AgriSearch Response to the DAERA Consultation on:

Northern Ireland's Draft Climate Action Plan 2023-2027

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Executive Summary

AgriSearch welcomes the opportunity to respond to the Department of Agriculture, Environment and Rural Affairs (DAERA) consultation on Northern Ireland's Draft Climate Action Plan 2023–2027. As a farmer-led research organisation, AgriSearch's response focuses on areas aligned with its charitable objectives and the interests of the beef, dairy, and sheep sectors.

Strategic Context

Agriculture is central to Northern Ireland's economy and uniquely positioned to contribute to climate mitigation through carbon sequestration and sustainable food production at a GHG intensity significantly below the global average. AgriSearch supports climate action but urges that it be grounded in scientific evidence, economic realism, and a just transition framework.

Key Recommendations

1. **Review of Climate Targets**
   The Climate Change Act (Northern Ireland) 2022 sets targets that exceed Climate Change Committee (CCC) recommendations. These targets are widely viewed as unrealistic and risk undermining farmer engagement. AgriSearch calls for an urgent review of the Act to reflect the reality of progress since 2023 to present, and what is realistic to achieve by the end of the First Carbon Budget in 2027, and thereafter to 2050.

2. **Metric Reform**
   Current reliance on the GWP100 metric overstates methane's impact. AgriSearch recommends adopting a split-gas approach, as used in New Zealand, to better reflect the short-lived nature of methane and support more accurate climate policy.

3. **Mitigating Carbon Leakage and Safeguarding Market Competitiveness**
   Climate policy must account for the risk of carbon leakage, whereby reductions in local agricultural production lead to increased food imports from regions with higher greenhouse gas emissions and lower environmental, social, and governance (ESG) standards. Northern Ireland's agri-food sector is among the most carbon-efficient food producer globally, particularly in ruminant livestock production. Undermining this competitive advantage through disproportionate domestic regulation could result in the offshoring of emissions, reduced food security, and economic harm to rural communities. AgriSearch recommends that DAERA explicitly incorporate carbon leakage safeguards into policy design

and ensure that climate targets do not inadvertently erode the global sustainability leadership of Northern Ireland's agri-food sector.

4. **Policy Coherence and Integration**
   DAERA must ensure that climate policies are coherent and do not conflict with other strategic goals. The Revised Operational Protocol on ammonia emissions is a case in point, where planning restrictions are impeding sustainable development and innovation.

5. **Support for Knowledge Exchange and Farmer Engagement**
   Effective implementation of climate measures requires robust knowledge transfer and farmer support. This includes targeted investment in skills, animal health, genetics, and grassland management to avoid unintended consequences such as increased reliance on imported feed.

6. **Investment in Research and Innovation**
   Continued investment in agricultural research, including soil carbon monitoring and legume integration, is essential. AgriSearch proposes the establishment of a soil carbon observatory to improve national data and inform policy.

7. **Recognition of Carbon Farming Opportunities**
   The Climate Action Plan should incorporate carbon farming measures aligned with emerging EU frameworks. This would incentivise land managers to adopt practices that enhance carbon sequestration and biodiversity.

8. **Economic Impact Assessment**
   AgriSearch urges DAERA to commission comprehensive, independent economic assessments of all proposed measures prior to implementation. This is essential to ensure transparency, stakeholder confidence, and policy effectiveness.

9. **Addressing Bovine Tuberculosis**
   The impact of bovine TB on greenhouse gas emissions must be recognised. Reducing TB incidence could contribute meaningfully to climate targets and should be included in mitigation planning.

10. **Translation of Scientific Findings**
    AgriSearch emphasises the need for DAERA to translate scientific findings into practical, economically viable actions at farm level. Farmers are more likely to adopt sustainability measures when the financial benefits are clearly demonstrated. This approach aligns with Recommendations 5, 6 and 8. By

clearly communicating the economic returns of adopting science-based interventions, DAERA can drive greater farmer engagement and accelerate the transition to a more sustainable agri-food sector.

Conclusion

AgriSearch supports the ambition to reduce greenhouse gas emissions and enhance environmental sustainability by increasing the efficiency of livestock production. However, this must be achieved through realistic, evidence-based policies that safeguard food security, rural livelihoods, and the long-term viability of Northern Ireland's agri-food sector.

Introduction

AgriSearch (The Northern Ireland Agricultural Research and Development Council) welcomes the opportunity to respond to the Consultation on Northern Ireland's Draft Climate Action Plan 2023-2027.

AgriSearch was formed in 1997 to provide a mechanism through which beef, dairy and sheep farmers could have direct involvement in agricultural focused research. Funds contributed to AgriSearch are used to commission research into the improvement and development of beef, dairy and sheep farming. Our vision is to drive farm profitability and sustainability through science, research and innovation and our strategy is applying our knowledge, network and capabilities and working with others to turn scientific possibilities into sound farm practice

AgriSearch will be limiting its response to areas related to its charitable objectives.

The importance of the farming industry to Northern Ireland cannot be over-stated and is widely recognised as the backbone of the NI economy. The total gross turnover of the food and drink processing sector in NI was £6.52 billion in 2022 with provisional estimates for 2023 projecting a 9.4 increase to £7.13 billion[1]. The Northern Ireland agri-food sector supports 113,000 workforce jobs[2].

Agriculture, and the land-based economy, will play a key role in tackling climate change. It is uniquely placed to capture the major GHG, carbon dioxide, from the air and turn it into a wide range of food, fibres and fuels.

[1] https://www.daera-ni.gov.uk/sites/default/files/2025-04/Northern%20Ireland%20Food%20and%20Drinks%20Processing%20Report%202022_0.pdf
[2] https://nifda.co.uk/wp-content/uploads/2021/05/Food-for-Thought-EIA-of-the-Food-and-Drink-sector-in-NI.pdf

Climate Change is the most significant environmental threat facing society. It is impacting all farmers across the world with every country facing weather events that are increasingly extreme and frequent. NI agriculture will have to adapt to a changing climate. This will include dealing with more frequent severe weather events, adapting to changing weather patterns and addressing the challenge of new pests and diseases. This must be recognised and may influence NI's ability to meet targets particularly in the LULUCF sector. Data gathered from AgriSearch's GrassCheck programme has clearly shown the extent to which more extreme weather patterns are affecting forage production and utilisation.

Farmers can and must be part of the climate change solution within the correct policy framework and support.

AgriSearch has been working on several initiatives to benchmark and improve farmers carbon footprint. This includes carbon benchmarking of 48 farms involved in the Beacon Farm project, conducting in depth case studies on seven of these farms and working with farmers to reduce their carbon footprint through the use of clovers and other legumes. AgriSearch was also a partner in the pioneering ARCZero[3] European Innovation Partnership project which carried out a net carbon balance on seven farms across Northern Ireland.

The International Paris Agreement on climate change aims to limit greenhouse gas (GHG) emissions and keep temperature increases below 2°C, it also recognized the importance of "safeguarding food security and ending hunger". While it is recognised that NI needs to reduce its impact on the climate, this should not reduce our capacity to produce high quality, affordable food produced to high environmental, animal health and welfare standards, as reductions in local food production risks displacement of this production to countries with much higher emissions and poorer animal health and welfare standards. The Paris Agreement recognised the importance of "safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impact of climate change".

Goal 2 within the United Nations Sustainable Development strategy[4] is to 'end hunger, achieve food security and improved nutrition and promote sustainable agriculture'. Global demand for food is increasing and, according to UN forecasts, the number of mouths to feed will rise to nearly 10 billion by 2050. Agricultural production will need to increase by an estimated 60%, according to the UN Food and Agriculture Organisation, with strong demand projected for commodities such as milk and meat. The UK is

[3] https://www.arczeroni.org/
[4] https://sdgs.un.org/goals

currently only around 60-70% self-sufficient on a calorific basis with regard to meat, milk and eggs from domestic livestock production. There continues to be increased global demand for meat and dairy products, therefore it makes no sense for the UK and NI to achieve its climate change ambitions by exporting food production to other countries where emissions per unit of food production are much higher (carbon leakage).

The CCC's own evidence has indicated that NI and UK farmers are efficient meat and dairy producers. Ruminant livestock farming in the UK and Northern Ireland produces much lower emissions per unit of milk and meat output than other countries. In addition, NI and UK agriculture can utilise readily available "green" water (i.e. directly from rainfall and not immediately available for human consumption), instead of "blue" water where chemical/mechanical intervention is required and which within farming is inefficient and has a significantly higher CO_2 equivalent. Thus, Northern Ireland also has a low water footprint. Climate change is likely to lead to further desertification and increased water stress across a growing proportion of the world. It therefore makes sense for NI to produce red meat and dairy from sustainable livestock farming here as the contribution to global emissions will be much lower than producing this elsewhere. The CCC have recognised carbon leakage as an issue that must be prevented.

It is also recognised that beef production in Western Europe is currently 2.5 times more efficient in managing carbon emissions than the global average. Dairy farming in Northern Ireland has reduced its carbon intensity by 34% between 1990 and 2017 and greenhouse gas emissions from beef in the UK are 52% lower than the global average.

In addition, while there is some scope to increase arable and horticulture farming, most of Northern Ireland is unsuitable for crop and vegetable production. In addition, these enterprises have seen their margins drop considerably in recent years raising serious concerns about the impact on profitability of switching from grass-based livestock to arable and horticulture. In addition, the ploughing of permanent pasture to establish arable and horticultural crops raises the prospect of the loss of a significant amount of carbon from the soil to the atmosphere The ability of local ruminant livestock to turn grass and other by-products into high quality nutrient dense protein for human consumption must be recognised. In addition to food provision, ruminant livestock also provide wider benefits such as producing wool and leather as alternatives to man-made plastics, help to manage landscapes and promote biodiversity and provide nutrients through organic manures which contribute to improved soil health.

The Climate Change Act (Northern Ireland) 2022 recognises the principles of just transition and a Just Transition Commission should be established as soon as possible to ensure climate change targets are fair and just. Any just transition should recognise the essential role of farming in underpinning the rural economy and safeguarding the

viability of rural communities and delivering food security for the nation and alleviate the cost of its transition.

It is important that a co-ordinated policy response is pursued. DAERA needs to consider its intended policy actions in a wider context and guard against unintended consequences / perverse outcomes. This includes ensuring the economic and social sustainability of farmers and the wider agri-food sector and Northern Ireland's rural economy, in addition to consideration of other environmental issues (such as water and air quality and biodiversity).

In considering the timescale needed to adopt new approaches in the livestock sector, DAERA needs to be cognisant that farmers are conditioned in their attitudes by previous DAERA and CAP policies. Changes to the farm payments system are still at a relatively early stage and will take time to have an impact.

Need to review the Climate Change (Northern Ireland) Act 2022

While we recognise that DAERA is legally obliged to produce a Climate Action Plan, we would highlight the fact that the 2050 targets contained within the Act were not in accordance with the recommendations from the Climate Change Committee and in its Advice Report the CCC makes it clear how challenging it will be for Northern Ireland to achieve Net Zero by 2050.

The CCC advice is clear that not all parts of the UK are required to get to net zero emissions for the UK to meet its 2050 net zero target which is in line with the Paris agreement. Advice to NI outlined that an 82% reduction target (later upgraded to 83% reduction) reflects a fair contribution to the overall UK Net Zero 2050 target. All other regions within the UK are following CCC advice and have set targets in line with that advice. The balanced pathway is already extremely ambitious and a significant challenge for NI and for the agri-food sector.

In passing the Climate Change (Northern Ireland) Act 2022 the Northern Ireland Assembly chose to ignore the CCC advice and have imposed a more stringent 2050 target for carbon dioxide. However, CCC information to date shows that it will be impossible to achieve this and they have struggled to find a credible and affordable pathway to achieve this ambition. The CCC have highlighted that this pathway towards net zero in NI by 2050 could lead to 'distorting actions' in NI.

If the targets set are widely perceived to be unrealistic (which we believe they are), it will be much more difficult to achieve farmer uptake of any proposed new measures. More realistic targets are likely to have greater buy in. There is an urgent need to review the entirety of the Climate Change (Northern Ireland) Act as it contains multiple contradictions in addition to the aforementioned unrealistic targets. As recent developments concerning the A5 has shown the Act has the potential to hamstring economic development in Northern Ireland if it is not amended. Furthermore, there will be even greater resistance to meeting targets set for the agri-food sector if other targets within the Act are 'cherry picked' for removal in order to facilitate specific economic projects (e.g. progression of the A5) whilst reducing the economic competitiveness of the agri-food sector.

It is essential that DAERA and MLAs re-consider the unachievable targets with the Climate Change Act (Northern Ireland) 2022. Already considerable amounts of resource and funding have been allocated to the delivery of this flawed legislation which will ultimately have to be amended as it is extremely unlikely that NI will be able to meet the targets imposed by the Act.

Farmers also have poor experiences from previous government policy initiatives and support schemes (e.g. the Renewable Heat Initiative) which have been short-lived, due to U-turns in government policy, resulting in the early adopters being negatively impacted financially. Whatever schemes are put in place must be committed to by government and the entire supply chain for the long term, so farmers and other have the confidence to invest and make the necessary changes.

While the government is obliged to treat different sectors of the economy such as agriculture, LULUCF, energy, transport and waste separately for purposes of the GHG inventory, farmers as land users operate across three sectors, namely, agriculture, LULUCF and energy, and it makes no sense to segment their activities as is being required. Moreover, it disincentives actions that might be undertaken in some sectors (E.g. Energy) to offset emissions that might arise in related sectors (E.g. Agriculture). It is important that credits earned by above / below ground sequestration in LULUCF, renewable energy etc can be applied to agricultural emissions, which by their nature as a biological system can never reach net zero.

We would also strongly support the need for further investment in Research and Development and in robust, validated science, particularly social science, as farmers will be asked to make significant changes to their businesses which many will find difficult to accept and implement. Furthermore, as with the GHG inventory, we are concerned that many scientists are working in silos, with insufficient connection or coordination across individual research projects. There is need for government to

address this deficiency when commissioning new research. In our view, much more emphasis should be given to a programme-based approach to research commissioning, rather than the project-by-project approach used currently.

Bovine Tuberculosis

AgriSearch wish to highlight the ongoing impact of Bovine Tuberculosis (TB) in Northern Ireland on Greenhouse Gas emissions from the livestock sector. DAERA statistics[5] indicate that over 18,000 cattle were removed from the national livestock herd in 2024 as a result of current TB policy. This represents around 2.5% of the mature cattle herd (older than 24 months) and adversely affects the carbon footprint of the affected farms and Northern Ireland as a whole. Consequently, the elimination of bovine TB would contribute to meeting the carbon budget objectives. This is an example of the type of measure that needs to be included in a published MACC to enable an objective assessment of the realism of the proposed targets.

Recent data from DAERA shows that in 2024, **2,314 herds** in Northern Ireland were identified as TB reactor herds, with **3,270 unique herd breakdowns** recorded during the year. TB herd incidence stood at **10.7%**, marking a continued upward trend from previous years. These figures reflect the widespread and persistent nature of bovine TB across the region.

One of the unintended consequences of TB breakdowns is the **increase in the number of animals held on affected farms**. Farmers often retain additional replacement stock to mitigate the risk of future breakdowns or delays in restocking, leading to **higher stocking rates** and extended animal lifespans. This results in increased feed use, manure production, and methane emissions—ultimately worsening the farm's greenhouse gas footprint.

AgriSearch recommends that DAERA:

- Quantify the **GHG impact of TB-related herd management practices**, including increased animal retention and delayed culling.
- Include TB mitigation as a formal component of the Marginal Abatement Cost Curve (MACC) for agriculture.
- Prioritise TB eradication not only for animal health and welfare reasons but also as a **climate mitigation strategy**.

[5] https://www.daera-ni.gov.uk/articles/tuberculosis-statistics-northern-ireland

Reducing TB incidence would allow farms to operate with more optimal herd structures, improving both **production efficiency** and **emissions intensity**. This is a clear example of how improving animal health can deliver environmental benefits and should be reflected in future climate action planning.

Metrics Used

The impacts of agriculture on the national greenhouse gas (GHG) inventory are currently assessed using the metric, ''Global Warming Potential 100'' (GWP100). GWP100 was developed to enable comparisons of the global warming impacts of different gases as it measures how much energy the emissions of 1 tonne of different gases will absorb over 100 years, relative to the emissions of 1 tonne of carbon dioxide (CO2). The larger the GWP, the more that a given gas warms the Earth compared to CO2 over that time period.

Methane (CH4) is one of the primary GHGs emitted by ruminant livestock and is estimated to have a GWP100 of 27-30 over 100 years. However, CH4 only stays in the atmosphere for around 10-12 years, which is much less time than CO2, but it also absorbs more energy than CO2. Limitations in the GWP100 measurement approach were identified some years ago by researchers at the University of Oxford (Allen et al, 2016). Its main limitation is that it assumes that all greenhouse gases are stagnant in the atmosphere and remain there for many years. However, methane is a short-lived gas and is removed from the atmosphere relatively quickly after being emitted. This atmospheric effect is not accounted for in the GWP100 calculation. Furthermore, in situations where livestock numbers are stable, methane emissions will remain constant, with no additional methane released into the atmosphere and therefore no additional warming from methane will arise.

As GWP100 does not fully account for the shorter-term impacts of methane in the atmosphere, this leads to an overestimate of its contribution to global warming patterns., Recent analysis by Lynch et al, (2020) concluded that basing climate policies on GWP100 was flawed as it fails to reflect the impact of different gaseous emissions on global temperature and risks undermining confidence in well-intentioned policy initiatives.

In order to account for this effect, a new metric (GWP*) has been developed (Allen et al, 2016) as a means of measuring carbon in the atmosphere, taking the shorter lifespan of methane from the atmosphere into consideration. GWP* provides a better estimate of temperature change for different GHG emissions as it captures differences in short- and long - lived GHGs. GWP* makes allowance for the fact that methane emissions will

cause warming for about 12 years before declining and calculations made using this metric demonstrate that livestock can eventually become climate neutral and no longer actively contribute to warming, providing that appropriate interventions are taken to reduce emissions.

However, current government policy remains based on GWP100 and does not take the new metric into consideration. In a recent research report McAuliffe et al, (2023) concluded that 'much of the information currently being communicated to stakeholders and laypeople alike may provide an incomplete or, potentially even misleading, representation of the impact of agriculture towards climate change.'

As a result, McAuliffe et al, (2023) recommended that in calculating the environmental impact of agri-food systems, it is important to test the robustness of assumptions by adopting multiple sensitivity analyses in life cycle analysis using GWP100 and GWP∗, whilst also reporting GHG emissions individually. These authors also noted that using a 100-year horizon alone to assess GHG impacts underestimates the full significance of the short-term gains, in terms of reduced planetary warming, of targeted mitigation of CH4.

We recognise, however, that the use of the GWP100 metric is bedded into current international deliberations and while there is an emerging appreciation of the deficiencies in its use, there is no guarantee that an alternative, such as, GWP* will be preferred, and certainly not in an early time frame. Accordingly, we consider that it would be prudent for DAERA to adopt a split-gas approach, as in New Zealand. This would involve the provision of two targets with Methane having a lower target than other gases.

AgriSearch welcome the investment that DAERA have made in investigating alternative metrics for biogenic methane and we welcome the publication of the paper by John Lynch "*What does the large range in potential methane 'CO2 equivalent' evaluation imply for climate policy targets? An initial exploration in the context of agricultural emission scenarios for Northern Ireland.*"[6] While we note that the selection of metric will have no significant effect on the 2023-27 Climate Action Plan it is important that this is kept under review.

While the limitations of GWP100 in assessing methane's impact are well documented, it is equally important to recognise that current emissions metrics often fail to account for the impact of animal health on productivity and emissions. Kyriazakis et al. (2024)[7] argue that emissions from unhealthy animals are systematically underestimated in national

[6] https://www.cabidigitallibrary.org/doi/10.31220/agriRxiv.2025.00321
[7] https://doi.org/10.1098/rspb.2024.0675

inventories, leading to a bias that obscures the true mitigation potential of health interventions.
AgriSearch recommends that DAERA explore the integration of **animal health-adjusted emissions factors** into future inventory methodologies and support the development of **Tier 3-compatible** models that reflect the metabolic and immunological costs of disease.

Proposed interventions in the agricultural sector

Rather than providing detailed commentary on each individual policy intervention, we offer a series of overarching observations and recommendations.

We are encouraged by DAERA's decision not to pursue a policy of livestock reduction. Such an approach would have significant adverse consequences for the Northern Ireland economy and UK food security, while paradoxically increasing global greenhouse gas (GHG) emissions. Northern Ireland's livestock sector is among the most carbon-efficient globally, and reducing production here would inevitably result in displacement to less efficient regions.

Knowledge Exchange and Farmer Engagement

Effective knowledge exchange and communication with farmers will be critical to the successful implementation of many of the proposed initiatives. For example, reducing age at slaughter can be achieved through:

1. Improved grassland management (including silage production)
2. Enhanced genetics
3. Better animal health
4. Increased concentrate feeding

It is essential that farmers are supported to focus on options 1–3, which offer more sustainable pathways, as highlighted in the report produced by the Expert Group on Sustainable Land Management in 2017 (Delivering Our Future, Valuing Our Soils; A Sustainable Agricultural Land Management Strategy for Northern Ireland) However, these areas (and in particular improved animal health and grassland management) require an increase in the level of skills and management intensity. While feeding additional concentrates is undoubtedly the most expensive of the three options above it is the easiest and given the part-time nature of beef farming in Northern Ireland there is a danger that many farms will opt to feed additional concentrates to achieve the earlier slaughter dates – indeed evidence from industry suggests that this is already occurring

in practice. This risks higher embedded emissions from purchased feed. Therefore, targeted support is needed to promote labour-efficient improvements in grassland management, animal health, and genetics. However, we acknowledge that on many occasions increased concentrate feeding may be warranted (for example during periods of poor weather) and if done in a targeted manner can actually reduce the carbon footprint of livestock production.

The discontinuation of the Business Development Groups (BDGs), coupled with the significant delay in launching the new Sustainable Business Groups (SBGs), has led to a marked reduction in structured engagement between farmers and CAFRE. This gap has weakened the channels through which knowledge transfer and advisory support are delivered. Furthermore, it is concerning that participation levels in the SBGs—particularly within the beef and sheep sectors—are notably lower than those previously achieved under the BDG model.

In addition, recent policy developments, such as the handling of the recent Nutrients Action Programme consultation, have adversely affected trust between the farming community and DAERA and AFBI. Rebuilding this trust will require a renewed commitment to transparent communication, timely consultation, and meaningful collaboration with farmers and their representative bodies.

Legume Adoption and Fertiliser Reduction

We note the Plan's emphasis on reducing manufactured fertiliser use through increased adoption of legumes in grassland systems but wish to highlight that this approach will involve a number of major challenges. For instance, successful clover establishment requires soil pH levels around 6.5, yet recent Soil Nutrient Health Scheme (SNHS) data indicates that over half of tested soils fall below pH 6.0.

AgriSearch has invested significantly in initiatives such as the ZeroNsile project, which has highlighted the complexities of legume integration, including the need for robust nutrient management planning to ensure adequate phosphorus and potassium availability. To achieve meaningful progress, DAERA must adopt a more comprehensive and better-resourced approach to research and knowledge transfer on legume management than has been pursued to date.

There is also need for further research on the use of clovers both at AFBI and on-farms. More work is needed on how we bridge the spring gap in growth with clover swards. Weed control can be a very significant issue with many farmers as options for clover safe sprays are extremely limited and expensive. Further work is also needed on bloat prevention strategies.

We need new metrics and an upgraded evaluation programme to evaluate different varieties of both White clover *(Trifolium repens)* and Red clover *(Trifolium pratense)* to evaluate its persistence and the nitrogen fixing capacities of different varieties. As our climate changes exploratory research and grass / clover breeding should be considered for other clovers and legumes such as Alsike clover *(Trifolium hybridum)* (which can suit damper conditions as well as more acidic soils), Birdsfoot Trefoil *(Lotus corniculatus)* (which helps to counteract bloat) as well as annual clovers such as Crimson clover *(Trifolium incarnatum)* and Egyptian clover / Berseem *(Trifolium alexandrium)* which have been successfully utilised by some farmers in Northern Ireland and may have a place within crop rotations.

Methane-Suppressing Feed Additives

We note that reductions in agricultural emissions proposed in the Climate Action Plan are heavily reliant on a large proportion of farmers feeding methane supressing additives. While such products do offer the opportunity to significantly reduce methane emissions from housed livestock, several key challenges must be addressed including:

1. **Social acceptance** – at present none of the Northern Ireland dairy processors are willing to collect milk from cows fed Bovaer (*3-Nitrooxypropanol / 3NOP*). This is due to pressure being exerted on them from further down the supply chain and demonstrates increasing consumer concern regarding use of artificial additives in food production.

2. **Costs** – The inclusion of methane-suppressing feed additives such as Bovaer would increase production costs by approximately one penny per litre of milk, potentially limiting access to premium markets and placing Northern Ireland's dairy sector at a competitive disadvantage internationally. Importantly, this cost burden offers no direct production or animal health benefits to farmers. Notably, the estimated cost of widespread adoption of Bovaer alone would exceed twice the total budget currently allocated to agriculture under the Just Transition framework—raising serious concerns about fairness, affordability, and long-term viability.

3. **Short term impact** – Given methane's relatively short atmospheric lifespan, the benefits of such additives diminish after 12 years, requiring continued use merely to maintain current emission levels.

To ensure the effectiveness and credibility of methane-reducing feed additives, it is essential that farmers and advisors have access to rapid, reliable measurement systems

capable of quantifying the impact of dietary changes on emissions at farm level. Without such tools, it is difficult to validate the environmental benefits of feed interventions, particularly in diverse and dynamic farm environments. Providing farmers with the ability to see and measure the impact of their dietary choices will not only improve uptake of methane-reducing technologies but also enhance trust, transparency, and long-term commitment to climate-smart nutrition strategies.

Anaerobic Digestion and Nutrient Management

We support the inclusion of anaerobic digestion (AD) technologies in the Plan, recognising their potential to reduce GHG emissions and address phosphorus surpluses. AD of separated slurry solids offers additional benefits, including reduced reliance on forage feedstocks and the production of organo-mineral fertilisers.

However, widespread adoption is currently hindered by planning restrictions, particularly those related to ammonia emissions. The interim Operational Protocol used by NIEA to assess planning applications is preventing sustainable agricultural development, preventing implementation of many of the policies and measures proposed through the emerging Sustainable Agriculture Programme, Climate Action Plans, Nutrient Action Programme and the draft Ammonia Strategy.

The Revised Operational Protocol limits a farmer's ability to respond to changing health and welfare requirements, environmental issues and discourages investment, and disincentivises farmers from making improvements to already existing developments.

These constraints affect not only new AD facilities but also slurry separation equipment and slurry methane abatement technologies (e.g. aeration / GasAbate) on farms. This situation exemplifies a siloed approach within DAERA and across the wider Northern Ireland Civil Service, where one policy area inadvertently obstructs another. A more integrated and coherent policy framework is urgently needed.

AgriSearch strongly urges DAERA to revisit and update the Revised Operational Protocol to ensure it is evidence-based, proportionate, and deliverable. As currently drafted, the Revised Operational Protocol is fundamentally flawed in both methodology and implementation. It fails to recognise the distinction between new and replacement or upgraded agricultural developments, leading to double counting of ammonia emissions and blocking investment in modern, low-emission infrastructure which will reduce GHG emissions. In doing so, it undermines the very environmental improvements it seeks to achieve, placing a de facto embargo on progress in sectors that are actively striving to enhance sustainability. The lack of recognition for environmental betterment, failure to accommodate welfare driven upgrades, and disregard for the operational and economic

realities of modern farming render the Revised Operational Protocol not only counterproductive but incompatible with key strategic goals, including those outlined in the Programme for Government, the Sustainable Agriculture Programme, the NAP and the Climate Change Act (Northern Ireland) 2022. Unless significantly amended, the Revised Operational Protocol will constrain innovation, stifle productivity, and jeopardise NI's agri-food sector at a time when it should be supported to lead on both environmental stewardship and food security.

It is clear science, and technological advances will continue to develop further solutions for the agricultural sector over the coming years to reduce GHGs. This will better inform the targets for agriculture going forward. It is vital that research and development continue to be supported in this area. There must also be clear long term funding allocation to research projects which are focused on mitigation measures and carbon sequestration to ensure the best available local information and data is being used.

Animal Health and Emissions Reduction

Improving animal health represents a significant, yet underutilised, opportunity to reduce GHG emissions from livestock systems. As highlighted by Kyriazakis et al. (2024), poor animal health leads to production inefficiencies, increased resource use, and higher emissions intensity per unit of output. Conversely, healthier animals convert feed more efficiently, have improved fertility and longevity, and produce fewer emissions per kilogram of meat or litre of milk.

The Climate Action Plan should explicitly recognise animal health as a mitigation lever. This includes:

- **Integrating animal health metrics into emissions inventories**, particularly through Tier 2 and Tier 3 IPCC methodologies.
- **Prioritising endemic disease control** (e.g. mastitis, lameness, parasitism) which have demonstrable impacts on emissions intensity.
- **Supporting research and data collection** to quantify the emissions benefits of improved health and to inform targeted interventions.

For example, Kyriazakis et al 2024[8]. estimate that reducing clinical mastitis incidence in dairy herds can lower methane emissions intensity by up to **4.5%**, depending on the methodology used. Similarly, parasitic infections such as liver fluke and gastrointestinal nematodes have been shown to increase emissions intensity by **2–10%** due to reduced growth rates and feed conversion efficiency.

[8] https://doi.org/10.1098/rspb.2024.0675

These findings underscore the need for **robust surveillance systems**, **farm-level diagnostics**, and **knowledge exchange programmes** that empower farmers to improve herd health as part of their climate response.

Translating Science into Farm-Level Sustainability: The Economic Case for Adoption

While scientific research continues to identify promising mitigation strategies for reducing agricultural emissions, there remains a critical gap in translating these findings into actionable, economically viable practices at farm level. Farmers are more likely to adopt sustainability measures when the **economic return** is clearly demonstrated alongside the environmental benefit.
For example:

- A dairy cow calving every **12 months instead of 14** improves lifetime productivity and reduces emissions per litre of milk, while also enhancing profitability through more consistent lactation cycles.
- Reducing **calf mortality** not only improves welfare outcomes but also reduces the need for replacement stock, lowering emissions and saving costs on rearing.
- Achieving **earlier slaughter age** through improved genetics, nutrition, and animal health can reduce feed costs and methane emissions, while increasing turnover and reducing overheads.

These interventions offer **dual benefits**—lower emissions and improved farm economics. However, without clear, farm-level data on the **cost-benefit analysis** of such changes, uptake will remain limited.

AgriSearch recommends that DAERA:

- **Commission economic modelling** to quantify the financial returns of key mitigation strategies, including improved reproductive efficiency, reduced mortality, and enhanced growth rates.
- **Integrate economic indicators into knowledge exchange programmes**, ensuring that sustainability advice is grounded in financial realism. This approach is currently lacking in both CAFRE and AFBI knowledge exchange, in contrast to Teagasc Knowledge Transfer Programmes.
- **Develop decision-support tools** that allow farmers to assess the economic and environmental impact of adopting specific practices on their own farms.

This aligns with:

- **Recommendation 5**: Investment in research and innovation must include economic validation of mitigation strategies.

- **Recommendation 6**: Knowledge exchange must be practical, relevant, and financially compelling to drive behavioural change.
- **Recommendation 8**: Economic impact assessments should include farm-level profitability metrics to ensure policy deliverability and stakeholder buy-in.

If farmers can see the **economic return**, they are far more likely to adopt the science—and in doing so, contribute meaningfully to climate targets while improving the sustainability of their businesses.

Land Use, Land Use Change and Forestry (LULUCF)

The agriculture and wider land use and forestry sectors are unique in their ability to remove greenhouse gas (GHG) emissions from the atmosphere. The agricultural and forestry sectors are the only sectors which can do this; NI will not deliver against targets without the support of the agricultural and forestry sectors. It is therefore essential that the right policies and support are in place for farmers and rural communities.

It is clear that our knowledge of above ground biomass in Northern Ireland is poor. The forestry inventory only recognises larger forestry plots failing to take into account smaller blocks of woodland throughout NI, particularly on farms. There are also assumptions made for NI in relation to the number of native trees (80%) v conifers (20%) which results in more conservative sequestration values.

We commend the progress made through the SNHS in assessing above-ground carbon via LIDAR. It is important that this rich dataset is used for inventory calculations rather than just using large forestry plots.

There is also ongoing debate around the amount of carbon in our soils. The amount of carbon stored in above ground biomass is minor compared to that in soils. There is still debate within the scientific community about the ability of soils to sequester carbon in the long term. AFBI Hillsborough 50 year+ trials indicate that soil carbon continues to accumulate under well managed soils under grassland long-term.

The ARCZero project demonstrated that soil carbon stocks far exceed those held in vegetation. Current SNHS data on soil organic matter is limited to 7.5 cm depth, with more detailed measurements available for only 250 sites across Northern Ireland.

While Northern Ireland initially led in this area, initiatives in Great Britain—such as First Milk's soil carbon benchmarking and the AHDB/HCC/QMS environmental baselining

pilot—are now advancing rapidly. AgriSearch has the ambition to establish a soil carbon observatory in Northern Ireland in order to provide accurate national data on carbon sequestration across a range of soil and sward types and livestock management systems and would welcome the opportunity to discuss details of their proposals with DAERA in more detail.

It has been reported in the Republic of Ireland that Teagasc has identified that estimates of emissions from drained peatlands are significantly overstated[9], due to an overestimation of the amount of drained peat grassland in the country. The published paper outlines that scenarios based on updated drainage status result in emission savings of up to 60% indicating how important it is to improve the accuracy of the inventory and baselines before plans and policies are determined and implemented.

We also highlight promising interim findings from Ulster University's research at CAFRE's Glenwherry Hill Farm, which indicate that peatlands are sequestering rather than emitting carbon. If confirmed, this could significantly alter the LULUCF contribution to Northern Ireland's GHG inventory. AgriSearch is proud to support this research through funding a PhD student to assist with data collection and analysis.

Carbon Farming

We note with disappointment that there has been no mention of the potential for carbon farming measures in the draft Climate Action Plan. The EU is promoting carbon farming by establishing the Carbon Removals and Carbon Farming Regulation (CRCF), which creates a voluntary certification scheme for activities that remove or store carbon, like improved soil management. This framework, approved in 2024, provides rules and a registry to ensure the authenticity and integrity of carbon removals, fostering a carbon market and creating new business opportunities for land managers. The CRCF aims to support EU climate targets by providing incentives, fighting greenwashing, and fostering innovation in carbon removal. The CRCF creates the foundation for a voluntary market where certified carbon removal units can be traded. This provides a financial incentive for land managers and farmers who adopt practices that sequester carbon.

Need for Economic Impact Assessments

It is critical that comprehensive economic impact assessments are undertaken on all proposed policy measures. The economic impact "assessments" contained in the consultation documents have not done this. The only values given are for capital

[9] Drainage status of grassland peat soils in Ireland: Extent, efficacy and implications for GHG emissions and rewetting efforts

investments and these seem conservative. While we realise this is a relatively high-level document it is essential that when and if DAERA decides to implement proposed measures through schemes (e.g. the sustainable agriculture scheme / sustainable agriculture payment) or legislation that they commission a thorough and detailed independent economic impact of such measures which should be provided in full at the start of the consultation process.

Conclusion

AgriSearch fully supports the ambition to reduce greenhouse gas emissions and enhance environmental sustainability. However, this must be achieved through a balanced and pragmatic approach that recognises the essential role of agriculture in delivering food security, sustaining rural economies, and supporting the wellbeing of communities across Northern Ireland.

Northern Ireland's agri-food sector is among the most carbon-efficient globally and is a cornerstone of the region's economy. Any climate policy must safeguard our capacity to produce high-quality, affordable food while avoiding carbon leakage and unintended economic harm. Reducing local production risks displacing food to regions with higher emissions and lower welfare standards, undermining both environmental and ethical objectives.

The Climate Action Plan must also reflect the principles of a **just transition**—ensuring that farmers and rural communities are not disproportionately burdened by the costs of change. This requires realistic targets, long-term policy certainty, and adequate financial and technical support to enable meaningful adaptation and innovation.

AgriSearch urges DAERA and the Northern Ireland Executive to adopt a coherent, evidence-based policy framework that:

- Prioritises food security and economic resilience; Recognises agriculture's dual role in emissions reduction and carbon sequestration;
- Supports farmers through inclusive, well-resourced transition pathways;
- Aligns climate ambition with practical deliverability and stakeholder engagement;
- Recognises animal health not only as a welfare and productivity issue but as a key climate mitigation strategy.

With the right support and strategic vision, Northern Ireland's agriculture sector can lead the way in climate-smart food production, contributing to national and global sustainability goals while protecting the livelihoods of those who feed us.

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