



**AGRISEARCH RESPONSE TO THE DAERA CONSULTATION ON:
Northern Ireland's 2030 & 2040 Emissions Reduction Targets and
First Three Carbon Budgets**
and
**Seeking views on Climate Change Committee (CCC) Advice Report:
The path to a Net Zero Northern Ireland**

AgriSearch (The Northern Ireland Agricultural Research and Development Council) welcomes the opportunity to respond to the Consultation on Northern Ireland's 2030 and 2040 Emissions Reduction Targets and First Three Carbon Budgets and Seeking views on Climate Change Committee (CCC) Advice Report: The path to a Net Zero Northern Ireland.

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 excellence and innovation within the Northern Ireland ruminant livestock sector and our mission is to drive a sustainable food system that embraces all dimensions of sustainability (people, planet and profit), by acting as a trusted, valued conduit of knowledge that is based on sound science and widely applied research.

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 almost £6 billion in 2022 and the agri-food sector supports 113,000 workforce jobs¹.

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://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 biggest environmental threat facing us globally. It is affecting every farmer 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 coping with more frequent severe weather events, adapting to changing weather patterns and dealing with new pests and diseases. This must be recognized and may influence NI's ability to meet targets particularly in the LULUCF sector. Data gathered from our GrassCheck programme has clearly shown the extent to which more extreme weather patterns are affecting grass growth and utilization.

Local farmers can and must be part of the climate change solution and with the right policy framework and support, farmers can deal with the climate and food production challenges.

AgriSearch has been working on a number of 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.

The International Paris Agreement on climate change aimed to limit greenhouse gas (GHG) emissions and keep temperature increases below 2C, it also recognized the importance of "safeguarding food security and ending hunger". While NI must reduce our impact on the climate, we should not reduce our capacity to produce high quality, affordable food produced to high environmental, animal health and welfare standards and balancing this will be a key challenge in the years ahead. 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".

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 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 demand for meat and dairy products, therefore the UK and NI must not achieve its climate change ambitions by exporting production and our greenhouse gas emissions, to other countries (carbon leakage). It makes no sense to import product from countries where emissions are higher and standards lower in order to meet climate targets.

The CCC have indicated that NI and UK farmers are efficient meat and dairy producers. Ruminant farming in the UK and Ireland produces much lower emissions 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 CO₂ equivalent. 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.

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. Plans to change the farm payments system are still at a very early stage and will take time to have an impact. Tax regimes and fiscal policies can also have a major impact. For example, farmers are unlikely to want to take land out of agricultural production (even if associated agri-environmental scheme payments are attractive) if it means the land no longer qualifies for Agricultural Property Relief for Inheritance Tax.

It is impossible to assess the realism or otherwise of the proposed targets for the reduction in GHGs without the publication of possible measures to address the challenge. Technological solutions need to be provided in the public domain to enable the objective assessment (i.e., science-based) of impact. The impact will be affected by the nature of the technology and especially by the likely adoption of the technology. Moreover, while many technologies are currently well known, many are at a very early stage of development and many, at this stage, are merely long-term prospects. We call on DAERA therefore to publish the Marginal Abatement Cost Curve (MACC) analyses that have been undertaken to date to enable an objective assessment of the targets to be conducted. This is a fundamental concern but there are other issues that we would like to highlight.

The consultation document sets out targets for the first carbon budget (2023-2027), but it is important to recognise that we are already at the end of year one, and compensation / incentivisation schemes have not yet been put in place to encourage industry adoption of any proposed new measures.

While we recognise that the Climate Change Act requires DAERA to set targets for 2030 and 2040, we feel that it is unrealistic to set in stone such long-term targets. We would also 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.

If the targets set are widely perceived to be unrealistic (which we believe the proposed targets 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.

Farmers also have bad 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 in particular, namely, agriculture, LULUCF and energy, and it makes no sense to segment their activities as is being required. Moreover, it disincentivises 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 highlight the need for further investment in 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.

Bovine Tuberculosis

AgriSearch wish to highlight the ongoing impact of Bovine Tuberculosis (TB) in Northern Ireland on Greenhouse Gas emissions from the livestock sector. Recent estimates suggest over 18,000 cattle were removed from the national livestock herd in 2022/2023 as a result of current TB policy. This represents around 2.5% of the mature cattle herd (older than 24

months) and consequently the elimination of bovine TB could make a contribution to meeting the carbon budget objectives. This is the kind of measure that needs to be included in a published MACC to enable an objective assessment of the realism of the proposed targets.

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.

AgriSearch would encourage DAERA to review the application of GWP* in assessing the impact of the ruminant livestock sector on GHG emissions and to include GWP* assessments in setting targets for the agrifood sector for 2030 and beyond.

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.

References:

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