

An Taisce:

Submission to the Department of Agriculture, Food and the Marine on 'Ag-Climate' – A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond

An Taisce rejects the business-as-usual assumption and cynical timing of this consultation process. The anemic ambition of the Government's Climate Action Plan is insufficient to meet Ireland's obligations under the Paris Agreement. Furthermore, given the increasing ambition among some of our European partners over the last 6-12 months, the goals and emission targets of the plan are plainly antiquated.

Any sectoral policy built on such poor foundations is destined to fail both the industry itself and the country as a whole. Climate action needs to be based on a coherent national plan underpinned by rigorous planning and high ambition. We endlessly hear of politicians' wish to move away from Ireland's laggard status on climate. This is not being matched by the action of those in authority.

Agriculture is Ireland's biggest emitter. The consultation document only commits to an emissions reduction of only 5% over current levels by 2030, reducing ambition and failing even to align with the 5-10% reduction for agriculture stated by the Climate Action Plan. Moreover, there is no clear focus on a society-wide pathway to zero emissions, only continued references to the ambiguous and inadequate measures provided by Teagasc and included in the Climate Action Plan.

In fact, given past failures to achieve mitigation action, An Taisce do not believe the measures set out by Teagasc and DAFM are credible [Notes 1 and 2, AT press releases below]. Rather, they are all too likely to increase total emissions by their reliance on efficiency improvements. As recent history shows these measures typically save money and time that are spent on increased production, cancelling out any climate benefit and causing more pollution.

The most important mitigation actions now required are immediate cuts in total imports of nitrogen fertiliser and animal feed. These are boosting the emissions of two potent greenhouse gases, nitrous oxide emitted from fertilised soils and manure, and methane, from cattle digestion of fertiliser-fed grass and feed concentrates. Ever more nitrogen use is adding to water, air and climate pollution damaging human health and accelerating our climate and biodiversity crises.

It is clear to An Taisce that the DAFM continues to focus on the industry mandated (and Government supported) Harvest 2020 and Food Wise 2025 plans. These have led to input-

intensive and ecologically illiterate practices that reward the few large agri-food processors and land owners at the expense of the vast majority of farm families and Ireland's biodiversity, habitats and waterways. Since 2010, Government, DAFM and Teagasc have presided over rising emissions, entirely contrary to Ireland's agreed EU target and taxpayers now have to pay the compliance costs. The industry "strategies" they have supported have enriched a minority of stakeholders but loaded risk onto farmers and ramped up pollution due to overuse of fertiliser and chemicals.

Running this consultation in parallel with the development of the next industry written "Agri-Food 2030" strategy without mutual coherence points to a lack of clarity in thinking. Once again the membership of the committee appointed to overseeing the agri-food strategy plainly shows the "dominance of a 'business as usual' approach". It is clear that the message is just not getting across – any business-as-usual basis for planning will not deliver on the change necessary.

A new mindset is needed: DAFM need to accept that total agricultural emissions **must** go down every year without fail. Over thirteen years from 1998 onwards, Ireland did actually achieve steady mitigation in agricultural emissions, cutting nitrogen use and reducing methane through having fewer cattle. Industry-led policy since then has reversed almost all of this success in just seven years, with emissions growing by 15% since 2011. The milk quota and reducing subsidies were important mitigation tools previously, we now need to set hard limits on fertiliser use on grass and on animal feed imports to curb emissions each and every year.

'Ag-Climate' is a roadmap to further failure, it fails to set out a sustainable transition for farmers and rural Ireland. It has no plan to cut total nitrogen inputs, the key driver of the increased climate, water and air pollution that is escalating damaging to human health and biodiversity as well as climate.

Inaction is causing climate change. We need meaningful action from all sectors to cut use of fossil fuel and reactive nitrogen. Delay is not an option.

NOTES:

1. An Taisce (2019) 2017 Correspondence between Teagasc and An Taisce regarding agriculture and greenhouse gas emissions <https://www.antaisce.org/AT-Teagasc-correspondence-2017>
2. An Taisce (2019) Are Teagasc's climate mitigation projections credible? <https://www.antaisce.org/TeagascClimateCredibility>
3. Tara Kenny, Mary Cronin & Colin Sage (2018) A retrospective public health analysis of the Republic of Ireland's Food Harvest 2020 strategy: absence, avoidance and business as usual, Critical Public Health, 28:1, 94-105, DOI: 10.1080/09581596.2017.1293234



ANIMAL HEALTH IRELAND

Contributing to a profitable and sustainable farming and agri-food sector through improved animal health

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Response to public consultation on A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond

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Animal Health Ireland (AHI; www.animalhealthireland.ie) was established in 2009 as a not-for-profit organisation and has the mission "To contribute to a profitable and sustainable farming and agri-food sector through improved animal health", with a focus on those diseases not regulated at EU level. AHI functions as a private/public partnership, with a wide range of stakeholders across the agri-food sector, including dairy and beef processors, farm and veterinary representative organisations, AI companies, service providers, pig farmers and DAFM. For each of our programmes in the cattle and pig sectors, a scientific evidence base is provided by a technical working group with an independent chair. Decisions on the initiation and oversight of programmes are taken by a series of Implementation Groups convened by AHI and comprising stakeholder representatives. Significant economic returns have been demonstrated for several of these programmes, reflecting the efficiencies gained.

Given AHI's focus on animal health, responses to the consultation are therefore largely limited to this area.

Part 1: Implementing Changes Now

1. Reduce agriculture emissions to at least 19 Mt CO₂eq by 2030

Action 3. Develop enhanced dairy and beef breeding programs, that; (i) increase our rate of genetic gain for key indicators linked to profitability, sustainability and climate efficiency, (ii) promote greater herd and animal performance recording and (iii) help achieve a reduction in our overall GHG output at a national level, by 2025.

Question 1

Are there other actions that could be considered for inclusion to further enhance progress and credibility of agricultural actions? Is there more that farmers and the food industry itself can do?

The incorporation of animal health in the most recent marginal abatement cost curve (MACC) within the Teagasc Report "An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030" and the Climate Action Plan 2019 shows that improvements to animal health have the potential to contribute significantly to efficiency measures reducing GHG per unit of output, and furthermore that these



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gains are cost-beneficial in terms of their abatement cost. These gains are associated with improvements in the health of dairy and beef cattle across a range of diseases, including BVD, Johne's disease, IBR, mastitis, liver fluke, diarrhoea, pneumonia, lameness and infertility. AHI and our stakeholders have already been proactive in progressing activity in many of these areas, including the national BVD eradication programme, CellCheck (the national mastitis control programme), the voluntary Irish Johne's Control Programme (IJCP) for dairy herds, the Beef HealthCheck (BHC) programme (capturing liver and lung data at abattoirs and reporting back to farmers) and communicating best practice in relation to CalfCare, parasite control and biosecurity.

However, with the exception of a target of increasing the proportion of herds engaged in milk recording (which is already a focus of AHI's CellCheck Implementation Group), the development and roll out of specific animal health measures do not appear to have been adequately considered or included in the current Roadmap.

Question 2

Have you any feedback on how uptake of these actions can be encouraged and facilitated?

Based on AHI experience to date, the potential to increase both the extent and rate of uptake of practices to control these diseases and conditions exists, requiring the development of an evidence-led consensus among stakeholders, agreement of an appropriate cost-sharing model reflecting the private and public goods achieved, communication of clear, consistent messages from all stakeholders and regular review all being important factors in actually achieving these outcomes. From an AHI perspective, sectoral efforts should focus on completion of BVD eradication, increasing the level of participation in the IJCP (and making this available to beef herds), continuing improvement in national SCC to attain industry-agreed targets, increased use of BHC outputs by farmers and vets and a decision on progression to a national IBR programme. The adoption of milk recording as a routine practice by an increasing proportion of dairy herds would contribute toward both an improvement in national SCC and increased participation in the IJCP. There is also the potential to use results generated by such programmes and shared with ICBF to inform the development of resilience sub-indices within breeding programmes. A good example of this is the use of data on liver fluke collected by the Beef HealthCheck programme to identify 5* sires whose progeny were relatively resistant to fluke, allowing these to be selected by farmers based on this characteristic.

Finally, it should be noted that the gains identified in the Teagasc report on abatement of greenhouse gases in relation to animal health assume that degree to which the national herd average could be moved from the current baseline value to the healthy value was assumed to be 20% movement from baseline to healthy value. In some cases, a greater move has already been achieved (e.g. BVD eradication) and should be captured in the figures; in others (e.g. a national IBR eradication programme, a movement of much greater than 20% (approaching 100%) is achievable by 2030.

Part 2: Acting in Partnership

Action 16: We will develop a charter with industry forging a sustainability partnership to support farmers in achieving market demands.

The State will play its part

Question 7. Are there other actions which the State could consider, particularly in partnering with Industry?

The stretching targets proposed within revised quality assurance schemes would be enhanced by inclusion of specific health measures, related to decisions on achieving the health-related gains identified in the MACC.

A greater role for producers, farm advisors and processors

Question 9. Given that the State and policies such as the CAP can't finance or deliver all of the actions required, which actions or measures could Industry fund?

Action 21, referring to further enhancement of animal health measures, is welcome, but requires further detail. For each measure/programme, an appropriate cost-sharing mechanism should be identified, reflecting the balance of costs and the public and private goods generated.

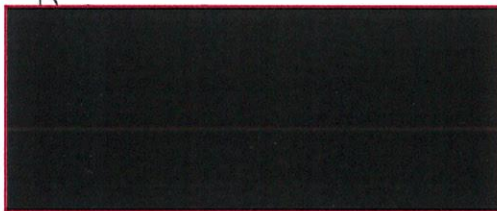
Part 3: Preparing for the Future

Question 11

What are your views on these six guiding principles in preparing for the future? Are they sufficiently comprehensive or are there others you would add?

The contribution of improved animal health should be more clearly recognised within these six principles.

Signed:





Submission Regarding
*A Draft National Climate & Air Roadmap for the Agriculture Sector
to 2030 and Beyond Public Consultation*

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Introduction

Agri-food and energy policies are now being considered in the context of 10, 20 and 50 year timeframes as opposed to the more traditional 3 and 5 year policy reviews. This shift in timeframe span is in line with the need to consider the long term impact of policies in the context of climate change. Climate change challenges now require that there is a coherence of policies across Government to ensure that sectors of the economy and Government are not working at variance to each other. Teagasc analysis notes *"This is the agri-food development and environmental policy dilemma facing Irish policy makers and the wider Irish agri-food industry."*

Recent Irish and UK Climate Change Committee reports have outlined the stark implications of climate change for future generations as well as the imperative need for change in society, business and Government if the challenges are to be adequately addressed.

Brexit has also highlighted a range of vulnerabilities in the Irish Agri-Food sector which will require new policy initiatives with a view to reducing agri-food business risks and creating new business opportunities in the sector.

This policy backdrop points to the need for new business development opportunities. It is critical that ongoing policy development acts as a catalyst to ensure that Ireland can capitalise on future innovative agri-food business opportunities.

This consultation process is a welcome step on the road for Climate Change policy development in Ireland however the consultation paper, *A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond*, fails to deliver a balanced approach to climate change for Irish Agriculture.

In considering this consultation document, it is clear that the starting point of the consultation discussion has been framed to fit an agricultural policy context envisaged by "FoodWise 2025" rather than the future food policy which is currently under consideration for the decade 2020-2030. This backdrop represents a serious flaw in the development of new agricultural policies in the context of the exceptional climate change challenges facing Ireland.

Ireland's food industry has grown exponentially due to innovations, new products and new market developments. Bord Bia and Teagasc have played a key role in assisting businesses to develop new products and access new markets. However not all sectors have progressed in line with the rising tide of the food industry and for the tillage sector, farmers are having to increasingly compete with imported product. While competition can be positive, the weakening of the tillage sector is a cause of concern. A circular economy approach to Irish agriculture, in the context of climate change, can create new opportunities for the arable sector while also helping to address some of the CO₂ and Ammonium Nitrate problems associated with the dairy and beef sectors.

The pillars of Irish agriculture should be viewed from the point of view of positive impact on climate change as:

1. Forestry
2. Arable
3. Horticulture
4. Beef
5. Dairy

The Climate Change Target

The consultation roadmap document clearly sets out the target commitments that the Irish Government has set as follows:

"The 10% to 15% emissions reduction target for agriculture in The All-of-Government Climate Action plan, translates to a reduction in emissions from 20.2 Mt CO₂eq in 2017 to between 17.5 and 19 Mt CO₂eq by 2030. Furthermore, this plan also requires agriculture to enhance CO₂ removals from the landscape by at least 26.8 Mt CO₂eq and contribute to the development of sustainable decarbonised energy systems. These obligations require full implementation of the actions set out in the Teagasc report 'An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030'⁷ (also known as the 'MACC curve')."

The introduction commentary goes on to state that:

"This means that all actors within the sector will need to work in partnership in order to achieve those targets, while also ensuring that the agri-food sector continues to support a vibrant rural economy and society.

There are 5 key things that we need to do while maintaining viable farm incomes in the sector.

- 1. Reduce GHG emissions from the sector*
- 2. Increase the carbon sequestration potential of our land and forests*
- 3. Meet our ammonia ceilings targets*
- 4. Build resilient food production and land use systems that meet these climate and air obligations, while also meeting market expectations*
- 5. Transparently communicate our progress"*

It is essential that all actors work in partnership if the issues of climate change in agriculture are to be effectively addressed however there are far more than five actions that need addressing if there is to be a successful viable and sustainable outcome from this roadmap. New strategies, new innovations, knowledge transfer, R&D and circular economy opportunities are needed to deliver sustainable opportunities across the agri-food, bioeconomy & energy sectors.

Research Background

The Teagasc land use, land management and energy MACC research provides the main body of research on proposed actions to address climate change up to 2030 in agriculture. However a 2019 Teagasc paper on this topic concluded that¹:

- **WARNING:** Across the world there is a poor take up of GHG mitigation actions by the ag sector
- Without mitigation, Irish GHG (and ammonia) emissions are likely to increase
 - Mainly due to increased dairy production
 - Which would lead to a larger cattle population
- Significant mitigation potential exists
 - But these solutions exist on paper only
 - Significant knowledge transfer input required plus
 - Policy measures to encourage uptake of mitigation measures

While the Teagasc Action list will in theory address the climate change targets for Irish agriculture, there is no guarantee that these actions will be sufficient or comprehensive enough to actually meet the 2030 climate change targets. The Climate Action Plan 2019² noted "while continued effort in further developing, enhancing, and implementing these measures is essential, the agriculture sector must step-up action to deliver the scale of ambition now required."

¹ Professor Frank O'Mara, Director of Research, Teagasc, RDS-Teagasc Climate Action Summit March 15th 2019

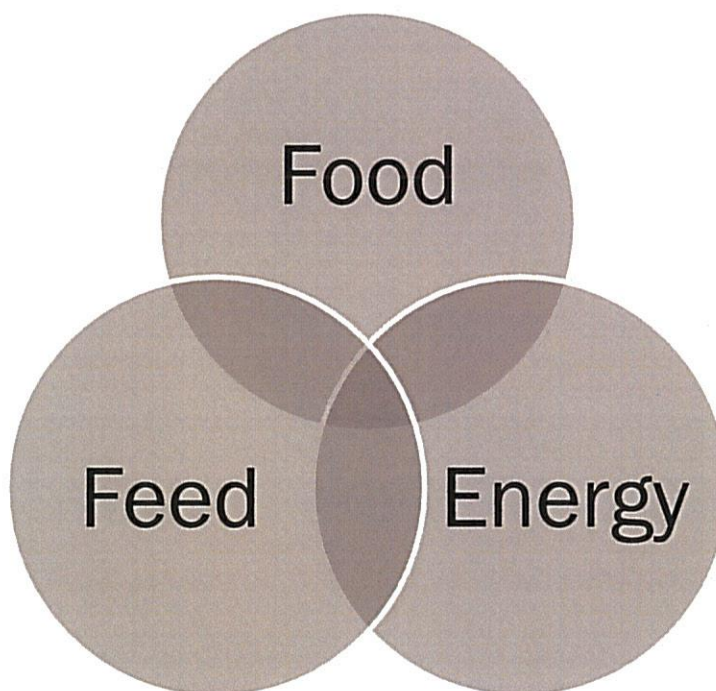
² Government of Ireland CLIMATE ACTION PLAN, 2019

Bio-Economy & Energy

The Government has affirmed the importance of the bioeconomy and its vision is for Ireland to become a global leader in this area through a co-ordinated approach that harnesses Ireland's natural resources and competitive advantage.³ The Roadmap consultation paper notes that *"the call for a climate-neutral Europe by 2050 highlighted that the systemic adoption of a circular bioeconomy approach at governmental, agri-food and industrial level provides the opportunity to address the multifaceted challenges posed by climate change and land use."*

While the *Biorefinery Glas* project example illustrates the need for ongoing research in this area, much more focus is needed in the agri-food and energy sectors if such new and innovative opportunities are to be capitalised on across the Irish rural economy.

Energy creates a common theme across our economy and society. Its impact on climate change is an ongoing focus of Government policy and it is an area of significant innovation. Agriculture is a sector that can positively impact with renewable energy development and sequestration of carbon. The need to develop circular economy opportunities is of strategic importance to the agriculture and tillage sectors. New business opportunities can be developed, especially in a food/feed/energy matrix.



While agriculture is a relatively low user of energy, it has the potential to be an important supplier and facilitator of renewable energy production via biofuel, biogas, solar and wind energy production.

Coherence of policy across Government Departments is critical if Ireland is to become a policy champion for climate change. In this regard transport and agriculture are two of the sectors that must seek to bring about important policy initiatives if the country is to make real progress. Both Departments must synchronise and harmonise their policies to best effect going forward. Agricultural policy has been heavily focused on food production, especially beef and dairy, which

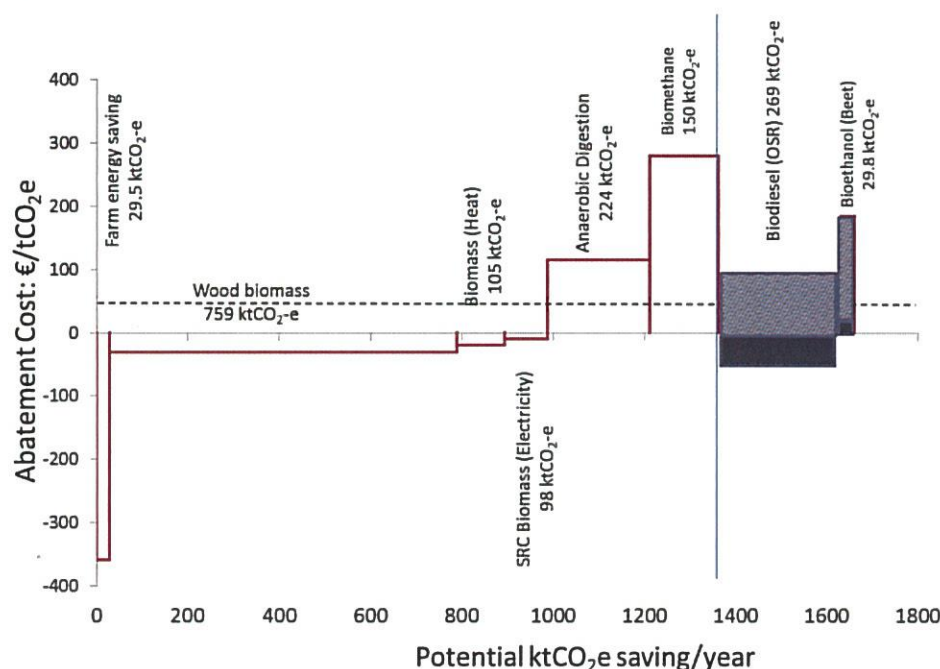
³ National Policy Statement on the Bioeconomy, 2018

in turn has created added supply of Greenhouse Gases. Agriculture must therefore become a supplier of sustainable energy sources which will assist with climate change improvements into the future. The sustainable production of bio-ethanol and bio-diesel is therefore of critical importance. In this context the Irish Government should introduce a policy framework to create and support the market for the sustainable production of bio-ethanol and bio-diesel in Ireland.

The NDP has set biofuel blend targets i.e. “Blending levels to reach E10 and B12 by 2030 with statutory blend increasing incrementally”. There are no barriers to introducing this change. The added benefit will be the generation of new demand for bio-ethanol within Ireland, which can be produced via energy beet. The energy beet also serves as an important break crop within the arable sector. The alignment of Government Department policies is therefore essential if the full environmental and economic benefits of this change are to be maximized for Irish agriculture. This policy change should be incorporated into the 2030 Roadmap.

The Teagasc analysis of Bioenergy⁴ notes that “The capacity for offsetting fossil fuel emissions is highly uncertain. In the previous iteration of the MACC, bioenergy was estimated to deliver 1.4-1.6 Mt CO₂-e yr⁻¹, yet much of this has remained unrealised as the land area of biomass crops is low and anaerobic digestion uptake is very low.”

Chart 1 Bioenergy MACC Analysis



Note: Marginal Abatement Cost Curve for agriculture for 2021-2030 for bioenergy produced in the agriculture and forestry sectors. Values are based on linear uptake of measures between 2021-2030, and represent the mean yearly abatement over this period. Note: Biodiesel costs/savings to farmers indicated in dark blue and total production costs in light blue.

It is concluded from the above that:

1. the potential impact of biomass will continue to be low, especially in the context of ESB not using biomass as an alternative to its peat source for electricity generation.

⁴ An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030, Prepared by the Teagasc Greenhouse Gas Working Group

2. The absence of a policy framework to promote sustainable anaerobic digestion and biomethane production will result in this opportunity not being realised within the agricultural rural community.
3. The production of biofuels from the agricultural base will not be developed as an opportunity for Irish agriculture unless there is a supportive policy framework in place. At present the commercial opportunity to sustainably produce biofuel is not viable. Failure to develop this opportunity will result in a growing opportunity for European biofuel production facilities to supply Ireland's growing demand with negative balance of trade impact for Ireland.
4. Biogas⁵ production needs to be considered in the context of both gas supply (biomethane) and electricity production can will be fed into the electrical grid. The latter opportunity will have much broader application across the agricultural rural community than biomethane injection to the gas grid, due to the extensive electricity grid available across rural Ireland.
5. The potential for biogas production must be considered in the context of a broad range of feedstock inputs other than just grass. Energy beet is a major feed-source for AD plants across Europe.
6. The production of biofuels will require a significant scale of production in order to deliver competitive sustainable advantage into the future.

It is critically important that Irish and European agriculture achieves food and energy strategies that deliver sustainable opportunities for all sectors that ultimately strengthen the overall agri-food sector.

Development of synergies between sectors and maintaining a sustainable balance within the industry, will ultimately help to de-risk the agricultural industry and broaden its sustainable base of opportunity.

Forestry potential

Since the foundation of the State the area of land under forest in Ireland has grown from 1.4% of the land area, to the current 10.5%, with significant growth from 1985 to 2006 when forestry land area grew from 5.9% to 10.1%. The period 2006 to 2012 saw the area rise from 10.1% to 10.5% with average plantings per annum of 5.6k. In terms of climate change impact the forest cover that has been established over the last 100 years, now presents a significant bonus in terms of CO₂ sequestration and this represents a significant 2.1Mt per annum over the period 2021-2030 for carbon sequestration measurement⁶. This level of sequestration is based on planting 8,000ha of newly planted forestry, including agroforestry per annum to 2030. This target is clearly very ambitious in light of the 5,600 hectares per annum planted between 2006-2012. It is unclear how the expansion in forestry plantings by over 40% will be achieved against a backdrop of increasing land-use demands by other sectors across the country.

⁵ Biogas produced from anaerobic digestion can be used for a range of purposes including electricity and heat generation. When it is upgraded to biomethane (>97% methane content) it may be injected into, and distributed, by the natural gas network. Biomethane has been highlighted by the EU Renewable Energy Directive to be a sustainable transport biofuel.

⁶ Teagasc 2019

Table 1 Forest Area 2012

Land use category*	Area (ha)*	% of total land*	Consultation Paper Target 2030
Forest	653,980	9.5	8,000 Ha per annum
Forest open area	77,672	1.0	
Total	731,652	10.5	80,000 ha by 2030

Source: *DAFM, Forest Statistics - Ireland, 2017

Arable potential

In 2018 the Irish arable sector represented 323,700 hectares of crops, of which barley made up 185,000 hectares⁷. Table 2 outlines the area of land under the respective uses for arable, horticulture and pasture.

Ireland's food industry has grown exponentially due to innovations, new products and new market developments. Bord Bia and Teagasc have played a key role in assisting businesses to develop new products and access new markets. However not all sectors have progressed in line with the rising tide of the food industry and for the tillage sector, farmers are having to increasingly compete with imported product. While competition can be positive, the weakening of the tillage sector is a major cause of concern.

Table 2 Area under Crops and Pasture

Description	June 2016	June 2017	June 2018	Change 2017 - 2018	
	' 000 hectares			' 000 hectares	%
Wheat - total	67.9	67.0	58.0	-9.1	-13.5
Winter wheat	60.4	60.3	54.4	-5.9	-9.7
Spring wheat	7.5	6.8	3.6	-3.2	-47.5
Oats - total	23.2	24.4	17.8	-6.7	-27.3
Winter oats	13.2	14.4	10.2	-4.2	-29.3
Spring oats	10.0	10.0	7.6	-2.4	-24.3
Barley - total	189.2	180.2	185.2	5.0	2.8
Winter barley	74.6	65.0	57.9	-7.2	-11.0
Spring barley	114.6	115.2	127.4	12.2	10.6
Other cereals	0.8	0.8	0.6	-0.1	-17.8
Total cereals	281.1	272.4	261.6	-10.8	-4.0
Beans and peas	12.5	13.7	8.5	-5.2	-38.0
Oilseed rape	9.9	10.1	10.6	0.5	5.0
Arable silage	3.5	2.9	3.3	0.5	15.8

⁷ Central Statistics Office

Maize silage	10.9	11.9	17.8	5.9	49.5
Fodder rape and kale	1.6	1.6	1.5	-0.1	-8.6
Potatoes	9.0	9.2	8.2	-1.0	-10.4
Turnips	1.1	0.8	0.9	0.1	8.6
Beet ¹	9.5	10.0	11.3	1.4	13.8
Vegetables for sale	3.6	3.6	3.6	-0.1	-1.5
Fruit	0.8	0.8	0.8	0.0	-4.9
Nurseries, horticulture etc.	0.5	0.5	0.5	0.0	4.4
Other crops ²	21.8	28.1	28.4	0.4	1.3
Total crops, fruit and horticulture	365.8	365.6	357.0	-8.6	-2.3
Silage	1,066.8	1,088.9 ³	1,064.5	-24.4	-2.2
Hay	188.4	192.1 ³	191.9	-0.2	-0.1
Pasture	2,307.8	2,322.7 ³	2,378.7	56.1	2.4
Crops and Pasture	3,928.8	3,969.3³	3,992.2	22.9	0.6
Rough grazing in use	532.4	520.2 ³	524.1	3.9	0.8
Area farmed	4,461.2	4,489.5	4,516.3	26.8	0.6

¹ Includes sugar beet and fodder beet.

² Includes other crops not specified elsewhere in the table, miscanthus, fallow land & wild bird cover account for over 80% of this area. See Background Notes.

³ Revised. Pasture & Rough grazing values revised due to consistency checks with DAFM's Basic Payment Scheme.

Source: CSO

Teagasc analysis estimates that a combination of cover crop management and straw incorporation within the tillage sector can secure 0.16 Mt of carbon sequestration per annum. This analysis does not recognize the potential impact that the arable sector could have in terms of energy production with crops such as sugar beet. Recent research highlights the positive environmental sustainability contribution of the tillage sector vis a vis other sectors of agriculture as follows:

Chart 2

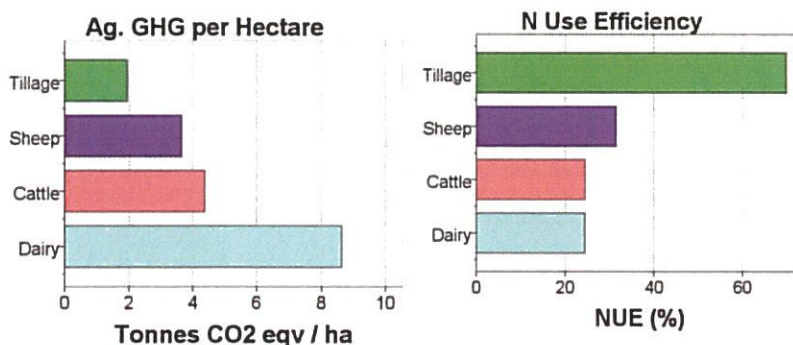


Chart 2. Environmental Sustainability: Farm System Comparison 2017 - average per system (Buckley et al.).

Horticulture potential

Horticultural production is referenced in the consultation document as a potential area for land diversification with a view to impacting climate change. This is not a realistic analysis of the potential of the horticultural industry. Future areas for potential impact relate to the circular economy within existing horticultural enterprises whereby the production of renewable energy sources could be used to substitute for fossil fuels currently needed to grow horticultural protected crops e.g. tomatoes. This sector will require a supportive policy framework for the shift to renewable energy sources by 2030. Failure to develop such a policy framework will likely have severe negative impact on the Irish protected horticultural sector.

Beef & Dairy Potential

Significantly the impact of the beef and dairy sectors for climate change is based on the national herd size. Ameliorating the negative impacts in terms of CO₂ and ammonium nitrates in the agricultural sector will be incremental. The Joint Oireachtas Committee on Climate Change⁸ described this challenge as, “ *There are currently ambitious targets aimed at adding value in the sector under FoodWise 2025. Exports are expected to reach €19 billion, which without diversification of the sector will inevitably drive higher levels of ruminant-based production and place GHG emissions on a continued upward trajectory, even with improved efficiency gains. There is a need for a more diversified, resilient, sustainable and equitable model for Irish agriculture. This must now form the central component of a long term strategy development for Irish agriculture moving forward.*”

Conclusions

1. Climate change is now centre stage in Government policy in Ireland and internationally.
2. Ireland has committed to achieving significant climate change targets in 2020 and 2030 however it will not achieve its 2020 targets in part due to the impact of the dairy and beef sectors policies of FoodWise 2025.
3. Irish agricultural policy must now be recalibrated in the context of climate change targets and this must guide all sectors of agricultural development.
4. New policies are now required to develop and support all sectors of agriculture. While forestry will continue to play an important part in CO₂ sequestration, the arable sector must be viewed as an area with significant potential for development and opportunity.
5. Renewable energy and bioeconomy innovations present the greatest opportunities for new ideas to address climate change. However these areas of opportunity require a supportive policy framework for businesses to be able to capitalise and commercialise these opportunities.
6. Agricultural policies must be coherent and aligned with energy policies such that Ireland as a whole delivers maximum benefits in terms of climate change, irrespective of which Government Department accounts for the initiative. Ireland's new policy shift needs to be based on Food and Energy policy alignment that is supportive of sustainable business innovations across the food, feed and energy sectors.

⁸ Report of the Joint Committee on Climate Action, Climate Change: A Cross-Party Consensus for Action March 2019



**Submission on “*Ag-Climatise*”, the
Government’s Draft National Climate and Air
Roadmap for the Agricultural Sector to 2030
and beyond.**

Date of Submission: 9th January, 2020.

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1. Introduction:

This document represents a submission by BioAtlantis Ltd. on the Department of Agriculture, Food and the Marine's, "*Draft National Climate and Air Roadmap for the Agricultural Sector to 2030 and beyond- Ag Climatise*". BioAtlantis is an indigenous Irish marine biotechnology company, specializing in the production and purification of natural bioactive compounds with the aim of providing solutions to specific problems in plants, animals and humans. The active components in the company's products are derived from marine and terrestrial sources, including species of brown macroalgae. BioAtlantis process intertidal and subtidal species of brown seaweeds including *Ascophyllum nodosum* and *Laminaria*. In particular, the company is licensed to sustainably mechanically harvest *Laminaria* (kelp) in Bantry Bay, Co. Cork. As such, BioAtlantis has substantial knowledge and insight into the harvesting of wild seaweeds, the technologies involved and ecological aspects therein.

BioAtlantis has reviewed the "**Ag-Climatise roadmap**" for the Agricultural Sector. This submission makes a number of comments and recommendations that should be considered when developing this roadmap, particularly with respect to enhancing carbon sequestration in the Agri-sector.

2. Enhancing carbon sequestration using sinks and removal of emissions.

Strategies and roadmaps aimed at enhancing carbon sequestration using sinks should focus on best available scientific information, including data published in peer reviewed scientific journals and other reputable sources. This section provides an outline of the scientific facts in relation to carbon sequestration both on land and in the marine area.

(a) Trees and wooded grasslands fix high levels of carbon from the atmosphere (41.7% of global NPP).

Global net primary production (NPP) is the total amount of carbon and energy that enters ecosystems worldwide every year. Carbon sequestration is the process of capturing and storing this carbon in the long term. For carbon sinks and sequestration strategies to be successful, they must be proven to be reliable and of sufficient scale and capacity. Field *et al.* (1998), estimate global NPP to be 104.9 petagrams (gigatonnes) of carbon per year, with carbon entering marine and terrestrial ecosystems from various sources. Data from this study shows that trees are a primary driver of global NPP of carbon, as summarised below and also in Table 1:

- As a combined category, forestry and wooded grasslands account for **41.7%** of global net primary production (NPP) of carbon every year (43.7/104.9 petagrams of carbon per yr^{-1}).
- Tropical rainforests account for **17.1%** of global NPP of carbon every year (17.8/104.9 petagrams of carbon yr^{-1}).
- Broadleaf and needle leaf forests account for **8.7%** of global NPP of carbon every year (9.1/104.9 petagrams of carbon yr^{-1}).

As outlined above, forestry represents a proven and effective method to sequester carbon in the long term. The carbon sequestration capacity of trees has also been studied in an Irish context. In a study by UCD, it was estimated that 10 to 50 year old trees can sequester carbon at a rate of 4 to 8 tonnes of carbon $\text{ha}^{-1} \text{yr}^{-1}$ (Black *et al.*, 2006).

Recommendation: The Ag-Climatise roadmap should focus on trees and forestry as proven carbon sinks, in efforts aimed at sequestering carbon from the atmosphere.

Table 1: Global Net Primary Production (NPP) of carbon from Terrestrial & Oceanic sources*Table adapted from Field et al., 1998*

Land NPP (petagrams of carbon per year)			Ocean NPP (petagrams of carbon per year)		
Class (Forestry/wooded grassland)	NPP	%	Class	NPP	%
Tropical rainforests	17.8	17.1	Oligotrophic	11	10.5
Broadleaf deciduous forests	1.5	1.4	Mesotrophic	27.4	26.1
Broadleaf and needleleaf forests	3.1	2.9	Eutrophic	9.1	8.7
Needleleaf evergreen forests	3.1	2.9	Macrophytes (e.g. seaweed)	1	0.95
Needleleaf deciduous forest	1.4	1.3			
Savannas (wooded grassland)	16.8	16.0			
Sub-Total	43.7	41.7			
Class (Other)	NPP	%			
Perennial grasslands	2.4	2.3			
Broadleaf shrubs with bare soil	1	1.0			
Tundra	0.8	0.8			
Desert	0.5	0.5			
Cultivated crops	8	7.6			
Sub-Total	12.7	12.1			
Total Land NPP	56.4		Total Ocean NPP	48.5	
Total NPP (Land & Ocean; petagrams of C/year):			104.9		

(b) Crops sequester up to 25% of fixed carbon as soil organic carbon (SCC).

Field *et al.* (1998) demonstrate that cultivated crops account for 7.6% of global net primary production of carbon every year (8/104.9 petagrams of carbon yr⁻¹). New studies demonstrate that cultivated crops sequester high levels of this fixed carbon within the soil. Sun *et al.*, (2018) have shown that **winter wheat translocates 25% of photosynthesised carbon below the ground (2.4 tonnes of carbon per hectare)**, with 18% allocated to the soil and 7% to the roots (0.69 and 1.7 tonnes of carbon per hectare respectively). Similar findings have been found for other crops such as barley (Table 2 below).

The study by Sun *et al.*, (2018) was based on a field planting density of 1.8 million wheat plants per hectare. Considering that up to 3 million plants are grown per hectare in countries such as the UK (Spink *et al.*, 2000), this would place the carbon sequestration capacity of northern European soils within the region of 2 to 4 tonnes of carbon per hectare. It is clear therefore, that cultivated crops play a major role in carbon sequestration by delivering vast quantities of carbon into the world's largest carbon sink- the soil.

It is worth noting that the levels of carbon stored in soils worldwide (1,576 petagrams) is almost three times that of aboveground biomass and almost double those levels in the atmosphere (Eswaran, 1993). Moreover, the majority of this carbon is stored within first meter of soil depth. As such, soil represents a major carbon sink that can be targeted in efforts made to increase carbon sequestration.

Recommendation: It is recommended that the Ag-Climatise roadmap should focus on soil as a major carbon sink. By increasing the efficiency, yield and growth of crops, carbon can be delivered and sequestered into the soil at higher levels. For example, winter wheat delivers up to 25% of photosynthesised carbon below ground and into the soil.

Table 2: Amount of carbon translocated below ground for wheat and barley.

The Table below and references therein are adapted from Sun et al., 2018. The amount of carbon translocated below ground was quantified by C pulse labelling methods.

Crop	Plant age (days)	Tonnes of Carbon ha ⁻¹			References
		Roots	Soil	Roots + soil	
Wheat	224	0.69	1.73	2.42	Sun, 2018
Wheat	167	0.327	0.016	0.343	Gregory and Atwell, 1991
Wheat	63	0.231	0.56	0.791	Martin and Merckx, 1992
Wheat	288	0.35	0.73	1.08	Swinen <i>et al.</i> , 1995
Wheat	239	0.84	0.526	1.366	Qi and Wang, 2008
Barley	167	0.324	0.024	0.348	Gregory and Atwell, 1991
Barley	127	0.449	0.818	1.267	Jensen, 1993
Barley	148	0.43	0.88	1.31	Swinen <i>et al.</i> , 1995
Barley	95	0.264	1.171	1.435	Jensen, 1994

(c) Macroalgae sequester low levels of carbon from the atmosphere (0.16% of global NPP).

Marine macrophytes (such as macroalgae and kelp) account for low levels of Global Net Primary Production (NPP) of carbon compared to other ecosystems. In brief, Field *et al.* (1998) demonstrate the following (See Table 1):

➤ **Global NPP of carbon:**

- Non-seaweed sources (e.g. forestry, wooded grasslands, grasslands, cultivation, tundra, broadleaf shrubs and phytoplankton) account for **99%** of global NPP of carbon (103.9/104.9 petagrams of carbon yr⁻¹).
- Macrophytes such as seaweed account for just **0.95%** of global NPP of carbon (1/104.9 petagrams of carbon yr⁻¹).

➤ **Ocean NPP of carbon:**

- Photosynthetic marine phytoplankton account for **>97%** of Ocean NPP of carbon (47.5/48.5 petagrams of carbon yr⁻¹).
- Macrophytes such as seaweed account for **<3%** of Ocean NPP of carbon (1/48.5 petagrams of carbon yr⁻¹; see Table 1).

The data from Field *et al.* (1998) shows that macroalgae account for very low levels of global NPP. In contrast, phytoplankton are the primary drivers of carbon fixation in the marine environment (>97%). As such, macroalgae have a low capacity to sequester carbon from the atmosphere in the long term. The study by Field *et al.* was published in the prestigious peer reviewed journal, *Science*, and has been cited over 4000 times.

A recent study by Krause-Jensen and Duarte (2016) estimates the following:

- Macroalgae have a global NPP of 1.521 petagrams of carbon per year worldwide. Therefore, macroalgae account for a low level (just 1.4%) of global NPP of carbon every year (1.521/104.9 petagrams of carbon yr⁻¹). Given the findings of Field *et al.* (1998) this places global NPP due to macroalgae within the range of 0.95 to 1.4% per annum.
- Macroalgae may sequester up to 0.173 petagrams of carbon per year worldwide. This is just **0.16%** of total global NPP of carbon (i.e. 0.173/104.9 petagrams of carbon yr⁻¹).
- Over 88% of the carbon fixed by macroalgae is not sequestered. For example, of the 1.521 petagrams of carbon produced by macroalgae each year globally, just 11.4% is sequestered into the environment (i.e. 0.173/1.521 petagrams of carbon yr⁻¹).

Recommendation: Macroalgae sequester low levels of atmosphere carbon (just **0.16%** of total global NPP of carbon) and therefore do not represent a viable target for climate action plans. To increase carbon sequestration in Ireland, the Ag-Climatise roadmap should focus on strategies involving effective and reliable carbon sinks on land such as cultivated crops, soil and forestry.

(d) Macroalgae is short lived, vulnerable to storm damage and is not a viable carbon sink.

For a carbon sink to be effective in the long term, it must have large scale capacity and be stable for an extended period of time. However, macroalgae in Ireland is short lived and highly vulnerable to storm damage. Therefore, it is not feasible to develop wild macroalgae as a carbon sink. This is outlined as follows:

- Studies by University College Dublin in June, 2017, demonstrated that *Laminaria hyperborea* in Bantry Bay has an average age of 3.4 years, with less than 12% of the stock greater than 4 years old. The age of *Laminaria* in this study is consistent with Storm Darwin having a devastating impact on kelp in 2014 and *Laminaria* regenerating within 4 years following the storm.
- Macroalgae such as kelp have no root system and are extremely vulnerable to wave action. When *Laminaria* is left unharvested beyond 4 years of age, it becomes highly susceptible to storm damage whereby the holdfast is ripped from the underlying substrate and the entire plant is washed ashore. Although it has been suggested that kelp has some minor wave dampening effects, this should not be confused with storm surge protection which is an entirely different concept.
- In Ireland, it is estimated that approximately 600,000 tonnes of *Laminaria* is washed ashore by storms annually. *L. hyperborea* fronds are also shed annually where they are washed ashore and decompose. When seaweed rots on the shore, it emits toxic gases and provides a protected environment for bacteria such as *E. coli*.
- When macroalgae such as *A. nodosum* is left unharvested, it becomes highly susceptible to being lost through storm damage whereby the holdfast is ripped from the underlying substrate.

Recommendation: It is not viable to include macroalgae in strategies or roadmaps aimed at carbon sequestration as they are short lived, vulnerable to wave action and sequester low levels of carbon compared to land sources.

(e) Aquaculture:

It has been suggested that seaweed grown via aquaculture could contribute towards efforts to increase carbon sequestration. However, while aquaculture is suited to culturing certain species of seaweed, it faces many challenges:

- Seaweed aquaculture is vulnerable to storm damage along Ireland's exposed western coast. As such, it cannot function as a stable carbon sink.
- Most of the species grown by aquaculture are short lived and live less than one to two years. Therefore, they cannot function as a long term carbon sink.
- Most seaweeds that are grown by aquaculture are destined for use in end products and not as raw materials in carbon sinks.
- As yields of marine macroalgae grown by aquaculture are relatively low, their contribution to efforts at carbon sequestration is negligible.
- It is not possible to grow certain species of macroalgae by aquaculture means (e.g. *L. hyperborea*).

Recommendation: Aquaculture licenses should be granted to users to grow certain species of seaweeds of commercial value. However, macroalgae should not be cultured merely for carbon sequestration purposes, as such an approach would be ineffective.

3. Specific recommendations and consistency with existing government policies.

(a) Societal and economic benefits to harvesting seaweed:

In order for the Ag-Climatise roadmap to be effective, it must be focused on a realistic vision that incorporates important societal and economical aspects. Harvesting of seaweeds such as *Laminaria* has many positive benefits, as it enhances regional economic development and provides much needed employment in rural and coastal areas. This activity is sustainable, renewable and is consistent with a broad range of local and national policies.

(b) Sustainable harvesting of seaweed:

BioAtlantis supports methods of harvesting seaweed that take place in a sustainable manner, in compliance with EU laws. Sustainability of mechanical harvesting of seaweed requires that harvesting is undertaken on a rotational basis, along with monitoring of regeneration rates and relevant flora and fauna.

(c) Carbon sequestration and carbon sinks:

The peer reviewed scientific literature demonstrates that soil, trees, crops and other land plants absorb vast amounts of the world's atmospheric carbon annually (as measured by Global net primary production of carbon; Field, *et al.*, 1998). As such, soils and land plants represent the most viable means of reducing carbon in the atmosphere and should represent the Government's main focus on efforts to sequester carbon. For example, crops such as winter wheat for example, can sequester as much as 25% of fixed carbon below ground. As marine plants (e.g. seaweed, kelp) are short lived and sequester low levels of atmospheric carbon (just 0.165% of total global NPP of carbon), they do not represent a viable or effective means of carbon storage, either in the short or long term.

(d) Climate Mitigation and adaptation strategies:

The Ag-Climatise roadmap should be in line with other Governments plans and strategies. Recently, Cork County Council issued its Climate Adaptation Strategy Draft, 2019-2024 (Ref: Cork County Council, 2019)

BioAtlantis concur with objective 45(a) of the Climate Adaptation Strategy draft, which is to *"Develop a plan to support an active native tree planting programme in conjunction with an awareness campaign that informs of the benefits to communities in improving air quality, offsetting carbon emissions, promoting biodiversity, limiting flood risk, reducing urban heat, as well aesthetic value"*.

(e) The Ag-Climatise roadmap should be in line with other government policies:

The Ag-Climatise roadmap should be in line with the Governments plans and strategies for developing the rural bioeconomy and marine biotechnology sectors. The examples below outline the importance of the marine resources for employment and economic development in rural Ireland, along with government targets for developing same. Harvesting of *Laminaria* will play a key role in developing these sectors:

- **Ireland's National Action Plan on Antimicrobial Resistance (iNAP; 2017-2020):** iNAP aims to *"implement policies and actions to prevent, monitor and combat antimicrobial resistance across the health, agricultural and environmental sectors"* (Department of Health, 2017). *Laminaria* is a source of bioactives that are used by BioAtlantis in technologies aimed at reducing the need for in-feed antibiotics in agriculture. Development of alternatives to in-feed antibiotics is critical as we now enter an era where many antibiotics are losing their efficacy. Antibiotic resistance is recognised as representing one of the most serious threats to public health in the 21st Century (Ref: United Nations, 2019).

- **Southern Regional Spatial & Economic Strategy (2018):** The spatial & economic strategy for the Southern Region, refers to 'seaweed' in the context of the "Marine Biotechnology" sector. *Laminaria* is relevant in this context, as it is one of the most important species of seaweed used by BioAtlantis.
- **The Ocean Economy of Ireland (NUIG, 2017):** The 'ocean economy' of Ireland is worth approximately €1.97B (~1% of GDP). The ocean economy provided employment to over 32,500 people in 2017.
- **Our Ocean Wealth Summit (June, 2018):** A report found that Investment in the marine sector may help Ireland to double the value of its ocean wealth to 2.4 per cent by 2030 and increase the ocean economy's turnover to exceed €6.4 billion by 2020 (ref: Anon, 2018).
- **The Bioeconomy - National Policy Statement (2018):** Outlined Ireland's aim to develop a bioeconomy that will focus on development of bio-based products. This will lead to promotion of rural employment and will drive economic development.
- **Harnessing Our Ocean Wealth Strategy (2015):** The Minister of Finance stated that *"The government has prioritised the marine as a key area for further growth under the Harnessing Our Ocean Wealth Strategy, with a target of doubling the value of the blue economy by 2030"*.
- **"Harnessing Our Ocean Wealth" report (2012):** Ireland's seaweed industry was estimated to be worth approximately €18 million per annum, processing 36,000 tonnes of seaweed, entirely from wild resources (ref: Anon, 2012).
- **Morrissey, 2010; "Ireland's Ocean Economy" report (2010):** Estimated that the seaweed & marine biotechnology industry in Ireland as having a net worth of €18 million and employing 185 people full time. This figure has grown substantially since 2010.
- **"Sea Change" report (2006):** The Marine Institute estimate that the seaweed production and processing sector will be worth €30 million per annum by 2020.

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BirdWatch Ireland Submission
AgClimatise Public Consultation
January 10th 2019

BirdWatch Ireland welcomes the opportunity to provide comment on the issues relating to addressing climate change within the context of agriculture in the AgClimatise consultation. Our organisation is a member of Stop Climate Chaos and the Environmental Pillar and we are fully supportive of the joint submission by these networks and the recommendations contained therein especially the need to reduce emissions deep and fast in order to meet the goals of the Paris agreement.

In general, it is our view that agriculture policy must become aligned with the requirements to address issues of climate action, biodiversity and water quality in a coherent manner where biodiversity loss is halted, water quality is in good ecological condition and greenhouse gas emissions are in line with national and international goals. Also we support the development of a national food policy that is underpinned by agriculture policy and one that is inline with the goals and objectives needed to protect water supplies, biodiversity and to be in line with the Paris Agreement. Food consumption patterns are changing and indeed need to change in order to address these issues and additional focus needs to be on supporting food security in Ireland.

Our main points below relate to the use of the Farmland Bird Index, climate action with biodiversity co-benefits, the current and future RDP and forestry.

1. Farmland Bird Index

The consultation document includes a paragraph on the Farmland Bird Index (FBI) and while it does state that several farmland bird species are not listed on the Index and are in trouble, the failure to list the caveats associated with the Index is misleading. The time period selected is also out of date and limited. Context for the FBI which is a pan- European derived Index, references and footnotes should be supplied in any future documentation and the correct information must be provided.

In 2019 the National Parks and Wildlife Service published the Irish Wildlife Manual 115 Countryside Bird Survey: Status and Trends of Common and Widespread Breeding Birds 1998-2016¹. This gives an up to date overview of the CBS from which the FBI is derived. The information provided in this manual should be used as the most up to date information available on countryside birds and still including the caveats.

The Countryside Bird Survey is Ireland's national monitoring scheme for common and widespread breeding birds. It is funded by the National Parks and Wildlife Service of the Department of Culture,

¹ Lewis, L. J., Coombes, D., Burke, B., O'Halloran, J., Walsh, A., Tierney, T. D. & Cummins, S. (2019) Countryside Bird Survey: Status and trends of common and widespread breeding birds 1998-2016. Irish Wildlife Manuals, No. 115. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Heritage and The Gaeltacht, and is coordinated by BirdWatch Ireland. It has been running since 1998.

The Common Bird Index in 2016 was based on 52 common and widespread breeding birds which are monitored as part of the CBS. The overall trend has been broadly stable since monitoring began, and the Common Bird Index in 2014 was 107% of the baseline index in 1998, the first year of the survey. This represents an increase relative to that reported in 2014. Overall there have been increases in 26 species, declines in 12 species with the remaining 14 species showing stable trends throughout the course of the CBS. Strongest increases have been in Blackcap and Goldfinch, while greatest declines have been in Grey Wagtail, Stock Dove, Swift and Greenfinch.

The Farmland Bird Index in 2016 was based on 18 out of a possible 33 breeding farmland birds in Ireland which are monitored by the CBS. The FBI in 2015 was 95% of the baseline index in 2000. This represents a marginal increase relative to that reported in 2014. Among the constituent farmland bird species, increases were shown in eight species and declines in a further five species, while the remaining five species were stable. The greatest increase has been in Goldfinch. Greatest declines have been in Stock Dove, Greenfinch and Kestrel.

While trends overall have been broadly stable since monitoring began during the late 1990s, it is important to note the following caveats:

Acute declines are known to have taken place in several of Ireland's breeding bird populations, especially farmland birds, since the 1970s i.e. before 1998, the base year on which Countryside Bird Survey trends are calculated. Significant range declines have been shown when distributions during breeding atlases in 1968-72, 1988-92 and 2007-11 are compared. Furthermore, the large-scale declines in relative abundance of farmland bird populations have been tracked by monitoring schemes elsewhere in Western Europe. These declines were driven largely by changes in agricultural practices.

The CBS cannot accurately monitor the trends of species with scarce distributions. This means that a number of key farmland birds have been excluded from the FBI, including Barn Owl, Lapwing, Curlew among others.

In addition, species that are currently red listed of conservation concern such as Yellowhammer which is marginally stable currently but can be severely impacted by policy changes. In addition, the goal is move this species off the red list and into green so significant additional efforts are needed to safeguard this species. Indeed significant recent legislative threats such as proposed hedgecutting in August in the Heritage Act and inappropriate hedge management continue to be of significant concern to BirdWatch Ireland in relation to this species and other hedgerow nesters.

Significant additional measures are required to bring agriculture policy into line with what's needed to safeguard farmland birds. Species such as Skylark, Meadow Pipit, Hen Harrier, Curlew and other ground nesters are particularly threatened by proposals to allow additional burning in March in upland habitats (Heritage Act 2018).

Future documents which contain information on the Farmland Bird Index must be clear on the limitations of the Index and policy must be based on supporting the active conservation of farmland birds that are threatened to safeguard their futures.

2. Nature conservation and water quality in the context of Agriculture

Climate actions and policy on agriculture land can be beneficial to a range of bird species and these co-benefits must be evidence based and supported financially. Agriculture policies, laws and failure to adequately monitor implementation of the law and regulations, can also severely impact habitats important to bird species and this must be avoided.

The Consultation document refers to the synergies between agriculture and on-farm nature conservation. Agriculture policy has a significant role in conservation of EU-protected habitats and species. The Consultation document fails to inform the reader that agriculture is responsible for negative impacts to 70% of EU-protected habitats according to the latest Article 17 report to the European Commission on the Status of Habitats in Ireland². The implementation measures in place through the RDP are simply not working and this statistic must be reversed and fast. In particular we are concerned with the status of upland habitats including blanket bog and wet heath which are peat based as these habitats are degraded and releasing carbon.

In the transcript of the Joint Oireachtas Committee on Climate Action debate³ on peatlands on October 23 2019, peatlands expert Dr. Flo Renou-Wilson stated :

“The same threats have also decimated the original 774,000 ha of blanket bog, with now less than 28% likely to be in conservation value, barely holding on to their carbon stores. The proportion of active areas is still unknown in those blanket bogs but it is likely to be critically low and decreasing each year as a national management plan for the network of blanket bogs SACs has not yet been established.

Members should recall that the area of blanket bog is three times greater than the area of raised bog. As such, Ireland could lock in ten times more carbon in the designated blanket bog network if only the management plan required by law under the habitats directive could be implemented for these rare ecosystems”.

The potential for mitigating emissions on farmed upland blanket bog is substantial and must be included as a climate action in the next RDP. However, it is still insufficient if emissions are not actively cut deep and fast.

BirdWatch Ireland is a member of the Working Group for the Bride Farming for Nature project in the Bride Valley in Cork. The creation of additional space for nature in this intensive agriculture landscape is critical and farmers are keen to be involved. We suggest that this very positive EIP should be supported into the future and assistance provided to roll it out to all intensive farms perhaps through an EcoScheme.

Additional supports for true low intensity High Nature Value farming must be provided for in the next RDP. HNVf is critical in supporting a wide variety of species and habitats and these must be given as strong supports as exist for forestry premia to counteract the potential for forestry to be targeted to HNVf land.

The consultation document needs to be clear on the impacts of agriculture on water quality. The latest EPA water quality report shows that agriculture is the single largest pressure for water quality, affecting 53% of water bodies⁴.

² <https://www.npws.ie/publications/article-17-reports/article-17-reports-2019>

³ https://www.oireachtas.ie/en/debates/debate/joint_committee_on_climate_action/2019-10-23/3/

⁴ [https://www.epa.ie/pubs/reports/water/waterqua/Water%20Quality%20in%20Ireland%202013-2018%20\(web\).pdf](https://www.epa.ie/pubs/reports/water/waterqua/Water%20Quality%20in%20Ireland%202013-2018%20(web).pdf)

3. The current Rural Development Programme 2014-2020

The RDP includes voluntary climate actions such as the Green Low-Carbon Agri-Environment Scheme (GLAS), the Beef Genomics Data Scheme (BGDS), the Targeted Agricultural Modernisation Schemes (TAMS), Knowledge Transfer Schemes. Some of the European Innovation Partnership (EIP) projects also include climate actions. None of the schemes have been evaluated for their actual GHG reductions potential or actual emissions reductions. It is also the case that some of the RDP measures (TAMS, Collaborative Farming) facilitate expansion of the dairy sector leading to increased cow numbers and GHGs. The main actions leading to potentially positive climate action in the GLAS scheme are low input permanent pastures supporting carbon stock retention in soil, through field margins, hedgerow planting, native woodland planting, catch crops cultivation and minimal tillage. The TAMS supports investment in machinery which could reduce GHGs in agriculture (i.e. incentive to purchase low-emissions 'trailing shoe' slurry equipment). The BGDS aims to improve the genetic character of the national herd to ensure that it has a reduced emissions profile. There has been good uptake for most of the GLAS measures, for TAMS and the EIPs. However, it is not clear what emissions reductions have been achieved thus far. This is a failing of the current RDP, the next RDP must include specific emissions reductions targets anticipated for each measure.

Ireland's long-term vision for the agriculture and land-use sector is to achieve carbon neutrality by 2050, including increasing afforestation as mitigation, and without compromising its capacity for food production. Yet, the Environmental Protection Agency has projected that Ireland will fail to meet its target of 20% emissions reduction by 2020 compared to 2005 levels. Despite improvements, agricultural emissions are projected to grow up to 2030, due to increases in livestock numbers, particularly in the dairy herd. The Irish RDP interventions facilitate expansion of the dairy herd with limited measurable climate action opportunities for this sector and significant focus on reducing the emissions of the beef herd.

In 2018 emissions from agriculture accounted for 34% of national emissions, an increase of 3.3% during the implementation of the RDP. Significant additional measures are required to tackle GHGs from Irish agriculture; particularly to address emissions from nitrous oxide and methane. Significant reductions in reactive nitrogen use (in fertiliser and feed) would make substantial gains for climate by reducing nitrous oxide pollution. Deep and fast cuts in absolute emissions are required in the first instance. Carbon sequestration, including the protection and restoration of peatlands on farmland is also urgently required to reduce GHGs from degraded peatlands. The national ambition for growth in dairy and beef production is not coherent with what is required to tackle climate change. It will be important for Ireland to manage the transition needed to reduce emissions in agriculture. Supports for High Nature Value farming are essential to maintain and restore biodiversity on farmland and these must continue.

Please see the attached report by the European Environmental Bureau on a project that we are collaborating on relating to agriculture and climate change (EUKI project) which includes references from Ireland.

4. Forestry

BirdWatch Ireland has developed a policy position on afforestation (Greening Irish Forestry report) outlining the serious issues relating to this sector and the conservation of habitats that support birds and other biodiversity. This document is included as an attachment. All recommendations therein should be implemented to ensure that afforestation ceases to impact important areas for birds and other habitats.



Submission to the

Department of Agriculture, Food and Marine

On

**A Draft National Climate and Air Roadmap for the Agriculture Sector to 2030
and Beyond**

From:

**Cré – Composting and Anaerobic Digestion
Association of Ireland**

January 10th, 2020

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1. Introduction

Cré welcomes the opportunity to comment on the consultation on the Draft Climate and Air Action Plan.

Cré's submission is focussed on the climate benefits the composting and anaerobic digestion sector can contribute to Ireland's national interests. Often these benefits are not recognised and not assigned a value.

The composting and anaerobic digestion sector has the potential to provide renewable energy and also help store carbon in the soil. The attached documents in the Appendix give a brief overview on these topics.

The survey provided by the Department of Agriculture, Food and the Marine has been filled out and is enclosed.

Cré

Established in 2001, Cré is the Composting and Anaerobic Digestion Association of Ireland. Cré (which is the Irish word for 'soil'), is a non-profit association of public and private organisations, dedicated to growing the biological treatment sector. Cré supports the production of high-quality outputs, assists the delivery of Government waste diversion and bioenergy targets, and promotes the creation of sustainable indigenous jobs.

Cré has a broad membership base ranging from compost and anaerobic digestion facilities, waste companies, local authorities, technology providers, local authorities, consultants and third level colleges. Cré is recognised by Government and agencies as the voice of the industry in Ireland and Northern Ireland. It is frequently called on to give the industry view on future policy and legislation. Cré is a member of the European Compost Network, the European Biogas Association and the Biobased Industries Consortium. Cré has a Board of Directors, a Carbon Committee, a Technical Committee, a Public Relations Committee and an Anaerobic Digestion Committee. See www.cre.ie

2. Survey and Responses

Question 1

Are there other actions that could be considered for inclusion to further enhance progress and credibility of agricultural actions? Is there more that farmers and the food industry itself can do?

Cré Response:

- Agricultural manures could be treated by anaerobic digestion (See Appendix 1 'Joint Policy Document on Biogas' & 2 'AD Industry Potential Contribution to CO₂ Mitigation in Ireland')
- Farmers could be supported to act as farmers of soil – to help sequester carbon in soil. Details on this can be found in Appendix 3 'BVOR Compost Carbon Sequestration'.

Question 2

Have you any feedback on how uptake of these actions can be encouraged and facilitated?

Cré Response:

- Anaerobic digestions needs to be supported by the Biofuels Obligation Scheme
- Carbon sequestration in soils is increasingly recognised as a relevant measure to combat climate change. One way to increase carbon uptake in soils is the application of compost, as it contains a high percentage of stable organic matter. In 2018, a Dutch government funded research program was set up to study the potential for carbon storage in mineral agricultural soils and to propose practical measures. The consortium is led by Wageningen University and supported by CLM and Louis Bolk research & consultancy. An annual budget has been made available by the Dutch Ministry of Economic Affairs & Climate Change. A study in Ireland that matches the current work funded by the Government in the Netherlands is likely to be beneficial.

Question 3

Are there other actions that could be considered to maximise the contribution of sustainable land management? Is there more that farmers and the food industry itself can do?

Cré Response:

- Farmers could be supported to act as farmers of soil – to help sequester carbon in soil.

Question 4

Have you any feedback on how uptake of these actions can be encouraged and facilitated?

Cré Response:

- CAP could be used to support farmers to sequester carbon in soil. This is measureable as carbon increases in soil and payment could be based on this.
- A certification scheme needs to be developed which will monitor carbon sequestration.

Question 5. Are these actions sufficient, or are there others you would suggest? Is there more that farmers and the food industry itself can do?

Cré Response:

For the anaerobic digestion of agricultural manures, the Support Scheme for Renewable Heat (SSRH) may be amended to help incentivise biomethane to grid injection. The details of the potential inclusion of biomethane to grid injection are not yet clear. However, this could help encourage the development of further AD facilities, particularly in the agricultural sector. Biomethane could potentially be supported instead by the Biofuels Obligation Scheme. For example, the implementation of an advanced biofuel obligation could provide an incentive for the introduction of biomethane as a fuel in the transport sector. This could lead to the production of biomethane from relevant feedstocks and its use in CNG/LNG vehicles. Such an obligation is considered to have significant potential as a market support mechanism for the introduction and use of biomethane in

the transport sector. The DCCAE issued a consultation document on this in October 2019, and this is currently being considered as a potential driver for the sector to develop biomethane if it is included in the Biofuels Obligation Scheme.

Question 6

Have you any feedback on how uptake of these actions can be encouraged and facilitated?

DAFM would also like to hear your views on the barriers and challenges to deployment of energy efficiency and renewable technology and also the types of supports and incentives that could increase deployment and wide spread adoption.

Cré Response:

For the anaerobic digestion of agricultural manures, the Support Scheme for Renewable Heat (SSRH) may be amended to help incentivise biomethane to grid injection. The details of the potential inclusion of biomethane to grid injection are not yet clear. However, this could help encourage the development of further AD facilities, particularly in the agricultural sector. Biomethane could potentially be supported instead by the Biofuels Obligation Scheme. For example, the implementation of an advanced biofuel obligation could provide an incentive for the introduction of biomethane as a fuel in the transport sector. This could lead to the production of biomethane from relevant feedstocks and its use in CNG/LNG vehicles. Such an obligation is considered to have significant potential as a market support mechanism for the introduction and use of biomethane in the transport sector. The DCCAE issued a consultation document on this in October 2019, and this is currently being considered as a potential driver for the sector to develop biomethane if it is included in the Biofuels Obligation Scheme.

Question 7. Are there other actions which the State could consider, particularly in partnering with Industry?**Cré Response:**

- The implementation of an advanced biofuel obligation could provide an incentive for the introduction of biomethane as a fuel in the transport sector.
- CAP could be used to support farmers to sequester carbon in soil. This is measureable as carbon increases in soil and payment could be based on this.

Question 8. Are these actions sufficient, or are there others you think that Industry should pursue?**Cré Response:**

Yes the biofuel obligation is sufficient.

Question 9. Given that the State and policies such as the CAP can't finance or deliver all of the actions required, which actions or measures could Industry fund?**Cré Response:**

CAP could be used to support farmers to sequester carbon in soil. This is measureable as carbon increases in soil and payments could be based on this.

Question 10. Do you have views on how the market could better incentivise and/or reward primary producers for adopting and implementing the necessary actions?**Cré Response:**

No Comment.

Question 11

What are your views on these six guiding principles in preparing for the future? Are they sufficiently comprehensive or are there others you would add?

Cré Response:

No Comment

Question 12

Innovation is now widely recognised as a key driver of long-term growth and sustainable development and addressing of challenges such as Climate Change. What type of approaches and processes could assist the Irish agri-food innovation system to address economic and societal challenges and facilitate increased networking, collaboration and investment?

Cré Response:

No Comment.