productivity or access to the labour needed to keep processing lines and goods moving. All of those will act as a spur to do things differently.

I really don’t want NI agri-food to take this report as a message that they have to stop doing things and that shrinking the sector is the only way forward. However, we have no choice but to start doing things differently, quickly, otherwise scaling back production will be the only alternative. There are some tough messages, and they must be heeded.

But let’s not start this journey resigned to reduced production as the likely outcome. With the right leadership, innovation and commitment can get us to where we need to be.

Our report can only point the way. It is not a plan; it is a strategic review which looks forward with a focused package of recommendations. It now needs agri-food businesses, farmer groups, knowledge centres, tech entrepreneurs and environmental champions to grab the baton and embrace the task. And, critically, it needs leadership from Government and the Assembly.

As one of your representatives said during a visit: Let’s just get on with it.

Before I get off my soapbox, I need to say a special thanks to everyone who took time to engage with the review team, in person or in writing. Minister Poots, Minister Lyons and Diane Dodds MLA have all been generous with their time and thoughts despite their heavy work schedules. I must also thank Victoria Hill at DAERA and Gráinne Moody at Invest NI for their input; they have been invaluable and supremely patient members of the team,

“There is passion, purpose and a sense that this is a game-changing moment for the sector. A moment for it to come together and be – literally, in some cases – the powerhouse that drives green growth in Northern Ireland.”

organising and advising us along the way.

It has been an enormous privilege to be involved in this review, one of the most challenging and rewarding tasks of my career. I look forward to returning in calmer times as a food tourist to enjoy some more of your great Northern Irish hospitality.

A handwritten signature in blue ink that reads "Peter Kendall." The signature is written in a cursive style with a large initial 'P'.

Sir Peter Kendall
Chair, ISRAF Team

INTRODUCTION

We were commissioned on 19 April 2021 to provide a short, focused independent strategic review of the Northern Ireland agri-food sector. We were encouraged by our commissioning ministers from the Department for the Economy (DfE) and the Department of Agriculture, Environment and Rural Affairs (DAERA) to do so with gusto and with no holds barred. This is our report.

THE BRIEF

The full terms of reference are set out at Appendix 1 but can be summed up as being asked to clearly identify and map out the strategic challenges and opportunities for the sector and, from that, to set out approaches and principles that the sector could employ to successfully adapt to the emerging trading environment.

This report has sought to deliver the brief, based on the evidence we have gathered. We have consulted widely, despite lockdown restrictions. We have engaged with the leaders of the food processors, representative bodies, environmental organisations, politicians from across the spectrum, workers' representatives, ministers and civil servants, academics, tech companies, investors, retailers, artisan food producers, distilleries, crisp manufacturers, auctioneers, and farmers old and young. We received written submissions to our *Call for Evidence*¹ from organisations ranging from the Food Standards Agency NI (FSA NI) and the Northern Ireland Meat Exporters Association (NIMEA) to individual young farmers and a sheepskin processor. Appendix 2 sets out a representative list of engagements, submissions received and documents we have drawn on as part of the review. Appendix 3 lists abbreviations used.

The report is divided into two main parts. In the first part – State of Play - we look at where the agri-food sector is now and the policy and market developments that are impacting it. In the second part – Strategic Advances – we pick up seven main themes for discussion. Our recommendations are set out in full in Part 3.

At the time this report is published, Autumn 2021, the sector is being rocked by energy and wage inflation, supply issues and market volatility. At the same time, there is heightened uncertainty about future GB-NI-EU trading arrangements. It is difficult to see beyond the operational day to day to the longer-term risks and opportunities, but that is the job of this forward-looking review.

WHY AGRI-FOOD MATTERS

The agri-food sector plays a much bigger role in the economy of Northern Ireland than it does in the UK as a whole. That is reason alone to focus on and invest in its future. The figures speak for themselves².

- The agri-food sector (farming and food processing taken together) contributes £1.7bn of value added to the NI economy, 3.5% of its total Gross Value Added (GVA)¹. The equivalent figure for the whole of the UK is 2%.
- The gross output of agriculture in 2020 was £2.2bn, while the gross output of food and drinks processing was £5.4bn.
- The ripple effect is even greater, estimated at almost £5bn when we account for the indirect contribution to a wide variety of sectors including construction and hospitality.
- The agri-food sector is critical to rural areas and balanced regional development. Some 86% of agri-food processors are based outside the Belfast City Council area. Agri-food impacts on more than just the financial bottom line of the NI economy.
- Food and drink processing contributes 37% of all NI manufacturing industry sales and 21% of its GVA. There are more than 400 food and drink processing companies.
- Agri-food is export-intensive. 77% of the sector's produce is consumed outside NI, and the sector ranks No. 2 in NI in terms of exports outside the UK, with a commercial balance of +£248m.
- The sector accounts for 4.6% of total employment in NI, with almost 60,000 further jobs supported in the supply chain. There are 25,900 active farm businesses, with a total labour force of 51,000.
- Agri-food has proved to be resilient in terms of the impact of Covid-19. Much steeper declines were evident in overall NI output.

Agri-food NI

- Produces food for 5x its own population
- Employs 100,000 people
- Critical to regional economy
- Largest manufacturing industry
- Manages >75% of land
- Resilient during Covid-19

That is the economic picture, but not the whole story. Primary producers – farmers – manage more than 75% of Northern Ireland's land area³. The role that nature-based solutions will play in the journey to net zero, the emerging focus on *natural* capital and the urgent need to reverse biodiversity loss puts agriculture at the heart of Northern Ireland's pressing challenges.

¹ Excluding the contribution of food businesses with less than £250k turnover.

A MOMENT IN TIME

The disruptive nature of Brexit and GB-NI trading arrangements coupled with the climate emergency have created an unprecedented challenge for the agri-food sector. Add to the mix the data revolution and current market turbulence and we have a sector at a fork in the road. One option is to take the safe route, repeating its traditional rallying cry at every step (we feed you, protect us from competition); the other takes it on a demanding but ultimately rewarding collective journey towards sustainability and increased competitiveness.

Despite the risks, there are reasons why now is the moment to take the second route.

- DfE's "10x Economy" strategic vision⁴ sets out to transform the whole NI economy over the next decade through innovation and green growth. A 10x economy looks for more than financial outcomes; environmental and societal outcomes matter too. The 10x vision will permeate all DfE strategies and policies; we see NI agri-food only benefitting by being front and centre of the vision and not left on the side lines, particularly as it has so much to contribute to the environmental and societal bottom line.
- City and Growth Deals are a once-in-a-generation game-changer, bringing in investment of c£1 billion to build innovation capacity and capability across the whole economy. These funds can be and are being harnessed by the wider agri-food sector and will be transformative in terms of digitisation. We know that Queen's University Belfast (QUB) is heavily involved in the innovation strand of the Belfast Region City Deal. It is planning a Global Innovation Institute which will develop digital technologies and data analysis systems that can be used to improve traceability and product integrity (lifetime tracking of animals through sensors or DNA sampling, for example).
- The NI Executive's Green Growth Strategy Framework⁵, led by DAERA and working to a longer time frame, is set to underpin all government policies from March 2022. There is an urgency and an opportunity here. As the Climate Change Committee Chairman Lord Deben has said: *"Northern Ireland must act swiftly to deliver a green recovery and avoid the substantially higher costs of delayed climate action. If successful, Northern Ireland has the capability to become a climate leader, deriving action from Westminster by setting the benchmark in Belfast."*⁶
- The major British retailers are ahead of the game in imposing carbon and other sustainability targets⁷; like it or not, sustainability will become the sector's licence to trade.

*"Northern Ireland must act swiftly to deliver a green recovery and avoid the substantially higher costs of delayed climate action. If successful, Northern Ireland has the capability to become a climate leader, deriving action from Westminster by setting the benchmark in Belfast."
- Lord Deben, April 2021*

- Following the UK's exit from the EU, Northern Ireland has unique access to two large trading blocs (GB and EU).
- At the same time, free trade agreements between the UK and third countries post Brexit pose a significant potential threat to NI agri-food trade to GB. Looking beyond traditional markets is a strategic imperative.
- Brexit has drastically reduced the availability of EU workers in Northern Ireland, and Covid-19 has exacerbated the problem, with many EU workers returning home.
- Government is now free to design a 'made for NI' agricultural policy.
- There is a growing sense of place, of NI as a food destination, and a fierce pride in what the sector has to offer.
- If it does not want to shrink, the sector simply has to bite the bullet. Whichever climate change bill makes it onto the statute book, food producers and the rest of the supply chain will be on the hook in terms of their greenhouse gas (GHG) emissions. Unless action is taken to reverse the environmental damage caused by sector outputs (ammonia on biodiversity and sensitive habitats, phosphorous in water) further expansion - particularly in the intensive sectors - will simply not be possible.

THE HEADLINE AMBITION

Our many conversations during this review have convinced us that the agri-food sector is willing, and able - with the right support, guidance and investment - to play a major part in Northern Ireland's pursuit of its ambition to be one of the most competitive advanced small economies in the world.

It will do this by:

- influencing research and linking up with agri-tech;
- structurally adjusting and improving data collection across the sector (farms, environment, food processing);
- managing and making smart use of that data to measure and report on performance;
- adopting digital technology and investing in innovation and automation;
- running collaborative pilots to see what works and what doesn't;
- making connections across the wider economy to create meaningful circularity;
- removing inefficiencies and reducing duplication in research and support functions;
- engaging with education institutions to train up its workforce and create careers not jobs;
- working on quality standards and attributes that set it apart from the competition;
- developing and responding to market opportunities;
- committing to long-term, measurable environmental improvement (especially on soils); and
- working with an Executive that is a meaningful enabler of beneficial change.

If the language we use is a far cry from the language of the cattle shed, the abattoir and the feedmill, it is because the agri-food sector needs to transform itself and be part of the wider economic journey we have highlighted above. We have heard during our review that agri-food is widely viewed as low-margin, low-wage and low value-added by policy makers. This needs to change. In this new post-Brexit green growth era there is no room for special pleading for the sector, but there is a case to be made for government intervention where intervention will help deliver on the NI Executive's Programme for Government⁸.

We have been encouraged by what we have seen happening during the period of our review. Ideas for collaboration, removing inefficiencies, re-framing company missions and reviewing how new market opportunities could be explored are already being worked on, triggered in part by the discussions we have had.

In terms of strategic advances, we envisage and support:

- the creation of a Northern Ireland Diamond model for agri-food, with a centre of science and research excellence at its core and which ensures that:
 - the sector's needs are taken on board, not just by the central departments of the Executive but by the local councils benefiting from City and Growth Deals;
 - agri-food businesses benefit from the technological innovations and data revolution envisaged by DfE's 10x Economy vision and City and Growth Deals; and
 - the sector itself is joined up in its asks, based on a rigorous assessment of what it needs and what is doable;
- an all-embracing industry-led Sustainability Body raising, measuring and certifying environmental and carbon credentials of everything from apples and oats to venison and yoghurt;
- the wholesale mapping of Northern Ireland's soils to give a baseline for the demanding journey towards net zero;
- a joined-up 'circular economy' which takes NI's nutrient surplus and repurposes it to decarbonise energy supply;
- a new agricultural policy which drives data management, productivity, innovation and long term environmental recovery;
- a food-processing sector supported to invest in innovation; and
- a big bold drive to make the sector more competitive and attractive by upskilling its workforce and developing its leaders.

The rest of this report aims to break the challenge and the ambition into manageable chunks. To help inform where action by the sector and intervention by the government should be focused, we have started by summarising our observations on the current state of play in NI agri-food.

PART ONE – STATE OF PLAY

CHAPTER 1: SUPPLY CHAIN

Northern Ireland has a single supply chain. The sustainability of the whole agri-food supply chain is only as good as the sustainability of its primary production. That is why we have spent time meeting farmers and looking at structural issues; their practices are critical to the success of those who process and sell their product into the market at home and abroad.

Primary production is heavily fragmented, particularly in beef and sheep and, to a lesser extent, dairy. We come back to the beef sector below. Dairy farmers are grouped into two main farmer-owned co-operatives which overcomes some of that fragmentation; some 85% of milk produced in NI is supplied into a co-op. Nonetheless, there is still a sense on the part of farmers' representatives that the dairy farmer is the "price taker". However, we have not seen sufficient evidence of market failure to justify strategic intervention by Government, particularly as the transparency of the whole chain should improve as the sector adopts better metrics and recording.

Nor would we support the call by Farmers For Action (NI) for minimum farm gate prices linked to costs of production, as set out in the draft NI Farm Welfare Bill⁹. It would take us in the very opposite direction from that envisaged by the DfE's 10x vision.

We touch on the 'joined-upness' of governance, support and reporting in Chapter 12 below, and our concern that realising the potential of the whole of agri-food may be hampered by the hard lines of departmental responsibilities.

CHAPTER 2: LABOUR SUPPLY CRISIS

It is difficult to overstate the extent of the labour supply crisis. This seems to have become even more acute during the period of our review and it has been the single biggest issue raised with us across all parts of the agri-food sector. What is clear is that some EU workers who might have stayed beyond Brexit, and who had or were eligible to claim settled status before the end of June 2021, went home during the Covid-19 pandemic and have not returned. This may be because of Covid-19 isolation requirements on re-entry or because they simply decided to settle in the EU.

The impacts have been well documented in the press. For the processing sector, the shortages are critical. With meat processing dominating NI agri-food, the lack of qualified butchers in abattoirs is leading to reduced production levels, and, according to anecdotal reports, unfulfilled orders. Unskilled production line workers, farm workers, vegetable pickers, mushroom harvesters and qualified haulage drivers are all urgently needed. For bakeries, food-to-go and food tourism, the lack of available hands is seriously hampering business.

“To put it bluntly, plans for growth, however well supported in terms of confirmed new business...will come to nothing if we cannot find the workers.”
- NI Pork & Bacon Forum

With some foresight, a “Harvesting Tomorrow’s Skills” report written in 2018 said: *“Over recent years many local agri-food companies have become increasingly reliant on migrant workers. The industry growth thus enabled could be curtailed should these workers decide to leave Northern Ireland, which could happen, irrespective of Brexit...The future of agri-food depends on actions taken now that will ensure an adequate flow of talent towards the industry, at all educational levels and from across the population.”*¹⁰

There is a real risk that agri-food will end up limited, not by lack of product development but by the number of workers it can recruit.

Access to labour is a strategic challenge faced by the whole of the UK, but the proximity of Northern Ireland to the Republic of Ireland, where there is open access for EU workers and a General Employment Permit scheme for third country nationals, makes the risk more acute for NI agri-food. If both capital grants and labour are more accessible south of the border, processors will be under added pressure to move processing capacity there to improve their prospects. It is worth remembering that local family-run NI processors which do not operate an all-island processing model do not have that option, at least not without fundamentally restructuring their businesses.

Rising wages, driven by the shortage, are also a major concern in a sector which operates on chronically tight margins. Nonetheless, wage rates have risen and incentives have been offered in the search for workers.

With immigration policy a reserved matter, sector representatives have made representations at the highest level in the UK. Agriculture Minister Edwin Poots has made

a strong case for the English-language requirement to be relaxed for butchers so that they can enter Northern Ireland on a skilled worker's visa under the new points-based immigration system. That has not happened, but Defra has allowed the issue of six-month temporary visas to butchers under the Seasonal Worker Scheme. The NI Executive is continuing to make the case to the Migration Advisory Committee (MAC) and the UK Government for changes to the Shortage Occupation List. Northern Ireland's situation (an open land border with the EU) should merit special treatment; the legislation allows individual areas of the UK to be specified as a shortage area. With no disrespect at all to graphic design, it is difficult to see how graphic designers can be considered a shortage occupation when butchers are not.

This section would not be complete without mentioning the shortage of vets, estimated to be approximately 11% versus requirements. Again, with livestock production such a big part of NI agri-food, this is keenly felt. However, unlike other roles mentioned above, at least vets are now on the MAC's Shortage Occupation List. During the review we heard about plans for the creation of a new veterinary education facility for Northern Ireland, which has no existing vet school. That is a big leap, but we do understand the drive for the facility, particularly as it would be a state-of-the-art centre of excellence helping drive innovation and would have a good strategic fit with Ulster University's research in life and health sciences.

CHAPTER 3: SKILLS

It is not just about labour supply though. More structurally it is about the skills needed for the agri-food sector to tackle the challenges of a new, data driven and streamlined way of doing business. Skilled butchers will always be needed, but the sector will also need operators who can input and understand data and manage automated processes. It will also need managers with a different range of skills, able to see the big picture and engage with the possibilities that technology offers. The future competitiveness of the sector depends on getting this right.

We have reviewed a recent piece of unpublished research¹¹ commissioned by NIFDA to inform the Automated Food Manufacture Network established by them with the support of Invest NI. A survey of a cross-section of ten agri-food manufacturers highlighted the following in relation to skills:

- a lack of available skills in the workforce has been identified as the most significant challenge by many businesses; and
- almost all companies identified the need for substantial staff training if the technological level in the factory were to be substantially raised.

As far as primary production is concerned, it is a given that farmers will need to upskill to manage the new demands that a data-driven sector will make on them. In the pig sector, the NI Pork & Bacon Forum go further; they and the Ulster Farmers' Union (UFU) pigs committee have been working with the College of Agriculture, Food and Rural Enterprise (CAFRE) to re-instate pig training courses, which ended over 20 years ago. These will cater for next generation new entrants and for those from beef and dairy sectors who take on a pig finishing unit.

This is an immensely exciting supply side policy opportunity to upskill the human capital of NI agri-food, most critically the next generations of farming. That 'upskilling' will take in not just the private sector players (processors and farmers) but also the institutions who will transfer those new skills to them. Big data, carbon reporting, managing GHGs in the journey towards net zero, and the need for behaviour change, all mean that new skillsets and mindsets are needed within the knowledge institutions themselves, and in government departments. It is a journey everyone needs to embark on.

A sector that genuinely believes in skills and lifelong learning will also be more attractive as a career choice. We envisage CAFRE and Ulster University being at the heart of this skills challenge and delivering the wider career progression ambition. They have, for example, worked together to develop higher level apprenticeships in agri-food manufacturing.

Northern Ireland's new post-Brexit agriculture policy will also play a role in supporting farmers as they develop new skills, including those needed to measure inputs and outputs and manage genetic improvements. We know that DAERA is committed to building on the success of the 'Business Development Group' peer-to-peer learning model and to

embedding a knowledge component in as wide a range of its policy initiatives as possible. We are also impressed with the Technology Demonstration Farms programme overseen by CAFRE; farmers who have adopted innovative technologies opening up their farms so that other farmers can learn from them.

This all needs a unifying vision, and co-ordination across the supply chain. Co-ordination between industry and knowledge institutions, between government departments and other public bodies (e.g. local councils) with responsibility for education and training, between those departments/bodies and education and skills providers and between the providers themselves. A 'Future Skills Action Group' was set up under the *Going for Growth* action plan, but this group is no longer active, leaving a gap. We know from CAFRE and others that there is intensive work happening on this front.

CHAPTER 4: DATA AND DIGITISATION

Data is the single biggest enabler for this stretching project. Before the agri-food sector can tell a compelling story, it needs to have a story to tell. That story will be based on traceability and sustainability, both of which rely on verifiable and verified data across the whole chain.

At farm level, some managers are measuring very little right now, let alone reporting it (and where they are, there is not always a seamless data flow through to processors). That has got to change; the question is how to bring about that change. Again, DAERA's new agricultural policy will have a major role to play, with support made conditional on certain actions. Farmer and manager/worker friendly interfaces for data input are vital and needs to be fed in at the platform design stage (things are improving on that front by the day).

At processor/manufacture level, there is also much to be worked on. The recent survey work done in connection with the Automated Food Manufacturing Network (mentioned above) reported that *"the lack of data collection and data integration means that company performance is often unknown"*, with management decisions then made on inadequate information, or areas for improvement not being identified at all (the unknown unknowns).

This is not just about the journey to net zero, but about the integrity of the food chain (NI has a head start with the NI Food Animal Information System (NIFAIS) and Food Fortress), improving productivity (measuring inputs and outputs), biodiversity gains and backing up the claim that food from NI has been produced sustainably ("Clean and Green"¹²).

On the metrics front, a real risk is that the industry ends up with a multiplicity of privately developed metrics and carbon and sustainability marks that are unauthenticated. Government must arbitrate on metrics (particularly in relation to carbon and biodiversity) and own them, drawing on the many research projects underway globally and at home (e.g. the Devenish *Heartlands* project¹³, *Arc Zero*¹⁴, *Food Futures*). Otherwise, as one retailer's sustainability director put it to us: *"one man's net zero is another man's 20%"*. We realise that there are challenges, not least the acceptance by the Climate Change Committee/Intergovernmental Panel on Climate Change (IPCC) of carbon calculation methodologies and how emissions are accounted for in Northern Ireland's emissions account.

We are very impressed by the *Food Futures* project¹⁵. It is exactly the kind of credible, collaborative initiative needed to develop a smart, industry-wide platform which captures, credits and drives positive behavioural change. Its ambition, over time, is to cover all farms in Northern Ireland. We very strongly support that ambition. With the right investment and leadership it could be the means to develop verifiable attributes for primary production which then feed into the "best-certified food in the world"¹⁶ message the sector needs in order to drive sales in export markets.

At the same time there will be industry marketing initiatives using eco-scores or similar

(just as there are for animal welfare). We are watching the EU-wide Foundation Earth eco-labelling scheme pilot with interest. Although not aimed at carbon inventory reporting or product safety certification these marketing labels also need to be robust, and show their workings. It is great to see Northern Ireland agri-food leading the way, with the late Denis Lynn behind the project and Professor Chris Elliott (QUB), Fane Valley, Mash Direct and Finnebrogue Artisan involved. UK retailers (M&S, Sainsbury's and the Co-op) are also on the advisory board. This is an example of the agri-food sector responding to demand from consumers and communicating product information valued by them.

We cannot really talk about data as a stand-alone; we are also referring to data networks and digitisation. Otherwise data is simply an unconnected and unmanageable mountain of information. The data platform is critical; it has to be accessible to the farmer, the production line manager and the sales director alike. It has to make things easy. This is where the sector needs to draw on the know-how and support available to other sectors: health, engineering, energy, aerospace.

Cattle Eye, a Northern Ireland company which has developed artificial intelligence tools for remotely monitoring ruminant health and welfare, is a great example (see box). It drew on techniques used in the health sector for detecting tumours. Cattle Eye's mission aligns perfectly with DfE's '10x Economy' ambition, where agri-tech is identified as one of the priority clusters ready to adopt technologies to build competitive advantage.

We had an energising visit to Digital Catapult in Belfast. Supported by public funding, they are an advanced digital technology innovation centre; they see all kinds of possibilities for agri-food, both on farm and throughout the supply chain. The same with Foods Connected, a Derry/Londonderry software company whose expertise in end-to-end data management is exactly what will be needed as the agri-food sector works towards fully integrated supply and reporting flows.

Cattle Eye – making data easy in dairy farming

- Farmer puts up a basic security camera in the parlour.
- Artificial intelligence in the cloud learns to identify cows and monitor welfare e.g. early signs of lameness.
- Information is sent to the farmer's smartphone or integrated with the farm's management system.
- Farmer takes action as needed.
- A record of lameness in the cows is kept on the smartphone app.
- Has the potential to lower antibiotic usage and improve stock management.

The role of government

Data collection and digitisation are central to increased productivity and the delivery of the sustainability agenda. Policy steps need to be investigated to raise the bar and ensure

the maximum potential level of data coverage, collection and analysis. The Northern Ireland Diamond will be critical here, in guiding how this revolution will happen and who is responsible for doing what, and when, in terms of initiatives.

Current public sector data sources are fragmented, and not easily accessible by researchers and sector bodies. If the NI Diamond is to work efficiently, data silos must be broken down. DfE and DAERA must work together with knowledge institutions and sector bodies to ensure that all agri-food data sources are joined up, accessible, analysed and interpreted to facilitate agri-food connectivity and the development of appropriate policies.

CHAPTER 5: PRODUCTIVITY AND STRUCTURES

The low levels of productivity across parts of the agri-food sector are well documented. Without structural change the opportunity to fulfil the headline ambition set out above will be lost.

There is a huge structural challenge in beef and sheep in particular. Reports of deliveries by farmers of three finished beef animals to a processor highlight a serious inefficiency in the chain; average dry matter per hectare is too low. Beef and sheep producers will continue to need sustained support from the government even if higher levels of efficiency are achieved.

The long tail of very small beef and sheep farms is not a new feature and it is tempting to say that it will always be thus. Small farms do not always have the wherewithal to invest in the technology or skills that will be needed to measure carbon, track performance and separate slurry. However, digitisation is a game-changer; it makes it much easier to communicate best practice and market signals, particularly for the next generation. And there are some positives here to build on. Northern Ireland is the only area of the UK where notification of animal ID, movements and registration is paperless, with 90% of livestock farmers now using online notification to NIFAIS and the rest (some of the long tail) notifying by telephone. That is impressive.

We were struck by how little in the way of collaboration there was (small-scale groups of farmers getting together to share kit, labour or expertise), with farm business consultants notable by their absence. We have not drilled down into why this is so but suspect that CAFRE's Knowledge Advisory Service fills the role.

We asked for examples of collaborative/joint ventures in our *Call for Evidence* but, other than one mention of a share farming agreement, had no substantive feedback. We note that Ulster University Business School is seeking to provide farmers with 'the latest thinking' in the use of joint ventures through its Advanced Certificate in Management, developed in partnership with the YFC of Ulster. That kind of best-practice communication needs to become the norm.

That does not mean there is not large-scale industry collaboration. The dairy co-ops are a case in point. There are co-operative producer organisations (POs) in the horticultural and fisheries sectors too, originally set up under EU legislation to strengthen the marketing power of fruit & vegetable and fishery producers, but out of 33 fruit and veg POs in the UK only one, Northway Mushrooms, is based in Northern Ireland.

Animal Health and Welfare NI (AHWNI) is a great example of across-the-chain working involving vets, farmers, processors, DAERA and other stakeholders. It was set up by agri-food organisations operating in the red meat sector and its core funding comes from the sector. It has been extremely effective in tackling endemic livestock diseases that are not subject to regulatory control. Its Bovine Viral Diarrhoea (BVD) eradication programme¹⁷ (see box) is unique in the UK. Its role in addressing the threat to future trade resulting from EU

regions achieving “freedom from...” status in relation to unregulated livestock diseases will be critical¹⁸.

We come back to the wider question of collaboration on sustainability in Chapter 2 of Part 2 of this report.

We see the future NI agricultural policy, currently being developed¹⁹, as being critical here, with its ‘pull’ approach and conditionality. CAFRE’s Knowledge Advisory Services arm also has a role to play, and farmers’ co-operatives too (we know that Fane Valley are starting to offer veterinary and agronomy expertise to members on the basis that the farmer pays for the product/service but Fane Valley pays for the expert’s time).

The Livestock & Meat Commission (LMC) has a central role to play in lifting standards; an example in point is their anti-microbial resistance (AMR) programme, training their 14,000 farmers in responsible use of medicines (with 7,000 done so far).

At the same time, if a part-time farmer with 9 sucklers works off farm for their main living and farms for the lifestyle (and perhaps some tax benefits), it is difficult to see why they would be persuaded to enter into a long-term large-scale biodiversity or carbon sequestration scheme with all the additional bureaucracy that involves. Unless, that is, the reward makes it worth their while, the message is compelling, or the sense of satisfaction from making a difference for future generations is enough to get and keep them involved. There are real communication and behaviour change challenges there, but we have seen some encouraging initiatives being developed (the 318 farmers involved in Ulster Wildlife’s EFS group in Fermanagh, Tyrone and Derry/Londonderry, for example).

We are encouraged by what we have seen and heard during our review, particularly in relation to the red meat sector taking the lead in the shaping of a Sustainability Body for the whole of NI agri-food, of which more in Part 2.

However, despite it making up a large part of NI agri-food output, our final report cannot be all about the beef sector. There is so much else going on in agri-food. The NI Pork and Bacon Forum, the poultry companies (poultry meat and eggs), oat millers, apple growers and cider makers – all getting on with making their supply chains as lean and market-focused as possible. Cereals, potatoes and horticulture (and its potential for growth) can easily be lost in the discussion if we are not careful.

BVD eradication – an industry initiative

- 97% of cattle have a BVD test status.
- Incidences of infections have reduced by ~60% to date since scheme start in March 2016.
- Voluntary culling of persistently infected animals.
- Voluntary abattoir ban on slaughter of BVDv positive animals.
- Retention of BVDv positive animals a non-conformance in FQAS.

Horticulture (food)

During our review we received submissions from Northway Mushrooms and the Northern Ireland Soft Fruit Growers Association/Horticulture Forum for Northern Ireland and met with mushroom and fruit producers. They are convinced that there is potential for expansion in NI's edible horticulture sector.

Set alongside that we have the startling fact that Northern Ireland has the lowest average number of portions of fruit and vegetables consumed per capita of all the UK regions, at just 2.1 per day, with 18% of the population eating less than one portion²⁰. If NI's population were to eat the recommended 7 portions of fruit and veg, there would be a deficit of 425,759 tonnes p.a. in terms of availability²¹. So, there is both a public health issue here, covered in the recent *NI Food Strategy Framework Consultation*²², and a supply opportunity if demand were to rise in response to the application of public policy levers and education campaigns.

And yet, we have seen the soft fruit sector shrink significantly over the last 30 years, from approximately 75 hectares to fewer than 20 today²³. The Horticulture Forum for NI carried out a strategic review of the sector in 2012²⁴, following a previous external review in 2002. The messages were pretty much the same as we are hearing now, namely that:

- there are market opportunities and demand for local produce but no local growers supply the multiples;
- the sector is undercapitalised, but capital investment schemes are not tailored to the needs of producers;
- innovation is needed to meet the challenges of environmental sustainability (e.g. removal of peat in growing media, and the journey towards net zero) and a diminishing labour supply, but the sector needs to be supported to do that; and
- there is not enough margin in the sector to carry the level of overheads required under the EU's Fruit and Vegetable PO regime.

There is a sharp contrast between the development of the soft fruit sector and Northern Ireland's mushroom sector. Northway Mushrooms is a collaboration between growers under the PO regime and, from its beginnings in 2000, has seen its farmgate sales reach over £55 million a year, more than half of the entire output of edible horticulture. Whilst an unsupported sector in terms of direct payments, it has ensured that its own investments in marketing and innovation are supported by public investment via capital grants and PO funding.

Direct comparisons between these two particular sub-sectors are probably not helpful. We see scope for more tailor-made horticulture sector support from DAERA now that agricultural policy is free from the constraints of the EU's Common Agricultural Policy.

We would encourage DAERA to work with the Horticultural Forum for NI and the NI Soft Fruit Growers Association to co-design an investment scheme that is built around the unique needs of the sector. We think it is also worth looking at whether there is scope for a more flexible PO model under the planned horticulture strand of the future agriculture support framework. This could strengthen the marketing capability of growers in the face of competition from larger sellers. However, we would recommend a preliminary strategic review of the sector to assess its competitiveness and the likely impact of such match-funding.

Organics

We would like to mention the organic sector briefly. In its “10x Economy” vision, DfE states that, in respect of agri-food, “*We need to build on opportunities such as the demand for locally sourced, organic foods...*”²⁵. This contrasts with the absence of any mention of the potential development of the organic sector in DAERA’s “Future Agricultural Policy Framework Portfolio” document, published in August 2021²⁶. We wonder whether the two departments consulted on their respective ambitions? (We talk about the need for more joined-upness in Chapter 12 below.)

On the question of demand for organic food, we have heard and seen evidence of agri-food businesses responding to demand for alternative proteins, plant-based and ‘free from’ products but, with one exception, express demand for organic products has not featured in the exchanges we have had.

The one exception is organic oats. White’s, the largest oat milling company in Ireland, submitted to our review and reported that it is increasingly reliant on importing oats, and that, despite increasing consumer demand for its organic porridge oats, organic oat production in Northern Ireland is virtually non-existent.

There is clearly an opportunity for import substitution here, but it is difficult to see how – in the absence of targeted policy incentives – the market will deliver that. We return to this question later, in Chapter 5 of Part 2.

Productivity – food processing

Productivity among NI food processors is also a major issue with GVA per employee lagging behind that of their counterparts in the GB²⁷. We have heard that the meat processors in particular have been slow to automate, having had access for many years to low-cost migrant labour. Automation of processes is a must, but will need support from DfE. Even at the product handling level, where technology is readily available, there is serious inefficiency. It is clear, however, that automation of all processes (e.g. deboning of cattle) is not straightforward, with development of the technology still embryonic.

The recent NIFDA survey of food manufacturing companies²⁸, referred to earlier in this

report, found that:

- the equipment in almost all of the factories is not “Internet of Things” ready and will not allow full connectivity;
- just under half of the companies in the study were almost completely dependent on manual data collection;
- automation of end of line processes is wanted by almost every company to replace manual, repetitive jobs.

There is clear empirical evidence that the food processing sector needs to embrace process technology not just to press on and lead, but to catch up and be fit for purpose. This links with the advanced manufacturing work that is going on in the wider Northern Ireland economy and with the skills and capabilities of human capital; we see these as key strategic areas for agri-food policy makers.

We return to capital grants for large processors as one of our main themes in Part 2.

Conacre

Conacre came up again and again in our discussions - with farming representatives, processors and environmental bodies - as a barrier to progress on multiple fronts. This is not news. The Agri-Food Strategy Board’s 2013 *Going for Growth* report²⁹ made the same point and recommended that longer-term leases of land must be facilitated by government.

Although in practice many farmers rent the same land year after year, the reality is that lack of security (i.e. lack of a guarantee that conacre agreement will be renewed):

- negatively impacts investment in the land;
- which in turn impacts on productivity;
- prevents entry of the land by the farmers into environmental schemes that require them to have control of the land for the length of the agreement.

The recent Agri-Food and Biosciences Institute (AFBI) research paper on long term land leasing sums things up well³⁰.

We saw an example during one of our visits of a young farming couple negotiating rolling 5-year tenancies with their landlords; five years’ notice has to be given to end the tenancy. That frees them up to plan investments and enter 5-year EFS agreements. Alternatives to short-term conacre lets may not be plentiful, but they are there.

We commend the work of the current Land Mobility Scheme, set up by DAERA, CAFRE, UFU and the Young Farmers’ Clubs of Ulster. It aims to encourage a culture of generational

change, longer-term land leases and other collaborative arrangements. After being fully funded by DAERA in its pilot phase, it is now part-funded by the Prince's Countryside Fund and agri-food sector sponsors.

However, there is no doubt that more is needed if we are going to see radical change on this front. Enhanced income tax relief introduced by the Republic of Ireland in 2015 has been successful in incentivising longer term land letting arrangements. The figures speak for themselves, with approximately 450,000 acres newly let on terms of 5 years or more between 2015 and 2017³¹. We have received several representations pressing for a similar scheme in Northern, with tapered income tax reliefs available to owners depending on how long they let their land for. There is a case to be made on the basis of likely productivity gains.

We touch on conacre again in relation to nature-based GHG solutions and environmental action in Part 2.

CHAPTER 6: THE ENVIRONMENT

The gap between perception and reality in terms of Northern Ireland's environmental credentials is stark. Although, once monitored, it may well be that its grassland has higher levels of organic matter than some other regions (starting from a better place on that score), the fact is that Northern Ireland agri-food does not have a positive story to tell right now.

This is particularly true when it comes to the impact of (a) agriculture's surplus nutrients on water quality, and (b) of ammonia on sensitive sites and biodiversity generally. During our visits we saw many instances of land cropped and slurry spread right up to the very edge of the field; we were told this was due to rents paid for conacre land (maximise every inch) and the high intensity of some dairy, pig and poultry units (so needing all available land to get rid of slurry). There are technologies in development which will help reduce ammonia emissions and there are opportunities, which we touch on elsewhere in the report, for surplus nutrients to be recycled as well as reduced.

The environmental scorecard below makes for grim reading, but we very much feel that the sector is up for change. No farmer wants to be part of a bad news story and we believe that with the right tools, technology and support individual farmers can change their practices. It is always worth remembering that more than 75% of farms in Northern Ireland are classed as very small³²; they do not have sustainability boards, procurement departments or R&D budgets. Many are one or two person businesses, with almost half of farmers working part time. Keeping up with the latest developments in the sector is difficult; taking days out for continuing professional development (CPD) is almost unthinkable. This needs to be taken into account in all agricultural and environmental policy development.

We must stress that at an individual level many farmers *are* already adopting new practices (dribble bars and trailing shoes in slurry spreading, for example), working with local wildlife groups, seeking to understand their environmental footprint. There are some well-known environmental champions who have emerged from the farming community, but we need more.

The stark reality

Resisting the temptation to put a positive spin on them, we have set out some environmental statistics below³³. There is no pretending that they paint anything other than a challenging picture. The environment has paid the price for what, on one level, is the impressive success of NI agri-food in growing its livestock sector over the last 40 years³⁴ and making the most of a climate that favours grass production. The ambition to sell Northern Ireland produce on the back of its sustainability depends on plans being put

***“We must avoid a situation where a ‘clean, green’ image is promoted whilst environmental indicators show no sign of improvement.”
- NI Environment Link***

in place, and quickly, to turn things round.

The threat of mandatory measures cannot be ignored if the sector does not get to grips with some of the negatives that primary production produces. We have in mind measures such as nutrient emission ‘rights’ allocated to businesses, as has already happened with phosphates in the Netherlands. Let us be clear: we absolutely do not want that to be the future for primary production in Northern Ireland, but it is highlighted in the recent “*Nature Positive 2030*” report³⁵ produced by UK nature bodies (including the Northern Ireland Environment Agency (NIEA)) as “one particularly promising approach”.

Soil nutrient management

Research undertaken by AFBI points to soil nutrient management as the key to addressing diffuse nutrient loss into waterways. This was also at the heart of the recommendations of the Sustainable Agricultural Land Management Expert Working Group which reported in 2016³⁶. Pilots in catchments across the Upper Bann, Colebrook and Strule have shown that where farmers are given accurate soil test and risk mapping information, real changes can result (see box)³⁷. It will inevitably take time for these changes to impact water quality indicators.

The great thing about better soil nutrient management is that it provides a ‘win’ for the farmer as well as the environment. As the SALM Expert Working group said in their report: “*We want farmers to recognise that so much of what is good for the environment is also good for farm businesses and that the environment can be a profit centre and not just a cost centre*”. We absolutely agree.

Agri-environment schemes

We should make a brief observation in relation to the last item on the environment scorecard above. On the face of it, the sharp fall in area under agri-environment schemes looks like bad news and we have probed further with DAERA to understand what is behind it. The drop is largely explained by the design and targeting of the Environmental Farming Scheme (EFS), introduced in 2017/2018. Unlike previous schemes it is not a whole-farm scheme. Neither is it ‘broad and shallow’; it focuses more closely on biodiversity and water quality (in line with nitrate action plans) and specific priority sites (ASSIs, EU-designated sites etc.) and species. Nonetheless the reach of EFS could be better. There are potentially

Upper Bann soil mapping pilot

- 700 fields sampled in 2017.
- Maps showing soil nutrient status and run-off risk produced.
- Farmers trained how to use the information.
- Fields re-analysed in 2021.
- Soil nutrient management improved on 60% of farms.
- Fields above the optimum for P dropped from 60% to 48%.
- The proportion of fields requiring lime fell from 46% to 28%.



NORTHERN IRELAND'S ENVIRONMENTAL SCORECARD

- Total GHG emissions from agriculture have risen 8.7% since 2009, the majority coming from enteric fermentation in cattle. Agriculture accounts for 26% of NI's GHG emissions³⁸.
- 12% of total UK ammonia emissions come from NI, a land area which is 6% of the UK total, and more than 95% of NI's ammonia emissions come from agriculture (88% from livestock, 8% from fertilisers, 4% from sewage sludge and digestate).
- Only 31.3% of river water bodies and 24% of lakes are achieving "good status" required under the Water Framework Directive (WFD).
- Since 2012-13 there has been an increase in the national phosphorous surplus and soluble reactive phosphorous concentrations in rivers, with agriculture contributing 60% of the P load to water bodies.
- 57% of soils are classed as high risk for run-off. 38% have Olsen P concentrations above the optimum for grassland.
- An estimated 86% of NI's peatlands are in a degraded state, with over 95% peat bogs at high risk from excessive nitrogen deposition.
- Only 20% of NI's terrestrial protected areas are under favourable management.
- NI has 119,000 ha of woodland (52% under Forestry Service ownership), 9% of its land versus 13% across the whole of the UK. 283ha of new woodland was created by private landowners in 2020/21 versus the 1,700ha per year needed if NI is to meet its target of 12% tree coverage by 2056³⁹
- 25% of bird species on the island of Ireland are on the red list of conservation concern, with upland and farmland birds accounting for 85% of those species⁴⁰
- 48,000 hectares are under agri-environment schemes as compared with well over 400,000 ha in the years from 2006 - 2012.

130,000 hectares of land within the areas targeted for the new scheme, versus the 48,000 covered so far.

The other point we would like to make is that the group strand of EFS seems to have had more success, with projects being facilitated by RSPB NI, Ulster Wildlife, the Rivers Trust and the Lough Neagh Partnership. The focus is very much on achieving favourable condition status in relation to environmentally designated sites or priority species, and WFD good ecological status in particular river catchments (i.e. addressing some of the numbers in the above summary). 530 farmers across NI are now taking part, with 318 alone in the Ulster Wildlife EFS group covering Fermanagh, Tyrone and Derry/Londonderry and 140 across two projects around Lough Neagh. We were impressed with the energy of the DAERA group advising on the schemes, and the facilitators. We think these group schemes become a model for future longer-term collaborative ventures.

We would not recommend a major re-vamping of EFS at this stage in its life. Departmental resource needs to focus on the launch of new environmental and public goods schemes which fit with NI's Green Growth Strategy.

One point we would make, however, is in relation to the maximum agreement value that is imposed in the EFS wider level scheme. The RSPB NI team raised this with us when we met them on farm during the review. It makes no sense if the focus is on delivering public goods rather than providing farm "support". If farmers are up for restoring biodiversity and improving water quality, they should not be limited in the work they can deliver under the scheme. (That does not mean a prioritisation mechanism should not apply if EFS (W) funding available is exceeded.)

In summary, primary production must make major strides to reduce its environmental footprint over the next generation. Whichever climate change bill makes it onto the statute book, there will be stretching carbon emission reduction targets on the journey towards net zero. Whilst improvements in waterbodies and landscapes can be expected to follow from measures which address carbon, there still needs to be a focus on biodiversity. As someone said bluntly during our review: *"There is no point re-wetting peatland if ammonia keeps killing the sphagnum moss"*.

***"...the crises of climate change and biodiversity loss are inextricably linked...creating and restoring biodiverse habitats locks up carbon... achieving the commitments for nature can consequently make a critical contribution to responding to climate change...a win-win for nature and for the climate."
- JNCC, September 2021***

We return to nature and the environment as a main theme in Part 2.

CHAPTER 7: SUSTAINABILITY OF THE PROCESSING SECTOR

Most food processing companies have a declared focus on sustainability and are actively taking steps to reduce their impact. Packaging is a particular challenge.

Some companies are further ahead than others in terms of putting sustainability and the environment front and centre. We commend Mash Direct for its transparent approach, captured in its 2021 sustainability report⁴¹, a realistic assessment of the challenges (pollution risk from wastewater, emissions from energy use, single use plastic in its supply chain) as well as its ambitions. It plans to include a sustainable reporting requirement on all suppliers as it seeks to join the dots through its whole supply chain.

The Foyle Food Group has also produced its first formal sustainability report, produced to Global Reporting Initiative (GRI) standards. It maps out the group's 2020 – 2025 strategy to the UN Sustainable Development Goals⁴², recognising that its operations can impact biodiversity locally and worldwide, and describing its ambitions to replace the linear 'take-make-waste' model with a more circular system.

And, in a first for agri food in Northern Ireland, Cranswick Country Foods Ballymena was awarded Carbon Neutral specification PAS 2060 in May 2021⁴³. This means that the site has reduced carbon emissions as much as possible, has an approved reduction plan and has invested in verified offsets to reach carbon neutrality.

In another significant step, Moy Park has had its commitment to achieving net zero emissions by 2040 validated by the SBTi (Science Based Targets initiative), a recognised international standard. Among other strategies, the company will invest in R&D projects to assist producer (Scope 3) efforts to strengthen and scale regenerative farming practices. Collection and verification of data will be central to this.

"...sustainability is embedded in our culture and underpins decision-making across all aspects of our operations."
- Foyle Food Group

Cranswick Ballymena – carbon reductions

- 2018 baseline year.
- Electricity emissions down 1,200 tonnes to zero by buying 100% renewable electricity.
- Heat recovery systems now in place to re-use excess and waste less heat.

Green Growth agreements

NIEA launched what were then called "Prosperity Agreements" in 2014, with the aim of working with NI companies to go beyond regulatory compliance and reduce their environmental impacts in ways that add to (rather than reduce) their prosperity. Public

documents, these voluntary agreements are signed up to for 3 years and set out the joint aspirations of signatory companies and NIEA, the steps to achieve them and how they will be reviewed.

Of agri-food sector companies, Linden Foods⁴⁴, Thompsons⁴⁵ were early adopters, as was Granville Ecopark⁴⁶. We commend them for that. Their commitments included the reduction of impacts on air quality (Thompsons), trialling new technologies to make use of AD by-products (Granville Ecopark) and working with farmers to improve animal by-product management (Linden). Lakeland Dairies (NI) signed up in 2018⁴⁷ and Dale Farm in August 2019⁴⁸, and their commitments include working with their supplier farms on nutrient management. All agreements featured engagement with local communities.

It is fair to say that take-up and review of these agreements, innovative in their day, has probably not been as wide as originally hoped. Resource pressures have played their part. It may also be because they were ahead of their time (no-one in NI was talking about the triple bottom lines of financial, environmental and societal benefits back in 2014-15). Feedback from those involved has been that the value of the agreements is in communication with the NIEA (we know who to call), the initial in-depth assessment and the internal challenge set by the agreements (we have said publicly that we are going to do this, are we achieving it?).

The agreements are now being re-launched as *Green Growth Agreements*. We think they have a lot of potential, and that food supply and food manufacturing companies should seriously consider signing up, particularly where they are not producing a formal GRI sustainability report. This is not a funding opportunity; it is about dialogue, being prepared to accept where there is room for improvement and having a framework for action which will have a positive impact on triple bottom lines.

CHAPTER 8: RENEWABLE ENERGY

We need to preface this section by acknowledging that government incentives for private sector investments in renewable energy have been tainted by what is known as the *Cash for Ash* scandal. We say no more about that in this report, except that it would be a great shame if the Renewable Heat Incentive (RHI) episode were to negatively influence government decisions to pump prime vital decarbonising technologies in Northern Ireland. The same is true of the recent NI Audit Office report on subsidies paid for stand-alone wind turbines. This is pushing at the boundaries of our remit; our main concern is that the government does not become risk-averse to the point of missing opportunities to invest in new technologies that could unlock agri-food's role in the journey towards net zero.

The fact is that Northern Ireland already has a good story to tell on the generation of renewable energy. More than 45% of total electricity consumption is now generated from local renewable energy sources, predominantly wind. That is easily beyond the Executive's original 40% target, set in 2010. Biogas is the second largest contributor, with solar and biomass also playing their part.

Much renewable energy production involves agriculture, agricultural land or the food chain. That presents a big opportunity for the sector to be front and centre of solving one of the key challenges facing the whole economy. Dale Farm's solar farm is an example of what we mean (see box). So, agri-food is not on the back foot. It is well-placed to play a key part not just in renewable energy production, but in the decarbonisation of heat and transport.

Discussions with experts from AFBI and the Energy Group within DfE have convinced us that there is a real opportunity to make a 'problem' (surplus nutrients from agri-food production) part of Northern Ireland's decarbonisation journey.

Dale Farm – Solar Energy project

- 5MW, 15 hectares, 18,000 PV panels, powering Co. Tyrone cheddar plant.
- Estimated to offset 20% of Dale Farm's carbon footprint over 20 years. £millions of energy cost savings.
- Plant ran entirely on solar power in May 2020.
- Green support jobs created.

Tully Biogas Plant – Poultry Litter into Power

- Takes in 40,000t p.a. of poultry litter (20% of total produced in NI broiler sector).
- From 100 Moy Park suppliers, with Moy Park arranging transport.
- Innovative nitrogen stripping technology allows 100% of poultry manure to be digested.
- Biogas is fed into gas engines on site to produce electricity which is sold to the national grid, enough to power 4,000 homes
- Solid digestate is sold into the horticulture market and liquid ammonium fertiliser is returned to farms, replacing artificial nitrogen fertiliser.

Biogas from anaerobic digestion (AD) plants is already contributing; the Stream Bio-Energy/Tully plant in Ballymena is an inspiring example (see box)⁴⁹.

The plant is a great illustration of close collaboration between technology companies, government and funding bodies. Kick-started by a Small Business Research Initiative (SBRI) proof of concept competition under the government's Sustainable Use of Poultry Litter scheme, it was supported by a £7.4m loan and £1.3m equity from Invest NI, with the majority of the £23m cost coming from private investors.

There is much more potential here, particularly as AD moves to adopt direct gas-to-grid technology. With the right governance, marshalling of technology and investment, circular solutions can be designed which will set NI on the road to decarbonisation of its energy system. We cover the journey to net zero as a main theme in Part 2.

CHAPTER 9: SCIENCE AND RESEARCH

We have spent quite a significant amount of time learning about the science and research available in Northern Ireland to support the future of agri-food. We can sum up by saying that we consider AFBI and the Institute for Global Food Security (IGFS) at QUB to be the jewels in the crown of the wider agri-food science and research landscape. We doubt that businesses in the sector fully appreciate what a resource they have on their doorstep.

At the same time, the cutting edge agri-food research coming out of Ulster University's Food and Drink Business Development Centre⁵⁰ is a well-kept secret.

And that is the challenge, how to harness this resource to identify, drive and enable the change that is needed. AFBI, QUB, Ulster University and CAFRE (and the Agri-Food Quest Competence Centre, an existing collaboration between IGFS, Ulster University and AFBI) provide a powerful knowledge base spanning research, education and value creation. We have already seen examples of joint-working during our review, with the joint QUB NI Technology Centre/CAFRE research project looking at opportunities for robotics and automation in agri-food, and the new science centre planned at CAFRE's Loughry campus set to be shared with food research staff from AFBI.

Bringing the four main institutions together in a model along the lines of the world-renowned Wageningen University & Research in the Netherlands could be transformative, not just for agri-food in Northern Ireland, but for the whole of the UK.

We cover this further in Chapter 1 of Part 2.

CHAPTER 10: THE FOOD LANDSCAPE

Although we have touched on the supply chain and structures, we thought it would be useful to make some brief observations on the food landscape as a whole. Northern Ireland has two distinct stories to tell.

On the one hand we have the large processing companies⁵¹ - Moy Park, Karro, Cranswick, Dunbia, Dale Farm etc., focused on the retail and the food service sectors and less prone to trumpet the green fields and rugged mountains of Northern Ireland (although they are not averse to NI branding in their offerings).

On the other there are the micro businesses, artisan and local which big up their provenance and see themselves as part of an emerging Northern Ireland food and drink culture. They tend to have a more consumer-facing message. These include Abernethy Butter, Brighter Gold, Clandeboye Estate Yoghurt, Glens of Antrim potatoes, Echlinville, Mac Ivor's Cider etc. Other businesses straddle the two (Mash Direct, Tayto, Finnebrogue, Deli Lites, Willowbrook Foods, Morelli's Ice Cream). Bushmills, despite its foreign ownership and lead brand status, still presents itself as "*born on the north coast of Ireland*".

Regional/Northern Ireland branding means different things to a commodity processor versus an artisan food or drink producer.

A positive narrative around geography, provenance, taste, animal welfare and sustainability is likely to become more important to enhancing the domestic credentials of the NI food sector, while also being a passport to a possibly material export opportunity. Bottom line, there are not enough NI food brands when compared with the level of food production here. Nurturing entrepreneurship is an important supply side function and we look at that as one of our main themes in Part 2.

We were impressed with the work that Food NI does for the artisan/local producers on a modest industry-funded budget⁵², and in delivering a Small Business Food and Drink Programme on behalf of Invest NI⁵³. They convinced us (if we needed convincing) that there is a great story to tell which, when linked to tourism, has significant potential to add value to the economy, enhance Northern Ireland's food reputation and provide a platform for export success too. Pre-Covid 19 it is estimated that food tourism was worth more than £300m a year to the local economy⁵⁴. The local, artisan, 'foodie' strand of the agri-food sector should be encouraged and supported, even if individual businesses do not have a declared export focus.

We were also impressed by local council initiatives like *Food Heartland* in Armagh City, Banbridge & Craigavon BC, which link up with and draw on Food NI expertise. NI agri-food has the highest number of *Great Taste* awards pro rata in the UK. Somebody is doing something right.

Single marketing message?

Bringing both aspects together under a single marketing message will be a challenge. However, quality and integrity - “the best-certified food in the world” - could be the common thread.

CHAPTER 11: ALTERNATIVE PROTEINS AND CHANGING CONSUMER DEMANDS

There is huge private investment globally in alternative proteins, not just plant-based products, but cell-based meats. The meat sector must not be naïve about the threats in their traditional markets. If it does not show that it is serious about its carbon footprint, the environment and animal welfare, consumers will vote with their feet and take up what they perceive (rightly or wrongly) to be a more environmentally and welfare-friendly offer.

“...consumer trust in the food chain is as much a driver for growth in our business as quality and taste”
**- Ronan McNamee,
 Stone Bakery**

There are also opportunities for NI agri-food and ancillary services, not just in plant-based/ alternative protein products, but in ‘free from’ products of all kinds.

- Finnebrogue’s investment in a new plant-based factory is a case in point⁵⁵. Aimed at flexitarians or ‘meat reducers’, the factory will enable the company to supplement its meat ranges with a meat-free line-up of plant-based food that is, it says, virtually indistinguishable from the meat it imitates.
- We have also seen news of an early-stage project to create an insect-based protein burger in NI⁵⁶, made possible by a partnership between Invest NI and CAFRE (Invest NI awarding the developer an innovation voucher and the food technologists at CAFRE helping to develop the product).
- Moy Park has also diversified its offering in response to the trend for a more red meat free diet, with the launch of vegetarian burgers among its Foodservice range⁵⁷.
- Whitewater Brewery in Castlewellan has invested over £400,000 in a new vegan-friendly range of ready-to-drink hard seltzers⁵⁸.
- With assistance from Invest NI, Stone Bakery is refurbishing and extending a factory in Crossmaglen to produce artisan-style vegan, dairy free and gluten-free products for local and export markets⁵⁹. It is the first dedicated ‘free-from’ manufacturing facility in Northern Ireland.

There is a clear opportunity here for NI companies to develop new products and for institutions like the IFGS at QUB to be at the forefront of providing analysis on integrity, safety, traceability of novel foods etc. in the EU single market, the UK and elsewhere.

CHAPTER 12: JOINED-UPNESS

One of the key findings of our review is that if the various actors in the agri-food sector were connected better the sector could be world class, a force to be reckoned with. In this section we make some observations about current levels of joined-upness.

Agri-food and the NI Executive

We heard about, and sense, a disconnect in government engagement with the agri-food chain. This comes mainly from the 'agri' element of what is a single supply chain being dealt with in one department and the post-farmgate food element being, in the main, dealt with in another. There is a perception that the food manufacturing/processing sector may fall through the net in terms of focus and support. But even more significant is the risk that - because of the split - the whole agri-food value chain is not well understood; no single department owns "food". It is something we heard repeatedly in our conversations with the sector.

There is no easy answer to this; we recognise it is not as simple as just shuffling departmental responsibilities. But if we want to see end to end innovation, efficient investment, upskilling and robust monitoring there needs to be something that sits above the partition and joins the two parts, prioritising, co-ordinating and implementing (with accountability).

It certainly feels odd to see DAERA launch its "*Innovation Strategy 2021 - 2025*"⁶⁰ and it be focused, essentially, on supporting pre-farm gate activities when there is a whole food supply chain that needs to innovate and have connecting data flows. How else will a diner in a Shanghai restaurant know that their top-quality steak comes from a hill farm in the Sperrin Mountains?

The recently published *Food Strategy Framework* consultation⁶¹ seeks to tackle this, and the more general disconnect between government departments. It will take a systems approach which recognises the interconnectedness of food across agriculture, the economy, energy, health, education and the environment. It will bring together departments and other public bodies (local councils and agencies such as Tourism NI) and be overseen by a cross-departmental 'Food Programme Board'.

Agri-food industry and NI Departments

There is a need for greater joined-upness here too, although there are some really positive examples of joint working (AHWNI and the Future Skills Action Group mentioned earlier in this report). But there are disconnects too, particularly on the primary production side.

If we look at the Scottish Government's approach to the development of its future agricultural policy, we see that 'Farmer Led Groups' were set up as a first step to inform the debate⁶². That is a powerful example of policy co-design, and we wonder why that has

not happened in Northern Ireland too. We believe that lack of an Executive for three years has a lot to do with it. DAERA is now playing catch-up as it seeks to get ministerial sign-off on draft policies and consultations ahead of the end of the Assembly's current mandate in March 2022.

Farming and environmental groups

Looking at Scotland again, we are impressed by the joint project initiated by NFU Scotland and environmental groups to develop a consensus roadmap in the context of the climate and nature emergencies, and the Scottish Government's commitment to net zero by 2045⁶³.

We know that farmers, the UFU and environmental organisations work together on the ground, and that there is a continuing dialogue. And the *Nature Friendly Farming Network* in NI is working with green groups to push forward an integrated approach to environmental management on farms.

However, we are some way from a joint position paper on the journey to net zero. There is still dialogue needed and connecting up to be done. It does not help that Northern Ireland does not yet have climate change legislation or a climate action plan; there is no formal target for organisations to plan for. Government has an important role to play in bringing civil society (environmental groups) and business (farmers, processors) together.

Agri-food research

Connectivity generally and the risk of duplication (and gaps) across funding and research bodies has been a recurring topic in discussions. We cover that in more detail under the "Northern Ireland Diamond" theme in Part 2.

By way of example, we have had highlighted to us the need to join up the efforts of AFBI, QUB, Ulster University and the government (especially NIEA) to design and deliver an effective pathway for biodiversity recovery.

Ruminants

Animal Health and Welfare NI (AHWNI) is one of the examples given in this report of what can be achieved when organisations work together to address a particular need. But the ruminant livestock sector as a whole is fragmented, with a multiplicity of bodies covering overlapping briefs, as follows:

- LMC – non departmental public body with a promotion and industry development and marketing information remit;
- NI Beef & Lamb Farm Quality Assurance Scheme (FQAS) – owned by LMC on behalf of the

beef and sheep industry;

- AHWNI – a private company limited by guarantee, focused on non-notifiable livestock disease programmes; and
- AgriSearch – a charity facilitating direct farmer involvement in research (research projects, antimicrobial use in dairy, beef and lamb, Grasscheck, Beacon Farm Network).

There are other bodies which have a tangential role too, not to mention AFBI and the other knowledge institutions. The outcome is that funding, data, IT systems, skills, intellectual property and knowledge is spread across multiple entities, impacting efficiency and delivery. Re-organisation is needed to make the most of the expertise, experience and data insights of these bodies. This is a first step if producers and processors are going to be able to play a full role in addressing the challenges we have identified in this report. We return to this question in Part 2.

CHAPTER 13: FUTURE TRADING RELATIONS

As all readers of this report will know, Northern Ireland's post-Brexit status and GB-NI trading arrangements are highly contentious. They are also a moving feast, with potentially significant changes on the cards resulting from current EU – UK exchanges.

These matters are out of the hands of the NI agri-food sector and it would be a mistake for us to allow them to distract from our report's key recommendations.

What we do want to stress is that agri-food businesses need certainty and stability. They need to know what legislative regimes they must operate under and what trading rules apply so that they can organise their systems and plan for the future.

There is no doubt that long-established supply chains and trading patterns have been disrupted following the UK's departure from the EU. In October 2021, the EU proposed a series of bespoke measures in relation to GB-NI food, plant and animal movements⁶⁴. If agreed to by the UK government and implemented, the measures could go a long way to easing issues.

A world beyond GB

What is clear, however, is that the agri-food sector must look beyond GB, and even the EU, for future trade; something that the food sector in Ireland started on many years ago, to good effect. The NI dairy sector is already doing this in a focused way.

The prospect of cheaper livestock products entering GB under new third-country trade deals makes this absolutely critical; Australia and New Zealand deals are already agreed in principle and will, over time, allow tariff and quota free imports of meat and dairy products. This is a particular threat for the red meat sector, which currently exports just over 2% of its product outside GB/EU markets.

Strategic research into new markets should be a large part of the remit of any market development resources (we touch on this further in Part 2). We were struck by the approach of NI whiskey companies we met, seizing opportunities and selling into the US market in a targeted way, drawing on Invest NI's expertise and connections (provenance, heritage, geography and taste coming together to make a great food story).

The need for improved co-ordination between relevant NI departments and Defra on export health certification is also something we were told about, and something that clearly needs work if NI agri-food is to take every opportunity to expand its markets abroad, whether under new free trade agreements or otherwise. We heard that it can be confusing for authorities of a third country market to deal with Defra as 'lead' and DAERA as a separate competent authority for Northern Ireland.

PART TWO – STRATEGIC ADVANCES

We were asked to clearly identify and map out the strategic challenges and opportunities for the sector and, from that, to set out approaches and principles that the sector could employ to successfully adapt.

So, pulling the observations of Part 1 of this report together, we have identified seven main themes as areas the sector should focus on in the immediate aftermath of this review and we have, where appropriate, made recommendations.

CHAPTER 1: A NORTHERN IRELAND DIAMOND

We raised the disconnect between various actors in the supply chain in Part 1. We think there is an exciting opportunity to bring all parts of Northern Ireland agri-food together to deliver on the massive challenges: climate change, biodiversity, the circular economy, anti-microbial resistance, global competitiveness. “Green Growth” sums up the ambition.

During our review we have been inspired by the “Northern Ireland Diamond” proposal developed by QUB and AFBI and modelled on the successful ‘Dutch diamond’ approached used in the Netherlands. We have discussed the proposal with them and with ministers, senior civil servants, Ulster University and CAFRE and food businesses and other stakeholders.

Essentially the NI Diamond model seeks to create an ecosystem in which the NI government, business, society and the knowledge base work together to pool goals, resources, risks, responsibilities and competencies in agri-food. It will be fundamental to the delivery of the NI Executive’s Green Growth Strategy⁶⁵ and to data connectivity.

The NI Diamond will bring together:

- the corporate efficiency and market-oriented methods of the private sector;
- the expert local knowledge and passion of civil society organisations (including green



groups such as Friends of the Earth NI, Ulster Wildlife, RSPB NI and forums such as NI Environment Link);

- the research, science and educational capability of knowledge centres such as QUB, AFBI, CAFRE and Ulster University; and
- the interests and responsibilities of the NI Executive across food, environment, the economy and health.

It is about a completely different way of working, based on a new integrated and collaborative approach, the kind of approach that will be needed if Northern Ireland agri-food is to have any chance of meeting the demands of the Green Growth Strategy. Risks and benefits would be shared by all four partners who would agree programmes of work, who leads on those programmes and who contributes what in terms of funding, expertise and support. We see the NI Diamond as ensuring that industry, government, society and the knowledge base are using each other's datasets, resources, skills and funding to move in the same direction. It will no longer be a case of one arm going off and developing a solution in a silo; solutions will be validated by collaborative and open communication.

As an example, the rolling Climate Action Plans that will sit under the Executive's Green Growth Strategy are exactly where the NI Diamond will add value. Having the land-use and agri-food elements of those plans co-designed, informed by QUB, AFBI, Ulster University and CAFRE working together and with buy-in from environmental groups, consumers and business (farmers, feed and food manufacturers, tech entrepreneurs) will massively increase the likelihood of them being implemented successfully.

Next steps and timeline for the NI Diamond

We know that discussions are already underway to identify key goals, governance structures and pilot projects. It is envisaged that these will continue until March 2022 when a proposal on a governance structure and initial deliverables for the pilot stage of the NI Diamond will be finalised and presented. A secretariat is being/will be established and an interim 'lead'.

It is vital that the proposal is genuinely co-designed; that needs stakeholders from all four elements of the diamond to be fully engaged at the planning stage and beyond. Clear terms of reference need to be drawn up and approved. We would like to see the DAERA and DfE Ministers (and other Departmental ministers) provide public leadership and encouragement at the outset, to outline the vision and rally stakeholders to be involved. That would have a real impact.

A 'Wageningen' for NI

Central to the success of the Dutch Diamond is "Wageningen University and Research" which sits at its core. In the NI diamond an alliance of institutes (QUB, AFBI, Ulster

University, CAFRE, and Agri-Food Quest) has the potential to be a collaborative science, research and education powerhouse matching the value Wageningen University & Research adds to the Dutch Diamond.

Structures will need to be put in place and the roles of the different institutions will need to be defined. This is not simply about removing duplication and inefficiency; it is about creating synergies. If done and presented well, we think the prospect of an “NI Wageningen” would excite and inspire farmers, processors and other agri-food businesses. It could lead the way on so many levels, and scientific research, and its commercial application, is likely to be a big winner.

The mapping out of the knowledge base, where the reach of each institution begins and ends and who does what, will be part and parcel of this project as it develops. We envisage that, at the end of the process, there will be an inclusive advisory board which sits above the separate institutions and ensures they work together to create Northern Ireland’s own centre of excellence for agri-food. We also envisage that the four institutions will work together collectively to come up with a proposed programme of work to drive the Green Growth Strategy forward, from fundamental to applied research and demonstration projects. This would be approved by the other partners in the NI Diamond.

Additional government funding will be needed to enable this exciting project.

Thinking Cells

- Commissioned by NI Diamond.
- Time-limited.
- Potential for mixed public/private funding.
- Bring the right people/expertise in – multi-disciplinary.
- No silos.
- Articulate the problem or challenge.
- Identify barriers to adoption/success.
- Learn from elsewhere.
- Identify research, knowledge, skills gaps.
- Identify and present solutions, opportunities, policy levers, incentives, actions needed, funding requirement, timescales.

Thinking cells – helping to unleash innovative solutions

The NI Diamond provides the framework and will radically change the way government, business, environmental groups and other civil society groups collaborate in the agri-food space. A Northern Ireland ‘Wageningen’ will join up the research, science and education elements and be at the heart of the project.

We wonder whether there is also scope for multi-disciplinary ad-hoc ‘Thinking Cells’ which are commissioned by the NI Diamond to work on the difficult questions facing the sector, to articulate the problem, identify the gaps and come up with innovative ideas for moving the issue forward. It would draw on groups of experts from different disciplines who would be tasked with designing end-

to-end solutions to some of the intractable issues. Northern Ireland's phosphate surplus springs to mind, as does the journey to a peat-free supply chain. Success in a particular export market for a particular range of products might also be a focus or the challenge of increasing per capita fruit and vegetable consumption at home.

It would be for the NI Diamond advisory group to decide which areas it needed 'Thinking Cell' input on, how a particular thinking cell was to be funded and how its ideas were to be taken forward. Again, this is about forging connections between different elements of the supply chain, from sheep graziers to ecologists and engineers, from families and food entrepreneurs to Invest NI's consumer insights team and behaviour change experts, depending on what a particular cell was set up to consider.

Again, as with the Diamond model itself, this is not a re-invention of the wheel. The Republic of Ireland uses a 'Thinking House' model to help food and drink companies build strong brands using marketing insights. We know that CAFRE have been working on how such a tool (a 'thinking sphere') might be used to help foster better connectivity and integration in the sector.

CHAPTER 2: A SUSTAINABILITY BODY FOR NORTHERN IRELAND

This is probably the theme that has developed most during the course of our review. The sector, under the leadership of the red meat bodies (NIMEA in particular), has worked together to flesh out a proposal for us to consider. As with many of our report's recommendations, much of it is about improving connections as a first step to improving outcomes.

The idea of a dedicated marketing body for NI agri-food has a history. Back in 2013, one of the key recommendations of the Agri-Food Strategy Board's *Going for Growth* report was that Government must: *“establish a single Agri-Food Marketing Organisation for Northern Ireland to consolidate all marketing and promotional activities for the industry with a clear food promotion strategy.”*⁶⁶

We do not need to rehearse the various reasons no such body emerged. Suffice to say that different strands of agri-food had different ideas about the remit of such a body; there was insufficient consensus around its role, resourcing and governance for it to be taken forward by the NI Executive.

Less than 10 years after *Going for Growth*, Northern Ireland is in a radically different place. A climate crisis has been declared. The UK has left the EU and Northern Ireland is in a unique position straddling the EU and GB markets (and their legislative regimes). The enormous biodiversity challenge and concerns about growth-without-sustainability have come to the fore.

The environment scorecard we referred to in Part 1 points to serious weaknesses in claims that, across the board, Northern Ireland agri-food has sustainability at its core. It may be on the way to being the 'best-certified food in the world' as far as food safety is concerned, but it needs to work on developing, measuring and certifying its environmental and carbon credentials before it can market itself as clean and green in the truest sense.

“We have a choice of selling our product on the basis of commodity, or excellence. We already have achieved excellence in so much, but we have the capacity to have excellence in food provenance, food security, animal welfare, animal health, traceability and the environment. And that’s the challenge that faces us going forward.”
- Minister Poots, 19th October 2021

The upshot is a proposal, not for a marketing body, but for a sustainability body for Northern Ireland agri-food. This Sustainability Body, an alliance of existing organisations and functions, will work across the whole chain to enable agri-food to market its products with a fully developed, certified and unified sustainability message behind them.

We endorse this proposal; it is a vital bridge between where the sector is now to where it wants to be.

We are resisting the urge to jump ahead and imagine component elements of the Sustainability Body sharing space and resources with each other, a symbol of a new collaborative approach and a beacon of innovation and sustainability. With so much other work to be done, this is not the immediate focus, but it may emerge from the intensive planning that is underway.

Headline role

The Sustainability Body will:

- measure and monitor sustainability metrics and design marketing messages based on those metrics;
- encourage and drive adoption on farm; and
- report back needs (e.g. relating to research and skills) to the NI Diamond.

It will do this by:

- drawing together existing expertise, industry schemes, systems and datasets under one coherent strategy;
- setting one industry-led strategy and a single platform for sustainability audits, standards assurance and delivering improvement;
- providing a single point of audit and inspection for farmers and, working through and with the NI Diamond, securing and maintaining the endorsement of customers, government and the public.

It will be funded primarily by the industry itself (e.g. by re-purposing current levies in the beef and lamb sector). But pump-priming by the NI Executive will be critical, as will ongoing assistance for programmes delivering climate change objectives agreed by the NI Diamond. Research funding will be managed in the main by the knowledge base element of the NI Diamond.

Beef and lamb

In Chapter 12 of Part 1 we flagged up the need for intervention in the beef and lamb sector to reduce overlaps and inefficiencies which result from the multiplicity of bodies operating in that space (a genomics programme body is also on the cards). A re-organisation of these bodies to make more joined-up use of the valuable experience and expertise they offer will be a preliminary step in the journey towards the creation of a Sustainability Body for the whole agri-food sector.

The sector already has some of the building blocks needed to deliver on sustainability in

place, including its traceability system (NIFAIS) and its beef & lamb assurance scheme (NIFQAS) with a single dedicated certification body in NI Food Chain Certification (NIFCC).

We have already highlighted the effectiveness of AHWNI, with its cross-sector working to tackle endemic livestock diseases. If that level of impact can be replicated and magnified by a re-organisation of the current beef and lamb support bodies, the sector will be in a much better place to deliver on the enormous demands today's headline challenges place on it.

Road map to a firm proposal

The draft plan for a Sustainability Body, as currently developed by a core of industry bodies, is set out in more detail in Appendix 4. It is provisional and will be firmed up as discussions between sector bodies, assurance scheme owners and other stakeholders continue. The plan sets no deadline for a fully costed proposal.

We recognise that there are some difficult issues to tackle, but we recommend that such a proposal is ready by Spring 2022 at the latest, with:

- a detailed timeline setting out what will happen by when;
- a governance scheme;
- plans for co-location of teams (where envisaged);
- costings and funding mechanisms (including the requirement for public funding and over what timescale);
- any legislative changes that will be needed in due course to see it implemented (e.g. in relation to the LMC, a statutory body); and
- terms of reference which set out clearly the remit of the new Sustainability Body and, importantly, how its work will fit within the wider NI Diamond and with the new knowledge base alliance.

Whole sector collaboration

The sustainability messaging developed must cover all that NI agri-food produces, from artisan products for the local market and GB to commodity ingredients exported to Vietnam. That is a big challenge and will need big leaders.

It follows that it is critical that the Sustainability Body is not perceived as being dominated by one particular sector, and we would encourage all parts of the supply chain to engage in the conversation and make sure that the needs of their sector are catered for. The new body should have an oversight board which draws on expertise from all parts of NI agri-food and which is skills rather than sector-based. It should have an independent chair.

“NI Food” brand

We have had a strong steer during our review that agri-food businesses want to be free to adopt whatever branding works best for them in a particular market, whether that is “Northern Ireland”, “UK” or “Irish”. A brief review of well-established brands bears that out. In short, there is not united support for an equivalent to the Republic of Ireland’s Bord Bia’s “Origin Ireland” for agri-food produced in Northern Ireland if that would cut across companies’ own marketing preferences. In conclusion, we see branding itself sitting with individual producers. Food NI will continue to help small businesses selling in the home market with their overarching narrative and marketing support, while Invest NI will continue to work with those businesses looking to sell outside Northern Ireland.

Where we do see a need for intervention is in developing greater awareness of market intelligence (provided by the likes of Euromonitor, IGD, Kantar and Mintel) among start-ups and SMEs. This will help them tailor their selling and marketing strategies more effectively. We know that Invest NI’s Food and Drink Division is actively working on this through its Consumer Insights team but we would recommend a review of Invest NI’s market intelligence and consumer insights capacity, to ensure that it is adequately resourced and ready to lead NI agri-food in this direction, particularly given the pressing need to look beyond GB for future sales growth.

Dismissing the idea of a formal “NI Food” brand is not the same as saying that there should not be an assurance that any product sold out of Northern Ireland meets world-class standards, that (as someone said during our review) *“If you buy product from Northern Ireland, you get a good night’s sleep”*. That is the job of the new Sustainability Body.

Strategic market development

A cross-industry body with a sustainability focus does not take away from the need for an enhanced strategic market development function in Northern Ireland. In Part 1 of this report we stressed the urgency of agri-food looking beyond GB and reducing its reliance on that market.

***“Put away your scattergun.
We’ll help you take a structured
approach to exporting.”
- InvestNI***

Invest NI has a central and co-ordinating role here. Given post-Brexit trading opportunities and Northern Ireland’s unique trading position, there is a strong argument for reviewing Invest NI’s current capacity and focus.

An initial assessment (perhaps the subject of a *Thinking Cell*) should be carried out to identify what is needed to ensure that Invest NI is match-fit to lead in promoting NI food and drink across the globe.

This strategic assessment should cover:

- the implications of the UK’s independent post-Brexit trade policy, including the statutory

role of the new Trade and Agriculture Commission (TAC);

- current lines of communication to the UK Government and other devolved teams responsible for trade promotion, market insights, new free trade agreements and the implementation of the UK's new trade policy generally (e.g. Department of International Trade and the new Food and Drink Export Council) and how these can be improved;
- what links to other NI departments and agencies need to be strengthened to ensure a joined-up approach in market development (e.g. FSA NI, DAERA's animal health teams and plant health directorate) and how that can happen;
- how Invest NI will work within the Northern Ireland Diamond;
- what support is needed from the NI Executive to front promotions and host trade delegations and how that can be effectively co-ordinated;
- where the data and market intelligence gaps are;
- how the marketing messages emerging from the new Sustainability Body and its member trade bodies will be incorporated into Invest NI's promotion of Northern Irish agri-food worldwide;
- what resource and expertise are currently available; and
- where the gaps are, what upskilling or new expertise is needed.

Given the importance of food and drink to the NI economy, we have considered whether there should be a separate "Food Trade Board" established out of current Invest NI resource. That may eventually emerge out of discussions within the NI Diamond, but we consider that an assessment of what is available within Invest NI and how that resource can be enhanced is a more appropriate starting point.

Industry - Invest NI liaison

Alongside Invest NI's formal liaison with the UK Government on trade policy and promotion, there are all-UK industry bodies at work, feeding in ideas and informing policy. Examples are the agri-food Trade Advisory Group (with Terry Acheson of the Foyle Food Group and Wesley Aston of UFU as a voice for NI) and the Food and Drink Sector Council, focused on increasing the sector's productivity, with Nick Whelan of Dale Farm involved.

We see the NI Diamond as the unifying force to enable communication between private sector and public body representatives with a view to ensuring that government and industry are working in the same direction as far as agri-food trade and promotion is concerned.

CHAPTER 3: THE JOURNEY TOWARDS NET ZERO

Climate change, and getting to net zero by 2050, is a global challenge. But it is a challenge that will impact the agri-food sector in Northern Ireland more than we can possibly imagine over the next 10 - 20 years. It will change what and how farmers farm, how land is used, how factories are designed and powered, how and where goods are transported, how waste is treated and re-cycled through the chain, how people earn their living, what people eat, what scientists research, what students learn, what is valued and how public money is spent.

Northern Ireland is behind other regions in setting long term targets and carbon budgets per sector. The two climate change bills currently before Assembly⁶⁷ featured in many of our discussions with sector representatives, particularly their fears about the effect on the agri-food sector if the more ambitious 100% by 2045 target is adopted.

It seems to us that it is better to have a target which is drawn from the evidence-based advice of the UK's Climate Change Committee⁶⁸. A target of 82% reduction in net GHG emissions by 2050 will demand actions equally stretching as those called for in other parts of the UK but takes into account the unique position of Northern Ireland as a strong agri-food exporter to the rest of the UK. Importantly, it is a target which the CCC considers achievable.

Ultimately which target becomes legally binding is a political decision, in the gift of the Assembly. We certainly hope that legislation is in place before the end of the Assembly's current mandate. It will provide much needed focus and drive efforts to achieve whatever target is set.

We recognise the concerns of UFU and other agri-food bodies⁶⁹ who commissioned KPMG to carry out an impact assessment of the private member's bill⁷⁰. The assessment showed just how at risk the sector is in the

Farming for 1.5° Inquiry

- Scottish farmers, environmental groups, policy experts, scientists, economists.
- Aim: to produce a consensus report on farming and land use's pathway to net zero in 2045.
- Balances three core goals: food, biodiversity and net zero by 2045.
- Key recommendations:-
- Food production per capita to be maintained while reducing total emissions.
- Universal farm-level carbon calculator.
- Improved use of data.
- All farms to do soil analysis (incl. soil carbon).
- Mandatory emission reduction contracts across all farm types from 2024.
- Work on ruminant selection and breeding.
- Targets for individual gases.
- Land use change to be planned, not left to the market.
- Carbon in soils not to be traded.

journey towards net zero. We were disappointed not to see a corresponding assessment of the impact of the DAERA bill at the same time (the alternatives are not between the 1990 baseline and net zero by 2045 but between net zero by 2045 and an 82% reduction by 2050). A full impact assessment would have been a call to action to the sector that, whichever bill makes it onto the statute book, agriculture urgently needs to decarbonise.

The difficulty is, we do not know what massive decarbonisation looks like at individual farm level, at sub-sector level (pigs, sheep, cereals etc.) or across the whole of agriculture, let alone the knock-on effects in processing. We know that some modelling work has been going on behind the scenes. As soon as a binding target is set, DAERA (working with and through the NI Diamond) should model the potential impacts of on agri-food, taking into account technologies in the pipeline which may become available in the medium term and the likely need for climate change adaptation measures on farm.

We commend UFU and DAERA for raising the profile of climate change and the challenge for agriculture at their joint conference ahead of COP26 this autumn. We recognise that it is already late in the day but we would strongly encourage science-led consensus building between farmers and environmental groups, along the lines of the NFU Scotland/Nourish Scotland initiative we referred to earlier in this report⁷¹. That inquiry took two years, but it has produced a set of agreed principles and recommendations (see box), an impressive achievement.

Climate Action Plans

We understand that the first climate action plan for Northern Ireland will soon be published, in line with the NI Executive's *Green Growth Strategy*. Its focus will be on immediate actions that need to be taken across individual sectors to meet their sector specific GHG emission targets. Each climate action plan will have a 3 - 5 year focus, with clear and challenging but achievable sectoral targets.

We expect that the creation of the NI Diamond will make a difference to how agri-food sector GHG emission targets are informed and developed. Businesses, and NGOs, will have a voice. Climate action plans should not be top-down plans; the chances of success are so much greater if they are designed with those who will be responsible for delivering them.

Soil Nutrient Health Scheme

News came through as we were finalising our report that DAERA has been given clearance by the Department of Finance to roll out a wholesale soil sampling and carbon analysis scheme across Northern Ireland. This is an exciting development and will be a global first.

LiDAR mapping of above-surface features and soil nutrient testing and carbon analysis will benefit the sector on many levels:

- it will give a baseline against which changes in carbon and nutrient levels can be

measured over time (the initial mapping will be delivered over 5 years);

- it will provide information for the farmer which, with follow-up training, will mean they can manage nutrients more efficiently, reducing losses into watercourses and making cost savings on inputs;
- it will enable accurate sector (and, potentially, farm) net carbon emissions to be calculated; and
- farm-level data will feed into the sustainability metrics to be managed by the new Sustainability Body.

“This is the first of its kind and it marks a major milestone for our sector...It has the potential to revolutionise the way we manage our land and soils.”
- Vistor Chestnutt,
UFU President

The fact that some £37 million of public funding has been forthcoming for this project reflects just how important farming, and soils, are to the success of Northern Ireland’s net zero journey. We trust and hope that all those who control land will welcome researchers onto their farms when they get the call. This is not ‘the man from the Ministry’ coming to check rules are being observed; this is an opportunity for farmers to have information which will make a positive difference to their businesses.

Carbon accounting, budgets and trading

DAERA will set a carbon budget for 2023 – 2027 and for each 5-year period after that. NI departments must ensure that the net NI emissions account for each period does not breach the budget. Budgets will be measured in “carbon units”.

We do not know yet how NI agriculture’s carbon budget will be managed, whether, for example – as suggested to us by Dr John Gilliland (Director of Agriculture & Sustainability at Devenish Nutrition) – individual farmers could be allocated a farm carbon target/budget for a fixed period, with the possibility of trading ‘credits’ to other farmers at periodic intervals. The mapping of farmland under the Soil Nutrient Health Scheme could provide a baseline for such budgets.

There are obviously many details to be explored and ironed out, not least where a carbon budget would sit where land is let in conacre and whether it would run with the land or with the farm business (we see echoes of milk quota here).

We do not see Dr Gilliland’s proposal as the end of the story, but the beginning of a conversation about whether and how individual farm carbon budgets could take the sector towards its GHG targets.

We note that the consensus recommendation from the 1.5% Inquiry was that soil carbon should not be tradable until a fair and credible scheme is in place, with a strong steer that it should be kept within Scotland’s carbon account.

Whatever policy DAERA adopts, we see a need for a single official standard for carbon accounting, endorsed by the Department. Users can then be confident that the measuring and reporting of their carbon position has a sound base.

A low carbon supply chain

In Part 1 of this report, we touched on the potential for agri-food to become a major contributor to decarbonisation of the energy sector in Northern Ireland through a circular economy, where waste from livestock products is recovered and re-purposed. We understand that a Circular Economy Strategic Framework is under development under the sponsorship of DfE; this will ensure projects are taken forward holistically and investment is co-ordinated.

There is a very strong case for expanding the production of biomethane in NI, and at speed. Biomethane (green gas) produced from litter, slurry and manure has the potential to provide a significant proportion of Northern Ireland's gas supply and help the energy sector to further decarbonise. At the time of writing there is no operational direct gas to grid facility in Northern Ireland; that is the next big step. We understand it is about to happen.

We have spoken to members of the DfE Energy Group and have seen the recent *Energy Strategy for NI* consultation⁷². They view the size of NI's livestock sector as an opportunity to decarbonise through biomethane production.

One of the big questions is whether, for biomethane to reach its potential, there will be enough feedstock for the number and size of AD plants that will be needed to make a difference. The last story we want to see 10 years down the line is Northern Ireland AD plants importing feedstock from abroad.

There is also that risk if feedstock values rise, due to demand for biomethane, production will intensify to meet demand (we know that environmental groups already have concerns on that score).

Energy crops, as potential feedstock, are in mix as well. There is further research yet to be done around these crops, their contribution to biodiversity and to carbon sequestration and whether farmers should be incentivised to plant them.

We know that the technologies used in biomethane are developing at pace. Concept/demonstrator plants may need to be supported, to prove the case for new technologies, but global benchmarking (through the NI Diamond) may reduce the need for that.

This is an area where government leadership, management and investment will be

“Northern Ireland's large agriculture base provides a significant opportunity to produce biomethane locally, and it is estimated that potential biogas production from AD feedstocks in the Republic of Ireland could account for over 25% of total natural gas supply.”
- Energy Strategy for NI consultation, March 2021

critical. All of the above factors point to further research being needed. This should be commissioned in consultation with Northern Ireland Diamond partners and should seek to identify, among other things:

- the potential contribution that biomethane could make to Northern Ireland's gas supply and how much of that contribution agricultural waste could account for;
- where AD plants should be located (we know there is research being done by the Centre for Advanced Sustainable Energy⁷³ to map out opportunities for biomethane production from locally sourced agricultural waste taking into account farm sizes, types and locations); and
- whether there is a sufficient supply of litter, slurry, food waste etc. to supply the plants, the potential of energy crops as feedstock and the likely impact of high demand on farm practices and the environment.

We see this as a massive opportunity for the livestock sector. If the cost/benefits can be made to stack up in terms of the decarbonisation impact, biomethane production from slurry will probably be the single biggest factor enabling the livestock sector to continue to operate at current levels in Northern Ireland. Once again, data collection, analytics and verification come to the fore in developing what could be an exciting and world-leading end-to-end supply chain that embraces great animal welfare, safe product, nutritious food and advanced sustainability. This is how to protect and generate wealth in the supply chain.

A biomass policy

At the same time, and picking up on the issue of energy crops, work should be done in relation to biomass in general, to develop principles for Northern Ireland on priority uses in the short, medium and long term in its journey towards net zero, and to establish where there are knowledge gaps. The UK's Department for Business, Energy & Industrial Strategy (BEIS) has recently published its Biomass Policy Statement⁷⁴. It is clear there are trade-offs to be made between uses (power, heat, transport, land use change and forestry etc.); Northern Ireland needs its own analysis of those trade-offs if its policy makers are going to make sound decisions in terms of incentives and investments in particular technologies and projects.

CHAPTER 4: NATURE AND THE ENVIRONMENT

As we said above, achieving net zero is a global challenge. Northern Ireland cannot solve it on its own. In contrast, the big environment challenges – air and water quality, biodiversity, landscape – are in Northern Ireland’s hands. Only Northern Ireland can tackle them.

As with the journey towards net zero, this will need strong leadership and oversight from government. It will need habitat mapping and baselines establishing (the soil-mapping and LiDAR survey roll-out will be invaluable on this score), it will need large-scale, long term land management projects, bringing together a whole range of stakeholders (landowners, graziers, environmental groups, ecologists, engineers, community groups), it will need targets set and plans in place (and regulation) to get to target, it will need research, new technology and innovative approaches to delivery and public/private funding. That, in turn, will need skills which Northern Ireland may not have enough of yet. There is a supply side issue (and opportunity) here. This ambitious task will fall to the newly created Northern Ireland Diamond.

We commend DAERA for its robust and ambitious *NI Peatland Strategy 2021-2040* consultation⁷⁵. It encapsulates one of the key messages coming out of our review, namely the need to connect across disciplines and diverse interests, and to recognise the multiple benefits that can flow from intervention. In the case of peatlands, this brings in the health and wellbeing agenda as well as economic and environmental interests.

Future land management plans

It is clear that large-scale, long-term projects will be key in achieving sustainable improvements in habitats and protected sites. A 5-year EFS agreement entered into by an individual farmer is not going to be enough to see the wholesale change that is

Garron Plateau Bog Restoration Project

- Largest expanse of intact blanket bog in NI. Catchment supplies drinking water to 14,000 rural households.
- Collaboration between NI Water, RSPB NI, NIEA, graziers and landowners.
- Mixed funding.
- Aim: to restore 500 ha of bog to favourable condition and improve quality of water received at the water treatment works in the catchment.
- 1960s drains blocked, bog re-wetted and better functioning – reducing GHG emissions.
- Conservation sheep grazing introduced (NI Countryside Management Scheme, EFS).
- Biodiversity enhanced (sphagnum moss regrowing, declines in bird species reversed);
- Peat erosion reduced, improved raw water quality in the catchment, treatment less costly and more energy efficient.
- Community engagement.

demanded. Projects such as the collaborative Garron Plateau Bog Restoration Project⁷⁶ (see box) will need to be replicated across other catchments and landscapes.

We have mentioned the EFS Group schemes in Part 1 and recommended a “*what works*” piece of research, learning lessons from the take-up and management of those schemes. We see that as an important piece of work that will feed into more ambitious future schemes. Conacre could potentially be a barrier to long-term land management commitments; innovative solutions will need to be developed to ensure as much land coverage as possible under future schemes.

Defra has carried out extensive “tests and trials” in developing its future Environmental Land Management scheme (ELMs). The results of these collaborative, funded user research projects are instructive⁷⁷. We recommend that DAERA, farmers and environmental groups use the findings as a take-off pad for developing made-for-NI schemes, adjusting and sense-checking them for a Northern Ireland context.

A land use strategy for NI

The issues raised in these last two chapters all point towards the need for a land use strategy for Northern Ireland.

In 2013, the Agri-Food Strategy Board recommended that the government develop – in partnership with the industry – a strategic land management policy to determine the most productive use of the limited land area of Northern Ireland⁷⁸. Not long afterwards, in January 2015, the NI Land Matters Taskforce produced its “*Towards a Land Strategy for Northern Ireland*” report⁷⁹, with the main recommendation being to progress the cross-departmental planning, development and implementation of a land strategy for NI by 2020. The aim of the strategy would be to balance the overarching demands from land (production of goods and services, mitigation of GHGs, provision of high quality habitats and landscapes).

And yet here we are at the end of 2021 with a raft of strategies, frameworks and plans in place or out for consultation but with no land use strategy among them.

Clearly the debate has changed since the 2013 Agri-Food Strategy Board’s production-focused recommendation. Northern Ireland now has a commitment, for example, to plant 18 million trees over the next 10 years, requiring some 9,000 hectares of land⁸⁰. Peatlands are to be managed differently. Farmers are now incentivised to plant protein crops. Energy crops are being promoted for their multi-functional benefits (biodiversity, carbon sequestration, flood risk alleviation). At the same time, large-scale conversion of grassland to arable use could have a serious impact on Northern Ireland’s carbon emissions.

Earlier this year a National Food Strategy for England was published, under the chairmanship of Henry Dimbleby⁸¹. This makes a recommendation that, as far as England is concerned, the government should create a rural land use framework based on the three-

compartment model:

- 'land sparing': aim to increase output through sustainable intensive methods, on the most fertile land;
- 'land sharing': organic and other labour-intensive methods on less fertile land;
- 'semi-natural land', e.g. woodlands, wetlands.⁸²

As with any policy recommendation made for England, this will need to be adapted to Northern Ireland's unique land characteristics and agri-food system.

We recognise that a land use strategy could be contentious. But we think a strategy is needed to underpin and join together other key strategies (peatlands, forestry, green growth, biodiversity, ammonia reduction, energy).

CHAPTER 5: A NEW AGRICULTURAL POLICY

We are encouraged by the direction of travel set out in DAERA's "Future Agricultural Policy Framework Portfolio" document⁸³. It accords with the thinking we have outlined in this report. We agree wholeheartedly with the principles that are set out on pages 25 – 26, and which will guide policy development moving forward.

One in particular merits a mention in this short chapter:

"Market-led initiatives to encourage and improve environmental performance on farms, and to capitalise on any market advantage that better environmental performance creates, must be rigorously explored and pursued, particularly by the food processing sector."

We recognise that we are asking a lot of both primary producers and the processing sector in our report. But there is so much to be gained if the single supply chain (including the retailers) joins up to drive sustainability, and then makes the most of advantages that brings in the market. This is one of the aims of the new Sustainability Body.

There absolutely must be a focus on measuring and reporting information which is critical to the big challenges – net zero, anti-microbial resistance, productivity, soil health. There must, for example, be zero tolerance shown by processors to animals presented at their plants without a full record of antibiotic use. We know how big a threat anti-microbial resistance is to public health.

It will be clear from what we have said elsewhere in this report that we would very much support the principle of conditionality, even in relation to the resilience and headage sustainability payments measures that are proposed. They should still come with conditions e.g. from a menu of options focused on environmental enhancement and carbon reduction (lower slaughter age, trials of methane-reducing feeds, genetic improvement programme participation). We would recommend that no payment is made to any farmer who has refused to allow land under their control to be mapped and the soil tested under the new government-funded Soil Nutrient Health Scheme. We would go as far as to say that data collection and recording – in a form stipulated by DAERA (in consultation with the Sustainability Body) – should be a condition of financial support of any kind.

"Any landowner wishing to avail of ANY form of payment (including suckler cows and breeding ewes) must have a nutrient management plan in place. This must be drawn up in conjunction with a qualified independent advisor and monitored until achievable targets are met. Good progressive farmers will understand the benefits and comply."
- Allan Chambers, County Down Farmer

Behavioural change

We also like the overall thrust of the new policy, that payments should 'pull' positive action

rather than punish non-compliance. However, behaviour change in agri-food is an under-researched area. We have a good idea of the outcomes sought, but not of how to generate the new behaviours from farmers that are needed to achieve them. The soil sampling pilots which followed the Sustainable Land Management Strategy report of 2016⁸⁴ were very encouraging; once presented with detailed information about their soils and trained in what their soil analysis report meant in terms of nutrient applications, farmers changed their practices.

More research on the 'how' is needed; there is no point simply setting targets; farmers need to be guided and helped to do what is needed, individually and collectively.

Incentives to steer production choices

In Part 1 of this report we mentioned the disconnect between consumer demand for oat-based products (porridge etc.) and dwindling levels of home production. White's Oats put forward a strong case for oats as a crop that ticks a combination of health and sustainability boxes and is well-suited to be grown in Northern Ireland. White's argued for a rebalancing of agricultural policy, and in particular for support aid to oats, along the same lines as the two-year Protein Crop Pilot Scheme introduced in Northern Ireland in 2021⁸⁵.

At the same time, there is a general feeling that horticultural production in Northern Ireland needs a boost. Horticulture is the only sectoral workstream within the proposed new support framework, exploring (in DAERA's words): "*how best to unlock some of the potential in a sector that could deliver significantly more for Northern Ireland agriculture*".

In the end, these are policy choices for DAERA's Minister. The policy justification for the Protein Crop Pilot Scheme is very specific: the almost total dependence of Northern Ireland agricultural production on imported soya⁸⁶. These imports have a significant environmental and carbon footprint and are simply not sustainable.

In summary, we are not convinced that coupled aid for certain crops is the way forward, whether for oats or other cereals or horticultural products. Any policy which would involve the conversion of grassland to crops would also need to be considered within the context of a wider land use strategy.

In relation to horticulture, and the fruit sector in particular, we see the opportunity for a much more targeted approach to assistance through grant schemes under the investment measure strand of the new policy. These grants should be focused on investments in innovative systems which enable producers to make advances in pesticide reduction, monitoring systems, growing media, water treatment and which give them an advantage in the marketplace. At the same time, support for collaborative investment in marketing should be made available under the supply chain measures strand of the new support framework.

The bigger picture

A final word on future agricultural policy. Farming does so much more than put food on tables. It is part of the fabric of Northern Ireland. It is about community and culture, families and generational renewal, attachment to land and history. It is about managing the landscapes that attract tourists and the natural habitats that contribute to health and wellbeing. Farmers are stewards of more than 76% of Northern Ireland's land mass, 75% of which is classified as less favoured area. They are part of the 36% of the NI population who live in rural areas, as are the workers in most of the agri-food processors they supply.

So, yes, agri-food must be part of Northern Ireland's pursuit to become one of the most competitive advanced small economies in the world, and it must become more competitive. But policy makers must avoid taking a narrow view, calculating its contribution in purely economic terms (GVA, employee numbers). DfE's 10x Economy vision has captured the point, with its triple bottom line approach focusing on environmental and societal outcomes as well as economic ones. That needs a whole new set of metrics, and genuine appreciation among policy makers of the wider contribution that farming makes.

As this report makes clear, the demands made on Northern Ireland's farmers over the next ten years will be enormous, and there is no room for special pleading. But farmers will need more than just data collection schemes, carbon targets and environmental policies. They will need guidance, support, and recognition that what they do is valued and that their contribution is more than the sum of its parts.

CHAPTER 6: CAPITAL GRANTS FOR LARGE BUSINESSES

Our focus here is on those food businesses who, because of their size, are excluded from capital grant schemes currently available for SMEs and farm businesses in NI.

Capital grants under the Selective Financial Assistance (SFA) scheme are available to SMEs⁸⁷. Invest NI's ability to award these grants is governed by the Industrial Development (Northern Ireland) Order 1982, with Invest NI funding provided in part by the EU through Northern Ireland's *Investment for Growth and Jobs Programme 2014 – 2020*. The aim of the programme is to accelerate growth through investment, innovation and export activities. The justification for providing financial assistance is that there is market failure primarily in the form of risk aversion and the provision of private sector finance.

A typical example of an Invest NI SFA grant in agri-food would be the £470,000 grant made to the Clondeboye Estate in 2020. The grant supported a £2 million investment by the company in the construction of a new factory and specialist machinery at its County Down site, enabling it to quadruple production of its artisan yoghurt, double its workforce and continue its growth in the ROI and GB⁸⁸.

We would argue, EU State Aid rules permitting, that large food manufacturers should be able to access capital grants to support their investments in innovation.

We understand the economists' purist line on this, that there is no market failure and companies will find secure finance if there is a good business case for investment. Large companies with a solid trading history should not need to seek a grant from the public purse for capital projects when there is a functioning risk capital market in Northern Ireland.

Despite that, we think the need for capital grants for the processors is compelling, particularly now, for the four main reasons set out below.

1. More than just financial outcomes

The DFE's 10x economic vision explicitly envisages intervention in driving innovation. It also seeks to ensure that gains from innovation mean something to all businesses, people and places in Northern Ireland. The triple bottom accounting principle inherent in 10x looks for more than financial outcomes; environmental and societal outcomes matter too.

As we have said elsewhere in this report, food and drink manufacturing plants, and the businesses supplying and servicing them, are predominantly based in rural areas. Investment in the sector is investment that benefits all regions of Northern Ireland, not just greater Belfast.

There is a real risk that processing facilities will shift from Northern Ireland to the Republic of Ireland or other parts of the UK where investment grants are available⁸⁹. That is not

sour grapes; the NI processing sector is at a competitive disadvantage versus processors in those areas and, as market operators, will generally follow the money unless there are compelling reasons not to.

This is a critical consideration. The migration of agri-food manufacturers away from Northern Ireland will hollow out local communities and damage the regional balance in the economy that large agri-food manufacturers help provide.

2. Innovation for Green Growth

There is a widely accepted case for enabling innovation through targeted grants, particularly if an intervention can meet more than one goal (reducing carbon footprint, increasing productivity through innovation). The sector is not asking for free money.

We have discussed the kinds of projects the processors would look to implement if grant support were available. Many are fully aligned with the NI Executive's Green Growth Strategy. Investment in packaging lines to ensure sustainable packaging, energy engineering and refrigeration projects to cut usage, introducing innovations to improve product shelf-life and reduce waste, installing IT systems that will improve connectivity and help reduce losses.

The Green Growth Strategy makes huge demands on agri-food as a key sector of the economy. In this report we, too, challenge the sector to produce full sustainability reports, to sign up to *Green Growth Agreements*, and we recommend a massive investment in data connectivity to drive out inefficiency and enable end-to-end sustainability certification. It is worth keeping in mind, too, that most of the output from the agri-food sector is sold outside Northern Ireland.

Where what is being demanded from food manufacturers goes beyond their own strict financial interests and is in the public interest (the greater good of the environment or Northern Ireland society) it seems to us that a targeted public investment is justified.

3. Addressing the labour supply crisis

We have covered the labour supply crisis in Part 1. We concluded that there is a real risk that agri-food will end up limited, not by lack of product development but by the number of workers it can recruit. That is a strategic challenge for the sector.

Automation of food processing will be a large part of the answer, reducing reliance on a scarce supply of local workers.

Again, talking to processors, we know that there is an appetite to invest, with end-of-line

“Public funding should generally represent the minimum assistance necessary to bring about the investment.”
- *Better Business Cases NI*

processes an immediate area for action (e.g. robots for traying up, palletising or packing products). Automation of specialised processes (e.g. de-boning of meat carcasses) is more of a challenge, but is in development.

Investment in automation can create opportunities for workers in the sector. Processors are working with CAFRE to develop career paths and upskill their human capital with the new skills required for the automated factory floors of the future.

4. Now is the moment

Invest NI has an *Agri-Food Investment Scheme* (AFIS) for large businesses in draft form. It has received State Aid approval from the EU and that approval lasts up to 31 December 2022. The scheme as drafted allows for capital grants of up to £5 million on projects of up to £25 million.

Whilst the AFIS could be rolled out in relatively short order, we understand that there would be a very tight timeframe for applications under the scheme as currently approved. Nonetheless, we recommend that it is rolled out as soon as possible.

Now is a good time for businesses to make capital investments. The time-limited 'super-deduction' for qualifying plant and machinery investments introduced in the 2021 Budget is a significant incentive. Combined with AFIS capital grants, we think this has the potential to kick start some game-changing projects in the sector.

Caveats

DfE, in its 10x Vision says: "*We must pivot from a mentality of subsidy entitlement towards a problem-solving one.*" We agree. Capital grants should only be made available where investment is going to meet the objectives of 10x and green growth, introducing innovations which reduce environmental impact and make a positive contribution in the journey towards net zero.

Joining up of data within the supply chain should also be a feature of projects. We would recommend that – as far as practicable – as much opportunity is taken within any approved scheme to digitise data within applicant companies in a way that enables the whole-chain 'best certified food in the world' message to be supported.

The level of AFIS grant versus project cost should not have an upper limit; whilst we understand there will be an indicative limit of 20%, companies should be able to bid for more depending on what added 'public' value their projects will provide.

The AFIS should not be constrained by a cost per job analysis; innovation and automation will reduce headcount, but – potentially – lead to better skilled jobs.

CHAPTER 7: ENTREPRENEURSHIP, LEADERSHIP AND SKILLS

It will be clear from the rest of this report that the skills needed within the agri-food sector of the future will be significantly different, deeper and wider than those of the past. The need to see the big picture in relation to data collection, its use and understanding are critical. The adoption of new technologies will be a challenge in the boardroom as well as well as on the farm.

We see the development of the Northern Ireland Diamond, in particular, as critical here. However, individual agri-food businesses need to play their part and be fully engaged with CAFRE, Ulster University and other knowledge institutions in communicating what skills they need, in developing career structures within their businesses and adopting a culture of lifelong skills training.

The leadership challenge

We need leaders, people who are able and prepared to push agri-food forward. This is not necessarily the CEO or development director of a large food manufacturer or feed business. It may be a farmer pulling together neighbours in shared slurry separation venture, it may be a processing co-operative re-defining its mission into one aligned with green growth and carrying its members with it, or an environmental consultant bringing groups of land managers together to carry out landscape-scale biodiversity restoration.

We commend UFU for its Next Generation Development Forum, set up with the support of the Young Farmers Clubs of Ulster. We enjoyed a lively evening of debate with 30 or so of its members as part of this review. The forum is focused on identifying future leaders in agriculture and helping to develop their business and leadership skills.

The entrepreneurship challenge

But it is more than up-skilling, and even leadership, that is needed if DfE's 10x vision is to be realised and carried forward beyond the decade. Northern Ireland needs to develop a culture of entrepreneurship and risk-takers. The connection between higher rates of entrepreneurship and overall prosperity is well-established; small business growth drives economic growth.

There is a massive need, and massive opportunity, for entrepreneurs to fill the gaps in the circular economy. And there will be opportunities and

funding available to develop new technologies, ingredients and products to address

“Our ambition is to become an economy known for its enterprising culture and we want to drive up the rate of new business start-ups and create an environment that actively fosters and supports entrepreneurs to turn their ideas into reality.”

- DfE, A 10x Economy

changing consumer preferences⁹⁰. There is almost no better moment for new product development and start-up activity. But the general assessment is that a culture that supports and celebrates creativity, innovation and entrepreneurship is not fully developed in Northern Ireland.

The 10x Economy paper sets the ambition: “*we want to drive up the rate of new business start-ups and create any environment that actively fosters and supports entrepreneurs to turn their ideas into reality.*” But the reality is that stimulating entrepreneurship has been and still is a significant challenge. A DfE 2018 paper on Entrepreneurship⁹¹ reported that the number of start-ups per 10,000 people was 27 in NI, compared to an overall rate of 50 in the United Kingdom.

The challenge, then, seems to be giving people the confidence and support to take the plunge, and celebrating their success.

Northern Ireland agri-food has some inspiring examples of entrepreneurship to draw on. The late Denis Lynn started by selling pizzas and pies out of a white van and went on to found Finnebrogue Artisan. Thomas Hutchinson spotted a gap in the market for a locally produced snack; Tayto has gone on to become the largest British-owned crisp and snack manufacturer. Jim and Jack Dobson started with a local butcher shop in Dungannon and from there built the Dunbia Group. Westland Horticulture was set up in 1990 to supply compost to mushroom growers; it now sells a whole range of garden products across Europe. WD Irwin started out selling bread baked by his wife and sister-in-law in his grocer’s shop; Irwin’s Bakery now employs over 300 people and sells its bakery products all over the UK and the island of Ireland. In 1911 Peter (Pietro) Morelli started selling fish and chips and ice cream based on a family recipe from his Coleraine shop; Morelli’s Ice Cream now has franchises across the island and supplies multiple retailers in Northern Ireland and beyond.

The list goes on: Owen Brennan at Devenish Nutrition, John McCann at Willowbrook Foods, Martin and Tracy Hamilton at Mash Direct, Matthew Hayes at Skea Eggs, Jackie and Brian Reid at Deli Lites, Shane Braniff at The Echlinville Distillery, Richard and Leona Kane at Brighter Gold. And we must not forget the entrepreneurial drive shown by farmer co-operatives, Fane Valley, Dale Farm, Northway Mushrooms; there may not be an individual founder or family but there are leaders who have driven and continue to drive them forward.

How can we ensure that there are others coming through to break new ground? To set up vertical farms distributing fresh salads to the market, to develop methane-reducing feedstuffs for ruminants, to launch the next free-from snack for consumers to enjoy?

The Young Farmers/Ulster University collaboration on UU’s new advanced certificate in Management Practice (Developing Leaders in Agri-food) is an example of what is needed. It will involve current leaders in agri-food; Jack Hamilton from Mash Direct, and members of the Finnebrogue and Devenish teams.

Many of the back stories behind these businesses feature someone widening their horizons, being inspired by something they see elsewhere or gaining experience in a different environment. Westland Horticulture founders were inspired by a trip to a horticultural trade exhibition in Birmingham, Deli Lites co-founder Jackie Reid discovered the downtown delis of New Jersey during a summer in New York and came back with a mission to bring a different lunchtime experience to Ireland.

The Nuffield Farming Scholarship Scheme is well-known for providing young farmers with the chance to travel and access expertise and ideas from around the world that they can then apply locally, and Northern Ireland's Thomas Henry Foundation provides an annual Nuffield scholarship for a local farmer. But we think there is scope for a travel scholarship fund with a wider remit across agri-food, and which will enable short, intensive travel outside NI to visit and explore how other businesses across the world are meeting the big challenges. That is the final recommendation of this review. It is not a *strategic* recommendation, but it will be a signal from the NI agri-food businesses involved in this review that they recognise the need to invest in the next generation and that the challenging task ahead needs a new way of thinking.

The challenge then, of course, is to ensure that there is support for those young entrepreneurs and emerging leaders when they return bursting with ideas. They will not need extensive courses; they will need mentoring, they will need short, sharp, stimulating engagement to keep them enthused and inspired. Among others, government Challenge Funds, flexible higher-education programmes, CAFRE's Knowledge Advisory team and Invest NI will have a role to play in providing that support.

Finally, we are all in this together. It is not for us to preach to the great business people in NI agri-food, but we would like to ask you to step back and think for a moment about what you think would make a difference to a structural increase in enterprise, risk-taking, not being too scared to fail, the intelligent 'having a go'. Please do contribute, with your wisdom and your help, to the development of an environment where business can be at its best for all ages. This is also something for DfE to reflect upon, with all business bodies in Northern Ireland, and bring together recurring initiatives and events to meet this aim; it can only do good.

CONCLUSION

In conclusion, at the heart of the review's message is the need to connect. Digitally along and across the supply chain. Between knowledge centres, tech entrepreneurs and businesses. Between primary production, environmental groups and central and local government.

It is natural to worry more about what we might lose (throughput, autonomy, members, the ideal outcome) than what we might gain (efficiency, synergy, social capital, a better outcome) but the sector needs to be brave and take some risks. So does the Northern Ireland government in the support it offers and the interventions it makes where there is market failure or a need to accelerate change. With so much at stake, the risk of doing nothing is greater than the risk of acting.

As Minister Poots put it, speaking towards the end of our review⁹²: *"We need leadership, we need commitment, and we need innovation to take this one forward."*

Peter Kendall

30 November 2021

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PART THREE - RECOMMENDATIONS

Recommendation	Action
<p>1. Embrace the smart use of data and the opportunities it creates.</p>	
<p>1.a. Farms must collect data and manage their performance against the findings.</p>	<p>DAERA must require farms to collect (and report) data as a requirement for financial support.</p> <p>Farming organisations must strongly encourage their members to digitise.</p>
<p>1.b. Digitisation of data systems should be a feature of any investment in facilities by food processing companies.</p>	<p>DfE must create incentives and provide support for companies to collect, store and analyse data and to use it for management.</p>
<p>1.c. Effective collection and use of data is the single most pressing need in the agri-food sector. All businesses across the food chain must invest in data management systems now. Government must facilitate this investment by providing know-how, advice and financial support.</p>	<p>DfE and DAERA must work together to ensure there is end-to-end digitisation of the whole agri-food supply chain.</p>
<p>1.d. DfE and DAERA must work together with the industry to ensure that all agri-food data sources are joined up, accessible, analysed and interpreted to facilitate agri-food connectivity and the development of appropriate policies.</p>	<p>DAERA and DfE must actively facilitate data sharing wherever possible. They must set targets and timelines and must provide the personnel, software and hardware resource required to enable effective cross industry data sharing.</p>

<p>2. Create a Northern Ireland Diamond to deliver green growth.</p>	
<p>2.a. We recommend that a multi-stakeholder ‘Northern Ireland’ Diamond is developed along the lines of the ‘Dutch Diamond’ model, and at pace. Its focus will be to deliver the Green Growth Strategy in the agri-food sector. Fully costed proposals for the pilot stage should be presented as soon as possible and by Spring 2022 at the latest.</p>	<p>This rests primarily with QUB, AFBI, UU and CAFRE, but it must be supported and encouraged by DAERA, DfE and the whole Executive.</p> <p>The support of the NI Executive will be critical. We would like to see DAERA and DfE Ministers (and other Departmental ministers) provide public leadership and support, outlining the vision and rallying stakeholders to get involved in the co-design of the project.</p> <p>DAERA’s Food Strategy Framework (currently out for consultation) will need to be re-framed to align with the NI Diamond model.</p> <p>The NI Diamond should not limit its activities to central government departments; it should include and involve all local authorities. This is an opportunity to ensure regional balance in agri-food.</p>
<p>2.b. QUB, AFBI, Ulster University and CAFRE should move towards a more collaborative model, under an inclusive advisory board, to create a ‘Wageningen for Northern Ireland’ at the heart of the NI Diamond. A draft plan should be presented as part of the proposals for the pilot stage of the NI Diamond (see 2(a) above).</p>	<p>This falls to QUB, AFBI, UU and CAFRE, but it must be supported and encouraged by DAERA, DfE and the whole Executive.</p>

<p>2.c. The four knowledge institutions should be adequately resourced for this task; there will need to be funding allocated for them to produce a collective plan for how they will drive forward the Green Growth Strategy as part of the wider NI Diamond.</p>	<p>DAERA and DfE should work together, with DoF, to ensure that sufficient resource is in place to drive the implementation of the NI Diamond.</p>
<p>2.d. Further work on the creation of multi-disciplinary thinking cells should be undertaken, with a view to an additional innovation tool being available to NI Diamond partners.</p>	<p>A task for the NI Diamond.</p>

<p>3. Demonstrate the sector’s sustainability through a new Sustainability Body.</p>	
<p>3.a. We strongly support the industry-led move to develop a “Sustainability Body” for NI agri-food. A fully fleshed out and costed proposal must be ready for presentation to relevant ministers as soon as possible and by Spring 2022 at the latest.</p> <p>3.b. We urge those heading up the design of the Sustainability Body to engage widely with all parts of the agri-food sector, and we would urge all parts of the sector to engage with its development.</p> <p>3.c. The planned repurposing of bodies supporting the beef and lamb sector as part of the development of the wider Sustainability Body is also supported.</p>	<p>This should initially be driven by a small group of organisations, to include representatives from beef, lamb, dairy, pork, and cereals sectors. They will meet to apportion responsibilities and to agree a development group, the resource needed, and timelines.</p>

4. Be ambitious on Net Zero.	
4.a. We would encourage joint working between farmers and environmental groups, with assistance from the NI Diamond knowledge base (AFBI in particular), to agree 'journey towards net zero' principles.	Farming representatives and environmental groups will need to come together, and draw on AFBI and CAFRE expertise in their work.
4.b. Food and feed companies not producing GRI sustainability reports should seriously consider engaging with NIEA within DAERA to develop Green Growth Agreements and DAERA must allocate sufficient resource to them.	DAERA/NIEA should engage with feed and food companies to accelerate the creation of Green Growth Agreements, starting immediately but eventually delivering in conjunction with the Sustainability Body.
4.c. Food processing companies should embrace annual sustainability reports even where they are not a legal requirement. As far as practicable these should be produced to GRI standards for consistency.	There is a role for DfE here in providing guidance, support and signposting.
4.d. DAERA should commission collaborative research through the NI Diamond into how farm-based carbon budgets and trading could work within the agriculture sector, taking into account the impact of carbon units being freely tradable.	DAERA in conjunction with the NI Diamond.
4.e. To support the case for investment decisions, further focused research should be undertaken on: (i) the potential for biomethane production and its role in decarbonising heat; and (ii) the potential size and shape of the bioeconomy in Northern Ireland, reviewing the availability of feedstocks from farming and food and the interplay between different biomass applications.	DfE should lead on this, working with the NI Diamond (and DAERA in relation to agricultural feedstock potential).

<p>5. Aim high on your environmental scorecard.</p>	
<p>5.a. DAERA should lead on a co-designed, cross-departmental land use strategy for Northern Ireland that complements and informs its Future Agricultural Policy Framework (in particular its environmental sustainability strand), future environmental schemes and the NI Peatland, Energy, Green Growth and Circular Economy strategies.</p>	<p>DAERA, in conjunction with DfE and other Departments, working through the NI Diamond with sector representatives and environmental groups.</p>
<p>5.b. Challenge Funds should be used to encourage new ideas and innovative approaches to delivering long-term environmental improvement at scale across multiple landholdings and land tenure arrangements.</p> <p>5.c. Research should be commissioned through the Northern Ireland Diamond to explore the extent of the skills gap in landscape-scale environmental delivery of the kind that is envisaged under the draft Peatland Strategy, and to make recommendations about how any skills gap should be addressed.</p> <p>5.d. Lessons learned from the take-up and management of EFS Group schemes should be pulled together to support a “what works” analysis as part of future scheme design.</p> <p>5.e. We recommend that the limit on maximum agreement value under the EFS – Wider scheme is removed and that future public goods delivery schemes are not subject to a maximum agreement value.</p>	<p>DAERA, farmers and environmental groups.</p> <p>DAERA, NI Diamond, environmental groups.</p> <p>DAERA, environmental groups and farmers.</p> <p>DAERA.</p>
<p>5.f. In relation to agricultural land, the NI Executive should make a fully developed case based on productivity gains to the UK Government for income tax reliefs, along the lines of the model in the Republic of Ireland, to be introduced to incentivise longer lets.</p>	<p>NI Executive.</p>

6. Boost investment by large food businesses.	
<p>6.a. DfE should move swiftly to open a window for applications under its Agri-Food Investment Scheme (AFIS).</p> <p>6.b. Invest NI should endeavour to seek an extension to the current end date for the AFIS; we accept that there will be a 'window of opportunity' for processors to apply for investments but if the deadline is 31 December 2022, there will be insufficient time for applications to be developed.</p> <p>6.c. The indicative limit of 20% match funding should be flexible, with companies allowed to bid for more depending on the value-added green growth their projects will deliver.</p> <p>6.d. The scheme should not be constrained by a cost-per-job analysis. This makes no sense in the current climate.</p>	<p>DfE should move quickly to initiate the capital grant funding process and ensure that it is used to drive productivity and sustainability.</p> <p>Invest NI.</p>

7. Focus on trading arrangements, beyond GB.	
<p>7.a. Northern Ireland businesses need certainty and stability. We recommend that the NI Executive and sector representatives continue to work with the UK Government and the EU Commission to find workable regulatory solutions that will ease GB – Northern Ireland trade and animal movements.</p>	<p>DfE and DAERA must support the NI Assembly and the UK Government in ensuring that trading arrangements are stabilised, allowing NI agri-food businesses to adjust and plan.</p>
<p>7.b. Agri-food businesses and Invest NI should work together in a structured way to identify the strategic global markets of the future for the sector's products, particularly as Northern Ireland's 'sustainability' story develops.</p>	<p>DfE should work with Invest NI, the UK's Department for International Trade and NI agri-food business representatives to structure Northern Ireland's approach to beyond-GB marketing and provide the resource to facilitate this.</p>
<p>7.c. There should be an immediate assessment of Invest NI's capacity to lead on strategic market development for NI agri-food and how it will work with the Northern Ireland Diamond and the Sustainability Body. This assessment should include a review of its market intelligence and consumer insights capability.</p>	<p>DfE and Invest NI working with the NI Diamond and the Sustainability Body.</p>
<p>7.d. The 'disconnect' between Northern Ireland departments and Defra in relation to export health certification and approvals in international markets should be investigated, and protocols put in place to ensure that NI exports are not disadvantaged.</p>	<p>DAERA.</p>

8. Tackle skills and labour supply.	
<p>8.a. We know that the NI Executive and sector representatives have been making their case to the Migration Advisory Committee and the Home Office for changes to the Shortage Occupation List to include butchers and meat processing workers. We recommend that they continue to do so in the strongest terms.</p> <p>8.b. The NI Executive must work with the UK Government as it seeks to encourage EU citizens with settled status to return to work in the UK and ensure that Northern Ireland is well represented in the UK Government's messaging.</p>	<p>DfE and sector representatives.</p> <p>NI Executive.</p>
<p>8.c. A big, bold shared vision and an action plan for skills development at all levels within agri-food should be developed by industry and knowledge institutions working through the Northern Ireland Diamond.</p> <p>8.d. The agri-food sector must engage intensively with CAFRE, Ulster University and other training providers to create easy-access and engaging training courses to help develop the leaders and entrepreneurial mind-sets that are needed.</p>	<p>DfE should be the lead department on this, working through the NI Diamond. Agri-food businesses and their representative organisations must commit.</p>
<p>8.e. The sector must look to invest in automated processes and the streamlining of logistics to reduce its reliance on labour, whether local or from abroad.</p>	<p>DfE should work with the agri-food sector to design and deliver a programme of funding and advice, in line with wider advanced manufacturing policies and drawing on support systems in the knowledge economy.</p>

<p>9. Innovate!</p>	
<p>9.a. Research should be carried out to consider how Northern Ireland can exploit its strength in agri-food and food safety to seize opportunities in the development of alternative proteins and plant-based products.</p> <p>9.b. There are opportunities for entrepreneurs to set up new ventures – collaborative slurry management schemes, sensor technology, data platforms, nutraceuticals, sustainable packaging...the list is endless.</p>	<p>DAERA, DfE and the NI Diamond should work with the agri-food and agri-tech sectors to identify opportunities for innovation. It will then fall to DfE/ Invest NI to support entrepreneurial initiatives.</p>
<p>10. Design an agricultural policy that drives change.</p>	
<p>10.a. We recommend that DAERA, through and in consultation with other parts of the Northern Ireland Diamond, commissions research on behaviour change in agriculture and applies its findings in implementing Northern Ireland's future agricultural policy.</p> <p>10.b. DAERA must require farms to collect (and report) data as a requirement for financial support. No 'resilience payments' or headage sustainability payments as envisaged in the draft future agricultural policy consultation should be made to farmers who refuse to have soil maps done on land under their control.</p> <p>10.c. The future agricultural policy should be 100% aligned to the objectives of the NI Executive's Green Growth Strategy.</p> <p>10.d. DAERA should work with the horticulture sector to explore the co-design of a tailor-made investment scheme for soft fruit and other specialist sectors, and the horticultural strand of the future agricultural support framework.</p>	<p>DAERA and NI Diamond.</p> <p>DAERA.</p> <p>DAERA.</p>

11. Entice talent and entrepreneurship.	
11.a. The agri-food sector must work together to promote the attractiveness of the sector, as if its future depended on it. (It does.)	Sector representatives, CAFRE and the universities.
11.b. DAERA and agri-food sector sponsors should continue to fund and support the Land Mobility Scheme.	DAERA and the agri-food sector.
11.c. The agri-food sector – through its representative organisations – should investigate setting up an “Entrepreneurs of the Future” scholarship fund aimed at young people in the sector with a view to stimulating the development of entrepreneurial ideas and activity.	The agri-food sector.

REFERENCES

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- 5 [Draft Green Growth Strategy](#), 27 October 2021.
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- 12 Prof. Chris Elliott, summing up NI agri-food's USP for us during our visit to QUB.
- 13 The Devenish [Heartlands](#) project aims to develop livestock production systems that enhance environmental sustainability and a healthy diet.
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- 43 [Cranswick announcement](#), 10 May 2021.
- 44 [Linden Foods Prosperity Agreement](#), August 2014.
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[development-centre/research-and-innovation](#).

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- 52 [Food NI – Our Food. Power of Good](#).
- 53 <https://www.nigoodfood.com/events/invest-nis-small-business-food-and-drink-programme-workshops/>
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- 70 [Climate Change Bill Impact Assessment](#) (KPMG), 11 August 2021.
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- 88 [Invest NI press release](#), 14 September 2020.
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APPENDIX 1: TERMS OF REFERENCE

Introduction

1. The Minister for the Economy and the Minister of Agriculture, Environment and Rural Affairs have agreed that an independent, strategic review be commissioned to consider the future development of the Northern Ireland agri-food sector.
2. The review will be led by an independent external advisor and will consider the challenges and opportunities that the agri-food sector now faces, these include but are not limited to:
 - Improving productivity;
 - Enhancing economic and environmental sustainability, including carbon footprint;
 - Reduced access to migrant labour;
 - Increasing the levels of innovation and R&D;
 - Changing market demands for food products;
 - Market opportunities;
 - The case for regional branding;
 - The implementation of the Northern Ireland Protocol;
 - The development of an independent UK Trade policy; and
 - Recovery from the Covid-19 pandemic.
3. From this analysis, the review will provide recommendations to enable the industry to respond to the above strategic challenges and opportunities and inform government policy making in both departments.

Purpose and Scope

4. Given the above challenges and the rapidly changing environment it faces, it is important that both the industry and government consider the future of the sector and develop a strategic framework, within which the sector can adapt, grow and become more prosperous and sustainable. It will inform decision making by the industry and policy development in both departments.
5. The scope of the review will include both primary production and processing but will be fully cognisant of DAERA's emerging policy position on primary production.

Aims and Objectives

6. Both Ministers envisage a short, focused, independent strategic review of the agri-food sector.

The review should:

- Develop a strategic framework and principles within which the sector can adapt, grow and become more prosperous which, in turn, will inform decision making by the industry and policy development in both departments;
- Take account of the changing strategic environment facing the sector, for example: EU Exit, the Northern Ireland Protocol, the Internal Market Bill, and the impact of, and lessons from, Covid19;
- Clearly identify and map out the strategic challenges and opportunities for the sector and, from that, set out the broad approaches and principles that the sector could employ to successfully adapt to the emerging trading environment;
- Identify any market failures that may require direct government intervention;
- Identify public policy levers that should be used, where justified and necessary, to facilitate the changes required by the sector;
- Make prioritised recommendations, for both industry and Government, which address all of the above.

APPENDIX 2: EVIDENCE

Meetings

Stakeholder/Individual	Ready Egg
DAERA Minister	Irwins Bakery
DfE Minister	Echlinville Distillery
DfE	Devenish Nutrition Ltd
DfE Energy Group	Fane Valley Co-op
Invest NI	Moy Park
DAERA	Mash Direct
CAFRE	Tayto
LMC	Linden Foods
Agri-Food and Biosciences Institute	WD Meats
Ulster University & UU Business School	Hinch Distillery
Professor Nigel Scollen (QUB)	Thompsons
Professor Chris Eliot (IGFS)	Dunbia/Dawn
Agri-Food Quest	Hughes Mushrooms
Digital Catapult	Devenish Lands at Dowth
AgriSearch	Stream BioEnergy
Foods Connected	Enerchem Solutions
Vet College Group	James P Donnelly Fruit Farm
Ulster Farmers Union	Hamilton Loney
UFU Next Generation forum	Fiona and Shaw Hanna (on farm)
Farmers for Action (NI)	Peter Donnelly (on farm)
NI Pork and Bacon Forum	Robert Mawhinney (on farm)
Dairy Council NI	John and Simon Best (on farm)
NIFDA	Roger and Hillary Bell (on farm)
NIMEA	Derek Hall (on farm)
NI Rural Valuers/Agricultural Law Association	Jim Dobson
NI	Unison
Patrick Casement, Northern Ireland	Green Party
Environment Link & Food, Farming &	Sinn Féin
Countryside Commission (NI)	Alliance Party
Ulster Wildlife	DUP
Rivers Trust	SDLP
RSPB NI	Irish Farmers Journal
Food NI	

Submissions

Organisation/Role	Name
DAERA	Transition Policy Division
DAERA Veterinary Education/Centre of Excellence Working Group	David Torrens
Armagh City, Banbridge and Craigavon BC	Lissa O'Malley
Food Standards Agency NI	Jayne McGlaughlin
Livestock and Meat Commission for Northern Ireland	Ian Stevenson
Agri-food and Biosciences Institute	Elizabeth Magowan
Ulster University Business School	Lynsey Hollywood
Innovate UK EDGE, Invest NI, Enterprise Europe Network	
Agri-Food Sector Group	Tom Kinney
DAERA Veterinary Education/Centre of Excellence Working Group	David Torrens
CAFRE	
Agri-Food QUEST (QUB)	Stephane Durand
Animal Health and Welfare NI	Sam Strain
Northern Ireland Food and Drink Association	
Dairy Council NI	Mike Johnston
Northern Ireland Meat Exporters Association	Conall Donnelly
NI Pork and Bacon Forum	Deirdre McIvor
Northern Ireland Soft Fruit Growers Association and Horticulture Forum NI	Peter Donnelly
North of Ireland Veterinary Association and Association of Veterinary Surgeons Practicing in Northern Ireland	Mark Little
British Veterinary Association (NI Branch)	Michael McGilligan
Northern Ireland Agricultural Producers' Association	Jim Carmichael
Farmers For Action (NI)	William Taylor
Northern Ireland Environment Link	Sean Kelly
RSPB NI	Jonathan Bell
Ulster Wildlife	
Friends of the Earth Northern Ireland	Colette Stewart
Food, Farming & Countryside Commission (NI)	
Sustainable Northern Ireland	
Whites	James Mathers
WD Meats	
Willowbrook Foods	John McCann
John Thompson and Sons	
Domestic Sheepskins UK	Yalcin Cubuk
Allan Chambers	

Roberta Simmons (UFU next generation)

Esther Skelly-Smith (UFU next generation)

Elliot Bell (UFU next generation)

Will Frazer (next generation farmer)

Background reading

Entrepreneurship in Northern Ireland – Context Paper	DfE	November 2018
(England) National Food Strategy (An Independent Review) – the Plan	Henry Dimbleby	July 2021
Towards a Land Management Strategy for Northern Ireland	NI Land Matters Taskforce & James Hutton Institute	January 2015
Lay of the Land – Report of the Northern Ireland Inquiry	Food, Farming & Countryside Commission	September 2019
Nature Positive 2030	Natural Resources Wales, Northern Ireland Environment Agency, Natural England, NatureScot, JNCC	September 2021
Sustainable Agricultural Land Management Strategy		October 2016
DAERA Innovation Strategy 2012 – 2025	DAERA	April 2021
Future Agricultural Policy Framework Portfolio for Northern Ireland	DAERA	August 2021
Northern Ireland Food Strategy Framework Consultation	DAERA	September 2021
NI Peatland Strategy 2021 – 2040 Consultation	DAERA	June 2021
Rural Policy Framework for NI Consultation	DAERA	July 2021
Draft Green Growth Strategy - Consultation	DAERA/NI Executive	October 2021
Energy Strategy for Northern Ireland – consultation	DfE	March 2021
The Case for Long-Term Land Leasing: A Review of the Empirical Literature”	Economics Research Branch, AFBI (Adenuga, Jack, McCarry)	March 2021
Written Evidence submitted to DAERA on the NI ‘Future Agricultural Policy Framework’	QUB (Dobbs, Gravey & Petetin)	October 2018
Farming for 1.5° - From here to 2045	NFU Scotland and Nourish Scotland	July 2021
Climate Change Bill Impact Assessment	KPMG	August 2021

What the Sixth Carbon Budget means for NI	Climate Change Committee December 2020	
Options for supporting the Suckler Beef and Sheep Sectors in Northern Ireland	The Andersons Centre	March 2020
Going for Growth – A strategic action plan	Agri-Food Strategy Board	April 2013
Review and Strategic Priorities for the Development of the Horticulture Industry in Northern Ireland	Horticulture Forum NI	July 2012
A response to the NI Future Agricultural Policy Framework	Horticulture Forum NI	September 2018

APPENDIX 3: ABBREVIATIONS

AD	Anaerobic Digestion
AFBI	Agri-Food and Biosciences Institute
AFIS	Agri-Food Investment Scheme
AHWNl	Animal Health and Welfare Northern Ireland
APHIS	Animal and Public Health Information System
BovIS	Bovine Information System
BPS	Basic Payment Scheme
BVD	Bovine Viral Diarrhoea
CAFRE	College of Agriculture, Food and Rural Enterprise
DAERA	Department of Agriculture, Environment and Rural Affairs
DfE	Department for the Economy
DoF	Department of Finance
DoH	Department of Health
BPS	Basic Payment Scheme
EFS	The Environmental Farming Scheme
ELMs	Environmental Land Management scheme (England)
FFA	Farmers for Action NI
FQAS	Farm Quality Assurance Scheme
FSA NI	Food Standards Agency Northern Ireland
GHG	Greenhouse gas emissions
GVA	Gross value added
IGFS	Institute for Global Food Security
JNCC	Joint Nature Conservation Committee
MAC	Migration Advisory Committee
NIEA	Northern Ireland Environment Agency
NIFAIS	Northern Ireland Food Animal Information System
NIFCC	Northern Ireland Food Chain Certification
NIFDA	Northern Ireland Food and Drink Association
NIGTA	Northern Ireland Grain Trade Association
NIMEA	Northern Ireland Meat Exporters Association
NISRA	Northern Ireland Statistics and Research Agency
PiGIS	Pig Grading Information System
RHI	Renewable Heat Incentive
RSPB NI	Royal Society for the Protection of Birds NI
QUB	Queen's University Belfast
UFU	Ulster Farmers' Union
UU	Ulster University
SME	Small and medium-sized enterprises
TAC	Trade and Agriculture Commission

APPENDIX 4: DRAFT PLAN FOR A SUSTAINABILITY BODY FOR NORTHERN IRELAND AGRI-FOOD

Northern Ireland food is marketed within a wide range of national and international markets. The industry has identified the need to be able to jointly market Northern Ireland produce to increase the demand (and market return) for the products. The industry agrees that this can only be achieved through the use of evidence gathered at farm and landscape level, and the current level of information gathered does not support this. Marketing of food on the basis of sustainability requires a critical mass of products which reach an agreed environmental standard. The industry recognises the need to jointly work together to develop method to gather information, agree standards, deliver practical change within the industry and identify research needs.

Northern Ireland agri-food is targeting high value food markets across the world. To do this, the sector needs to be able to demonstrate high environmental and sustainability performance, but a critical mass of product is required to deliver this. A number of market failures are currently preventing delivery. #

MARKET FAILURES

1. Lack of collaborative working on sustainability by the industry

- The industry recognises that there **many organisations which are delivering positive activity** around the development of sustainability, including monitoring, delivery of research or the implementation of structural or practical changes to alter the sustainability.
- It is also recognised that **much of this activity is uncoordinated** and that more progress could be made if the industry worked together.
- The industry recognises that much of the work is pre-competitive and significant cost will be required to address emerging challenges. Where investment does not lead to competitive advantage, traditional business practice does not encourage financial spend.
- The industry acknowledges that there is a need to jointly set environmental targets around a range of indicators. These targets would enable joint activity to be designed and delivered.

2. The lack of ability to prove or demonstrate sustainability in NI agriculture

- The industry has recognised that there is currently **an absence of high integrity**

sustainability assurance to measure sustainability activity at farm level.

- There is a **need to coordinate and agree farm standards** against which inspection can take place, either in the form of bolt-ons or as a whole farm standards.
- Agreed standards must be focused on meeting customer and regulatory requirements. The organisation should anticipate and plan for expected long term requirements and challenges.
- The industry needs to design and implement 'within sector' sustainability systems to deliver assurance. Each sector standard should work towards joint industry outcomes, but it is recognised that different practices will be required for different sectors.

3. Delivery of changes to improve sustainability at farm and factory level

- The industry recognises the need to collate baselines and to collectively agree and deliver necessary activity at farm and factory level to ensure that the agreed targets are achieved.
- The industry recognises the need to coordinate and agree environmental and sustainability targets which the industry can work towards.
- The need for collective action is recognised. Collective action needs to be focused on identifying and implementing best practice, and on identifying areas where additional research is required.
- The need for collective messaging to farm businesses around best practice is recognised. A significant amount of practice change is required across the whole sector. This is dependent on altering attitudes and behaviour of managers and decision makers across the whole industry.
- Much of the work of the sustainability body will necessarily focus on culture and behavioural change across the industry.

4. The marketing of sustainability

- The industry recognises the need to market sustainability on the basis of information gathered, the positive changes made and the ultimate result of those changes. The delivery of a marketable sustainability programme can be stepped, enabling different aspects of the sustainability story to be told and built on over time. Showing positive momentum is important and will eventually lead to increased marketability.
- The industry recognises that there is the need to collect and collate the necessary information to communicate up and down the entire production and marketing chain.
- The industry recognises that considerable competitor activity is taking place in the

sustainability sphere and that it is essential to ensure that Northern Ireland is at the forefront of development.

- The industry recognises that where performance is below expectations, there is the need to deliver remedial activity to address this.
- The industry recognises that, where information or knowledge of ideal practice to address underperformance does not exist, it is essential to interact with scientific organisations and other stakeholders (ideally through the proposed Northern Ireland Diamond) to initiate work to address the challenge.
- The industry recognises that sustainability is a continually developing area, and that there is a need to constantly horizon scan for upcoming requirements or challenges. The sustainability body must enable the Northern Ireland industry to constantly stay ahead of the curve, meeting consumer needs as they arise, as opposed to being continually reactive.

SOLUTION

The industry has identified the need for a Sustainability Body which would work collectively across the whole Northern Ireland agri-food sector. This organisation would focus on the development of sustainability performance and messaging.

Scope

The initial scope of the organisation would include the following components:

1. joint industry working to drive improvements in sustainability;
2. implementation of methods of measuring sustainability performance at farm level to prove delivery around sustainability in the whole supply chain;
3. identification and guidance of commercial and environmental challenges which require research;
4. collection of information and the creation of messages which can enable sustainability to be demonstrated to customers;
5. collection of evidence which can inform sector or policy development.

Objectives

1. To draw together expertise, industry schemes, systems and datasets under one coherent strategy to maximise the impact on sustainability. The development of linkages to existing datasets is critical, as is the development of agreements around the ownership, analysis

and handling of the collated data.

2. To set one industry-led strategy and a single platform for sustainability audit, standards assurance and delivering improvement.
3. To provide a single point of audit and inspection for farmers and secure and maintain the endorsement and buy-in of customers, Government and the public.
4. To provide easily accessible, practical advice on best practice at a farm and processing level to enable the industry to jointly achieve and exceed targets. The body needs to work closely with CAFRE to assist with the design of appropriate advice which CAFRE will provide to farmers.

Activity

1. Development of sustainability standards for all farms in Northern Ireland.
2. Identification of high performing farms producing food which can be used to tell the story of sustainability of Northern Ireland farming.
3. Development of sustainability standards for processors within Northern Ireland.
4. Development of high integrity assurance to demonstrate current performance.
5. The proving of sustainability at farm level through the collection, validation and collation of data from a range of different industry and official sources.
6. Interaction with and direction to science providers (ideally those within the Northern Ireland Diamond) to address gaps in scientific knowledge.
7. Joint working to address sustainability performance at farm level through the implementation of new practice and technology.
8. Promoting and fostering innovation (allowing the best farmers to have a role in leading the process).

Structure and Functions

The Sustainability Body would be run by a board with a range of industry and agricultural representative organisations on it.

It would have four main functions, as set out below.

1. Data collection, collation, validation, organisation, analysis and the establishment of industry targets around environmental performance. Target setting will involve discussion with government, scientists and customers.
2. Development and oversight of multiple methods of collecting data on farm environmental performance and for providing assurance about the quality of data collected. Where

possible and permissible data should be collected from very wide range of sources including LCA tools, BovIS, APHIS/NIFAIS, farm maps, vets/medicine suppliers, fertiliser suppliers, feed suppliers etc.

3. Monitoring delivery of practical change at farm and factory level.
4. Communication of activity, farm performance and overall environmental outcomes to the rest of the supply chain within Northern Ireland.

Membership

Membership of the Sustainability Body will include:

- Primary food producers in Northern Ireland.
- Food businesses which are processing primary agricultural products from Northern Ireland, including:
 - Cereals
 - Vegetables, Fruit and Produce
 - Dairy
 - Beef
 - Lamb
 - Piguemeat
 - Poultry meat
 - Eggs.
- The Sustainability Body will be set up to be inclusive and as many sectors as possible will be involved from the start, but those that do not initially join can become members at a time of their own choosing

Joint working with other organisations

- In establishing a new Sustainability Body, the industry recognises the opportunity to amalgamate, absorb, combine, enhance the functions of some existing organisations. This could potentially include (but is not limited to):
 - LMC. The sustainability organisation is intended to replace LMC and would absorb its staff and expand activity beyond what is currently being delivered;
 - the proposed genetics organisation;

- Animal Health and Welfare NI;
 - AgriSearch;
 - PigReGen.
- This would ideally happen organically, as other organisations recognise the effectiveness of joint working under a larger, collaborative and focused organisation. At the very minimum these organisations would use the information and messaging generated by the Sustainability Body.
 - The Sustainability Body would work closely with the following organisations:

1. Northern Ireland Diamond science organisations

The interaction between the sustainability body and other (particularly science and Knowledge Exchange) organisations within the NI Diamond will be critical to the delivery of clear baseline figures and the identification of practices and technologies which can improve practical performance.

2. Representative Organisations

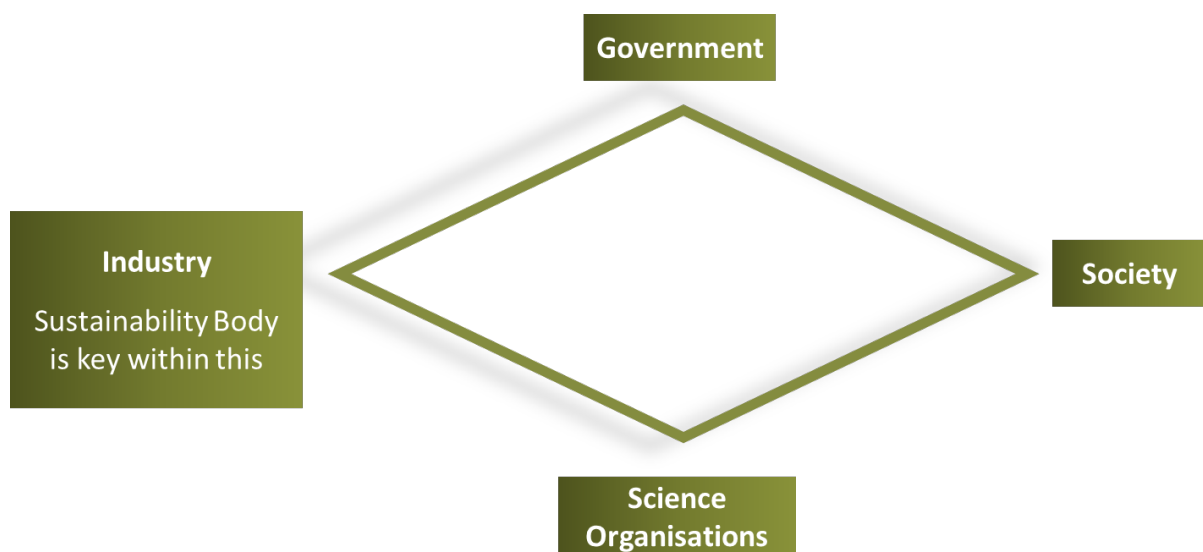
The Sustainability Body will formally interact with a range of external and internal organisations, including:

- Government
- Invest NI
- Special interest (environmental) groups/NGOs
- Industry representative organisations
- Services
 - Certification Bodies
- Knowledge Exchange Organisations
 - CAFRE
 - AgriSearch
 - Private companies
- Science organisations
 - AFBI
 - QUB
 - Ulster University

- Science projects
 - Food Futures
 - European Innovation Partnership projects (e.g. ArcZero)
 - Catchment projects
 - Soil improvement programmes
 - Slurry Management/Handling
 - Energy generation/nutrient recovery
- Customers

The exact nature of these relationships is yet to be determined, but official methods of interaction will be established. In many cases, the interaction will take place using the mechanisms established by the Northern Ireland Diamond.

The diagram below shows the key components of the Northern Ireland Diamond.



Organisational Activity

1. The Sustainability Body will be established as a collaborative organisation, focused on joint working to establish baselines, set targets, achieve targets and to provide information for the use of NI-based food companies.
2. The Sustainability Body will be a facilitator, enabling joint working, the identification of information needs and the organisation of the information to allow it to be used to support sales from Northern Ireland. It will also facilitate the identification of data requirements

and research requirements which will be delivered by science organisations.

3. The Sustainability Body will be focused on practical change at a farm and factory level. There is a need to transfer information to farmers and processors to enable best practice to be implemented to enable the whole industry to meet and exceed the agreed targets. The body will work closely with other organisations to deliver change at farm level.
4. The Sustainability Body will, as and when invited, represent the industry to existing or potential customers.
5. The Sustainability Body is not a lobbying organisation *but it will provide evidence and information to inform Government policy.*
6. The Sustainability Body is not a science organisation but will foster innovation and knowledge exchange and will help to uncover knowledge gaps which need to be addressed by scientific organisations.

PRACTICAL WORK

Practical work will flow from the initial work to agree standards and baselines. A range of projects will be delivered, some focused on delivery across the whole industry and others more sector specific.

Initial work could include:

1. development of a full assurance scheme or specific bolt-ons to allow information to be gathered, with a particular focus on measurement of net GHG emissions;
2. agreement of methodologies to address the slurry and manure challenge;
3. agreement on the carbon calculator which will be used across Northern Ireland;
4. development of the genetics organisation in NI;
5. identification of methods for assessing biodiversity at farm level.

FINANCING

Finance would be provided from a range of sources.

- The operation of the body would be funded primarily by industry contribution and repurposing/redirection of levy. It is likely that additional levy will be required to deliver against intended outputs.
- Pump-priming of the organisation will be required by Government.
- Ongoing funding would be required to assist with activity which meets Government and societal needs.
- Research funding (from DAERA and elsewhere) would be sought to deliver research, but this would be primarily applied for and managed by the NI Diamond science organisations.

ROADMAP TO DELIVERY

The steps set out below will be undertaken in the establishment of the Sustainability Body.

1. A steering group will be established to design and establish the initial form of the Sustainability Body. As the baselines, initial work and activity are agreed, the steering group will identify and agree the high level structure of the organisation, potentially in conjunction with a consultant to establish organisation, articles and governance arrangements.
 - 1.a. The organisation will take account of government, industry and other targets.
 - 1.b. The organisation will use the latest scientific findings and recommendations.
2. Identification of the full range of production chains to become involved in the programme. This includes (but is not limited to):
 - 2.a. Grain (NIGTA)
 - 2.b. Horticulture including soft fruit
 - 2.c. Beef & lamb
 - 2.d. Dairy
 - 2.e. Pork
 - 2.f. Poultry (meat)
 - 2.g. Poultry (eggs)
 - 2.h. Farming Representatives.

Ideally as many organisations as possible will join the programme at the start, but those who choose to wait will be able to join at a later date.

3. Boards and technical groups will be appointed on the basis of skills needs, drawn from the organisations funding the programme.
4. We recommend that once the body is developed, a widely respected chairperson with a strong knowledge of agriculture, a strong environmental track record and a good understanding of the processing sector is appointed under a process agreed by the board.
5. The steering group will work to secure industry and Government buy-in.
6. Funding requirements will be determined, and potential sources identified and approached including funding from Government and industry.
7. As the organisation is formalised, additional work will commence, some cross-sectoral, other work within specific sectors. This will enable the functions of the organisation to develop organically under practical conditions.

Note: this is a draft plan developed by a range of industry bodies (November 2021).

