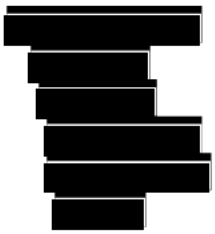

Submission to
Climate & Air Roadmap Public Consultation

Draft Proposal
Possible names of proposal .
(HIP) Hedgerow Improvement programme /
(HEP , HES) Hedgerow Enhancement programme / scheme .

Basic outline of proposal is to improve our hedge rows for all future benefits it would bring .

At present there is aprox 4.4 million (ha) under agriculture production , under proposal for each (ha) a landowner is claiming under BFP , they would argree to plant a tree per (ha) cliamed per year for duration of future scheme . Trees would be planted ón or at butt of existing hedge rows .

Example
If landowner is claiming 50 (HA) , they would be required to plant 50 trees each year, ón or at butt of existing hedge rows around their holding for duration of future agri scheme . CAP .
Or maybe they could opt to plant two trees per (ha) .

At end of say ,seven year period 4.4 m (ha) x 1 x 7 equates to over 30 million trees planted at one tree / (ha) ,
at 2 trees per (ha) it equates to over 60 million permenant trees and assosiated environmental benefits etc .

To promote it , the land owner could be rewarded with an extra payment ón their entitlements per (ha) or could be used as carbon reward .

Native trees could be used where possible and some evergreen promoted , ie evergreen oak .

In certain circumtances it may not be possible to implement tree planting propasal ie , stud farms with existing high value hedges / trees around fields or where it might impeed visual attractions in certain areas , example , stone wall bounderies which are natural to specific area .Also in certain coastal areas where trees find it hard to grow , and areas that are in commonage which lack hedgerows .

At present our tree planting targets are behind so this proposal would increase our levels while also adding several additional environmental benefits from a biodversity , carbon sink , landscape , water quality , shelter ,shade ,increased nature value etc .

The question of landowners receiving the full credit for carbon that is sequestered and stored of existing hedgerows , habitats, scrub area , grassland and crops also requires consideration going forward under EUs Green Deal .

Thank you

[redacted] dated 02/01/2020

A brief note before your deadline:

There is a growing network of climate awareness groups across rural Ireland. Here in West Wicklow we have Dunlavin Climate Connections for example.

We aim to take the public on farm walks at farms and with active farmers who are taking steps to address decarbonisation.

I just want to advocate this sharing of information and sharing the 'burden' of the change.

I would welcome the opportunity to speak about this piece in a forum.

Thanks,
[redacted]

Dear Gov, the following text is also attached and is my submission to you, it represents the views of a number of professionals who work on sustainability in Ireland but is not the view of [redacted] in [redacted].

My research, amongst other things, identifies the embodied energy and ecological footprint of each food item. The awareness created by this forms an international sustainability blueprint championed by IGES, SEI and One Planet. Farming products require extensive energy input mostly fossil fuel. Whether its feed energy, fertiliser energy or others we have the figures.
Unfortunately current beef and dairy practices impact Irelands ecological footprint massively and need to be reduced overall not supported. We will only ring a certain amount of efficiency out of these products as their embodied energy is enormous. What will efficiency do with the shadow cow in dairy farming. I do not want to spend too much time on the Draft Plan as its current thinking is in my opinion protective of the present systems, and their interests. The Draft suggests, and the survey queries, changes – which skirt around the major issues, adding efficiencies, respecting Directives but not decarbonising.
Innovation, its thinking, its process, and its nourishment has never been more important in this sector. We need at the very least a qualified mobile innovation unit to explore and animate innovation and production on farms all around the country. Transition is not required, we require transformation or its likely we will be significant players in climate change going forward. Transformation of farming values, ideas and products is essential. Education of the farming youth has never been more important, an education which shows diversity and not the restricted thinking that presides now.
As a start can we measure the ecological footprint of each food product and produce a figure per kg consumed. So the consumer can compare and in the future we can all impact farming policy from a climate damage and aware position. The dairy footprint needs to include the shadow cow, which it does not at the moment and if the animal is exposed to feed (GMO) this needs to be recorded and the product labelled. Feed is imported from GMO friendly areas like USA and India, the feed is not labelled but it is cheap. Can we find out what farmers buy, what is imported and scrutinise what our beef and dairy products represent. Labelling brings awareness, we are told our beef is the best, it is the most efficient, why are there no figures and labels? Why can we not compare one beef item to another or one litre of milk to another – it is because this information does not exist, we

do not know how good our beef is. We also do not know if the shadow cow is included in the milk footprint, we wonder where the milk footprint is and if it includes the transport distances of cheap feeds. Transparency and labelling I essential and let the consumer decide on what is best and on decarbonisation.
Some of our farmers are wealthy enough to import their feed without using retail or wholesale suppliers. Do the coops know the provenance of the food and the processes used to produce it – GMO or otherwise? Organic food is central going forward, can we have labels showing organic status, ecological footprint, GMO use and full scrutiny of farming purchase practice to back this up? The consumer will decarbonise farming there is no point waiting for authorities and farmers to do so.
There are a number of diversification ideas which should also be become more mainstream, some of these are listed below:
1) Wood-energy - http://www.ccwep.ie - farmers can keep their jobs, protect the climate and actually make jobs. Covering all wood products and appropriate wood species.
Biofuel - rapeseed oil and others should be grown and incentivised so that the market can build and establish itself. Incentives should be upfront as being phased out so that new entrants are there to work at producing for an industry. Through small incentive biodiesel and PPO are exceptional transport fuels, yet we prefer to import virtually all transport fuel from the Middle East. I applaud the fact we add c.10% to our fuel mix as it stands, but we need more of this and we need to grow that 10% ourselves. We were doing this in Tipperary before fiscal measures killed our work with farmers –
BioNETT. https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/bio-nett_biofuels_handbook_en.pdf
BioNETT also shows biogas units working. We need to harvest methane and inject into the gas grid - producing our own carbon neutral fuel. Mobile units could be used to collect methane we have examples of this.
In short there is significant innovation for farms to work on, a number of test cases - best practice should be developed as per EIP-Agri, but we should be developing these ourselves too, without European funding. 5 best practice case studies for farmers on various wood products, a number on PPO, a number on biogas, a number on biodiesel, a number on arable farming and alternatives, a number of the EIP-Agri examples.
Helping farmers to move away from beef and dairy and supporting their decarbonisation. Similar to what we have developed for innovation in communities here:
https://www.sparkchange.ie/success-stories/ we need to offer

farmers ideas that work for others, in the narrative of those others, not using Teagasc or other narratives, innovation does not need a huge technical overload it is mostly hard work but will require an innovation unit, possibly a mobile one, one that is qualified and builds and sets up ideas as it moves around the country. The unit should be backed with flexible supports which include funds so that projects can be helped in the appropriate ways – sometimes these ways cannot be envisioned from an office, the unit needs to work with farmers to support diversification and build case studies f success that others can follow.

In short the diversification offered by examples above and by EIP-Agri is the way to go with significant facilitated support with a mobile unit. We should select the sustainable farming ideas and nourish them well, others will follow, jobs, decarbonisation and resilience will follow. Also I think the farming sector should not be afraid to label its products with organic status, embodied energy value, ecological footprint value, education and awareness is needed, as they say the consumer is always right.

Slán go fóill

[redacted]

Submission to "Ag-Climatise" – a Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and beyond

By

County Wicklow Environmental Network

January 2020

County Wicklow Public Participation Network
CEART
Crinion Park
Wicklow Town

Tel: [redacted]
Email: [redacted]
Web: www.countywicklowppn.ie

Introducing County Wicklow Public Participation Network
County Wicklow Public Participation Network (PPN) was established in July 2014 under the directive of the Department of the Environment, Community & Local Government and in accordance with legislation in the Local Government Reform Act 2014 (Section 46). Public Participation Networks were established to be an independent structure that would become the main link through which local authorities connect with the community, voluntary and environmental sectors in a process to facilitate communities to articulate a diverse range of views and interests within the local government system.

Co Wicklow PPN has 292 diverse member groups, some of these groups are networks in their own right. PPN representatives serve as a voice for the community on structures including: the Local Community Development Committee; all of the Wicklow County Council Strategic Policy Committees; Wicklow County Childcare Committee; Co Wicklow Children & Young People's Services Committee; Co Wicklow Local Sports Partnership; Wicklow County Tourism Board; Co Wicklow Volunteer

Centre, County Wicklow Partnership, and Co Wicklow Joint Policing Committee. PPN Representatives strive to ensure that the needs of the community sector are prioritised within local policy processes.

Community Consultation

In 2018, Co Wicklow PPN consulted community groups across the 5 Municipal Districts of Co Wicklow, asking them "What is your vision for community wellbeing for this and future generations"? We asked them to consider this question under the following headings:

- Environment & Sustainability
- Health (physical & mental)
- Work, Economy, & Resources
- Social & Community Development
- Participation, Democracy & Good Governance
- Values, Culture & Meaning

The responses we received were documented and are available to download from our website: www.countywicklowppn.ie or they can be read in the "Our Vision for Community Wellbeing in Co Wicklow" booklet. We ran 11 workshops, 5 online consultations and accepted 2 submissions in total. The consultations facilitated the development of an overarching vision for each Municipal District along with community visions and high-level goals under each heading. The county vision was developed in the same way.

County Wicklow Environmental Network

County Wicklow Environmental Network is made up of the environmental member groups of Co Wicklow PPN and other groups and individuals that have an interest in the environment and sustainability. The network meets regularly and regionally through the North Wicklow and West Wicklow Environmental Networks and occasionally at county level. It maintains regular electronic contact through the PPN.

[redacted] PPN Representative, representing the environment, on the Local Community Development Committee, wrote this submission. It is informed by the consultations for Our Vision for Community Wellbeing in Co Wicklow and online consultation through the Co Wicklow Environmental Network.

Introduction

It is important to emphasise that we are facing both a climate and a biodiversity emergency. These are both sides of the same coin and should be addressed together, as tackling biodiversity loss will also help to tackle climate change. The loss of biodiversity in Ireland is illustrated in Padraig Fogarty's book, "*Whittled Away*" and is largely due to the intensification of agriculture.

The National Climate and Air Roadmap for the agricultural sector almost exclusively focuses on beef and dairy farming. In producing a policy or a strategy it is useful to examine consumer trends that may impact on farming over the next few decades.

Already we are seeing a reduced consumption of animal based products, the possible rise of artificial meat substitutes and a rise in plant based diets. At the same time we have lost half of our vegetable producers over the last ten years with a concomitant rise in vegetable imports.

The financial return to growers and to beef farmers is often below the cost of production, which should be borne in mind in the development of any future farm policy.

Climate and Biodiversity

At present we have in Ireland a largely inflexible 'one size fits all' common farm payment system that encourages farm intensification, carbon and methane emissions and biodiversity loss. On the other hand there are many alternative practices here that offer other approaches to tackling these issues.

One of the most well researched of these approaches is CAP4Nature (https://www.cap4nature.com). It provides an ecological evidence base to inform the future of the Common Agricultural Policy in Ireland. Developed by scientists at Trinity College Dublin and funded by the Department of Culture, Heritage and the Gaeltacht as part of the 2019 'Seeds for Nature' initiative to provide independent advice to Government, CAP4Nature presents six principles and four examples backed by extensive research. The key principles are;

1. Farm for food security – Biodiversity underpins the delivery of multiple ecosystem services that benefit both farming and society.
2. Nature has limits – Global trends indicate that we are facing a mass extinction and Ireland is similarly affected.
3. Quantity, quality and connectivity matter – Ecosystem and land use type, condition and extent determine the ecosystem services that can be delivered in any one area. Such services can be measured and financed through natural capital accounting.
4. One size CAP does not fit all – Targeted interventions are essential to ensure ecosystem delivery across the Irish landscape. Because the Irish landscape is so diverse, we need local solutions for landscape-level challenges. Good examples already exist co-created by farmers, advisors and scientists working together, such as the Burren Project, the Bride Project in Cork and the Sustainable Upland Agriculture Scheme in Wicklow. For effective administration, a national framework is needed to implement local level solutions across the country.
5. Strengthen the links - The food system depends on links between producers, consumers and nature. Strengthening these links enhances the benefits from nature and the reputation of Irish agricultural produce.
6. Nature needs long term but flexible planning – Support for the natural processes that deliver beneficial ecosystem services which themselves support farming requires long term planning.

In terms of food security we need to focus on getting more food directly from farm to consumer doing so safely without generating food waste. We should be identifying case studies in our European neighbours where individuals, local coops or local businesses have taken an innovative approach to getting food production delivered into the local economy bypassing national distribution networks. One example is Community Supported Agriculture (CSA) where the farmer supplies the community directly. There are several examples around the country, particularly in Wicklow. The focus should be on find ways to get produce on to local markets safely rather than telling farmers what they cannot do.

In other countries agriculture is better integrated into the local industrial economy developing better scope for resource reuse across sectors. Again it would be useful to see some research done on best practice in the development of rural economies in countries such as Austria to explore how we link resource efficiency across sectors. Biomass produced on farm, from forestry and from industry can play an important role in farm enterprises.

One of the main themes that emerged from last years' National Biodiversity Conference in Dublin Castle, was the need for farm payments that supported on-farm biodiversity and especially nature friendly farming and which move away from classifying biodiverse areas as 'waste'.

Such a measure that reduces farm intensification can also have a significant impact on reducing carbon and methane emissions and the conversion of nitrates to ammonia.

Emissions of methane from cattle are greatest from intensively managed high nitrogen pastures with a few high yielding grasses. Much like it would be for us if we ate Christmas cake for breakfast, dinner and tea for 365 days a year.

There is a range of relatively straightforward approaches that could be enacted within a short time scale that would lead to both climate and biodiversity improvements;

1. Implement the Nitrates Directive,
2. Examine the extent of over-use of nitrates and phosphates at farm level,
3. Provide support for nature based farming and biodiversity through the single farm payment,

4. Encourage the sowing of clover and a variety of palatable grasses and herbs in existing swards, and prevent the intensification of wildflower rich pasture and meadows,
5. Encourage mob grazing – tight grazing in strips that locks up carbon in the soil and which maintains a species rich grassland. An effective example is that of Clive Bright who produces 100% grass fed and grass finished organic beef on his farm in Sligo. Clive has developed his 'Rare Ruminare' brand and sells directly to consumers for a profit. www.farmingfornature.ie.
6. Research the methane emissions of different breeds, feeds and grazing regimes on different soil types.
7. Encourage the growth of hedgerows for biodiversity and carbon sequestration. There are several farms in Ireland which produce a range of niche food products from their hedgerows, apart from honey. www.wildabout.ie . Hedgerows are important for linking wildlife habitats.
8. Support and encourage farmer to farmer visits and discussions around local experience and examples.
9. Support co-operation between farmers, advisors, consumers and processors at landscape level to encourage community led carbon and biodiversity schemes along the lines of the Burren Project, as well as linking quality local food production with environmental quality, such as with the Wicklow Food Strategy promoted by Wicklow County Council.
10. Introduce the teaching of ecology in agricultural colleges.

In tackling GHG emissions from agriculture, it would be important to have achievable targets and a monitoring system in place. The calculation of a carbon 'footprint' is now standard practice in business and should be applied at the farm level. This would look at the energy balance of the farm and its GHG emissions, including CO2, methane, nitrates and ammonia.
A workable on-line calculator should be developed to enable the farmer to track their emission targets. This could be linked to a sponsored award scheme.
For this to work, a package of achievable and affordable measures should be developed that a farmer could adopt suitable for their own situation and based on sound research.
The use of imported feed, such as GM soya, should be included in such calculations.
In order to reduce the carbon footprint from farming, the production of feedstuffs within Ireland should be encouraged. The ultimate aim should be to develop a closed loop nutrient cycle within the farm and to limit livestock numbers to what the farm can support.

Forestry

There has been much discussion about reforestation being a major focus for carbon sequestration in Ireland. This is in spite of the great reluctance of farmers towards adopting forestry due to the requirement in the Forestry Acts that the land must be kept in forestry into the future, which prohibits flexibility.
There is an increasing antagonism towards commercial forestry by rural communities, such as is seen in Co. Leitrim. The projected planting of large areas of, for example, Sitka spruce, would have a deleterious impact on biodiversity, water quality and may release carbon from peat rich soils.
This suggests that an amendment to the Forestry Acts maybe required that would give farmers the necessary flexibility regarding land use. This may provide an impetus for planting deciduous trees on mineral soils.
Agroforestry may be the most suitable system for Ireland. Again, a restrictive 'one size fits all' approach would not be appropriate given the range of farming and landscape/soil types across the country. Farmer led agroforestry systems using largely native or naturalised deciduous species would be more appropriate for landscape and biodiversity than non-native conifers.
The World Agroforestry Centre (ICRAF) has documented agroforestry systems around the world. www.worldagroforestry.org. They have classified standard trees in hedgerows as the most appropriate agroforestry system for north western Europe. This clearly is a system indigenous to Ireland that would have benefits for carbon sequestration, biodiversity and the production of niche foods and timber.
Reforestation with native deciduous tree species should be co-ordinated with peatland and bog restoration at a landscape or catchment level, both to support carbon sequestration and to reduce the

impacts of downstream flooding, as a part of a climate impact mitigation programme carried out with local authorities and communities. There are several funding streams that would assist such an approach. (Natural Capital Financing Facility, European Investment Bank, www.eib.org.)

Renewable Energy

There may be great scope for the development of on-farm and co-operative energy systems.
These would include solar power roof panels on farm buildings for farm energy use and solar farms for larger scale generation.
Biomass from coppiced timber may also be used for on-farm energy, for local sale or community use.
Biomethane production may not be cost-effective at farm level but it could be at the local co-operative or community scale. Planning objections to recent biomass schemes suggest that if groups of farmers come together to develop biomethane energy schemes, or even wind energy and biomass, then a community benefit component should be included.

There are two major problems with both energy conservation and renewable energy generation at the farm level. One is that nearly all existing designed systems have been developed for domestic use.
There are few systems that can be used economically at the farm scale. This presents an opportunity for rural business. The second problem is that there is no reliable and independent source of advice suitable for farm scale energy conservation and generation. There is limited advice from the Sustainable Energy Authority Ireland and from some area energy agencies, such as in Tipperary but these are more focussed on the domestic market. This situation would point to co-operation between the Department of Agriculture and the Department of Energy.

The Global Goals, also known as the Sustainable Development Goals (SDGs), are a **universal plan of action for people and planet** to be achieved by the year 2030. These 17 goals aim to end poverty, combat climate change and ensure that we leave peaceful, just and equal societies for future generations.
These goals are **universal** in nature, applying to developed and developing countries alike, and place sustainable development at their core.

Connecting the Local to the Global

Working towards realising our community vision for wellbeing has a direct impact on achieving Ireland's targets for the sustainable development goals


Health (physical & mental)
Work, Economy & Resources
Social & Community Development
Participation, Democracy & Good Governance
Values, Culture & Meaning
Environment & Sustainability
Community Wellbeing

Dear Sir/Madam,

I wish to make some brief comments on this consultation:

- We need to urgently address climate change (look what is happening in Australia right now), and the agriculture share of Ireland's emissions is over a third - one of the highest rates in the world. Animal agriculture forms a major part of this percentage.
- We need to reduce the national herd - no amount of "efficient" cows will match the current increase in recent years since the end of the milk quota. We must eliminate increase in the herd, and reduce thereafter.
- Irish beef is not more efficient in emissions terms than other countries - it relies a lot on imported feedstuffs (including transport emissions) and fertilizer -boosted grass growth. This grass is monoculture and is impacting badly on biodiversity in the countryside.
- We should encourage other countries not to fill gap if Irish beef exports reduce to help them meet their Paris targets.
- We must not send infant milk formula to China - this increases our emissions and is not good for Chinese women who are lactose intolerant.
- We need to plant more trees (especially deciduous) on Irish farms to act as a carbon sink.
- We need to increase production of plants, vegetables, fruit and grain on Irish farms. We import more food calories than we export - this must stop. It will also lead to more healthy diets by Irish citizens. More and more plant-based foodstuffs like potatoes are being imported which is unsustainable.

Thanks & regards,

SUBMISSION TO "AG-CLIMATISE" - A DRAFT NATIONAL CLIMATE AND AIR ROADMAP FOR THE AGRICULTURAL SECTOR TO 2030 AND BEYOND

BY

CONSUS PROGRAMME, UNIVERSITY COLLEGE DUBLIN, 10TH JANUARY 2020

BACKGROUND

CONSUS, (Crop Optimisation Through Sensing, Understanding and Visualisation) is a major strategic partnership in the area of digital agriculture jointly funded by Science Foundation Ireland and Origin Enterprises plc. The funding is €17.6M over five years. When hiring is complete the project will have 52 new PhDs and post doc employees including three admin staff along with the involvement of 18 academics from UCD. In addition, there is extensive collaboration with employees of Origin Enterprises. www.consus.ie

The top Governance body of CONSUS is the Steering Committee and the Department of Food and Agriculture is represented on that by Ms Ann Derwin.

CONSUS is a multi-disciplinary programme involving four Schools in UCD; the School of Computer Science, the School of Agriculture and Food Science, the School of Biosystems and Food Engineering and the School of Biology and Environmental Science. The diverse work packages include focus on such areas as machine learning applied to farm decision support, novel distributed software architecture, hyper-local farm weather and other services, novel biological disease control and biostimulants and new approaches to nitrogen use efficiency.

This is, to our knowledge, the largest university-based initiative of its type in digital agriculture in Europe and of major national and international significance.

COMMENTS ON THE DRAFT ROADMAP

CONSUS is concerned only with arable agriculture so our comments relate primarily to that area although they may have more general relevance also for animal agriculture.

We note that in "Part 3. Preparing for the Future", there is a section (section iii) on an action to "Continue to invest in R&D and KT Services"

We have no problem with the content of this but we believe that it omits the importance of digital agriculture and its benefits for increased farm efficiency, greater yields, reduced farm inputs, reduced environmental damage and contribution to the problems which are the subject of this Roadmap.

Digital agriculture itself is part of a wider trend beyond software to apply new technologies to agriculture. This is termed "agtech" and encompasses such areas as new agriculture focused biotechnologies, vertical farming, novel sources of protein, use of robotics in farming and application of the Internet of Things (iOT) to farming.

Digital agriculture and agtech is a rapidly growing area internationally, especially in the US and has received increasing amounts of investment by major agrochemical companies, and private equity and venture capital funds since the acquisition of Climate Corp by Monsanto for $1bn in 2013. The financing and market research firm AgFunder, https://agfunder.com/ tracks investment in agrifood, a category that includes agtech and innovation within food. In 2018 total world-wide investment was €16.9 bn, a relatively modest share of global private equity and VC funding but growing very rapidly. https://research.agfunder.com/2018/AgFunder-Agrifood-Tech-Investing-Report-2018.pdf. Of that, $6.9 bn of investment was in agtech and related areas representing a 44% increase from the previous year. It is noteworthy that Israel, a small but R&D intensive country, accounted for $185M of the above investment and that Israel has 460 agtech startups. Overall global agtech investment is growing at an average of 25% CAGR (Source: Boston Consulting Group).

In Ireland, this sector is at a very early stage of development. In 2016, four out of 109 HPSU projects funded by Enterprise Ireland were in agtech. The major agtech VC, Finistere Ventures has set up an investment branch in Dublin and in 2017, the Ireland Strategic Investment Fund co-invested with Finistere in a new €20M fund.

The application of digital agriculture on farm has been very limited to date in Ireland but about 20% of UK famers use some form of precision agricultural software or technology. It appears to be under the radar in terms of policy within the food and agriculture sectors in Ireland. We believe this has to change. Ireland would appear to be well positioned to compete in agtech given our strong internationally trading food sector, our knowledge intensive farming sector and our strong base and skill sets in ICT.

We recommend action items for inclusion within the Roadmap as follows; -

- Expand state R&D investment in the areas of digital agriculture and agtech.
- Incorporate the vital role for digital agriculture and agtech into all state initiatives for the area of climate change adaptation and mitigation.
- Create more public awareness and more awareness within the Irish agriculture and food sector of the trends in agtech and the benefits possible from its adoption within Ireland. Develop a sense of national responsibility for the stewardship of our natural resources both within farming and generally.
- Need for more training and support services for knowledge transfer to farmers in these areas.
- Invest in real time monitoring infrastructure that monitors our soils, coastlines, coastal waters, rivers, air, climate, ecosystems, , fauna, animal stock, plants and invasive species. The symbiotic relationships between soil, air quality, climate, oceans and agriculture need

to be better understood and requires more research investment in order to optimise agricultural adaptation to climate change.

- Develop and implement initiatives to promote greater private sector investment in digital agriculture and agtech such as VC investment and investment by corporates.

CONSUS would be happy to provide any further information needed to incorporate our recommendations in the final policy document.

CONTACT

[redacted]

www.consus.ie

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To it may concern

I would like to know how much of the tax payer money was wasted on this unnecessary action plan?
Next I would like to point out that the Irish government and of course other government signed up to the Paris agreement not the people so let be very clear on that point. We were not asked if we agreed to this Paris agreement.

Global economy crashed and now global governments need an excuse to charge people extra taxes and what better way that through scare tactics telling everyone that the world in ending its all your fault what a the big scam. Scientist love research grants and would say anything to ensure they get those grants what better than the trumped up global crisis. In any case politicians will on hown advice that ensure they can gain revenue they couldn't care less about the environment.

To date when I have asked for someone to explain to me how charging carbon emissions tax actually changes the fact that we have no affordable alternatives to gas for heating our homes and petrol to fuel our cars to get to work to pay all these extra taxes. So folks are being penalised. If there were affordable alternatives and people choose not to use them then its fair to penalise them via taxes. The simple fact is FG as have other countries have seen a money making opportunity here and could not care less about how it affects the people.

This road map is talking about the quality of our water in the country as being good however its not good it used to be now it just smells like bleach my dog won't even drink it. The quality of our water would be improved if FG did not waste millions of tax payer money setting up Irish water in the first place that money should have been invested in the pipe network. Further more the sewage treatment plants are not run correctly the people run them are not getting penalised. EPA reports that there is sewage being pumped into the see mainly because the treatment plants are over taxed. I wonder why that is would it be that we are allowing the mass building of housing estates nation wide with out upgraded both the water treatment plants?

I have one question to ask 3billion euros will be blow on NBP the people have had no say in this why is the 3 billion not being invested instead into the pipe network for our sewage and water supply so we can stop using chemicals the clean our water ?

The road map also talks about biodiversity I have one question how does the government allowing developers to tear up trees and fields to pack in hundreds of houses for profit fit in to biodiversity plan? I live in small town [redacted] co Wicklow every little green patch of land is zoned for building houses and now I see a wooded area is up for sale its an absolute joke wild life habitats are being destroyed so developers can make profit. Wicklow will soon become the concrete jungle of Ireland instead of the garden of Ireland.

I think it is foolish to mess around with our agriculture sector the farmers are exploited enough as it is. This country relies heavily on agriculture if that fails the country is screwed.
Does the public control how food producers package food is it our faulty they don't use recyclable packaging? We would be more than happy not to have endless amounts of packaging to throw out each week. So why blame use or penalise us?

In this country people have tried to do their bit by recycling, composting installing energy efficient boilers insulating our home etc. But with every effort we make we get penalised by the government. What did the government do they introduce pay by weight scam allowing waste management companies to rip people off for doing the right thing.

Do the people decide how we generate our electricity ? NO we don't do we have any alternatives no we don't.
Board Gais advertise natural gas as a clean fuel for heating our homes but the government charge us carbon tax how is that fair.

I priced up how much it would cost to replace my gas boilers with a heat pump system run with solar panel and standard electricity well the hardware costs about 10 thousand euros plus whatever the installation cost is. Further research also indicated the potential cost of running the heat pump which works out the same as I pay for gas. So in the end not financially viable.

For our cars I would be perfectly happy to use and electric car if the price of the car was not so high and any of the motor shows on tv advise against purchasing a second hand electric car. The grants the government provide for hybrid and electric cars the dealer just add that on to the price of the car so its a waste of time. Dublin area has a traffic issue for a couple of reasons a lot of folks had to move out of the city to rural areas so they could afford to buy a house so now they clog up the roads getting to work in Dublin. We have no alternative there is no buses or train that only works if you live the city or surrounding areas. Public transport is badly run and too expensive. To add more fuel to the fire whatever monkey in the Dublin council that changed the traffic flow in the city has cause this congestion they made it worse.

I find it disgusting that our politicians blame us for carbon emissions yet they jet around the world constantly to climate action meetings etc all of this could be done via video conference I use this all the time at work. Such hypocrites they all are and they have cheek to dictate to use what we should be doing. Its a disgrace that they are using impressionable naive children as way to gain political favour those kids should be in school not in the dail or out protest. The only thing I would say to those kids is you will be thankful when the climate is warmer in the future because you won't be able to afford or rent a home so you will need the extra heat when your are on the streets homeless. But at least they actually showed up and were in Dail not like our politicians.

I am really so sick of hearing about Climate change the climate is going change by itself we are still coming out of an ice age and I don't trust a word from our politician or their advisors I would trust what David Attenborough say over any of them.

Regards [redacted]

To whom it may concern,

I am writing to express my concern that the Draft National Climate, Air and Energy Roadmap for the Agriculture Sector to 2030 and beyond does not mention organic farming, or better still, regenerative agriculture! These approaches to land use must be at the forefront of any plan which aims to mitigate climate change and biodiversity loss and ensure food security in the face of the global environmental emergency.

As an entomologist, I represent the interests of the insects - pollinators, nutrient cyclers, pest predators - who make our existence on earth possible. Without them, the natural processes that sequester carbon and mitigate the effects of climate change are no longer possible. We know that insects are in severe decline and will continue to disappear until we reduce pesticide use to a bare minimum or entirely, and begin to return our land to a state in which they can thrive by ensuring the continued existence of wild plants, nesting sites, hedgerows, etc.

Regenerative and permaculture agriculture lead to a build up of organic matter and microscopic life in the soil which sequesters carbon and sustains soil fertility and. Along with agro-forestry, this would be the best way to go. https://regenerationinternational.org/why-regenerative-agriculture/

It's time for drastic changes, but these don't have to be a hardship. Please provide farmers with the support and resources they need to make their practices sustainable and less precarious. Not only will sustainable agriculture enable us to reach our climate mitigation goals, but this is a chance to release farmers from a system which traps them into making decisions which are detrimental to the soil which supports our quality of life. Nobody whose livelihood depends on the land should be put in a position where they are forced to poison it. A well-supported focus on sustainable organic or regenerative agriculture instead of quotas could reduce the rate of rural suicides in this country. Just talk to those farmers who have already made the shift.

Please heed the calls to action of the Extinction Rebellion: Act Now. Tell the Truth. Beyond Politics. Thank you for taking the time to read this.

Sincerely,

[redacted]

Priorities include:

- Prevention of penalties being imposed on farmers who widen their field margins. Prevention of penalties being imposed on farmers who plant trees in a wet corner of a field.
- More education is required on the cutting of hedgegrows
- 20 year programmes to target the elimination of invasive species such as Rhododenron

Dear Sir/Madam

I would like the inclusion of agricultural contractors that do not hold a Herd number for TAMS / LESS grant funding as they provide a vital role in rural ireland for the faming sector - otherwise each small farm would have to purchase slurry equipment etc themselves and there is a huge cost involved in purchasing same.

Currently small agricultural contractors that do not hold a valid herd number cannont apply for TAMS / LESS grant funding.

I would like this changed to include them.

Please acknowledge.

Kind regards,

[redacted]

To whom it may concern,
As a geography and part time farmer I find myself in a very frustrated position. There appears to be an ongoing media campaign to target farming and agriculture in general as the primary cause for carbon emissions in Ireland.
Although it certainly does play it's part, I struggle to see how its role as the main solution is being overlooked time and time again.
Farms are without doubt a key component in the green countryside of Ireland which attracts over 10million tourists per annum injecting much needed funds into our country.
If the government wishes to work with farmers then why not offer lucrative incentives to every farmer to plant one acre of natural irish woodland.
Coillte should also be brought to task over the areas being planted with non native Scandinavian trees which are adding to the acidity levels of our lakes.
In relation to beef farming, numbers of animals are not increasing by and large so methane levels produced today are not causing an overall increase in this gas as it remains in our atmosphere for only 10 years.
There are many other points which I would like to raise but I dont wish to bombard you at this juncture.
This is also an area that I have always been interested in working in and would aim to do so in the future.
Thanking you for your time.
[redacted]

Dear Sir/Madam,
At a time when beef farmers are losing money, the department shouldn't shy away from looking for alternatives for these farmers that would provide better pay and stability for the farmer and lower carbon emissions for the country. The department should examine ways in which the national cattle and dairy herd could be reduced.

Furthermore, many rural farmers are now older and looking to retire. Perhaps when this happens to multiple adjacent farms, the department could look to create a decent sized forest that would be large enough to encourage native wildlife. The families of these farmers should be paid properly for the use of their land in this way and the local towns and villages should be supported in improving the local rural community through the proper provision of local public services.

Forestry will have a big role to play. If 300,000 ha. has been planted since the 1990s, perhaps 8,000 ha./annum is a low target?

When forestry is being planted, native biodiversity should be a priority. Native trees should be planted and the forest should be planted in a way that promotes local and other native wildlife including plants, insects and animals. Our farmers could be the vanguard in recovering lost wildlife for local communities such as foxes, bees, badgers etc. Contrast the positive publicity for a farmer who has planted a portion of his land with native trees and is helping to recover local bee populations with the negative publicity of being (rightfully) linked with 34% of Ireland's GHG emissions. There is no reason for the department to prioritise above all else the maintaining the national herd.

Teagasc, the department, the IFA and the many other farming organisations can ensure that quality of life for farmers and their pay increases in the decade to 2030 even if their lifestyle changes slightly. The department is right to prioritise farmers' well being but they are wrong to assume that the most important part of this is maintaining the national herd.

Thank you for undertaking this consultation.

Kind regards,

[redacted]

Hi,

Just some feedback on the online survey. It took me 45 minutes. I found it was too long. I am under 40 years old and use computers a lot and even at that I found it long. I suspect older farmers may loose patience or become tired before getting to the end of the survey and may not finish it. perhaps it should be broken up. Just my opinion.

Good to get the opportunity.

regards,

[redacted]

Carbon Neutral Beef

Carbon neutral beef can only be produced on a carbon neutral farm where carbon emissions are absorbed equal or greater than they are produced on that farm.

Irish Suckler Farmers take Irish Beef to a new level on the world stage.

Learn more about a new beginning, a new opportunity for Carbon Neutral Beef with the following benefits:

1. Creating Carbon Neutral farms with some advancing to A1 Status.
2. Honouring Ireland's responsibilities and commitments on Carbon emissions targets from the beef industry.
3. Providing the new Cap plan with a golden opportunity.
4. Improved water quality.
5. Reduced Ammonia Levels.
6. Improved animal welfare.
7. Ensuring Ireland's youth and their children will inherit a healthy countryside and environment.
8. Copper fastening Ireland's green image worldwide.
9. Excelling carbon natural Irish beef to a new all time high on leading world markets.
10. Protecting family farms and rural Irish life from extinction, while returning a viable income.
11. Reuniting the main beef industry partners, the producers, processor and retailers creating stability in the sector.
12. A new initiative that will make all involved proud to be part of –i.e. Department of agriculture, Board Bia, Teagasc, Suckler farmers, Tourism Ireland etc.
13. Demonstrating to and reassuring environmentalists that carbon natural beef is not harmful to the environment.
14. The new dawn with Irish Beef has just begun with this 3 year pilot scheme.

1. Carbon Neutral Farms

Such farms will create a farm environment where at least the same amount of Carbon will be absorbed as produced on the farm

a. This will be obtained by some or all of the following methods
    1. Adjust Stocking rate

2. Adjust feeds and fertilizer usage
3. Planting of trees, shrubs and special grasses

A1 Farms

b. Carbon Neutral farms can advance to A1 status by the following means
    1. Wildlife habitats
    2. Wild grass and flowers, bee habitats
    3. Solar PV
    4. Rain Harvesting
    5. A rated cows – refer to notes (1b 5)

1. b5 A3 rated cows
    1. Must be 100% Beef breed.
    2. Calf every 380 days for 3 years.
    3. Must rear own calf.
    4. Calf must gain 1.3kgs a day at least.

    Suckler Beef heifers enters the heard at B status

    They rise or gain I grade according to performance, i.e. where the heifer calves down under 30 months she gains 1 grade
        - Calves the following year within 380 days gains 1 grade
        - Calves to be weight at birth to gain calving ease survey

    Cows receive payments according to their ratings i.e.

    Heifer €100

    A1 Cow €300

Stock bulls must be pedigree registered.

We feel (and our feedback from other Suckler farmers) that there is strong believe that this A rated cow idea would give far better results to the beef quality and carbon footprint than the present system.

i.e. If Suckler cows were paid subsidies according to their "on farm" performance. The better they perform the higher the payments, the poor performers get paid far less. Then within a short time farmers would start to concentrate on their best cows and cull the weak performers. This would be a practical exercise and would be self policing. It would also get our quality weanling program back on track quickly.

We also believe that weight recording the newly born calf will give the necessary information on how a bull is breeding and the cows' ability to calf. Weighting a weanling will tell the story from birth to weanling.

If the cows producing the best weanlings also received the highest subsidies it wouldn't take long to have the best possible Suckler population again. Following a period of time, mardan heifers could carry the information on their dams, i.e. whether their dams were A rated or slipped under the B rated start point for maiden heifers.

2. Honouring Commitments on Carbon Emissions

For the third consecutive year Ireland has not met its commitments on Carbon Emissions.

Some of this failure falls on the shoulders of our Beef industry.

Our Suckler farmers would like to lead the way in changing this and lead by example. We need to reverse the conception that beef can harm our environment.

We wish to produce beef that does not harm the environment on our carbon neutral farms.

Carbon Neutral farms will significantly reduce the rise and do its part in ensuring Ireland will not face large fines.

Furthermore it will eliminate the view that this beef is harming the environment or causing climate change.

3. New Cap Plan

We hear and read everywhere that climate change requires more serious focus. We hear the next Cap payments will have more environment based focus.

We believe our plan is a golden opportunity for the next plan.

We would like to see a special pilot 3 year scheme run for a small number of forward thinking Suckler farmers.

This pilot group could be ambassadors for a full nation launch in 3 years time. Make it worth their while by ensuring such farms could make a viable living.

This could be done in many steps. i.e.

- A basic figure for carbon natural farms, step up accordingly to A1 status.

- Incentivise by offering €1,000 per open day i.e.
    - Schools & colleges.
    - Fellow carbon neutral farmers.
    - Teagasc.
    - Overseas purchasers.

- "A rated" cows paid accordingly.

4. Improved Water Quality

Improved water quality will result from Caron Neutral A rated farms due to the following:

- Reduced Stocking Rates
- Rain harvesting - run off from roofs being reused instead of run off
- Reduced amount of NPK Fertilizer
- Reduced amount of Slurry
- Reduced amount of chemicals
- Improved wildlife habitats

5. Reduced Ammonia Levels

Ammonia levels reduced significantly due to

- Less use of nitrogen due to the introduction of environmentally friendly fertilizers.
- Introduction of varied grasses and clovers.
- Lower stocking rates.
- Increase in Tree population.

6. Improved Animal Welfare

Improved animal welfare due to

- Lower stocking rate.

- Homeopathic medicines to replace conventional medicines where and when possible.
- Reduced use of chemicals on farms.
- Calves reared on their own dams until weanling leading to less manufactured feeds.
- Fewer possibilities of diseases or virus outbreaks.

7. Our Youth

Our Youth are our strongest asset, it is vital that they inherit a nation that's in good shape and not broken.

We must provide them now with the assurance that we nourish our environment so that they and their children can look forward to carrying on a healthy way of life.

We must show them that suckling farming can work alongside nature and both can cherish together on A rated farms.

We must show them why our beef is not harming anything and is good to eat.

We must do talks in schools and colleges to highlight this in the future.

We must make them proud to grow up on our farms, a pride they will carry with them for life.

8. Green Image

With carbon neutral farms and beef, Ireland would without doubt become the green Isle of the world.

Not only leading to new niche markets, but also being important to our valuable tourists industry including fishing.

9. World Markets

Ireland already enjoys a good reputation when it comes to food but imagine bringing it to a new level where the top markets all over the world would seek to purchase this quality food.

As wealth increases in countries like China, high end products are sought after. Our pilot programme could look at using where possible mainly homeopathic medicines on carbon neutral farms. We have an advanced veterinary surgeon willing to help and share his knowledge to other vets. We feel with the proper marketing approach this carbon neutral beef could fast become a market that we would struggle to fill such could be the demand.

We ourselves already have foreign interest for 8,000 head of cattle, to start with from carbon natural farms at a premium price.

10. Protecting Rural Ireland

At present, Suckling farming plays a big part in keeping rural Ireland active. However over the last 3 years, pessimism has crept into sucking farming with many getting out of cows altogether.

We need to change all of this negativity if suckling farming is to survive.

We need to put money and pride back in the industry and we feel carbon neutral beef will do exactly that.

Suckling farms can once again stand proud by knowing and proving that they have taken climate change seriously, and have fulfilled their part, same as the A rated houses or electric car owners.

This can be a revolution in Irish Beef Farming.

We would like to see a completely new template here where all the issues and problems of the past are left there, a new working committee to advice and monitor this programme. Put together a finically attractive 2 or 3 year pilot scheme for say possibly 5,000 farmers. By close monitoring a near perfect programme will be ready to roll out to all Suckler farmers in 2 to 3 years.

11. Reuniting

A new business plan between the business partners can lead the way for proportional profits between the three main players. It will also mean the factory protests would be a thing of the past.

For carbon neutral beef the market price will be slightly higher than all the other beef.

Retailers and farmers will work on a percentage divide of the end product and between them pay the processers for their services. This will ensure traceability in margins for all involved.

The three main partners will share profits or losses evenly.

A good business plan will be drawn up where for 2 to 3 years marketing professionals will secure markets with guaranteed price structure.

Certified Suckler farmers will provide the weanlings for the market.

Producer groups will be set up to finish the animals at required weights and grades.

Information and data on this programme will be gathered and monitored. Stability will be created in the sector with a 3 year agreement on price percentages and volumes. This in turn will develop trust among the main business partners – something that has been missing for years

12. New Initiative

This new initiative will give all involved a sense of achievement and a better future. By securing higher end markets and looking after nature and global warming concerns, it will be a corner stone of the way forward.

It will **create a new energy** in the Suckler sector.

For the certified farms it will return higher margins while reducing costs on feed and fertilizers.

The increased income will be made up by the following:

a) Fixed payment of agricultural yearly grant

b) Higher fixed prices on sales of certified cattle
c) A rated cows receive payment
d) Open days

i.e. A 20 cow herd is reduced to 16; the farmer receives a grant of €10,000.
Increased cost of sales of weanlings = €300 a head.
A rated cows @ €200 kg = €3,200
Open days €5,000 (1,000 x 5 days)

- Farm to farm
- Schools & colleges
- Teagasc
- Environmentalists
- Potential Purchases – home & abroad

Total income, sale of 14 weanlings X €1,300	€18,200
	€10,000
	€3,200
	€5,000
	€35,200

13. Demonstrating to and reassuring Environmentalists

By developing carbon neutral A rated farms, they would be working examples of how well they work together with nature.

Such farms would be our shop window for our carbon neutral beef both at home and across the world. Such arms would reassure our concerned environmentalists that they are doing no harm to the environment bur are in fact working alongside nature.

14. New Dawn

We believe that if these proposals were taken on as a complete package as a pilot scheme it would give an opportunity or a new beginning to be born.

Perhaps some adjustments may be required now or during the pilot period but it would lead the way for a new beginning in Irish beef and our carbon emissions responsibilities.

We feel it could make us market worldwide leaders with a unique product while honouring our commitment on climate change. We the Suckler farmers want to be part of the solution.

To: **Climate & Air Roadmap Consultation** Dept of Agriculture, Food & Marine, Portlaoise R32 K857 via email agclimatise@agriculture.gov.ie

Re: **Submission to 'Ag-Climatise'** A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond Public Consultation

From: [redacted]

Retired Research Scientist AFT/Teagasc in area of soil, water & environment

Title: **Climate emergency probably exaggerated but a great opportunity to bring in land rental-ownership reforms, elimination of farmyard liquid emissions, free CAP- farming link for older farmers and allow them to retire, and to make special case for GHG emissions for very efficient farm product exports.**

My Background: After qualifying with B,AgrSc -hons degree in 1961, I spent over 8-months in [redacted] teaching science, rural-science to pupils of [redacted] at [redacted] I was also an external science lecturer for [redacted] for an adult extramural course but was then appointed to [redacted] Johnstown-Castle taking up a research position pasture production on regional soils where both local climate and soil type were significant variables. After that I transferred to [redacted] where I specialised on the physical aspects of soils including drainage, irrigation and climate effects. I got a Fellowship to study at [redacted] for 2-yrs and used my time there to undertake all the PhD courses available in Soil Physics in Agronomy College and Geo-Technical Engineering in the Engineering College. Of relevance to this submission, I spent considerable time in physics & math depts. Of particular relevance was my contact with [redacted] who was a research leader of a major

study on the uptake of CO_2 by the corn crop. [redacted] a dairy farmer and creamery manager in his early life following being injured in the Korean war went back to college and got seriously involved in the physical sciences. With considerable Military funding and advanced equipment he had developed advanced models of CO_2 uptake and its suffusion and dispersion within the large corn canopy. As well as the formal contact, I happened to live near [redacted] home and we frequently walked to college together. I, because I had no convenient parking on campus and [redacted] because he was a military-man who wanted to kept fit. We frequently discusses matters such as the differences between continental climates as we had at [redacted] to temperate marine influenced climates like we have in Ireland and the importance of the different temperature extremes could make to crop growth. [redacted] as a very well got US-government appointee to the University had a free world phone. To settle a difference of opinion he would ring [redacted] in [redacted] on his free phone over the [redacted] in [redacted]. In annex-5, I show some work published by [redacted] students about 15 years ago showing the importance of elevated CO_2 concentrations, not just to total plant growth but to the relative different growth rates for the different plant organs. Also of relevance to this submission, after my former boss [redacted] retired from [redacted] in 1988, I became responsible for the [redacted] Climate Station and also became an informal contact in [redacted] for Met Eireann. I became an active member of the Ag-Met group and also a member of the Irish Met Society Through this I was privileged to get to know a number of meteorologists, solar and atmospheric physicists in Met Eireann and further a-field. [redacted] with [redacted] had set up all the original AFT Climate stations, many of which are now replaced by the Met Eireann TUSCON network. More recently I have attended a number of lectures by long established eminent physical scientist in the area of the fundamental physics of climate change modelling. Most of those were put on by the informal Irish Climate Science Forum [ICSF.ie] but also by other institutions

and on-line by way of podcasts. Some of those scientists have been involved from the very beginning of the climate debate, such as [redacted]). He was involved in the very first US Presidential Climate enquiry under the chairmanship of [redacted] (MIT) a scientist regarded as the father of modern CO_2 driven global warming.Their report (1979) led eventually to the foundation of the IPCC.

Other Submissions of Relevance: I made a submission by email to the Citizens Assembly on Climate Change in 2017, most of which is relevant to this submission. I attach the whole submission in Annex 4. I also made a submission to the Climate Change adaptation - consultation, via on-line in August 2018 which you will have. I give details of this also in Annex 4 below. I have also completed your "Survey on a DRAFT National Climate, Air & Energy Roadmap etc"..

Introduction: The government has declared a climate emergency. I am aware that Ireland has signed the Paris Agreement and that the Government has committed itself to certain actions in compliance. I am also aware that Ireland makes good use of EU funding to a value of nearly €2bn and that to draw down most of these funds our obligations to the above agreements and declared actions must be complied with. My serious concern is that some of these actions could turn out to be on projects that are useless or worse and turn out to be a very serious squandering of tax-payers money and further in some cases quite harmful to Irish interests & the Irish economy. However, I believe that if some changes are made and if projects that have benefits to society and the country over and above those envisaged for climate change mitigation, moneys spent may then, for different reasons, yield very positive benefits to society and the country. It could be a case of ***"not wasting the opportunity of a good emergency to make some badly needed changes"*** in the world of farming.

List of serious issues that I am aware of and that the examiners must look at:

- That the GWP of CO2 and all "Agr-GHGs" is exaggerated: The DoAgr Consultation may rightly consider this issue to be outside their remit but the issues concerned are so serious I believe they should look at the overwhelming evidence that is now building up on the issue. I was privileged to have know some very relevant meteorologists and physicists who have been pointing out this since the late 1980s. [redacted] of Armagh Observatory and earlier of Dunsink Observatory has related cyclical changes in the longest temperature record on this Island which he discovered when he went there, to Solar activity. On a global scale this association has been verified in recent times. [redacted] was born on a dairy farm in S-Cambridge-shire and is a frequent visitor to Dublin. [redacted] ex-head of Research [redacted] then head of a Climate Modelling and Simulation

unit at NASA Goddard Institute for Space Studies (GISS) and before returning to Ireland to the Meteorology Dept in UCD was Prof of Meteorology at the Niels Bohr Institute (University of Copenhagen0 published a paper in (2016) that showed convincingly that CO_2 has about 1/3rd the GWP of the mid-range value used by the IPCC. A number of papers by long standing eminent physicists have come to similar conclusions both before and since then. Similarly the long term GWP of Methane (CH_4) is greatly exaggerated. Besides the work of Myles Allen and his colleagues at the Oxford-Martin-School that you are no-doubt already aware of, there is ongoing research in the US that when fully published will show that CH_4 and N_2O are "irrelevant" GHGs. A preliminary presentation of this work was made at the American Met Society annual conference in Vancouver in 2018. I provide a summary and a list of references to all those published papers and presentations in annex-1.

- Most of our Agr production is exported and consumed by citizens in other jurisdictions: - thus exaggerating the Irish C-footprint -. Ireland, like New Zealand never had old heavy industry. What new industry we have, is modern and clean - thus not much room to improve our C-footprint by for example, changing from coal to natural gas. That fact and our low population has made our Agriculture C-footprint sticks out disproportionately; particularly for animal and animal product agriculture. Per unit product, our dairy industry has the lowest C-footprint in Europe and at world scale, second only to New Zeeland. Our much maligned beef is in about 4th place in Europe. It is nothing short of lunacy for us to restrict Dairy or Beef and allow other countries to fill the vacuum with much higher C-footprint product, if we should ever do so. Every expert analyst says both dairy & beef production are set to expand globally, as developing country diets improve. So in the overall scheme of things not only is it pointless for Ireland to attempt such reduction but worse, it would lead to an increased global C-footprint equal to the difference between the Irish product and the increased footprint of the replacement product. I understand there are some proposals to change from a 'product and production' based system of C-footprint accounting at national level to a citizen consumption based system which would resolve this

issue. BUT even if that never happens, as is probable because big countries are not affected noticeably and provably have little incentive to make the necessary changes, Nevertheless the anomaly in our case, is so great and the facts are so obvious I believe if the necessary political effort was made we could get a special derogation for our Dairy and Meat industries. Not only that, but we should be given a C-footprint credit equal to the amount of C-footprint saved by our products measured against those that would displace them - a job for our economists, EU politicians and diplomats possibly ? ..

- The Consultation-Examiners should be aware of squandering tax-payers money on projects that are useless in contributing to climate-change mitigation: - and whats worse in some cases quite harmful to Irish interests & the economy - The most glaring and scandalous examples of this are:
    - Planting good and medium quality Agric-Land to forest trees. Nobody in the EU except us is seriously considering this. This forest policy employs at most 1 person per 1000 acres and destroys the capital value of the land so planted. removing mature tree-stumps alone costs about €8000 per acre. In the newer private forestry projects, the employees are mostly not rural based. Mass planting as in Leitrim, is destroying local communities. EU grants and premiums are paid to absentee owners and clear-felling when it comes lasts only days and is carried out by mobile workers living long distances from the local forests. Most of the soft-wood forest is put into short life product that soon ends in the product being oxidised back to CO_2 Unlike soil carbon sequestration there is no long term sequestration with the bulk of forest C-sequestration. It is a one cycle only C-sequestration; no long term C build-up after the first cycle, only a repeat cycle.
    - Planting "Biomass" crops for fuel.on farm-land at about 5-times the wholesale cost of coal it will never be sustainable.
    - promoting industrial scale methane production for fuel from farm crops and farm manure is equally grossly expensive and will never be sustainable
    - promoting long distance electric vehicles that have such high embodied energy in their manufacture and assembly that it is doubtful if they have any C-footprint saving at the end of their life span.
- I believe it is possible to make changes to all of the above 4-items that would satisfy the Climate & Environmental gods in the EU and at the same time yield useful value-for-money benefits to society. such as

- Instead of blanket forestry plant suitable trees on a proportion of the 600,000 km of hedgerows we have in the country. On the assumption that single row trees intercept about twice the global solar radiation that forest-stand trees do, I am allowing 40m2 per mature stand tree. If the trees are planted for a final spacing of 5m (X8m notional width) then planting 1,25 million trees/annam is equivalent to planting 5000 ha of blanket forestry and these trees would require about 1,250 km of hedgerow. That is an average of about 50 km per average county of the 25 rural counties A wide variety of suitable trees and shrubs could be planted initially; some suitable for final saw-log timber; some native, some for fibre; some for fuel and some for amenity and wildlife.- more details in annex-2.
- A major advantage of using hedge row planting would be the opening up of farmland for green-way trails, walkways and bridle paths. These would need careful research such that farm security both property from vandalism and bio-security were never compromised. Ideally these trails would be along existing farm -boundaries ans also along natural boundaries such as significant streams, rivers and lake, more details in annex -2 These details include a body within existing Agriculture -Forestry- Wildlife services that would coordinate the development such trails and co-ordinate the involvement of local enterprises like hotel, tourist, fishing, shooting and hunting bodies.
- planting trees around farmyards for visual amenity and also as a scrubber for NH3 emissions from manure storage facilities and manure soiled surfaces more details in annex-3.

- For all of the above tree plantings there should be no permanent "Forrest"designation which would immediately kill the scheme. Taking out thinnings and other plantings for fuel could locally replace the traditional turf-cutting tradition and be suitable for local community crop-fuel harvesting projects. BnM may have a role to play also in the midland counties. Since there is multi-use involved, grant aid can be justified under a number of headings - more detail in annex-3
- On the separate issue of farmyard liquid emissions causing surface and ground water contamination I have made a separate submission on low-cost manure storage and simple farmyard alterations that would make all farmyards liquid emission free - see annex-5 for more details.

I trust you will give the above items favourable attention and if anybody wants to ring me at any time please feel free to ring my mobile number at any time .

I will send the Annexes later as an amendment to this document.

[redacted]

Ag-Climatise – A Draft National Climate & Air Roadmap for the agricultural Sector to 2030 and beyond.

Submission by: Goldcrop Ltd, Seed and Agri inputs supplier

While the majority of the report is well received, the following commentary pertains the action listed on page 22, "Require incorporation of clover (and mixed species) in all grass reseeds by 2022 "

Improving nutrient use efficiency and extending grazing through increased reseeding rate

- Reseeding rates are currently low (approx 2%) despite the fact that Shalloo et al (2011) stated that at a milk price of 27 c/L, farm profitability was €20 764, €24794, €30073 and €33515 on a 40 ha farm when 1%, 5%, 10% and 15% of the farm was reseeded annually, respectively
- Swards with 100 % perennial ryegrass will produce roughly twice the herbage mass in the spring period compared to swards with 40% perennial ryegrass (Creighton et al, 2012). This has a large effect on nutrient use efficiency (NUE) and potential for extended grazing, two measures identified in the report's MACC for abatement potential of GHG.
- Improved sward production also mitigates the need for imported feed
- It is the authors firm belief that farmers should be encouraged to create an annual grass reseeding plan to encourage improved levels of annual reseeding on Irish farms to improve economic and environmental performance from pasture on Irish farms with a high feed demand.

Use of Clover in Silage Swards

- White clover is not suited to areas designated for intensive silage production. Recent work by Teagasc has shown that white clover can become overly dominant under intensive silage management.
- Red Clover is suited for use in silage swards, however, current uptake of red clover for silage production is low demonstrated by low red clover seed imports. Much of the current seed usage is within the organic sector. Knowledge will need time to be built up among farmers before use becomes compulsory. Red clover also requires rotation so can't be sown concurrently in the same areas due to risk of Sclerotina and Stem Eelworm disease build-up
- A study by Calvin et al 2017, showed potential for production of higher protein conserved forage with reduced inorganic nitrogen applications. This creates two potential avenues for GHG abatement.
- Considerable potential exits for the increased use of Red Clover under silage management on Irish farms. Measures should be introduced to encourage the phased incorporation of red clover into Irish forage production systems.

Upcoming removal of clover safe chemistry

- The flagged removal of 2,4-DB will mean that farmers will be forced to spray off the establishing clover with a non-clover safe herbicide in order to control a full array of broad leaf weeds. Under these circumstances, forced inclusion of white clover in all grass seed mixtures will add additional cost with no net benefit to the farmers or the environment.
- The presence of perennial weeds such as Dock, Thistles and Nettles will reduce herbage production leading to increased requirement for imported feed on highly stocked farms
- Further complications to reseeding should be avoided to ensure reseeding rates are not reduced and national pasture production is not depressed accordingly
- Stitching clover could also be incentivised but research coming from Teagasc Moorepark shows that better results are being achieved from establishing clover during reseeding. Obviously, the latter is reliant on suitable chemistry coming available
- The authors can see no logic to the compulsory inclusion of clover in grass mixtures. Farmers should have the freedom to use the most relevant technologies available to their farm in order to establish a target proportion of their farm with clover by a set date.

Inclusion of mixed species on highly stocked farms

- The forced introduction of mixed species would remove all possibility of weed control from swards. Current publications on mixed species does not justify their forced introduction.
- A recent Meta-Analysis of studies conducted on the inclusion of herb species in grass swards by McCarthy et al 2020 showed a 1.2kg/day increase in milk yield in treatments containing herbs. While the control treatments consisted of perennial ryegrass in some insistences, the inclusion of tall fescue, Chardgrass and Italian ryegrass in other studies would not be typical of common grazing species in Ireland and would be known to express poorer animal performance results. Much more research work on the inclusion of herbs is required in condition and species common to Ireland, including evaluation of the persistency of herb species.

K. M. McCarthy, C. G. McAloon, M. B. Lynch, K. M. Pierce, and F. J. Mulligan, 2020. Herb species inclusion in grazing swards for dairy cows—A systematic review and meta-analysis. Journal of Dairy Science, In Press.

D. Clavin, P. Crosson, J. Grant and P. O'Kiely, 2017. Red clover for silage: management impacts on herbage yield, nutritive value, ensilability and persistence, and relativity to perennial ryegrass. Grass and Forage Science, 72, 414–431.

Shalloo, L., Creighton, P. & O'Donovan, M. 2011. The economics of reseeding on a dairy farm. Irish Journal of Agricultural and Food Research, 50, 113-122.

CREIGHTON P., GILLILAND T. J., DELABY L., KENNEDY E., BOLAND T. M. & O'DONOVAN M. (2012) Effect of *Lolium perenne* sward density on productivity under simulated and actual cattle grazing. *Grass and Forage Science*, **67**, 526-534.

Green Party – Kerry branch
Submission to Climate Action Consultation for Agriculture

The Kerry Greens welcome this Roadmap for agriculture to 2030 and beyond.

Greater efficiency

- We welcome the concept of doing more with less. Greater efficiency through nutrient management, use of digital technologies, improved breeding and land mapping are all excellent ways of improving efficiency, drastically reducing emissions while keeping the national herd stable, protecting employment and the supply chain.
- It has been shown that biodiversity can be improved greatly even on intensively managed farms. The BRIDE project is a great example of how intensive dairy farms can support huge biodiversity with no impact on the efficiency of the farm. This should be used as a template throughout the country

Current System

- There are major flaws with the current system, namely, CAP and GLAS. The bar is set very low to receive these payments. The payments should be much more directed, where farmers that do the most get the most. Currently they have been normalised as a payment almost everyone gets. Also habitat retention and protection needs to be rewarded. In GLAS a farmer could legally remove up to 500m of hedges without an EIA and then put up bird boxes and get a GLAS payment. Also a farmer will get a payment to set native trees but is penalised if they have existing scrub or woodland or ponds.

Alternative agricultural model

- It should not be one size fits all in agricultural policy. It is necessary to make the large scale farms as efficient as possible using technology and the latest science, as detailed in the consultation document.
- There should be another model, an example of which is a 'Farm to Fork' model. Local farmers/suppliers supplying through a local co-operative fresh seasonal produce to local markets. This model will require different supports. This model is a vital part of a Just Transition, allowing greater resilience for the future, reducing reliance on imports.

Soil

- The soil is one of our most valuable assets. Farming practices which have positive environmental impacts, such as organic farming, regenerative farming, agro-forestry will protect and build carbon in the soil. These methods must be encouraged.

- Stop poisioning the soils and waterways with chemicals as a matter of urgency and penalise, rather than reward, farmers who do this. There have already been significant cases taken against Monsanto internationally so why is Ireland still not banning roundup, knowing the serious implications on health and biodiversity loss?

Organic Food Production

- We need to become more self-sufficient in our food production encouraging more local, organic food and less reliance on imports. At the moment, we are importing 70% of all organic produce which results in increased air miles and carbon footprint.

- Organic food production builds rather than depletes soil, is more healthy and nutritious and avoids pollution of our land and water sources.
- We need to be able to meet the growing demand for organic vegan and vegetarian diets around the world.
- Develop a formal internship programme in the horticulture sector to provide labour for farmers and also incentive for young people to take over farms and get involved in horticulture
- Build a market for local organic food in Ireland. We need a well-resourced national PR campaign. There is no marketing of clean organic food in Ireland and this must change. We need to support growers to reach their consumers through a range of measures from farmers markets to traditional retail outlets.
- Need to support more community initiatives to ensure resilience at local level (community allotments, school gardens, local markets etc)

- Introduce new procurement guidelines for all public service orgs to prioritise local organic food supply/circular economy especially in schools, hospitals and public buildings. Policies which make it mandatory for all state institutions to provide local organic food in their restaurants or food service. They did this in Copenhagen in 2007 and now 80% of food in public institutions is coming from local organic food producers

Cross-sectorial support for agricultural land

- Flooding – where farmland is in a high-risk flood area native woodland should be planted, as part of a whole river approach to flood risk management.
- The National Parks and Wildlife service needs to be correctly funded to ensure that management of farmland within SPA/SPC/NHA is beneficial to the species/habitat under protection.
- We welcome the revision of Origin Green. Origin Green has potential to both improve Ireland's environment and as a marketing initiative, but needs to have strict criteria, so only best practice industry and suppliers are accepted onto the scheme.

Training & Upskilling

- Upskilling and training are vital. Particularly through the advisory bodies. It is important that farmers see environmental issues as an opportunity and not a threat. A shift in attitudes is therefore required.

National Food Security and Food Independence

- There is an over reliance on livestock farming. Much of the feed stuff for these animals is currently imported. Ireland should aim to feed the national herd with feedstuff grown and produced from the Island of Ireland. We need to begin with a ban on importing GMO foods.
- While the CO2 per kg of beef can be reduced, the agriculture sector is still over reliant on beef sector with its' high inputs and relatively high CO2 emissions. A move away from beef farming and reducing the size of the national herd is necessary.
- Ireland should aim to feed the population of Ireland with the vast majority of food grown/produced on the Island. We have ideal growing conditions and with new science and technologies this is achievable.

- In general the consumption of meat will reduce into the future. Locally grown, quality produce 'Farm to Fork' is the solution.

Energy crops

- Caution is needed regarding energy crops. All costs and benefits, to biodiversity, energy inputs versus outputs must be considered.

Upland areas – High Nature Value Areas

- Regarding Ireland's uplands, majority of which are grazed by sheep. Subsidies are still given to sheep farmers, resulting in overgrazing of the uplands, reduction in biodiversity and degrading of soils. Much of this livestock is being sent to Iran or Turkey.
- A change of attitude to upland areas is required. They should be viewed as conservation areas, allowing the area to re-wild or plant native woodland, for example see ongoing projects in Scotland. Grazing can continue on strips between these conservation areas to act as fire break.
- There needs to be much more value placed on HNV farmland. The farmers farming these lands should be supported to stay farming these lands and not incentivised to plant non-native forestry. There needs to be a new class of farming that includes farming biodiversity and sequestering carbon.
- Mt Brandon in Kerry is an example of severe over grazing where a management plan is urgently required.
- Working with all farmers, modules on biodiversity and the opportunities in a changing face of agriculture need to be given to farmers in training colleges and mandatory by the advisory boards or department of agriculture.

Seedsaving

- We urgently need more investment in seedsaving as this is critical. We need to ensure that we are saving heritage seeds and support organisations who do this (Brown Envelope Seeds, Irish Seedsavers)
- Famers need to be supported to plant native speices througout the island to protect against climate events
- Bring international speakers like Vandana Shiva from India to Ireland to inform policy and action

Conclusion

- Nature needs to be integrated into agricultural policy, training and land use. We have a huge opportunity to promote nature as a positively as possible in Irish Agriculture and reward good practice. We need to allow habitats and species time and space to recover systemic over exploitation.
- The current situation of low prices, high inputs, high subsidies, low farm income, farmers protesting cannot continue. We need to educate and empower farmers. Farmers need to be involved in conservation management in areas of conservation value, greater efficiencies on larger farms in productive areas and also we need to support the 'Farm to Fork' model.

Hi,

I see you are undertaking a survey / study of what "Agriculture" needs to do as regards the Climate issue.

This whole subject has greatly interested me for a number of years and I am quite prepared to accept that I hold very Alt views on the issue. It would however be simply crazy for anyone involved in decision making in this area, not to at least do me the courtesy of looking at the below. It was actually written for the purpose of riling up the I.F.A. who are simply dead from the neck up on this, let alone their even more despicable position in the hosting of the off shore salmon farming operators organisation.

Anyhow, please pass this message and content on to any of your team who are in need of a bit of outside the box, thought stimulation.

Thanks

[redacted]

On Planet Earth, the following is the case.

- There is an exponential expansion of construction of coal burning plant down in SE Asia, totally dwarfing ameliorating moves being made in our part of the world. RTE World Report.
- There is also an exponential increase in air travel
- The just issued Saudi Aramco prospectus tells us they have fifty years of reserves at present pumping rates.
- Data storage electric costs are exponentially expanding world wide
- LNG use is also expanding rapidly world wide.

CLIMATE ACTION
AN ALT VIEW

Many must wonder where [redacted] went, after his years of work in the establishment of the Limousin breed here in Ireland. He now lives with his wife [redacted], at her family place of 800 years, [redacted], down on the banks of the river [redacted] in Co. [redacted]. He is now very engaged with the issues pertaining to the wild salmon, once a massive part of the local economy, with over 200,000 being caught commercially in the [redacted] system a hundred years ago, now whittled down to a mere 2,000. All the problems that have caused this terrific decline, can [redacted] says, be solved, along with a whole lot more in our economy, by the employment of just a bit of joined up thinking, on the back of a **properly constructed** Climate Action plan.

[redacted] maintains there is a totally illogical witch hunt against farming here in Ireland, when all that has to be done in the temperate zones, is make a rapid move into Generation

Four, mass produced, modular, molten salt Nuclear. This has got very little to do with old, bomb friendly, dirty waste technology of which so many are frightened. Ten times more efficient for power generation, leaves a tenth of the waste. Will process the waste of the old types down to a much safer level and is a thousand times safer. All proven right back in the sixties, but deliberately suppressed by the fossil fuel industry, oil, coal etc.. Now all it needs is a good push forward and this can be easily done by applying a small levy to all aviation fuel worldwide. Just ten dollar cent a litre would yield over $50 billion a year. More if bunker fuel was included. In this area of nuclear power, it is very important to be fully cognisant of the views of leading environmental and climate activists, Jim Hansen and Mike Schellenberger. It was they who persuaded Clinton and Obama to sink $200 billion into wind and solar, but now realize it was all a dreadful mistake. A very short recent Youtube explains new nuclear very well. The leaders are the Chinese. Very significant. !!!! Moltex Overview - May 2019

Wind power is completely over rated and despite the claims peddled to the contrary, is a highly expensive means of making carbon free power, simply because the proponents get away with completely disregarding their miserable ability to supply the power when needed with its load factor of 35%. Actually their effective contribution is even less than this, as the wind does not automatically blow at periods of high demand. Also the very great issues with heavy grid all over the place, to cover its high production periods. Lets not also forget the plant that must be there to provide the power when it cant. Wind also has a massive carbon footprint in the very great amount of cement needed for their sound foundation. Cement being the worst climate component of all. Having anything more than a few hours storage is near impossible, so what will happen when we get a prolonged Winter blocking high pressure weather event. As for solar in the temperate zones. That's just a subsidy harvesting scam. It might cool the morning milking in the Summer, but if there was a smart grid, that would be cheap after morning peak in any case.

If the choice is dropping four molten salt nuclear reactors in to the existing coal power station at Moneypoint, and another couple into the peat stations, cement plants etc., or defacing the country with wind towers and solar parks and all their associated grid, along with hammering our agriculture industry, no contest. We could though build a mega pumped storage facility on the high ground in behind the cliffs of Moher for holding millions of tonnes of pumped up sea water, to be let back down when the wind is slack. However the amount of cement needed for the reservoir would initially set back our carbon account by years and I wonder is that over there in Co.Clare, someone's back yard.?

But the big one for our farmers, has to be the massively valuable base loading we could get by having a Scandinavian style system of sustainable, cyclical biomass burning, Combined Heat and Power plant, (CHP) in every town around the country. These operate at over 80% efficiency, a far cry from burning Australian or Brazilian wood biomass in a "should have been closed down" peat station, at 30% efficiency. It is this blatant abuse of our PSO carbon taxes to date, to the tune of well over €100 million a year, that has so damaged our national climate response, for which agriculture is now being given most of the blame. The other €300m a year going to the wind and now solar corporates. Of course, raping out the rain forests makes room for producing the beef out there, so we don't need to do so here.!

Another point regarding CHP technology, is such state of the art plant, can also incinerate all our plastic and other wastes. Who wants all their food pawed over in a supermarket at the same time as being told that every single touchable surface on our public transport is contaminated with human fecal material.

However, if we do go down this very sensible road, it is absolutely imperative that we do not simply fall out of the frying pan and into the fire, by allowing the creation of another national cartel, as has happened in our beef industry. Each potential CHP plant must be owned by the local town UDC or a specially set up local cooperative, all copper fastened by the Competition Authority, such that any farmer selling biomass has at least two, close by selling options. This will be massively resisted by the corporates, already used to getting all the subsidy cake. They will want to buy the biomass off the farmers for the least possible amount of money and themselves own the power plants, paid for mostly by the tax payer. No!

So what biomass.? For starters we already have a lot of forest thinnings and wastes. Vast areas of scrub and invasive species, but more importantly, over 300,000 kms of hedgerow, which can be trebled in width and also in linear amount, to be cyclically coppiced every eight or ten years. The very great advantages of this as regards stock and crop shelter have been amply demonstrated by work done in N.Z. No need for blocks of monoculture forestry when a better result can be got by planting strips of trees, with native species shrub undercover. One side being cut one year and the other side five years later and so on. Doing this would also be of enormous benefit to our metaphoric birds and bees, let alone the land owner's income. We could also grow biomass on some of our cut away bog areas in the Midlands, but from our carbon account perspective, those areas might be best used for wetland sequestration.
As well as that we have over 30,000kms of completely shaded over small rivers and streams, where our trout and salmon used to spawn. With none of the now shaded out, ecologically vital Ranunuclus Crowsfoot weed roots to hold the sands, silts and muds in place, these particles are now migrating downstream en mass, destroying the spawning gravels, and depositing in the lower reaches, leading to massive flooding problems in so many of our principle river side towns and adjacent agricultural lands. And by the way, the prolific growths of Alder and Willow, colonizing these new deposits are a major factor in restricting the run off into the open estuaries. They need harvesting too.!

The other area of potential to which we seem totally blind, is that of constructed wetlands. Of all the things we could do to rectify our carbon account, this really is the best. There is no better way of sequestering vast amounts of carbon, at the same time as dealing with our very serious issues regarding nitrate and phosphate run off into our waterways. Every farmer with a suitable water course should have such a system and be handsomely paid for doing so. How this is done has been very well demonstrated by our own [redacted] a hero of the Eco movement. Likewise of course all our vast areas of cut away bog too need to be made into wetlands, all fitted with limited egress V notch weirs, so as to emulate the central plain, big river flow patterns of a century ago, where they acted as mega sponges, soaking up the big Winter rains and gradually releasing them over the subsequent Summer. Sphagnums created in these wetlands can be periodically harvested and returned to our depleted soil structures, along with their incorporated mineral constituents.

Where farmers or others do generate green power, be it wind, solar, biomass or bio digestion, they should be rewarded for the bought in fossil fuel obviated. There is no need for a feed in tariff. Unfortunately to date, all the supports, themselves based on the PSO carbon tax levy, have been simply handed straight out to the corporates, mostly glossed up side shoots of the ESB, Coillte or Bord na Mona.

Farmers along with the rest of the population should also be able to buy power in from the grid on the Dutch Flower Auction system, for topping up their own batteries, both motor and static and also of course heat sinks, in the form of large insulated tanks of water. This would help soak up the surpluses of wind and solar power, being produced when not needed, at the right price for the consumer who has already paid the PSO levy that put it there. However the insiders plan is to allow new corporates to buy the surplus power into their battery parks at rock bottom and then sell it out to the consumer at top notch. Crazy.

Farmers do need to realize though that commodity cattle production per say is now the wrong side of the climate action curve, and certainly here in Ireland, competing in the commodity market, with a cartel situation in the middle, is a complete non runner. Any beef produced here needs to be promoted way up the luxury scale, meaning less of it and much more money. This could be achieved by doing a deal with the Chinese. They take our unique, top end beef and we give them a leg up on the international stage by taking four of their advanced Generation 4 MSRs for installation down in Moneypoint. Win win for all. And build a new beef processing plant into the bargain, to finally break the beef cartel. They are the only people this sort of deal could be done with.

We do also need come to grips with the greatest environmental scandal of our time, the off shore salmon cage farming. A lot of this highly damaging activity even has the brazenness to masquerade as organic, greatly undermining the worth of that accolade for the rest of our product. **It is even more galling to know that this industry hides under wing of I.F.A. !** The damage here is because of the industrial harvesting of the natural ocean krill, sandeel and the like, for feeding them, to the gross detriment of wild ocean fish, bird life etc., let alone the swarms of highly damaging lice these operations produce, these destroying the natural stock juveniles up to 50km. distant. World wide we are harvesting 800 million tonnes of this natural feed, to the total detriment of the natural ecosystem. These cage operations need getting out of the ocean right now and be close contained in onshore units.

This means a tremendous opportunity exists for some farmers with the Soldier Fly. Producing the larvae of these remarkable creatures, is the new big opportunity in World food production and it these that will produce the protein needs of our fish and fowl into the future, let alone the forthcoming false meats. Given that in Ireland alone we have over a million tonnes of food waste a year for them to eat, Grange research station should already be right on this.

[James Hansen & Michael Shellenberger: Nuclear Power? Are Renewables Enough?]

RESPONSE/SUBMISSION RE CLIMATE CHANGE.PUBLIC CONSULTATION

Submission by [redacted] and [redacted]

Thanks for the opportunity to contribute to this process.

INTRODUCTION. Ireland is a services led country,with 60.2% of 2018 GDP, being delivered by such services. However, first and foremost its an agricultural island. Manufacturing lags a long way behind services, but it is possible to increase this sector, with best use of agriculture and Ag based products. This can be done by growing the raw materials for the manufacturers to use. The way this can be done is by growing a useful crop and a crop that has multiple uses. Hemp is that crop. Almost, no matter what one's view as to climate issues, it is difficult to see a viable future without industrial hemp being used to the maximum of its potential, which would seem to be nearly endless. No contribuion here, can do other than highlight the view , that industrial hemp must play an enormous role in many aspects of any project seeking to improve and enhance the lives of our people, seeking to rejuvenate rural Ireland, and that with best regards to climate issues.

Carbon sequestration is one critical matter, with a hectare of hemp,fibre strain, capable of sequestering a NET 10 to 11.5 tons. A modest house, built from hemp, can be responsible for sequestering 5 to 6 ton of carbon ,plus further carbonation, in near equal amounts; ie approx total of 10ton for a modest house, with the raw material produced from 0.7 to 0.9 ha. One thousand (1,000) modest sized houses per annum would sequester approx ,10,000 ton of carbon, with obvious options to scale upwards.
That however is but a small part of even the straight forward capacity of hemp to sequester carbon. Replacing concrete is a real issue, but so also is the matter of reduced heating requirements into the future. If coal turf and briquettes are to be restricted, if not banned altogether, then building healthy,breathing houses with minimum internal temperature variations, would seem to be an absolute requirement; in this regard hempcrete houses can deliver the requirement.

In addition there is the potential for the production of hemp fibre insulation, an obviously natural and renewable form of non toxic insulation, fully biodegradable, with a longer functioning lifespan than such as fibreglass insulation.

In simplest terms, with Ireland Inc having paid €68 million already for carbon credits, it would seem an obvious matter for discussion at least, as to the overall net value of growing 100,000 hectare of industrial hemp, @ a net 10ton+ per ha., of carbon sequestered; ie 1 million ton of sequestered carbon, via a renewable crop, which will grow in approx 12 to 14 weeks.. That amount of hemp would build 100,000 houses of modest size, and would create some significant export potential. 1 million ton of carbon sequestered @€26 p/ton per annum deserves discussion, and that is before real crop values are applied to the crop. The retail value,today,of hemp shiv from 100,000 hectares of hemp,(fibre strain,) would be approximately €375million, + €187 million for fibre,(processed)+ €12million for dust.,totalling almost €0.574billion . However this takes no account of CBD production,or other food and health products from flower and seed element of the crop.

With 135,000 farmers, producing 3hectares each, this would add up to 405,000 hectares, sequestering a net 10 ton of carbon per ha. (ie 4.05 million ton of carbon). Should carbon values increase to €80 per ton, then this would add approx €430 million to overall value.Rather than

purchasing carbon credits,a national policy to committ 20% of this sum, per annum over next 10 years, towards the development of the hemp industry , would seem a very wise investment for the tax payer.

Biofuel. When compared to other plant species of active interest in biofuel production, hemp derives 100% more cellulose than species under investigation. Production costs for corn based ethanol,is nearly twice that of estimated production costs for hemp derived ethanol. Hemp,and its related species provide denser cellulose content than corn,higher sugar content, and derive higher ethanol yields per metric ton at lower costs.

Jobs Potential. While it is still a matter of speculation, it is easy enough to compute how Teagasc spokesman recently suggested that industrial hemp can produce 60/80,000 jobs. This might well be 200,000 jobs, if exploited properly. This surely contributes enormously to a more circular type of development across agriculture and Ag. Based industry. The concept of a circular economy is a perfect match for the many uses of industrial hemp.

Industrial Hemp V Sitka Spruce. The government's intention to have grown in Ireland, an extra 18.6 million trees per annum, and an increase in aforestation of 8,000 hectares, per annum,seems to fly in the face of common sense when viewd against the potential for industrial hemp to deliver more product in about 12 weeks per annum. The authors holds the view that no sitka spruce should be grown where industrial hemp can be grown.
Doubling biomass from timber by 2030, seems an absurdity, absent a full,if impossible, denial of the potential of industrial hempo to do better, with vastly greater benefits for rural communities. In the circular agricultural world, the use of roundup in the "protection" of Sitka Spruce in early years, must be ended in order to protect our water scources. Obviously also, the reductiuon, if not the banning of roundup totally for any and all uses, may well be an important consideration, but proper use of industrial hemp at farm level can be a major contributor to weed control and soil remuneration, while delivering a large% reduction in herbicides and pesticides.

Hemp Oak. Hemp Oak is a new concept and already has two production units in the making, in the USA. The furtherance and development of this option in Ireland, creates a new range of high value products, and on a world wide level, will reduce demands for hardwood production from natural sources such as the amazon basin.In this context, it is impossible to justify the growing of Sitka Spruce on land which can grow industrial hemp.

Hempseed contains all of the amino acids which very feed plants can make that claim, and its also perfectly balanced for human consumption. One of the unique selling points is it obtains GLA, which is a natural anti inflammatory. With this optimal balance of essential fatty acids in one's diet it will reduce heart disease, diabetes and dementia.
This balanced nutrition is not only good for human consumption, but also, the animal world can benefit from this seed. Instead of importing thousands of tons of GM soya bean, we could grow our own source of protein for our cows, cattle & sheep, reducing the carbon footprint on shipping and reducing our carbon emissions in sequestration as it grows and cleans Irish soil and air.
.
CONCLUSION. This submission is very limited in both content and detail. It would be impossible to provide all of the relevant information and projections here. However, if further detail is required, then a more detailed report can be prepared in a reasonably short space of time. Other issues such as the production of capacitors from hemp waste, the use of hemp dust to replace coal, and obviously also the vast range of issues surrounding food and healthcare products from Industrial hemp,require much coverage and detailing. The matter of using industrial hemp as a source of NON GM protein for both animal and human consumption, is a sine qua non.

Sir/Madam,

Farming is at a crossroads. One sector, dairying, is thriving while all others like sheep farming, my own sector are declining.

All farm families want is to make a living. How that is made in many cases is secondary. I myself planted 35 acres of trees in 2016 to support my income and provide an environmental good for my 2 young girls, now 4 and 1.

The message that agriculture is damaging to the environment must change. However the key to its success is how it's delivered. As a former General Manager of [redacted] , I'm fully aware that it's not just the message, it's how you deliver it.

When farmers on low incomes hear a message of change, they assume that this means less income in an already tight budgetary situation.

I fully accept that this is not your intention, but in today's world of sound bites that is how it is received. There must be schemes for paying the farmer for providing environmental good. This is clearly the way to go and would be very welcome. As stated it is household income that concerns families not the way it's earned.

How this environmental scheme is sold to farmers will be key. Fear of red tape will be your enemy and something that would enthuse take up would be to hark back to the most successful environmental initiative undertaken by farmers, the Rural Environment Protection Scheme.

Farmers were happy in the scheme and many only realised how beneficial it was after it closed.

To achieve your agricultural goals a scheme of a grander scale would be required. To facilitate awareness and uptake may I suggest a catchy title for today's world of 140 characters. I give you 'Super REPS'! Feel free to use it.

When discussing agricultural policy, rather than saying Irish Agriculture must change, may I suggest that you say you want to help Irish farmers to continue and enhance their roles as guardians of the Irish environment.

If you'll excuse the horticultural and silvicultural reference, it's the Carrot rather than the Stick approach.

I hope this is of some benefit to your deliberations.

With best wishes,

[redacted]

[redacted]

[redacted]

Sir/Madam,

A couple of further suggestions:

The appointment of a Climate Change Ambassador from within the Farming Community. Eg. An ex farm leader. Farmers will respond better to this than scientists or politicians.

A grand land policy review. Set up a massive scheme lead by government to use land for environmental good, with farmers earning an income from it. This must be a sustainable scheme for up to 20 year. Eg Growing digestate for Anaerobic Digesters.

This must be a global leading scheme that will copperfasten our green image.

The massive pool of money from savings in EU environmental fines can pay for this.

Drip feeding money like the 100m Beef fund will not answer any environmental issues. Especially when 25m is sent back.

I am a farmer living in County Roscommon. I have been farming here since I left school in 1976. I farmed conventionally up to 2002 and since then, I have been farming organically.

I want to make a suggestion/proposal that rewilding be made available as a possibility in the next CAP round. By rewilding I mean that stock numbers be reduced to a level that the lands can start to return to growing the vegetation that would naturally grow. This would result in the a natural agro-forestry/native woodland habitat.

Here are some points that, in my opinion, show the advantages of rewilding:
- Rewilded land will produce more oxygen.
- Increase biodiversity and resilience of land.
- Improve soil fertility.
- improve water retention capacity of soil, preventing run off and flooding.
- Improve carbon sequestering ability of soil.
- Reduce cattle numbers, resulting in lower methane levels.
- Help Ireland to reduce harmful emissions and meet our targets.
- Reduction of fines Ireland will have to pay for not reaching our emissions targets.

This is just a short outline of what I have in mind.

I am prepared to rewild most of my land and I know other farmers that would do it with some or all of their land.

Thank you for taking the time to read this. I am available and willing to discuss this is more detail with you at any time.

[redacted]

[redacted]

TO WHOM IT CONCERNS

I am writing this email to you for your consideration in the forthcoming Climate Change Sectoral Adaption Plan.

My name is [redacted] I am a dairy farmer farming approx 95 cows supplying [redacted] near [redacted] in [redacted] I farm approx 165 acres (150 eligible) in 5 parcels. It bounds [redacted] as well as approx 900 metres of the [redacted] river.

I have also been a past participant in the REPS 3 scheme and I am currently a member of the [redacted] group as well as being a member of the [redacted] Group.

I have a lifelong interest in both farming and the environment and recently completed a Diploma in Environmental Science and Social Policy with UCC. I offer my views as an honest appraisal of the current Climate Change proposals from my perspective.

As you are aware,it is accepted that grasslands are the 2nd largest source of carbon sequestration in the world after our oceans. As Ireland has the highest % of grassland in the EU there is a particular onus on us to efficiently manage our grass to combat climate change.
Therefore, grass is the greatest resource on our farms and it needs to be regarded as such by both the Dept and farmers.

Improving our grass, its management and our soil fertility to minimise emissions and maximise carbon sequestration must be a priority in any climate change plan to be implemented by the Department.

- Improving the PH of our soils is the single best improvement that can be made to our soil. The promotion or lime needs to be prioritised. Indeed, my father speaks of lime grants back in the 50s and 60s and how they were probably the most effective grant aid he ever received. It may be worth considering a reintroduction of a new Lime grant focused on those farmers with Nutrient Management Plans and who are in Derogation. Use of Knowledge Transfer (KT) schemes and better education of farmers by Teagasc and the Dept is vital.
- Nutrient Management Plans should be mandatory for those farmers in derogation and attendance or training courses with Teagasc or ASSAP advisors should be encouraged.
- Promotion of clover in our swards needs to be improved and appropriate advice given.

- Mandatory soil testing every 2 years if in Derogation. It's good management as far as I concerned
- All waterways fenced off.
- Use of protected Urea needs to be promoted and made more widely available. It is something that I have little knowledge of myself. However, according to Teagasc, it can reduce bovine emissions by the equivalent of 100000 cows and its use needs to be promoted as a priority.
- Use of LESS (Low Emission Slurry Spreading) methods need to be encouraged. I note the proposed changes to the Nitrates Directive regulations for the coming year. However,farmers and contractors need to be encouraged to invest in this equipment on an ongoing basis to maximise the use of this method of slurry spreading.
- Better use of grass. The more grass grown, the greater the sequestration. As well as better production of milk, beef and sheep. Educating all farmers in better m management technique is essential.I approve of the proposals regarding courses and m e membership of Pasture Base Ireland (PBI) in the new nitrate proposals.

However, these measures are irrelevent if proper sequestration potential of both grassland and hedgerows are not measured as a matter of priority. Without proper measurement, all grassland proposals are a waste of time. I have approx 3km of hedgerow on my farm, that and my grass will amount to a large level of sequestration, but how much??????
As important as grassment management is, the role of the animal needs to be examined.

OTHER POINTS

1. Increase EBI of national herd. Recent studies by Teagasc have shown that emmisions in the production of dairy beef can be reduced by approx 28%. Theses studies need to be expanded and brought to wider attention.Those bulls which reduce emmissions need to be identified and brought to the market. The EBI/Eurostar needs to be adapted to include a section for reduction in emmissions.
2. The Department or Teagasc needs to identify commercial, “intensive” but low-carbon or carbon neutral farmers to act as model or monitor for the industry. Co-ops and groups like CGDF can assist in identifying such farmers
3. As someone who has land not eligible for SFP and has no commercial use, but a lot of biodiversity use,I believe that it is essential that I and my fellow farmers are compensated for preserving lands not used for commercial purposes, but that has biodiversity value. It defies logic for this not to happen under the new CAP proposals. More projects such as the BRIDE project need to be established and funded, these should be targeted at the rivers currently being assessed for water quality.

4. Regarding generation of on-farm energy, I believe, is not regarded seriously by government. Realistic tariffs for farmers, fully funded TAMS grants, tax relief and access to the grid need to be sorted out. Alas, farmers still remember the miscanthus fiasco of some years ago.
5. Teagasc and universities need to be fully funded in the search of solutions to climate change. Already the Vistamilk project in Moorepark has shown the potential of 30% reduction in emmissions by subtle changes in diet. There is much more potential which needs to be realised.

6. Any carbon sequestration rights that accrue from farming needs to be credited to the sector. Hedgerows, grass and especially forestry grown on farms needs to be credited to farming and not other sectors.

I would like to make a number of points not directly related to this submission,but issues which I feel are important to address if farmers are to be sucessful in combating climate change on their farms.

There is an increasing amount of stress on Irish farms resulting from increased rules and regulations. Nitrates regulation, Bord Bia audits and its increased importance and rules as well as those required to meet our CAP and traceability requirements mean that farmers are under increasing levels of both mental and physical stress.

[redacted], I feel that I have some experience of the issue. I was informed by consultants that stress, strain and overwork played a major role in my illness.During my [redacted] in the [redacted] there was always 3,never 2,never 4,but 3 out of the 6 patients farmers. It is a statistic that our industry must not ignore and as one of the lead stakeholders, you must take a proactive lead on the issue. Further regulations and actions in combating climate change will only increase both stress and costs. The Department must ensure that farmers are not left isolated in carrying their responsibilities. Regulations, inspections and blunt control measures must be avoided. Agencies such as the Health and Safety Authority(HSA) must play an increased role in the area of farmers mental wellbeing.

Given that the average age of dairy farmers is 58, succession will be a major issue in the future. With its vast amount of rules and regulations and limited access to land, it is little wonder that our young people see little future in agriculture. There is a need for the Department to engage on the issue and look at all potential means of farmers accessing land including share-farming. It must be acknowleged that the Department has done much work in this area especially regards long-term leasing, but all other areas must be advanced.

Although agriculture is a net contributor to ghg emmissions in Ireland, it is also the one sector which can play a leading role in reducing total ghg emmisions.
The Teagasc MACC places high targets for farmers to reach, but I am realistic that it can be achieved. However a serious process of consultation with farm organisations and other stakeholders in the industry need to be enacted

I hope that you consider these suggestions while undertaking your review and I hope that you find them useful. Please feel free to contact me with regards this submission.

Regards,

[redacted]

ICMSA Submission

Ag-Climatise – A Draft National Climate and Air Roadmap for the Agriculture Sector to 2030 and Beyond

ICMSA is a farm organisation that represents dairy and livestock farmers in Ireland.

Climate change represents one of the major challenges facing the world and farmers are willing to play their role in taking measures to combat climate change. However, ICMSA wants to be very clear, farmers will not accept a scenario where more regulations are imposed on Irish farmers while other sectors get a free pass and equally, that Irish farmers will be expected to compete with produce meeting no such standards, the potential impact of the proposed Mercosur deal being a case in point. Furthermore, and importantly, the price of food must reflect the environmental cost of producing that food, we can no longer promote a cheap food policy if Governments are serious about combating climate change.

In response to the Consultation Paper, ICMSA would like to make the following specific points:

1. Within the introduction on Page 8, 5 key things are outlined. The fifth point "Transparently communicate our progress" warrants greater focus. We as a food producing nation are already superior to other countries when it comes to dairy and livestock production. This needs to be recognised and the production of food in climate efficient regions promoted rather than undermined. In addition, a sixth point should be added – Developing more accurate methods of accounting GHG emissions. Climate change is a global problem that requires a global solution, yet it is still being addressed (unsuccessfully) at regional level. In light of growing food demand, measuring emissions at regional level rather than by net efficiency is short sighted and lends itself to excessive carbon leakage elsewhere. If policymakers are really serious about addressing climate change, it must be dealt with at a global level.

2. Online nutrient management planning is worthy of consideration, Action 1, page 22, but it must be managed appropriately and take account of farm type etc. Nutrient management planning will not be relevant to certain types of farming. Training must be free and widely available and the plan must be easy to create, understand and implement. This recommendation cannot result in either directly or indirectly increased consultancy fees or unnecessary paperwork.

3. Spreading slurry with low emission slurry spreading has been shown to be effective in lowering ammonia and nitrous oxide emissions and so should be encouraged. However widespread adoption of the practice has its limits, such as availability of the actual machinery, suitability of the land for such machinery (soil compaction issues) and demand for slurry spreading in the spring. ICMSA propose that the use of LESS should be encouraged from April onwards with a tolerance for the use of splash plate to spread slurry in the

Spring given the demand on slurry spreading resources (both machinery and contractor availability) for early spring slurry application. This proposal is supported by the findings of Lalor et al. 2011, whereby the benefits (nitrogen replacement value) of using LESS in June is similar to using the splash plate in April. Research on the use of slurry additives must also continue as an alternative method of reducing ammonia emissions.

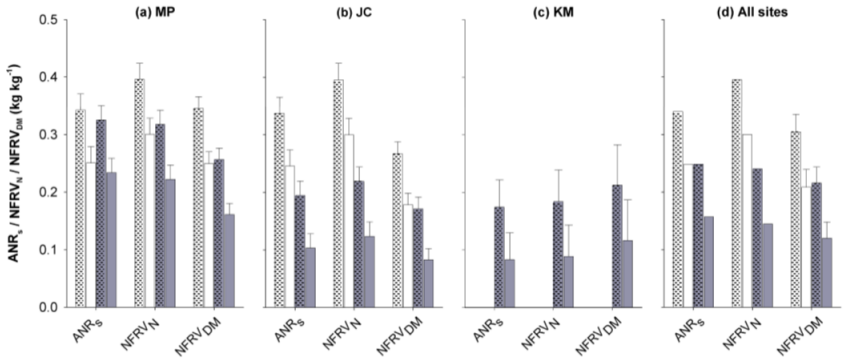


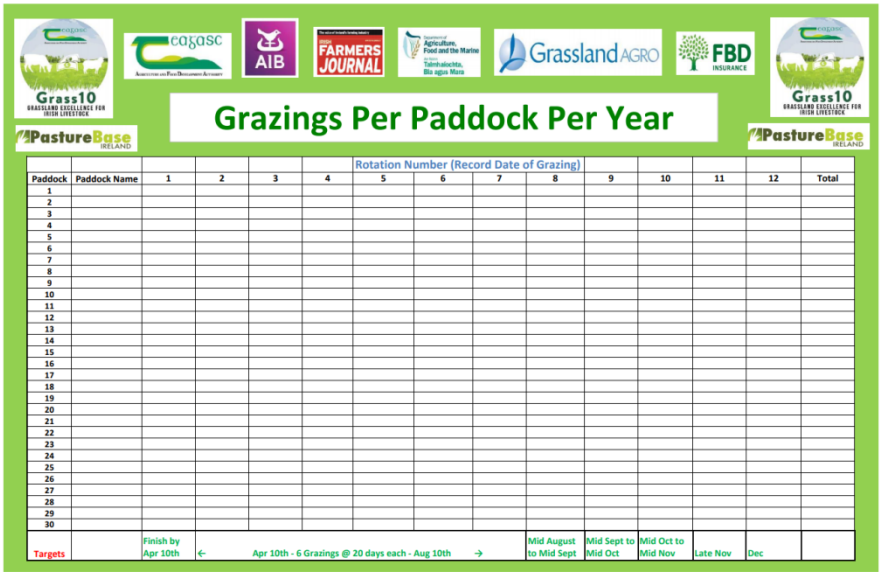
Figure 3.6. Apparent recovery of total slurry N applied (ANR_S), N fertiliser value based on N uptake ($NFRV_N$), and N fertiliser value based on dry matter yield ($NFRV_{DM}$) for the first harvest following treatment application with trailing shoe in April (white dotted bars), splash-plate in April (solid white bars), trailing shoe in June (shaded dotted bars), and splash-plate in June (solid shaded bars) at (a) Moorepark (MP), (b) Johnstown Castle (JC), (c) Kilmaley (KM), and (d) all sites over all years. Error bars indicate SEM.

Lalor, Stan & Schröder, J & Lantinga, Egbert & Oenema, O & Kirwan, Laura & Schulte, R. (2011). Nitrogen Fertilizer Replacement Value of Cattle Slurry in Grassland as Affected by Method and Timing of Application. Journal of environmental quality. 40. 362-73. 10.2134/jeq2010.0038.

4. On the fourth point under Action 1, ICMSA is seeking clarity on what types of covers would be required for external slurry stores. A UK study by Smith et al. (2007) has shown that natural crusting of slurry at the top of a slurry store can reduce the volume of ammonia emitted from such stores. Placing covers on external slurry stores should only be adopted if the mitigation potential is greater than that of a natural crust and that the difference is worthy of the additional cost. If the research provides evidence to support the use of covers, these should be supported under future farm investment grant schemes.

   (Smith, K.A. & Cumby, T. & Lapworth, J. & Misselbrook, Tom & Williams, Adrian. (2007). Natural crusting of slurry storage as an abatement measure for ammonia emissions on dairy farms. Biosystems Engineering. 97. 464-471. 10.1016/j.biosystemseng.2007.03.037)

5. The fifth point under Action 1 recommends farmers to record grass growth on a software management package. While this can be useful for some farmers, others are reluctant to use such a package. Grass 10 has previously issued a paddock grazing chart which would be easier to implement on farms and yet still gives a good estimation of grass growth. We suggest that this be offered as an additional alternative option for farmers to measure grass growth.



Grazings Per Paddock Per Year

		Rotation Number (Record Date of Grazing)												
Paddock	Paddock Name	1	2	3	4	5	6	7	8	9	10	11	12	Total
1														
2														
3														
4														
5														
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Targets		Finish by Apr 10th	← Apr 10th - 6 Grazings @ 20 days each - Aug 10th →						Mid August to Mid Sept	Mid Sept to Mid Oct	Mid Oct to Mid Nov	Late Nov	Dec	

6. The eighth point under Action 1, ICMSA will not accept a scenario where additional recording requirements are being placed on farmers with little benefit accruing.

7. Action 2 - The sale of protected urea must be promoted right across the industry and not just at a high level.

8. Action 3 – The recommendation to increase the number of dairy herds milk recording from 50% to 75% needs to be carefully considered in the context of the availability and cost of the service. Perhaps a cow level rather than a herd level target would be a more realistic target.

9. Action 3 – The recommendation to increase the number of dairy herds completing genomic testing from 1% to 75% is questionable and requires further consideration. For example, does this mean the whole herd or those entering the milking herd? What is the cost and who covers the cost? Will testing result in delayed registration? This recommendation is overly simplistic and needs further consideration.

10. Action 4 – The PDI of ruminant feed should be clearly stated on all feeds as it is a more accurate measure of protein content. This should be made a legal requirement on all concentrate feedstuffs as the feed industry has resisted such a proposal for too long.

11. Action 5 – Any gains from afforestation must be directly and solely attributable to the agriculture sector GHG inventory. Farmers have concerns regarding the

economic return from broadleave plantings and it is important that clarity is brought to this matter.

12. Action 6 – What is the current stocking rate on the 40,000 ha of peat based agricultural soils? How will farmers on these lands be compensated for reduced earning potential? ICMSA is firmly of the view that such conditions should not be compulsorily imposed on individual farmers. State owned peatlands should be prioritised over privately owned lands to optimise carbon sequestration.

13. Action 7 – A dedicated fund must be made available for the development of community based renewable projects. The current auction system for renewable projects favours the lowest price offered which is typically the price offered by international companies which community projects cannot compete with. ICMSA believe that the Government needs to proactively support farm based and community based projects over large investor type projects and we would question Government commitment on this issue to date.

14. Action 9 – Economic viability for the farmer must underpin any developments in the AD sector. Using grass silage as a feed stock is at first attractive however currents indicators suggest that this would be purchased at €30 per tonne which is not viable or competitive. The farmers must have a fair share of the final product price and not be just suppliers of the feedstock in order for any developments in the AD sector to be sustainable.

15. Action 12 – Farmers should be incentivised to install solar PV panels on their farms. Current grant aid available still does not make their installation economically viable and hence the poor uptake. Net metering must also form part of initiatives to encourage the use of solar panels on farms.

16. Action 14 and 15 – ICMSA wishes to emphasise that the CAP budget must be at least maintained in the current reform and farmers cannot be expected to meet additional requirements with the existing level of funding. If CAP is to address additional climate change measures, then additional funding, whether EU or national will have to be forthcoming.

17. While the actions proposed for farmers are quite detailed ICMSA are disappointed that the goals for advisors and processors (Action 17 to 23) are somewhat aspirational and lack direction.

18. Action 18 – All state funded research farms should demonstrate best practice when it comes to GHG mitigation.

19. Action 19 – The lifespan of methane in the atmosphere needs to be properly investigated. While livestock produce methane, they also graze permanent grassland pastures which store carbon. This needs to be adequately quantified.

20. Action 20 – The greatest obstacle in promoting biodiversity in intensive faming areas is ineligibility of land area. Biodiverse areas such as woodlands and ponds are ineligible for Pillar 1 payments. This obstacle must be removed immediately in order to promote biodiversity at farm level.
21. Action 23 – In recent years, dairy production has been the only farming system that has demonstrated profitability and robustness to price volatility. Diversification is only an option if the system adopted is profitable. We cannot promote diversification of farms into economically stressed systems such as horticulture.

Based on the proposed actions outlined above, significant additional costs may be imposed on Irish farmers producing quality food. Farmers cannot be expected to cover these costs and ICMSA is very clearly saying that if society is serious about addressing climate change, all sectors need to play their part and be seen to do so and the price of food will simply have to reflect the environmental cost of its production.

Irish Fertilizer Manufacturer &

Blenders Association

Submission by

"Irish Fertilizer Manufacturers & Blenders Association" (IFMBA)

to the

Climate & Air Roadmap for Agriculture Public Consultation.

Introduction

The Irish Fertilizer Manufacturers and Blenders Association consist of the 4 main companies Involved in the importation, assembly and distribution of approx. 85% of the fertilizer used in Ireland. Goulding Chemicals, Grassland Agro, Grassland Kilkenny, and Target Fertilizers have many years' experience in the sector. Each have a proven track record of delivering a full range of quality fertilizers, specifically designed to meet the needs of the various crop requirements in Irish Agriculture.

IFMBA are fully aware of the need for Ireland Inc. to address the issue of climate change and the need for agriculture to play its part in this regard. The fertilizer sector is more than willing to participate in a spirit of partnership and to work with the Department of Agriculture Food and the Marine (DAFM), the Ag-Climate team and Teagasc in order to further support the drive to reduce GHG's and ammonia.

Agri Food Sector

The Agri Food sector in Ireland is one of the great success stories of our time. The success has been such that today Ireland exports in the order of 90% of all the food it produces. Beef and Dairying enterprises make up the majority of this production. We have a competitive advantage in both of these grass based activities both in terms of efficiency and CO2 emissions per kg of beef and per liter of milk.

“Food Harvest 2020” and “Food Wise 2025” have both been hugely successful initiatives and have played no small part in driving Beef and Dairy production and Tillage to their present level

The Agri food sector today forms an important part of our overall economy. Its unwavering performance during the recent recession helped carry Ireland through that difficult period and its growth in recent years has made a major contribution to the recovery of the Irish economy.

IFMBA accepts the contribution that agriculture has to make in reducing GHG and ammonia emissions and to improve water quality but it is important that our efforts in this area should not inflict unnecessary damage on the admirable achievements of Irish Agriculture over the last 5 to 10 years.

Protected Urea.

IFMBA accept that Protected Urea can make a valuable contribution to the reduction of ammonia emissions and, if used in place of CAN, has a beneficial effect on GHG emissions. All IFMBA members have been supplying protected urea to the market for the past number of years. The uptake from farming has been slow. Many farmers are not willing to pay an extra €40-€50 per tonne for protected Urea over and above unprotected urea. They see no agronomic gain from this additional cost. In the 2019 season only 20% of tonnage of Urea sold was treated with an inhibitor. i.e. 125K metric tonnes sold only 27k metric tonnes treated.

It is the view of our association that the proposed Teagasc drive to have all Urea treated with an inhibitor will need to be incentivised.

Urea Incentive.

Irish Farmers have responded spectacularly to the drive for increased Milk production and Beef production over the last number of years. There was a clear market incentive for them in achieving these targets and they responded. There is no tangible incentive for farmers to pay an extra €40-€50 per tonne for Treated Urea. It is the opinion of IFMBA that without an incentive it will be a long slow process to have 100% of the Urea tonnage treated. The total cost of treating 127K metric tonnes of Urea is in the region of €5/€6 million euro. It would be a small price to pay if it were to avoid the state paying Billions in EU fines.

IFMBA issues with Protected Urea.

1. IFMBA members are concerned with possible residues arising from the treatment of Urea with inhibitors. The industry would like to be more confident that traces of inhibitor or indeed some of the carrier chemicals involved will not show up in milk or worse still in Infant formula in the years ahead. Teagasc trials are not complete in this area and we understand have another 3 years to run. We do understand that NBPT, 2NPT and NPPT are

fully cleared under REACH EU regulations, but given the importance of the Dairy Industry and in particular the Infant formula industry IFMBA would favour a less aggressive approach than that proposed in the Teagasc plan.

2. Treating Urea with an inhibitor is not such a straight forward operation. Extra precautions need to be taken with the coating material. There are extra risks for the plant operator when handling this material and treating Urea. This is an industry issue.

3. Typically when Urea is imported in bulk it is bagged almost immediately. Because of the hydroscopic nature of the material it is not possible to store Urea in bulk for any length of time. In particular storing protected Urea in bulk will result in the inhibitor becoming ineffective, giving the product a very short shelf life. This will present a practical problem for making bulk Protected Urea available to the farmer. This being the case the transfer of bulk CAN to bagged Protected Urea will result in more packaging going into the environment.

4. Handling Treated Urea does present additional risk for the farmer over and above untreated Urea. IFMBA are currently preparing a Guideline document for the safe handling and accurate spreading of treated Urea. These Guidelines will be distributed to the farmer through the trade.

Teagasc Targets

Achieving the treatment of 100% of Urea will be a slow process, to replace 50% of CAN sales with Treated Urea will be infinitely more difficult and doing so by 2022 is an unrealistic objective. Urea has been freely available, at a much lower cost per Kg than CAN, since the last production of Urea in the 1980's. Yet its usage has been fairly flat at a total of 100kt for many years due to the farmer's perception of urea and its spreading difficulty.

It is now well accepted that protected urea cannot be blended with DAP and there are serious questions regarding its suitability for blending with Sulphur. Given the increased use of Sulphur in recent years in combination with Nitrogen this will further reduce the opportunity to replace CAN or CAN +S with protected urea.

IFMBA recognise the benefits that would flow from achieving such a target but we must be realistic, achieving this particular target in the specified timescale may not be possible.

Suggestions.

1. **Review of omission's calculation methods/formulae**

Nitrous oxide, a potential greenhouse gas, has a higher factor of 1.4 for CAN versus Granular Urea which is closer to 0.4. In CAN (calcium ammonium nitrate), 50% of the N is in nitrate form. From information we have received from within Teagasc, the ammonium form of N has a similar nitrous oxide factor as Urea and therefore protected Urea.

Presently our understanding is that the nitrous oxide factor per tonne of compounds is calculated the same as for a tonne of CAN, however the Nitrate %'age in some cases is considerably less than the ammonium %'age. For example 10-10-20 has nearly 90% of its N in the ammonium form. Is there further research needed in this area?

2. **Universal Spreader Grant Aid**

The Dept. of Agriculture, Food and the Marine grants aid for Fertilizer Spreaders under the TAMS scheme. These grants apply mostly to tillage farmers and to other farmers only if they have greater than 25Ha's of tillage. In view of the fact that 85% of all fertilizer used in Ireland goes on grass and in the interest of the efficient and accurate spreading, it is worth considering extending this aid to all farmers. There are obvious benefits to accurate spreading, keeping fertilizer out of watercourses, away from ditches, no over/underlapping and proper headland management. This would improve the sustainability of nutrient use on all farms.

Consultation Response

'Ag-Climatise' – A Draft National Climate & Air Roadmap for the Agriculture Sector Department of Agriculture Food and Marine

Agriculture House,

Kildare St.

Dublin 2. D02 WK12.

By email to: Agclimatise@agriculture.gov.ie

[redacted]

By email from: [redacted]

10th January 2020

Submission by Irish Bioenergy Association

Dear DAFM,

Please find our submission below.

Thank you for the opportunity to respond to this consultation. We look forward to working with you on behalf of our members to further the development of the agri food sector into the coming decade.

Yours sincerely,

[redacted]

[redacted]

www: www.irbea.org

Irish Bioenergy Association (IrBEA)

Response to

‘Ag-Climatise’

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

Document prepared by: [redacted]

Date: 10/1/20

Preliminary remarks

1. Bioenergy has a significant role to play in any long-term strategy on greenhouse gas emissions reduction from the Agriculture sectors. Bioenergy including biomass, biogas, biofuels, energy crops and wood fuels are fully dispatchable renewable energy which can be produced indigenously. The production of feedstock for bioenergy by farmers offers significant opportunities to reduce the emission footprint of agriculture.

2. The agricultural and land-based sector is the main source of the raw material and feedstock required to produce Bioenergy. Bioenergy reduces the usage of fossil fuels across heat, electricity and transport but it has added benefit for the agriculture sector. Bioenergy can complement food production and livestock farming by reducing the carbon footprint of agriculture and food production through the production of biogas, biomass, energy crops and wood fuels.

3. The bioenergy sectors have multi factorial benefits addressing climate action, emissions reduction, reducing the carbon footprint of farming and promote the economic, growth and jobs agendas.

4. Bioenergy turns renewable and waste resources (i.e. biogas produced from slurry, grass and waste) into energy and promotes the biobased, circular and rural agricultural bioeconomy.

5. For bioenergy to compete with mainstream fossil fuels, carbon taxes on fossil fuels will need to increase incrementally over time and supports will be required to incentivise bioenergy in the short to medium term.

6. The recent UN report on achieving a 1.5^{o}C cap on global warming says that bioenergy, which currently provides 10-20 times more renewable energy in transport worldwide than electricity, will continue to be essential to climate progress, and that bioenergy deployment will need to grow 7-fold over the coming decades[1]

7. The recent UN report on climate change and land, repeatedly stresses that land will be needed in ever greater areas to provide bioenergy for climate action.

8. The Dept of Agriculture, Food and the Marine should support the Irish Bioenergy Association call for E10 (10% inclusion of Bioethanol in Petrol) up from E5 which is currently available, to be introduced in Ireland.

9. Ethanol is a synonym of alcohol and it is made by fermenting the sugars in grain and sugar beet crops, in highly advanced energy efficient “breweries” The protein, oil and fibre from the crops

[1] IPCC SR1.5 Chapter 4 Supplementary Material Table 4.SM.1 (link)

stay in the feed sector, greatly helping reduce imports of GMO soya meal from the Americas. Ethanol is blended into petrol to reduce the carbon emissions of the fuel and to improve its technical properties. The greenhouse gas emissions of ethanol are 70% lower than oil. Ethanol is produced at scale at a European level. Further inclusion of European Ethanol in petrol mixes will assist agricultures carbon footprint by providing a European source of animal feed protein thus reducing our reliance on American protein sources.

10. Bioenergy and Biomethane derived from Irish farmed crops and Irish farm wastes, residues and biomasses is the most sustainable, scalable and cost-effective way of reducing the carbon footprint of the road fleet. This will bring added value to Irish agriculture through better use of agricultural residues and wastes and provide alternatives to farmers in some of the struggling sectors.

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?

We agree with the measures proposed. We would add the following.

New techniques and development of methodologies that can assist Action 1 are being developed, these actions include the use of on farm biogas plants to mitigate CH4 emissions from slurry, enhance use of nutrients and provide onsite energy. Much of the benefits of digestate have been extensively researched by Teagasc and funded by DAFM in the FIRM project.

The use of biochar as a soil additive and an organic fertiliser enhancement should be included. International research has shown the benefits in terms of nutrient efficiency and soil health. Given Irelands unique agriculture systems and climate further research may be of benefit to further understand the benefits, and further incorporate biochar use in agriculture.

Bioenergy offers significant potential to reduce the emissions footprint of irish agriculture. Bioenergy including biomass, biogas, biofuels, energy crops and wood fuels are fully dispatchable renewable energy which can be produced indigenously. The production of feedstock for bioenergy by farmers offers significant opportunities to reduce the emission footprint of agriculture and complement our existing farming systems.

The agricultural and land-based sector is the main source of the raw material and feedstock required to produce Bioenergy. Bioenergy reduces the usage of fossil fuels across heat, electricity and transport but it has added benefit for the agriculture sector. Bioenergy can complement food production and livestock farming by reducing the carbon footprint of agriculture and food production through the production of biogas feedstock, biomass, energy crops and wood fuels.

Question 2 Have you any feedback on how uptake of these actions can be encouraged and facilitated?

Farmer education backed up with on farm demonstrations would be of considerable benefit in increasing knowledge and uptake. Further funding for programmes like EIP Agri as part of the Rural Development Programme is very important. There are many successful EIP projects which will assist the transition and reduction of emissions from agriculture.

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?

Promotion of the use of of wood products in the built environment and in the circular economy as substitutes for fossil based materials is essential to reduce CO2 emissions from cement manufacture (one of the biggest contributors to overall national and global GHG emissions), and emissions from the use of other extractive-based building materials such as steel and aluminium, as well as fossil-based plastic. The consultation makes scant mention of these long term, realistic mitigation opportunities from land use in Ireland. On the energy side of the bioeconomy there is a need for a continuation of the SSRH measure but DCCAE should also consider a higher level of ambition in change to the current heat supply system, focussing on large scale highly efficient biomass based heating systems for combined commercial and institutional heating, combined heat and power and possibly district heating. Such measures are necessary to provide a progressive and energy cost-effective increase in the use of forest biomass, and energy crops. Without policy and support measures on the demand side past failures regarding the lack of economic markets for short rotation coppice and other biomass could reoccur. With the right policy mix and price signal the market potential is significant, and for security of supply reasons and risk reduction Ireland needs a mix of intermittent and dispatchable heat and electric energy. Ireland currently imports €8billion worth of fossil fuels annually, diverting a major portion of this spend to indigenous bioenergy products will reap considerable economic benefits for the rural economy.

At farm level, the growing of biomass crops for biogas production can be very beneficial in terms of encouraging farmers to diversify while providing low carbon fuel for the economy.

Another potential farm level enterprise is short rotation forestry using fast-growing species such as eucalyptus and poplar, which is a measure supported under the Forest Service afforestation scheme. Uptake of this measure has been almost non existent, largely due to the lack of market pull (see earlier). Eucalyptus is the fastest growing tree species for biomass for energy but it is also an excellent source of fibre for board manufacture and other uses. Poplar can be used primarily as a veneer product, with all by-product being suitable for fibre and energy.

The current measure for forest fibre under the forest programme has not proven successful in uptake, while the bioenergy crop scheme was successful in uptake but unfortunately support for use was not provided and the scheme regressed. We would strongly suggest that a support scheme that incorporates all fibre and fuel crops be explored that would combine aspects of both, and be designed to provide sustainable materials and fuels as primary products and as co-products.

Biochar* is an excellent soil additive for carbon capture, while delivering many advantages in terms of soil health, biochar is also considered to be a highly recalcitrant form of carbon – remaining in the soil of decades and even centuries.

***Biochar is a charcoal-like product produced by heating biomass in low oxygen conditions to 400 - 800 C. At this temperature much of the volatile contents are removed leaving a stable, carbon-rich biochar with an open porous structure. Biochar and charcoal have been used for millennia as soil improvers and as an addition for animal feeds.**

Question 4 Have you any feedback on how uptake of these actions can be encouraged and facilitated?

Farmer education backed up with on farm demonstrations would be of considerable benefit in increasing knowledge and uptake.

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?

Provided there is roll out of a dedicated large scale heat and CHP measure by DCCAE (in addition to measures such as SSRH and RESS). A redesign of the Energy Crop Scheme should be considered. Merger of the willow element of the energy crop scheme with the short rotation forestry measure could be considered. where they can be considered as low input crops with harvest intervals of 10-20 years.

We fully support all the other measures suggested, and in particular encourage supports of on farm biogas to enhance individual farms, and large scale biogas for biomethane production.

IrBEA are currently running the small scale farm biogas demonstration programme – funded by DAFM, the results of this project we would expect with further add weight to encouraging on farm use of biogas technology.

In July 2019 IrBEA and Cré published a policy paper which reflects the industry view on how a mainstream biogas industry can be mobilised in the short to medium term over a phased approach[2] in Ireland. This document developed following extensive consultation with many stakeholders focuses on the need to develop 10's of biogas plants rather than 100's of biogas plant in Ireland as a starting point. The document reflects how the government climate action plan figure of 1.6TwH (200mw) of biomethane will be achieved over a phased approach. The paper advocates for 25 plants developed close to the gas grid in a first phase. This phase will abate 500,000Tn of CO_2. Financial Support in the form of a biogas support scheme will be required to bridge to gap between the price of wholesale fossil gas and the production of biogas. Our document clearly sets out how the support can be funded. The role of farmers in this medium to large scale model is to provide feedstock to cooperative style plants.

At farm biogas scale, IrBEA has started working on a 4 year Department of Agriculture, Food and The Marine funded European Innovation Partnership Project[3]. This title of this project is "Small Scale Biogas Demonstration Project". This project aims to assess through the provision of capital support to three farmers to develop small biogas projects on their farms if this scale and size of biogas development is economically viable. The project will assess the reduction of emissions on the farms where the plants are developed. This scale of biogas plant presents opportunities to

[2] https://www.irbea.org/wp-content/uploads/2019/08/IrBEA-Cre-Biogas-Policy-Paper-Final_1.pdf

[3] https://www.irbea.org/farmbiogas/

reduce emissions from agriculture. Small scale Farm based biogas plants will need capital support for them to be deployed. The level of capital support required will be determined by this EIP project.

Considerable research funding is required to investigate use of third generation biofuels, for example producing transport fuels using woody material as feedstock.

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.

Funding of research and funding of on farm demonstration is vital to encourage uptake.

Challenges in the first Energy Crop Scheme caused a collapse of planting. While the Department of Agriculture and farmers fully embraced the scheme and committed capital and land to producing fuel, there was no commitment from DCCAE to support boilers to use the fuel. In 2019 the SSRH was finally launched and this vital component is now available to energy users. Consideration should be given to re open the Energy Crop Scheme given the new support. As stated earlier Ireland should consider supporting some large scale biomass CHP which can take advantage of the volumes of biomass available, provide low carbon heat and provide baseload power to the grid.

Farm investment supports to farms could assist in future proofing farms for the adoption of biogas, for example funding of dairy farm expansion should incorporate scraper systems in cubicle houses rather than on slats – this allows the farmer to collect fresh slurry daily for biogas production, and greatly reduces emissions of methane and NO2 from slurry in storage. Even if a biogas plant is not to be constructed these facilities allow for covering of slurry stores.

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

CAP is a mainstay of support for the agricultural sector, its ongoing success lies with it remaining to be relevant and that it adapts to the changing geopolitical, environmental and economic climate. CAP needs to support low carbon measures at an equal level to food production and other environmental protection measures. We would consider that supporting the growing of energy crops to be a central component of any future measure, as well as any onfarm proposals for utilising carbon mitigation technologies such as biochar or biogas.

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

We support the proposed actions and would advise that any policy programme must include flexibility to incorporate new thinking and new techniques in the coming years. Some of the tools we are considering using today were far from accepted practice in recent years, but are now considered very important parts. The ability to adopt new ideas into working policy, and to ensure that flexibility is based on the aims of environmental sustainability, and economic sustainability is key to ensuring the correct path is followed.

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?

Carbon tax should be mobilised for any adoption of technology that reduces emissions or captures carbon.

Co funding programmes, or tax break supports for Industry partnering in R&D in the sector would de-risk investment and encourage innovation.

Banks and other lending institutions could be encouraged to play a bigger role in developing financing models and advice in general, or risk and return in bioenergy based projects.

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?

Best practice should be identified and then rewarded. Unfortunately decades of farm supports that only focused on ~~beef, dairy, sheep and tillage caused the agricultural sector to concentrate only on these areas~~ food production rather that a combination of food, fuel and fibre which were produced by farmers in the past. The Innovation on farms should be incentivised and encouraged at a similar (if not greater) level to conventional land use.

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 six guiding principles are well structured and reflect the direction that needs to be taken.

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?

The challenge to be undertaken is unprecedented and we would consider that it would be of benefit for DAFM and other government bodies to be completely open with industry and stakeholders, and to allow greater input by stakeholders into policy formation.

Organic farming should be our priority. Why is it being ignored?

[redacted]

Dear Sir /Madam

Kantoher Development Group is a community group based in West Limerick and wishes to make the following points as a submission to this process

1. Community groups like KDG see many opportunities to help in reaching targets set out thought its link with this rural population and creation of over 100 jobs in past 14 years locally
2. community energy schemes to be promoted - we ideally based to deliver small wind , 500kWe , mini district heating , solar in our community
3. we are looking at growing hemp in this area to sequester carbon -- much underutilised land available but needs a coop approach , help needed .
4. We are an SEC and are looking at solar for our local poultry sector , 300,000 birds produced weekly and high energy usage , much of it fossil based
5. we must see sale of electricity back to grid from solar ,, this has to be achieved to promote take up in rural areas
6.

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[redacted]

Dear Sir/Madam,

I write with reference to the draft National Climate Action Plan. In particular, I refer to the Forestry section of the plan.

We seem to have an obsession in Ireland with promoting forestry. While I do not disagree with the contribution that forestry makes to carbon sequestration, I find it annoying that our woodlands are consistently ignored with little or no acknowledgement of the contribution that these woodlands make to our environment and tourism.

Our Irish woodlands are a valuable asset to Ireland both in terms of the environment and the tourist industry. There is nothing particularly scenic about a forest of ever green trees, if anything they are a depressing sight and support relatively little wildlife. If we fail to support the owners of our Irish woodlands, they will gradually disappear with serious consequences not only for carbon sequestration and tourism but also for the loss of wildlife.

We have a large amount of old woodlands on our farm which we maintain to the best of our ability. About 10 years ago, a representative from Coillte visited our farm and inspected the woods. He advised us to harvest a large proportion of the woodlands including the old oak trees as they were nearing the end of their days. We did not take his advice, preferring instead to leave these trees, some of which are at least 300 years old. I'm glad that we did not take his advice as the vast majority are still standing and have made a notable contribution to the environment.

Any future climate action plan needs to include woodlands. There needs to be a recognition of the natural woodlands in Ireland and their contribution to the environment. It is not just their contribution to the sequestration of carbon but the large amount of wildlife which they support. We need to have a separate policy for our woodlands as they are not commercial enterprises. There is currently no recognition for farmers who have woodlands and no incentive for them to keep them.

Any future policy should include:

1. Grants should be available for the maintenance of woodlands. In many cases, farmers do not have the necessary funds to replace trees which have fallen.
2. Advice should be made available to farmers to assist them in the appropriate care of their woodlands.
3. Areas such as woodlands and marshland should be included in area aid. This would help to prevent reclamation of these valuable contributors to the environment.

I hope that you will consider the recommendations above.

Yours sincerely,

[redacted]

Dear Sir / Madam,

Below please find comments on the
; Climate Action Consultation for Agriculture

1. Beet production, suckler beef production and calf rearing are traditional practices and play a role in carbon sequestering
2. Growing population need not necessarily lead to increased need for food in the context of population ageing. Adult and older populations will need less food than populations of young persons
3. Agriculture is estimated to contribute up to 34% of national emissions CO2eq. However care should be taken in assessing CO2eq emissions in agricultural context.
4. Climate change is a relatively recent phenomenon and so care should be taken to establish baseline levels of CO2eq emissions, ie. what might be called naturally occurring or traditional occurring levels of CO2eq emissions. In the Irish context the economic history of cattle / stock faming after the famine is well documented (eg. Turner, M., 1996, After the Famine; Irish Agriculture 1850-1914. Cambridge University Press) and cattle faming was well established before the recent global warming /climate change phenomenon started to emerge. Thus traditional cattle faming should not be seen as a causal agent in Global warming. ie grazing cattle on traditional pasture land (EU definition of traditional practice- a practice existing for 30 years or more) should not be considered causal until it is established that a change in the practice has occurred and only to the extent that there has been a change in the practice. Further while cattle may emit CO2eq their role in maintaining pasture must also be considered and so doing cattle their role in CO2eq sequestering must be established and taken account. This sequestering capacities need to be assessed and compared with other systems of agricultural production systems. In accord with the tradition of EU legislation changes in traditional practices should not and indeed cannot take place until it is established emphatically that the traditional system is defective and change should not be based on opinion but on evidence. Thus in this traditional context the suckler here would not change

5. In an expanding dairy herd context ammonia (milk Urea) will occur in a different context that will require different management systems and policies. In this context change in the system of milk production would be necessary in the spirit of EU regulatory framework.

6. In terms of sustainable land use the tradition of beet growing should facilitate carbon sequestration and climate change amelioration - ie.
Beet growing for ethanol

Sincerely,

[redacted]

A Chara,

I sat down today to complete your survey. I was having difficulty due to the simplistic nature of the questions which in my opinion could be interpreted in a number of ways. I failed to answer Q7 as the potential use of peat soils to store more carbon could result in increased management skills rather than the reduction in the question.

I applaud your attempting to consult with farmers, but this survey will not give you direction without having proposed incentives or regulations included in the questions.

I suggest that the best solution to what are obviously concerning issues of climate, air, and energy, is to publish a clear roadmap of funding and initiatives to deliver the Teagasc roadmap that has been included in the Government Climate Action Plan. The next CAP budget and program, product prices to deliver farm incomes, and access to technology, will play crucial roles too.

Farmers have always responded to the latest scientific advice, but the solutions have to also make practical and financial sense.

Please keep me informed on any follow up consultation or information.

Regards,

[redacted]

My Background .

I have been involved in Consultancy work with the farming community for 30 years (REPS , Nutrient management planning , Building design ect .

2008 to 2014 – Visited numerous countries (Germany , Holland , Denmark) studying farming practices and on farm Anaerobic Digestion . Culminating in studying Anaerobic Digestion in Hohenheim University , Stuttgart .

2014 – I established an energy park -anaerobic digester of my own design , Pasteurisation plant . Using the digestate to reduce chemical fertiliser applications on farms .

Observations / Comments regarding Agricultures response to climate change.

Irish Agriculture is indeed the cornerstone of the Irish Economy .

Regarding its responsibilities to climate change , Agriculture should embrace any changes which contributes towards its reduction of carbon emissions , with a view to enhancing its marketing potential . Irish Agriculture is now trading on the global market for its food products , and any advantage in the market place which further enhances our green image is a plus .

That advantage is our ability to be able to produce food from lower carbon emitting farms. In contributing to the lowering of our carbon footprint consideration must be given to the following

(1) - How we monitor our fertiliser application programmes . From a monitoring perspective , our soil analysis programme is extremely inadequate . Presently we are addressing only 2 soil nutrients - Pospherous and Potash , along with soil PH (which is not a soil nutrient) . It indeed takes up to 30 nutrients to grow crops . Our consultancy firm has looked at this area over the past 6 years , culminating in a NUI Galway student receiving a first class honours masters degree , which is to be published in the near future . This research conclusively demonstrates that digestate not only adjusts the soil PH , but also contributes to a significant increase in both crop quality and quantity , and significantly increased both the Nitrosomonas and Nitrobacter populations in the soil , and so contributing to a more efficient conversion and uptake of soil nitrogen . This research demonstrated that application of organic materials (digestate) contributed to a significant requirement in chemical fertiliser usage , a significantly reduced weed count and a significant increase in the clover population on those trial plots where digestate was applied compared to those plots where only chemical fertiliser was applied.

(2) - Anaerobic digesters - There is indeed a significant capital outlay and seasonality associated with anaerobic digestion . However I believe that there is indeed an opportunity here for farming groups and communities to embrace such technology , by incorporating the significant food and other commercial organic wastes in the Irish Economy in its development . It is important to realise that growing energy crops to feed digesters is a direct contradiction to the objective of trapping Methane gas (Ch4) in digesters ,when one considers that N2O (via tractor diesel engines) is expended in harvesting these crops and indeed applying additional chemical fertilisers. In considering this pathway , a farmer is also adding additional nutrients to his soil . We have been doing extensive soil analysis over the past number of years and have found quite a number of soils

to be deficient in elements such as calcium , iodine , selemium , and others . Elements which we should be continually testing for . Such an approach as 2 , would contribute to significantly reducing the need for chemical fertilisers on Irish farms .

(3) - With regards comparing anaerobic digestion here in Ireland with continental Europe , we should be aware of the following points taking the dairy herd for example

(A) - Cows in continental Europe produce over 100kgs Org N per yr , we produce 85 kgs org N / cow per year

(B) - Cows in continental Europe produce 0.48m3 slurry per week , we produce 0.35 kgs slurry per week

(C) – Cows produce a higher dm slurry compared to cows here in Ireland

This points are indeed quite valid , and when we look at information which is presented to potential anaerobic digester clients , it tends to be based on Continental experiences and so tends to be somewhat misleading . Maize (which is considered an energy crop in places such as Germany) has a DM % of 30% , here we struggle to achieve 20% dm.

(3) – Carbon Credits .Certainly (in my opinion) anyone who is prepared to construct an anaerobic digester should be paid for reducing carbon emissions .This practice occurs in other countries .

(4) – Establishing carbon boundaries – In order to consider 3 above , identifying carbon boundaries so that an individual farmer would assume reduction responsibility.

(5) - Afforestation of a % of land

(6) – Trail shoe application of slurries . However consideration should be given to mixing slurry nutrients with nutrient deficiencies on other farms . In that way one would improve on crop growth efficiency .

(7) – In my opinion breeding farm animals to reduce carbon emissions is never going to contribute significantly to carbon reduction , because slurry produced , because of its organic nature will create emissions of significance . It will certainly not reduce the N2O levels on farms , as such as winter feedstock production.

(8) – Addressing the taxation element associated with methane gas production via anaerobic digestion on farms (especially the VAT element) must be considered .

Summary .

It is indeed possible to develop a programme which reduces the carbon footprint on Irish Farms while at the same time enhancing our green image in the market place (" food produced from lower carbon emitting farms") .

By tackling the chemical fertiliser conundrum , which in so doing would also enhance the countryside environmentally (eutrification of surface water , and reduction of Nitrates in ground water) .

Regarding Anaerobic Digestion - This definitely has a future . However we need to look at and consider its role in Agriculture . Recently we have costed out a 1,000m3 digester , remotely controlled and monitored costing 350,000 Euros . Its equivalent from European suppliers is an average of 924, 000 Euros . This construction will be going to planning in the not too distant future . This particular construction also facilitates thermophyllic digestion .

Indeed methane gas produced on farms or in Co Oprative structures affords the development of secondary industries.

In relation to the research work which was undertaken with NUI Galway , we intend to put our findings into the public domain once it has been published .

Kind Regards ,

[redacted]

To whom it may concern,

Here are my suggestions as to how Irish agriculture can be changed in such a way as to make a positive contribution to climate change:

- We have more than enough agricultural land to grow all the food we need here in Ireland rather than shipping it in from abroad. Locally grown food would save on a lot of carbon emissions as well as providing healthier, fresher food. We need to move away from predoninmantly livestock to more traditional agriculture with a mix of vegetables, fruit, grains, livestock and wildlife space.
- Organic and regenerative methods - using composts, manures and mulching to sequester carbon in the soil and prevent soil erosion. Stop the use of herbicides, pesticides, fungicides and chemical fertilisers which have a high carbon footprint to produce and transport as well as degrading soil and biodiversity.
- Mixed crops and underplanting crops with green manures to build soil and prevent soil erosion.
- Agroforestry systems - which can produce more food per acre than any other food system as well as sequestering more carbon than any other food system. Agroforestry systems are much more low maintenance than traditional vegetable growing, provide much more habitat for wildlife and are more climate resilient.

Warm regards,

[redacted]

To whom it may concern

Limerick and Tipperary Woodland Owners would like to make the following comments in relation to the Ag climate consultation

The target of planting 8000 Ha is currently not achievable due to a number of issues

Ash dieback
20,000ha (49,000acres) of Ash forestry that is now infected with Ash dieback has placed forest owners at a huge financial loss along with a carbon sequestration and filtration loss to our national emissions target. This disease has also infected our native hedge row ash trees which are the second most important tree in 500,000km of hedge rows in Ireland. Ash forest owners have not been compensated for this loss due to lack of bio security measures implemented by the Forest service, this has dealt a huge blow to the planting targets of 8000ha as it gives no confidence to any potential forest owner entering into the forestry scheme.

Delays in processes
While a new approach is being taken with the Mackinnon report Long delays in getting approval to plant your land in forestry is also turn off potential forest owners not to mention the lengthy delays in getting approval to mange your existing plantation.

Poor image of forestry
As a whole the public has a poor image of forestry in particular Sitka spruce plantations more work needs to be carried out on public perception of forestry. While hardwoods are important and the public requests more of them to be planted unfortunately the landowner gets the least return from these trees a longer term premium for hardwoods is called for to support the land owners who plant them.

It also needs to be shown to the public that Sitka spruce plantations are very important to the land owner as an income provider and to the industry supporting 12,000 local jobs and currently is the only tree type that has a ready available market specifically for its purpose.

Carbon credits
One way to increase the forest cover in Ireland is to let forest owners trade their own carbon credits. This would give a huge lift to existing forest owners and draw potential forest owners into a plantation scheme.

Smaller plots on farms
Another area that Should be investigated is the planting of smaller plots on farms for biodiversity carbon sequestration etc that at farm scale level could be easily completed by the farmer.

To commit land to forestry is not a decision taken easily by any farmer and any pitfalls or barriers put i their way during the process will lead to them not continuing with their idea to plant.

LTWO would welcome the opportunity to feed into further consultation and stakeholder meetings and events as they occur on the issue.

All the best

[redacted]

Name: [redacted]
County: Waterford
Sector: Beef

Thank you very much for the opportunity to consult with you on your climate roadmap. However, the consultation was not well advertised and opening just before and after the Christmas period is likely to mean it has flown below the radar of many interested parties.

I would like to highlight a number of concerns in relation to current agricultural practice in Ireland, that I do not feel are adequately addressed by this road map.

On the whole, High Nature Value farming appears as a footnote - something to be practiced on marginal land, rather than practiced across the system as a whole. Therefore, the plan is not ambitious enough. We need all farms to be HNV farms and for this to be incentivised with a payment on results scheme, similar to that of the BRIDE Project. Agroforestry and silvopasture could support farmers to diversify, offering greater income protection and a move away from the monocultures that currently exist on the vast majority of conventional farms.

This document makes no reference to over-grazing by sheep on upland areas, and the impacts on biodiversity and fragile eco-systems. Ireland's upland areas are barren with many only supporting non-native invasive species, such as Rhododendron. I would like for the Dept of Ag to consult with environmental NGOs, such as the Irish Wildlife Trust, on a better vision for our upland areas and the type of agriculture, if any, that can be supported in a sustainable way.

Re. forestry - it is very sad to see that the majority of forestry in Ireland (10%) consists of non-native pine and spruce and that native tree cover consists of just 1%. These plantations contribute little to biodiversity (although granted they may support some species) nor the scenic/touristic value of an area. If, as is stated, farmers are custodians of the land, they should be supported through the CAP scheme to establish continuous cover forestry of native species. The charity 'Trees on the Land' outline how this type of forestry can harvested without clearance felling while providing a source of income for the landowner. Farmers should no longer be penalised under the CAP scheme for land that not of 'productive use' where this land could provide services to nature.

Ireland has among the lowest rates of organic agriculture in Europe. As organic practices are generally more sympathetic to the environment, I would have expected to see some targets and a plan around increasing the number of farmers within the Organic Scheme.

While there is reference in this document to supporting the tillage/horticulture sector, and this is badly needed, there is very little reference to food security in Ireland. I think that we need to see significant growth in this area and the plan does not make clear how that will take place.

Thank you for welcoming submissions. There is much more that I would have like to have said, but becoming aware of the consultation at the last minute has hampered this.

Best wishes,
[redacted]

Hello,

I would like to see the makeup of the panel of people like Dr.Marco.Springman from,"What Planet Are you On",,(will your experts like Springman be unqualified in Agriculture?),that came up with these proposals.Obviously have never set foot on working farms.

Forestry is a non starter on most land,read the science.Plus you the government imported Ash Die-back disease.

The slurry proposals are not new,trailing shoes/dribble bars have been in use for a longtime now.

Spreading slurry/dung and then ploughing it in.

Do your experts understand Arable farming.?Shallow discing or use of a tine cultivator is more efficient,uses less diesel and therefore better for the climate.

Regards sowing the crops a lot of farms are changing to direct drilling or minimum drill methods.

Ploughing reduces moisture and worms in the soil,dries it out.Direct drill/min till increases soil nutrition,worm count,more efficient use of fertilisers,reduced fuel usage.

Also better for the environment in that in greens up quicker and is good for insect life.

All slurry tanks now,be it indoors or out are normally covered/slatted so that proposal was wasteful.

I have a few more thoughts.

Regards

[redacted]

Hello

Can you submit my submission in reference to Donegal County Council and Donegal County Council Planning department not acknowledge flooding event Inishowen Donegal August 2017 if you remember recall lessons have to be learned and my feedback provided Donegal County Council refuse to acknowledge substantial flooding event words cannot describe landowners putting up genuine flooding defences to protect their land and mitigate against any future flooding event.

Can this be raised urgently and be acknowledged to the minister its not right people on the ground affected by this to be fully listened too especially in reference to Flooding opw and Donegal County Council never helped me it's not right or fair

Please acknowledge

Yours

Dear Dept of Agriculture,
We are writing in relation to the public consultation on Ag Climatise.
We are involved in an EU funded project – RiskAquaSoil that is concerned with better adaptation of rural areas and farmers to climate change. As part of this project we have undertaken qualitative and quantitative studies with Irish farmers to identify their preferences for climate change adaptation and mitigation. We believe that the project and our work might be relevant for Ag Climatise and we are happy to send you further details on the project or indeed meet with you to discuss the project if you think that might be helpful.
We have included some details on the RiskAquaSoil project generally and some details on our survey work below.
The RiskAquaSoil project aims to develop a comprehensive management plan for risks in soil and in water to improve the resilience of the Atlantic rural areas to climate change. In the context of agricultural production in the Atlantic Area and globally, countries face challenges from changing temperatures and rainfall patterns, sea level rises and the impact of extreme climate events that could interrupt agricultural activity.
At part of this project NUI Galway is developing a policy report on the results of our research. This report presents findings from a component of one of the work packages for RiskAquaSoil called "*Implementation and Adaptation*" and it outlines the results of qualitative interviews and a quantitative survey that was undertaken with farmers in Ireland and France. The study mainly focused on the impact of extreme weather events that are likely to become more common as a result of climate change. The purpose of this survey was to identify how concerned farmers are regarding climate changeand whether they are willing to engage in adaptive behaviour (related to adopting weather insurance and flood protection). The report also outlines findings from international studies to understand farmers' willingness to engage in adaptation or mitigation activities in developed countries like Ireland.

We hope that we could feed into the policy discourse and we are happy to meet with you to discuss the project further if you think this might be helpful.
With best wishes and many thanks,
[redacted] and [redacted]

To whom it may concern,

I am writing to you in relation of facing climate change problems, not as a farmer but as a registered agricultural contractor. We've been in the business for many years now and we've never received any grants. In 2018 almost 180 million euro was sent back from the department of agriculture, food and marine to the exchequer. Most of our farmers are not able to afford the Low emission slurry spreading equipment as its so expensive so they rely on us to provide that service.

Regards

[redacted]

Dear Department of Agriculture,
In addition to submitting the questionnaire I would like to make some general comments about the future of Irish agriculture with reference to your proposed options in the online survey.
I regret that the general thrust of the proposals are essentially within the questionable parameters of current agricultural practice and that our COPD commitments on greenhouse gases are to be largely met by improvements in efficiency. In that regard the plans lack both credibility and ambition. Certainly carbon efficiency should be increased for existing farming practice. We should also be exploring the promotion of plant based food/protein production, greater diversification, support for small producers and the expansion of new crops such as hemp.
My other main objection to the Roadmap is the disconnect between biodiversity/ sustainability and agriculture. The latter is addressed in an appendix whereas the future of both our agri sector and our planet depends on a return to sustainable farming practice, measures related to soil health, and the integration of wild habitats including hedgerows, with food production. In this regard the absence of reference to developing organic farming is profoundly disappointing. Current thinking in meat production is moving towards a low volume grass fed high end high quality model.
Another disappointment in the section on forestry is the failure to particularise between broadleaf/ native species and conifers. The latter have negligible benefit upon biodiversity and actively damage the environment in the area of acidification of rivers for example.
In summary, the proposals need radical review and I sincerely hope that your department will be prepared to amend the document in the light of feedback.

Yours faithfully,
[redacted]

Dear Minister Creed

With regard to the above mentioned Ag Climatise Consultation we would like to see the promotion of Anaerobic and Bio Digesters.

There is great potential for waste from agriculture, livestock manure in particular to be used for energy. Farms should be part of the solution.

Ireland's climate is very suitable for the production of livestock. We should support this by utilising all aspects of animal production.

We can recycle farm and animal waste and turn this into energy. The energy produced could power farms, homes and farm machinery and sell the excess energy back to the grid.

For example a few livestock farms in close proximity could fuel a common Bio Digester which in turn could create power for number of homes.

The use of animal waste to make energy should be facilitated.

Electric energy is not suitable for agricultural machinery. Methane fuelled tractors would be a better option.

Regards

[redacted]

Dear Sir or Madam,

This is to confirm that I filled up the Survey Form and submitted same. I wish however, to make the following salient points.

1. Organic material such as pig and cattle slurry should be in a position to displace much of the imported chemical fertilizer.
2. Low emission spreading of all slurries should be phased in quickly.
3. Tillage farmers should be encouraged to use as much organic fertilizer as possible.
4. Grass production for Bio Energy as proposed in a recent report is not a wise move. The disposal of the effluent from these energy plants is not fully addressed and could actually put the entire pig industry at risk. It has been clearly stated that pig slurry is not suitable material for these plants due to low solid content.
5. Available land for spreading slurry is presently quite restricted, taking weather and other factors into account.
6. Bio energy plants should only be encouraged for sewerage, factory and food waste. It makes no sense to encourage the growing of crops for this system. In my view the pig industry will be at serious risk and adequate suitable tillage land will not be available if this is encouraged.
7. In two of the last five years, major imports of grass had to take place so as to feed the cattle and cow herd. This situation in my view is not reflected in the October KPMG report.
8. Slurry storage on many farms must be improved and this should be further grant aided and encouraged.
9. The solution should be in small steps as follows:

    i. Organic rather than chemical .
    ii. Low emission slurry spreading.
    iii. Shallow tanks with covered slurry storage.
    iv. Protected nitrogen and more R & D relating to this area.
    v. Renew grass land with more clover. Teagasc area.
    vi. Encourage solar, wind and low energy equipment at farm level.

vii. In our Pig Farm at [redacted] we piped natural gas 7 kilometres, using high efficiency condensing boilers. We are presently exploring CHP Plant. Previous to this we were using inefficient dirty diesel boilers. Also a big cost saving.

viii. Nutrition is an area that will reduce emissions and research in this is also moving quickly.

ix. A limited amount of forestry should be encouraged.

x. We grew willows on our farm with some grant aid but unfortunately it had to be taken out at huge expense as there was no market for them in the Cork area.

I qualified in 1973 as an Environmental Economist and I also practised as a General Practice Chartered Surveyor for many years. My son [redacted] runs the Pig Farm now and we are available for discussion at any time.

I take this opportunity to thank DAFM for allowing us to make a submission.

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

9th January 2020.

'Ag-Climatise'

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

Public Consultation.

We wish to make a submission on the above 'Ag-Climatise'

We agree that emissions in agriculture need to be reduced. We in our own farming methods over the years have made many changes for greenhouse gas reduction and efficiency in our land use.

Our methods have included significant changes;

- Moving our tillage operation from traditional ploughing and tilling to strip drilling thereby reducing our carbon emissions by at least 65% in this area.
- Planting broadleaf and mixed forestry
- Moving to pasture only grazing of cattle
- Setting aside areas for natural wildlife without any farming interventions
- Creating bee corridors
- Non-interference in section of raised bog

Our main concerns for the future of agriculture in this country and how it can contribute in a sustainable way is to concentrate on food production in order to give food security to this country.

Ireland is an island requiring that any import into this country must come by air or sea.

It has been suggested that Ireland's population will rise to 8 million by 2050. This will result in a doubling of our population since approximately 2000.

Unlike mainland Europe where any import / export can be transported by rail or road between the countries, Ireland must import goods by ship or air.

As an island nation any hiccup in our ability to import food could precipitate a national food crisis. One must remember that during the Second World War Britain at one point had only enough food for six weeks. This demonstrates the fragility of an island nation relying to a large extent on food imports

Ireland enjoys a temperate maritime climate due mainly to its proximity to the Atlantic Ocean and the presence of the Gulf Stream. Consequently Ireland does not suffer from extremes of temperatures like similar countries of the same latitude, thereby making it ideal for food production.

The current renewable energy policy in Ireland is encouraging many farmers to move away from food production to renewable energy projects. This results in the loss in certain areas of land for food production.

Ireland has been designated as the major Data Centre Hub for Europe. These Data Centres wish to state they run on renewable energy. I t has now emerged that the inclusion of these Data Centres in Ireland will raise our emissions far higher than the Agricultural sector has ever produced. There will also be billions of euros burden on ever Irish citizen.

A further danger which has now been suggested, is that Ireland with more than its fair share of Data Centres could leave the country open to cyber-attacks.

Cyber-attacks should they occur, could have a catastrophic impact on the day to day running of the country.

We urge the government to think wisely and realistically to all the modern world changes and to protect the people of this country through food security.

Notwithstanding the fact that we are a member of the European Union where free trade exists we must not leave this country in a vulnerable position with regard to our food security.

We are all aware of the changes necessary to run our agricultural sector in a green and sustainable way and farmers are all too willing to move in this direction as it is their livelihood.

We urge that the 'Ag-Climatise' document should concentrate on the food security to 2030 and beyond.

The precautionary principle should always be adhered to when major irreversible proposals are put forward.

[redacted]

Dear Department of Agriculture,

Please find attached my submission of suggestions for modifications to the current Ag policy to bring Irish Agriculture in line with our legal climate and biodiversity obligations. While at the same time increasing the income of farmers and Irish food security.

I am submitting the following detailed report outlining the transition to a plant based agriculture system.

Transition to an Irish Vegan Agricultural System

yours sincerely,

[redacted]

Further to the coverage in yesterdays Farmers Journal regarding the proposed Climate Action Plan for the farming sector i am astounded that the supposed consulation process did not involve all the stakeholders..i.e. all registered farmers..... That such a process was in place and then give them a mere TWO days to respond to the plan being proposed seems ludicrous!!

Was it beyond the capabilities of the Department to inform farmers individually that such a process was taking place?

This as usual is representative of big business and the government taking joint action to the exclusion of the individual.

Were all farming organisations appraised of the consultation process and if so did the Department advise the representative bodies to consult their members..?

I am a member of the IFA and an organic farmer (member of the Organic Trust) and received no notification from either body that such a consultation was in process .

Given that the article on this matter with your contact details appeared to my knowledge only yesterday giving us until the 10 January...today...to respond seems to be further evidence that nobody actually wants to hear the views of the majority stakehoders in agriculture... THE FARMERS..

Copy to agclimatise@agriculture.gov.ie and to editor@farmersjournal.ie

Yours Sincerely

[redacted]

My proposal is that all farmers plant a section of THEIR farms based on farm size and stocking levels with the view towards making farms and their production systems carbon neutral. 🐄🐂🌳🌲🌎

The suggestion arises from the reality that not all farmers wish to plant or people living in the country side wish to have vast amounts of forestry surrounding them.

Also it may be more effective and achievable that each farmers (who I believe would have no problems with at all and very possibly all farmers have an acre or so left aside of not the best of ground that would benefit the climate the country side and environment)

We are dairy farmers and as with the climate crisis it will be won by positive effective small changes made at HOME under our own roofs and own backyard.

So like changing from a weekly shop of 10 plastic bottles of shower shampoo etc to using reusable refillable ones!🌎

The change is small but spread it is highly effective positive PROACTIVE.

Farmers can manage their lands and improve the environment by taking small but effective measures.

As I stated forestry is not for all! But is for some but also not practical that we plant all old Ireland! And some us want to farm the lands and feed the world and play our part healing the Earth.

We all have an area that could be planted and the bigger picture is so powerful.

Plant a Plot Ireland farming sustainably 🌎🌲🌳

Kind regards [redacted]

[redacted]

To whom this may concern

1 Local producers to be encouraged to supply to all food outlets.
Local producers to be defined in terms of proximity to those outlets;
To be given status by attention to practice of biodiversity; (without lots of red tape!)
And by zero tolerance of pesticides;
And by escorting and selling of produce without plastic

2 encouragement of biotechnologies to consider animal and human waste as sources of fertiliser perhaps through exploring onsite or sewage processing technologies. Pasturising or UV treatment to eliminate pathogens.
Farmers to dispose of protein waste through a reed bed system.

3 Vulnerable flood prone areas to be protected by planting willow and poplar for their ability to draw water.
This will stop soil erosion while the growing of rice, a water loving plant can be explored.

4 Irish apple varieties, pear and cherry trees to line untreed waste lands.

5 Rapeseed to be discouraged.
It makes the honey bees honey rot.

6 Education of children to have food security in the curriculum asap.

7 an investigation of under ground water to take place to see how safe it is in its current condition.

8 No industrial or agricultural waste into rivers or soil or sea. Filtration systems to be invented.

9 Supermarkets to freeze meat that is about to go out of date for distribution to pets at cost.

Here are some good ideas.

https://facebook.com/events/s/all-peopleall-rivers-matter-pr/843598019425636/?ti=cl

Have a good day.

[redacted]

Trees should be left grow in hedge rows,you dont have to sow trees just mark trees not to be cut before hedgecutting

Dear Sir/Madam,
Further to your article on public consultation to Ag-Climatise – the National Climate and Air Roadmap see below.

I am a small full time suckler farmer in the West of Ireland. Our farm is self sufficent as we rear our own stock for the deepfreeze and I grow my own fruit and veg for our own consumption. We do not use coal or oil but cut turf in a local peat bog that my father's family have been cutting for many many years and there's plenty of peat left for many many many years to come.

We are such a small country. We cannot blame climate change on our farming pratices, sucker cow or even peat cutting. The world froze over and heated up many years ago before there was ever peat cutting or a combustible engine.

If we all switched to electric cars and we all went vegan the difference it would make would be so so small compared to the rest of the world. Some say its a "cultural change" we need to adopt and other countries will follow?? But at what cost??? Rural Ireland is on its knees, further changes and taxes will be the last nail in the coffin.

If this government was serious about climate change then they would look at the bigger multi national companies. For example look at the esb station in Shannon Thousands of kilos of potent greenhouse gas (SF6) leaked from the ESB station. SF6 is 23000 times more pollutant than carbon dioxide.

Bord na mona have done more damage to the bogs of ireland than any family cutting a hopper of turf a year would do in centuries.

In summary climate change is another way of knocking more money from the working man. No matter what we do our population is so small compared to USA, India, China that out impact will be only a drop in the ocean.

I would appreciate if you acknowledged the receipt of this email.
Signed,
Concerned west of ireland rural farmer

What quantity of carbon dioxide is taken up annually by an acre of growing grass in Ireland?
How much is taken up by the crops grown for feeding animals in Ireland?
How much is taken up by the hedgerows?
How much carbon is returned to the soil in dung, slurry, bedding annually? This is a carbon sink.
Is the uptake of carbon dioxide taken in to account in the carbon /climate calculations?
What is the net carbon equation of different farming enterprises in Ireland?
Matter cannot be created or destroyed, only changed from one form to another.
You can't have emissions without input.
The carbon cycle in Irish grassland systems is virtually carbon neutral.
Yours,

[redacted]

A chara
We just want to engage with you on the issue of the proposed policy of planting 18.6 million trees pa. While this is marvellous initiative as always the devil is in the details & its success or failure depends on proper thought out implementation.

Areas of West Cavan where 30% of some DED's are already planted with conifers decimating the biodiversity, ecology & rural community do not need any more trees. What we require is investment in hedge rows & rewilding of the current High Value Nature grasslands.

The failed policy of Sitka cannot be seen as a model for future climate action as it has left swaths of countryside devoid of life on forest floors, rivers acidified by pine needles & communities struggling to maintain critical mass from inflated land price from dubious tax breaks for foreign pension fund companies.

We do support native tree planting in a regulated industry which enhance rural Ireland for all.

We are available to attend public forums to tease out these issues further if need be

Mise le meas

[redacted]
On behalf of Save West Cavan group.

As a farmer, I would like to see more rapid action being taken by the Government on the following issues that could positively improve both environment and assist in carbon and methane reduction from Irish Agriculture.

1. Total ban on splash plate slurry application by 2021 with Grant's being given for dribblebar or trailing shoe purchase. In addition, farmers should be encouraged to use slurry amendments such as Bacterisol to reduce emissions, improve humid values of slurry and reduce smell on application. These additive help capture and maximise the nutrient value thus reducing the need to use artificial NPK.

2. Removal of Nitrogen derogation that has caused unfettered expansion of Dairy at the expense of soil health and water quality.

3. Ramping up of Biogas production rollout especially in areas of large Dairy/Tillage concentration from farm sources material as both an alternative fuel and as an alternative income stream source. These should be community owned facilities.

4. State sponsored Project called Soil Ireland which uses most recent research study results to implement improvement in Co2 sequestration in Irish soils and improve natural soil health.

5. More radical approach to Organic farming than current piecemeal gestures based around restricted categories and small numbers. The Department should be moving to a plan that sees our current food production move to a more sustainable platform while reducing artificial inputs. This should be funded under a CAP initiative for those farmers moving towards this more sustainable model. It's at soil level that we must work, not artificial input level. Know your soil.

6. Plant a tree. If every farmer in Ireland decided to plant 5 native trees, this would result in 600000 more native trees which would have a positive effect on the environment. This could be encouraged as a way to increase the awareness on the concept of Agroforestry and its benefits.

7. Allow farmers make their own decisions to improve sustainability and environmental integrity without burden of more bureaucracy. Simple plans are often the best.

Eg. Nobody knows the land better than the person who farms it. However schemes such as Agroforestry are not designed by farmers for farmers and this is my opinion based on discussion with Teagasc forestry stand at National ploughing in 2019. Currently in Agforestry plan, the farmer is bound to take up 2 hectares on one plot fully fenced with between 400 and 1000 trees depending on species. 2 hectares is too big an area on a small farm. 1 acre would be a good start in every 20. I argued that a farmer may have 3 or 4 areas on his small farm which could support different trees species totalling maybe an acre and this scheme does nothing for him. If we are serious about reducing greenhouse emissions, rigid policy should NOT be standing in the way of the willing as it currently does. What would be wrong with that acre in 2 or 3 different parts of the farm, Alder and Sally in a wetter area, Oak, Hazel or Cherry in a drier upland portion and Birch in boggy areas. Multiple non monoculture planting creating different habitats on the farm. It's better for all concerned.

8. Reduction in plastic use by encouraging more hay saving using media campaigns to highlight the issues concerning the recycling of Farm plastic.

9. Encourage and grant aid the rewetting of bogs under private ownership to aid sequestration.

10. As in France, UK or Holland, where good financial rewards exist for energy creation, Ireland needs to prepare a proper payment structure for farmers who use their sheds for solar capture, their land for small wind energy which would encourage greater use of farm assets to create extra income. We have a very poor history as a state of paying ordinary citizen who use their entrepreneurship to create wealth, just look at the Miscantus mess of the last decade or current payment for Biogas.

All of the above need the rural economy to be financially incentivised to do this work for public good. The state will have to be more creative and rather than pay millions in fines to Europe, pay Farmers to reduce this fine by all of the above which would be money better spent than going into a Brussels black hole.

In partnership

Submission on Climate Change and Agriculture

From [redacted]

[redacted]

[redacted]

We need a radical transformation in how we relate to the land and food in Ireland.

Proposed Actions

Ending chemical pollution

- Stop poisioning the soils and waterways with chemicals as a matter of urgency and penalise, rather than reward, farmers who do this.
- There have already been significant cases taken against Monsanto internationally so why is Ireland still not banning roundup, knowing the serious implications on health and biodiversity loss?

Supporting Local Organic Food Production

- Why can't ireland become the **Leading Green Organic Food Producer in the world?** We have the soil, fresh Atlantic air and the rain!
- We need more tangible support for growers of organic vegetables. Why were 75% of farming applicants refused from last years organic farming scheme?
- We need to become more self sufficient in our food production encouraging more local, organic food and less reliance on imports. At the moment we are importing 70% of all organic produce which recults in increased air miles and carbon footprint.
- Organic food production builds rather than depletes soil, is more healthy and nutritious and avoids pollution of our land and water sources.
- We need to be able to meet the growing demand for organic vegan and vegetarian diets around the world.
- Develop a formal internship programme in the horticulture sector to provide labour for farmers and also incentive for young people to take over farms and get involved in horticulture
- Build a market for local organic food in ireland. We need a well-resourced national PR campaign. There is no marketing of clean organic food in Ireland and this must change. We need to support growers to reach their consumers through a range of measures from farmers markets to traditional retail outlets.

- Need to support more community initiatives to ensure resilience at local level (community allotments, school gardens, local markets etc)

Public Procurement

- Introduce new procurement guidelines for all public service orgs to prioritise local organic food supply/circular economy especially in schools, hospitals and public buildings
- Policies which make it mandatory for all state instirutions to provide local organic food in their resturants or food service. They did this in Copenhagen in 2007 and now 80% of food in public institutions is coming from local organic food producers

Labeling and Branding

- Need clear labeling to link ingredients to farms - produced in Ireland means nothing except that we make a profit on ingredients from anywhere else
- Need to identify all chemicals used in the process which are currently not listed (e.g. acid sprayed on grain) (See Joanna Blythman's book 'Swallow This')

Move from Meat to Veg production

- We need to move from beef and dairy to more diversification and organic horticulture.
- The current system of food production is unsutainable for farm families, rural communities and is detrimtal to biodiversity and the climate.

International Actions / Global Solidarity

- We also need to greatly expand our support for food systems in the countries around the world who are most susceptible to climate change. What happens when your farm is underwater and your food source is completley cut off? We need to take our international responsibilites very seriously and support those most in need.

Seedsaving

- We urgenlty need more investment in seedsaving as this is critical. We need to ensure that we are saving heritage seeds and support organisations who do this (Brown Envelope Seeds, Irish Seedsavers)
- Famers need to be supported to plant native speices througout the island to protect against climate events
- Bring international speakers like Vandana Shiva from India to Ireland to inform policy and action

Biodiversity and Native Woodland

We need to support farmers to support biodiversity and plant native woodland.

Initiatives which encourage people to eat local

- 30 Day Local Food Challenge: Encouraging people to eat food grown in the island of Ireland:
- https://lisafingleton.com/project/30-day-local-food-challenge/

- https://www.facebook.com/groups/30daylocalfoodchallenge/
- https://www.irishtimes.com/life-and-style/people/the-30-day-local-food-challenge-1.2429064

Links

- **New Book 'The Local Food Project' which emphasies the importantce of eating local food especially at the critical moment in history:**
- **http://lisafingleton.com/the-local-food-project**

Ag Climatise Submission

[redacted] Co Wicklow

I am an Irish citizen. I actually grew up on a mixed cattle & sheep farm here in Ireland. I have a Science degree from UCD- a BSc honours degree with an elective in Organic Agriculture. Last year I completed the 'Soil is the climate solution' course with Kiss The Ground and I am now an advocate for organic regenerative plant based agriculture in my community. I am also a concerned mother- my most important role.

It is the saddest thing to realise that your government is putting profit & the jobs of a tiny minority of people in this country before the climate crisis, ecological breakdown & our children's futures.

Agriculture remains the single largest contributor to overall emissions in Ireland accounting for 34% of the total.

This is uniquely high in a European context where the average is 10%. Our emissions are this high because we rely so heavily on animal agriculture and this has to change.

Methane (CH_4) and nitrous oxide (N_2O) make up the majority of Irish agriculture greenhouse gas emissions, mainly due to the dominance of cattle and sheep livestock production. But we do not need to eat ruminant animals or any products from them to thrive as humans. In relation to ammonia (NH_3), the agriculture sector accounts for virtually all (99.1%) of ammonia emissions in Ireland. Recent increases in cattle numbers and fertiliser use have seen NH_3 emissions increase for the last five years. Animal manures produce about 90 per cent of ammonia emissions in agriculture and chemical fertilisers and road transport account for the remainder. The increases in dairy cow numbers and nitrogen fertiliser use were the most significant drivers of increased ammonia emissions.

And you talk about low emissions slurry equipment in your paper…. You talk about research into technologies and novel feed additives for animals to just continue doing what you are doing.

You talk about great exports revenue & economics but who is benefiting? It is not most of the population, it is not the small farmers, it is not wildlife and the natural world, it is not the animals, it is not the climate. The statistics show that just 8 families control 80% of the Irish beef market- [redacted] earning millions in the beef processing industry. Meanwhile we import tonnes of fruit & vegetables to feed Irish people and our land is tied up in use for degenerative animal agriculture.

You say in Ireland we have one of the most sustainable models in the world for beef & dairy yet both are completely unnecessary & in fact harmful to human health (www.nutritionfacts.org) not to mention unethical & destructive for our environment- so you really mean these industries are good for the economy. I grew up on a mixed sheep & cattle farm here in Ireland so I am very aware of how it all works and I am aware of farmers livelihoods but we all have livelihoods to be considered and things can and must

change. I also know that these farmers depend on subsidies & welfare schemes and to some it is little more than a hobby while the big food CEOs & corporations make the money.

You talk about how sheep and cattle farming is strongly embedded in local economies and plays an important role in supporting rural employment- what about its massive role in climate change and ecological collapse? Farming animals is strongly embedded because of the incentives to do so- start to strongly embed a new way of working with the land.

You say dairy farming is more profitable now. In the last two years, Irelands top dairy export was food preparation for infant use, accounting for 93% of Irelands dairy exports in 2017 because in China they market formula feeding babies over promoting breastfeeding. That our land here is used for these exports, as well as sheep & cattle exports (new deals being done all the time last year) while benefiting only a few food corporations is unacceptable. You talk about reducing herd size for dairy cows but you want to obtain more milk from these cows, improving efficiency, reducing the age at first calving among other measures- exploitative & completely unethical for an unnecessary product for human consumption. A sentence which means nothing in the completely unethical dairy industry we have follows in your paper: “We must do this while not negatively impacting on animal welfare”

You talk about how soils are fundamental to production agriculture, and with appropriate nutrient application, soil health can be improved over the coming years. Nutrient application: this thinking is shortsighted and wrong.

You talk about scientific research in your summary & best practices at farm level- well I have looked at the science and it is crystal clear- we have to start the transition to regenerative organic plant based agriculture now.

With the new science of Regenerative Agriculture and ecosystem restoration we can have a profoundly positive impact on climate change, public health & revenue for farmers.

We have to first recognise that the biology in the soil is crucial now. Most farming worldwide is degrading the soil and the natural environment. Agricultural practices such as tilling, ploughing, leaving the soil bare, using chemicals & overgrazing are degenerative. Degraded soil absorbs and retains less water which means run off and less plant growth & less carbon being pumped into the ground to make healthier soil. Bare soil is exothermic after losing its water. Plants are endothermic. You increase the infiltration rate of water with plant cover & replenish springs providing clean water because the living roots create aggregated spongy healthy soil that is actually absorbing lots of carbon. Tree & plant cover on our planet is vitally important now.

Regenerative Agriculture is about outcomes based thinking- it is about growing soil. Least disturbance to the soil is so important so no tilling, ploughing or chemicals added. These old practices lead to shredding of the fungal hyphae which make healthy soil, loss of water and run off. Bare soil or chemically treated soil is dying soil. Conversely, living roots in the soil feed the life in the soil making it healthy. We have got to lead the way with a ban on glyphosate in this country now.

The evidence now shows that food grown in healthier soil has a higher nutrient content & higher mineral content. The plants access the nutrients using the microbes in the soil and this is crucially why we need that intact soil ecosystem. For the fruit and plants to contain

the minerals & nutrients it should there needs to be certain biology in the soil. We as humans need certain microbial communities in our gut & chemicals in the soil affect this.

Animal agriculture- the production of animal foods- is the leading cause of species extinction on Earth. It is the leading cause of habitat destruction, water pollution, ocean dead zones and a leading cause of climate change. Animal Agriculture is responsible for producing more greenhouse gases than all transportation combined. Animal agriculture is the most destructive industry facing our natural environment worldwide & here in Ireland.

Current statistics report that the leading cause of death worldwide & in Ireland continues to be heart disease with cancer another leading cause. The consumption of animal products are now heavily linked to both (www.nutritionfacts.org) & the World Health Organisation classification of processed meat as a class one carcinogen now in the same category as tobacco smoke. So not only can you be healthy without eating any animal products whatsoever you are actually likely to be healthier reducing your chances of getting heart disease, our number one killer as humans, stroke, cancer, diabetes and obesity- the list goes on.

It is wrong that our taxes are used to fund food that makes people sick, that destroys the environment and exploits animals. It is unethical and unnecessary to continue to exploit animals in any way. When will the products of animal agriculture be taxed (not subsidised & promoted!) as a leading contributor to climate change?

We need to regenerate Irelands ability to provide healthy nutritious food & clean water to people. With only 7.7% of total employment in the agri-food sector in Ireland, the rest of us get a say. As awareness is growing it is becoming clear we do not want our land in Ireland used for animal agriculture (the majority of Irish land use is currently for animal agriculture) with the rest mostly sprayed degenerative ploughing & tilling agriculture. But the public are learning more every day now. Over 90% of pigs and poultry in Ireland reared inside for their entire lives, never allowed outside or to even see the sun until the slaughterhouse, for meat that is proven as unhealthy for us. Again, it is unethical and completely unnecessary to continue to exploit animals in any way in this outdated industry. We need organic protein crops grown here in Ireland.

The following actions in your paper are important

Action 23: Engage with Teagasc, NESC and other stakeholders to review and analyse the full suite of land diversification options ranging from horticultural production; protein crop production and organic farming to afforestation and agroforestry to consider the alternative economic opportunities that could assist with a just transition to lower emissions land use.

Action 24: Engage with farmers and communities to address behavioural barriers and ensure a just transition to land use change.

I understand that politicians do not want to upset the farmers but this issue is too pressing to worry about upsetting people! We all have hardships in our lives, not just the farmers, it is the EU & our governments responsibility to help them transition to organic plant based farming or other alternative sources of income for our health & future as a nation- begin the process now please- for our children who are already trying.

Feed Irish people healthy nutritious organic plant based foods & protect our environment- tell the EU this is what we want and start to implement measures

-Stop subsidies and other biased compensations to animal agriculture by stopping the multi-billion-euro, taxpayer funded subsidies and handouts that go to animal agriculture

-Make healthy food affordable by redirecting subsidies to ensure healthier, organic & regenerative, plant-based food is affordable for everyone

-Help farmers transition to plant-based organic regenerative farming by providing financial assistance to farmers wishing to make the transition now and set up the necessary committees to provide guidance during that transition

-And lastly, start rewilding all other land. Simply give it back to nature and incentivise to restore habitats & ecosystems for our health & the health of the environment

IRELAND produces 0.13% world GHG.

How do we rate 1/ by population.?

2. By the square mile of national territory ?

3. By people plus domestic animals ?

Each line will give Ireland a different rating against other countries.

Ireland for the most part is largly based agricultural industry, as compared with countries that had majour coal and steel industry base. It is not so easy to reduce the GHG of ones country , if there has not been a majour amount of heavy industry as compared to animals out in the fields.

One way to take in GHG is by planting trees...i.e putting more land into Forest.

Does Ireland take into account the amount of existing trees on farm land. Many of these trees are 100 years old and doing thier bit for climate change. Many of the roadside Beech plantations are near 200 year old. As well as the trees, there are miles of hedges, fields of grass, crops, fallow, gardens, river banks, road sides and window boxes all taking in GHG. (Long before it was a buzz word).

On an individual farm with animals there are all the above plants. Taken into account when calculating carbon footprint. DOES THE INDIVIDUAL FARMER GET CREDIT for the plants taking in GHG as against the amount the cattle and sheep belch out? How many farms are neutral, putting out as much as they take in ?

Because of extra carbon in the air, IVY is growing faster each year; also because earlier Springs and later Autmns plant groth is increasing, is this not helping to reduce GHG/carbon in the air.

Because of less frost or higher temperatures, less central heating is required in houses. Less frosty roads, less vehicles skidding and crashing. Maybe there are advantages to global worming ?

SLURRY SPREADING. We are asked to stop using the splash plate when spreading slurry. OK, we should use TRAILING SHOE or inject; but talking to contractors; if the farmer feeds hay or to a lesser extent bale silage in the feed passage the filters will get clogged. Many good ideas have a problem.

DUNGSTEADS should be covered ! If a dung stead is properly built and drains back to the slatted tank, why cover it. Rain will help rotting. Many slat tanks are topped up by diverting rain water into them to aide mixing. What is the difference between adding rain water off the roof or off the dung stead to do the same job??

SPREADING earlier in the year; a good idea. BUT unlees the yard is empty of animals one can not mix the tanks. By the time all animals are out , there are few empty fields; one has to wait until after first cut silage or hay making ! Contractors dont want to empty a quarter of a tank. Nothing is simple !

SREADING DUNG on stubble after harvest a very good idea. Adding organic matter to the soil, good. Kill weed seeds that germinate by ploughing or spraying, good. Requiring that the dung is ploughed in within 12 hours NOT REAL. Let us look at a 30 acre field, last year we spread dung on 10 acres on the east side; this year we spread in the middle 10 acres. Crop planting ; reversable plough starts at the headland, followed by tilling, followed by sower. If rain all action stops. A pre ploughed field can be a problem in wet weather. Just another wise idea.

"EVERY BODY WILL HAVE TO DO THIER FARE SHARE" Why should tractor diseal be loaded with CARBON TAX when we do not get a good price for our farm production. Why is the E.U importing tax free meat from South America when the E.U is in surplus.

Why should Ireland reduce production and watch the tropical forests being cut down to produce more meat ? Why in a resturant do we not see on the menue " BEST BRAZILIAN STEAK" ?

THE AIRLINE INDUSTRY. Once opon-a-time there was a tax on airline tickets, then it was abolished to boost tourism. WHY does the airline industry pay no CARBON TAX. It is estimated world wide 2% of GHG comes from planes. It is probably much higher and because of the hight planes fly ,damage to the upper athmosphere is much greater. Soon Dublin will have runway TWO; more planes ! WHY not start with a rule that no aircraft could take off before 0700 hrs and no landing after 2300 hrs; that would keep more planes out of the sky; and the locals in flight would get a better nights sleep. Why should farmers look up and see jet trails of tax free planes and be paying CARBON TAX ON THE GROUND FOR THIER TRACTORS.

[redacted] Co. Meath.

I have completed the online survey.

Solutions exist to a significant degree is potential land use policy with proven sequestration of trees. This needs to be balanced with industry supply needs and with best environmental practice in protection / enhancement of biodiversity.

Science and best management practices can deliver better efficiencies and reduce emissions; trees are a proven source of sequestration and the focus needs to be on encouraging and incentivising greater development of on farm woodlands as well as ensuring that suitable land which is uneconomic in conventional farming can be converted while enabling and protecting farmers, rural jobs and communities through just transition during the essential economic conversion to sustainable production with climate change mitigation as a primary goal for a clean economy and a clean, indeed enhanced, physical environment.

Regards

Hello,

There are, in effect, only two measures that will be effective:

1. Reduce total herd numbers;
2. Incentivise HNV farming and rewilding through subsidies.

Regards

[redacted]

Re the document Ag-Climatise' A Draft National Climate &
Air Roadmap for the Agriculture Sector to 2030 and Beyond

Page 25 Question 5 – What else could be done.

As may topics are covered I suggest one more – encourage farmers to use circular fields!
Most field in Ireland are in a general rectangular shape. Continuous machinery use
would be best served by circular fields. Starting in the center – tillage, silage cutting etc could
take a continuous route (rather than having to cope with corners) and be more efficient
with fuel usage, time etc.
The rectangular corners outside the circles could be planted with trees.
This simple change would help to increase national tree cover and biodiversity and so compensate the "loss" of land in
the corners of fields.
The downside of more difficult fencing patterns could be overcome by adapting different "straining post" etc technologies.
This small change would, on a national scale improve carbon sequestration and make machinery (and fuel) use on
farms more efficient.
I believe that this small simple step should be worth adding to those mentioned.

[redacted]

Dear Sir,

I think there is an urgent need for an overhaul of schemes governing Agirculture ,Food and Forestry to recognise the actual contribution,positive or negative that each farm makes to the carbon cycle.There should be a renewed investigation of Agroforestry on less intensive livestock farms,with both enterprises fully integrated ,keeping farm families on the land rather than pushing them off the land with large scale commercial forestry.Each farm should have its non food contribution to the environment recognised,with forestry,hedgerows,specimen trees etc all given a value and some financial reward for the public good it does.

Going forward there must be a difference in direct payments to farms with a high carbon sink value, wildlife rich, biologically diverse enterprise and those whose only shelter is a single strand electric fence .

[redacted] Co Tipperary. [redacted]

‘Ag – Climatise’ A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond

Macra na Feirme
10/01/2020

AGRICULTURE, FOOD AND THE MARINE

Macra na Feirme

Q1: 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?

While Actions 3 has many welcome measures the failure to highlight the potential role of sexed semen in rapidly improving the genetic merit of both the national dairy herd along with reducing the number of low genetic merit and feed conversion bulls produced by the dairy herd is a significant oversight in Macra's view

The investment in a sexing facility in Ireland which can address the issue of transport related declines in conception rates, which reduce uptake by farmers. This is a measure the State must address through either direct grant support or through partnership with commercial entities.

Macra would also suggest that aim of 75% for milk recording remains too low when we observe international competitors in the dairy markets with national figures of greater than that.

The weighting of the national beef herd must be facilitated through on farm schemes, however the current resistance to provide weighting facilities in slaughter plants which could provide data on 100% of all beef animals in Ireland is something the State must address. This data has already stated to be hugely valuable by both ICBF and Teagasc along with support from Bord Bia. Current measures of farmers paid for service are not acceptable as they will not provide a complete data set from which to establish growth rates and genetic components of kill out percentage

Q2: Have you any feedback on how uptake of these actions can be encouraged and facilitated?

Macra na Feirme broadly welcomes the actions proposed and encourages additional actions where the evidence base is demonstrated to be both scientifically robust, and compatible to the social and economic elements of sustainable policy.

The key element is that the measures introduced are fair and justified. Placing restrictions on farmers that are cumbersome and directly affect their profitability are completely unjust. At a time when there are dwindling numbers of young people entering the farming sector it is increasingly important that government support farmers and provide them with realistic and workable policies. Obstacles and barrier to entry to schemes and the threat of inspections is to the forefront of the majority of young farmers. Introducing regulations that will directly impact the profitability of a farming enterprise negatively is completely unacceptable. With some sectors in farming already under severe pressure for viability it is imperative that supports are put in place to mitigate against losses in the sector.

Placing restrictions that directly inhibit that farm economic viability is completely unjust and at odds with the State's aims of Just Transition. Targeted and continuous financial support is required for adoption of certain aspects of the proposal. Where there is a financial benefit for the farmer in the long run to adopt these practices supports are required to facilitate the changes required. This is necessary as a due to the low availability of capital to invest in the technology and infrastructure required to adopt many proposed changes.

Capital investment grants must be made available to farmers to achieve the aims of in modifications to slurry storage as these may in some cases require significant investment and modification works

Education is also critical to encouraging buy in from farmers. This in the form of relevant literature to the changes and the benefits of adopting them. Also facilitated discussion on the changes will allow for peer to peer learning amongst farmers. Peer-to-peer learning has been repeatedly shown in literature and practice

to be the most successful way to encourage adoption of new practice and to achieve knowledge transfer. The use of videos should also be considered to convey the messages to farmers which could include live demonstrations. A targeted information dissemination strategy needs to be developed and implemented to inform farmers but also to build trust with farmers in relation to the necessity of the changes. These will be key to achieving aims associated with grassland and genetic improvement

Providing farmers the facility to feedback on how these practices have impacted on their businesses also needs to be implemented. This is essential so that farmers concerns can be addressed directly. There also needs to be a more concerted effort from those negotiating on behalf of Ireland to stand up for Irish farmers on the international and EU stage and inform other countries and representatives of the level of efficiency that Irish farmers are already achieving. If this is already being done it is not be conveyed back to the average Irish farmer.

To achieve the aims around the use of protected urea products, farmers are currently unable to purchase these products when requested due to a lack of buy in from many major players in the industry to supply through their retail outlets

Q3: 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?

The initial question has to be if agriculture makes the necessary changes to land use and management, is the agricultural sector actually going to get the credit for doing such. Historically agriculture and agricultural land has contributed to CO2 mitigation and has not got the credits, they have been attributed other sectors. Under current flexibilities, sequestration would be capped at 2.68 Mt CO2-e per annum, the implication for this capping is that farmers may take actions to mitigate carbon emissions and the resultant reduction is not credited. Currently hedgerows are not included in the sequestration of carbon that Irish farmers maintain despite research by the EPA demonstrating that measurement of carbon storage of hedgerows. These are also included in cross compliance that they must be maintained. It is grossly unfair that there is a penalty for removing/modifying these hedgerows but no credit for maintaining them. It is imperative that State representatives negotiate to remove the legislative barriers to recording the carbon storage compacity of non-forest woodland stores and have these recorded in the National Inventory.

Targets are needed in the opinion of Macra for the uptake of soil practices such as minimum tillage where appropriate as this is demonstrated to reduce soil carbon loss. Targeted supports including continued inclusion in environmental schemes.

More research is also needed in the area of soils ability to sequester carbon. Preliminary research would suggest that a positive correlation between highly productive grassland and soil carbon sequestration. Further research is needed to identify the opportunities that exist in relation to this. Linking sustainable land management to good practices is critical in ensuring farmer buy in.

This would provide an important first step towards reorientation of both schemes and funding from action based measures, which are often reactionary, towards more results based environmental payments for delivery of common goods.

Q4: Have you any feedback on how uptake of these actions can be encouraged and facilitated?

The most important step is identifying the key obstacles in implementation of actions. These will vary from availability of skills, knowledge and capital to invest. Beyond these and common to many of the challenges we face in implementation of actions or schemes is the lack of young farmers in the sector. No sector without young people entering can change as drastically as is needed to meet climate targets. Key to this issue is both availability of credit and land to young farmers. Macra na Feirme has stated numerous times that the actions laid out will fail unless there is strong commitment in both CAP and Irish funded schemes for young farmers

The issue of afforestation of large areas in the west of Ireland and the negative impact it has on the communities in these areas needs to be addressed. Macra Na Feirme's members from these areas have raised concerns or rural depopulation and rural isolation being a major issue in these areas. Close examination of the policy of afforestation needs to include this concern and place a restriction on the area under forestry in a given area.

Classification of land must be more transparent to farmers to avoid issues such as we have seen in restriction of turbary rights such as clarity around the definition of 'peat based agricultural soils'. Depending on the definition this may include farmland that farmers have invested heavily in to make these lands productive and provide the farmer with increased income. It is distinctly anti-competitive and discriminatory to impose sanctions on a farmer after the fact of investment without full compensation. Careful consideration needs to be given to the area that is placed under any restrictions. Any restriction will directly affect the profitability of any enterprise, no farmer is going to welcome changes to farming practices enforced on him/her that reduce that farms ability to survive.

Planting 18.6million trees can be encouraged with initiatives that spread the load of planting trees across a larger proportion of farmers. Trees that add to biodiversity need to be prioritise as these will then add to the ecosystem in an area and in turn will benefit the farm enterprise. These also have the benefit of a far longer carbon storage potential than commercial forestry as these are unlikely to be harvested for products or fuel on farm.

Action 6 including targets of cover crops are welcomed by Macra na Feirme. Limited success has been achieved through supports in environmental schemes for covers crops and these must continue to achieve wider industry acceptance of practice.

To further the benefit of cover crop to farmers State agencies should engage with EU officials on the definition of protein crops for Protein Aid Scheme. By ensuring flexibility which would allow DAFM to include high protein forage crops which can act as break and cover crops such as Red Clover only silage which significant increase the uptake of these crops. This would equally achieve the aim of reducing protein imports from high deforestation sources, a stated objective of EU and Irish policy.

As is the case with question two education and practical examples of how improving soil PH will improve the production capacity of that soil. Research would show that in order to adopt new practices peer to peer learning is key to increasing the uptake of the new practices. Nutrient management plans need to be incorporated into all farmers practices, which are simple and easy to follow. Training and simplification of the IT used is essential to getting farmers to engage and understand these plans. There is an onus on industry to aid this process. In relation to reduced prices for inputs and active engagement with farmers around the best use of fertilisers. We have seen a reluctance of industry to buy into protected nitrogen products in recent years, the reasons for this reluctance seem unclear. These areas where the commitment to the actions must come from industry to facilitate farmers and cannot be left to market measures.

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

An additional action should include the increase of the Feed in Tariff to the grid. Farmers are in a unique position in relation to their potential to produce renewable energy. We have seen that other nations including some in the EU have considerably higher feed in tariffs to the grid, thus creating an income source for the producer of the energy. If renewable technologies are to be taken up at a larger level across farms this tariff needs to be increased to make it sustainable for a farmer to supply the grid. Macra Na Feirme welcomes the collaboration element of the actions proposed. It is very important that the input is included from farmers in order to garner interest in the process. Macra Na Feirme looks forward to being part of this process.

The development of an AD strategy towards the use of biomethane in the gas grid and for use in HGVs is a key element for ensuring the successful role out of AD. There is considerable opportunity for farmers to supply product to these plants. This offers the opportunity for diversification and risk spread amongst farmers. It is critical however that proper consultation with farmers in incorporated at all stages of the AD strategy development. Research into the appropriate product mix that will supply an AD plant with the materials it needs is important so direction can be given to suppliers on the requirements they will need to meet to supply product to an AD.

The commitment is welcomed to continue to support actions to support PV panels and other energy efficiency measures. It is established that the payback for investing in such technologies is varied and further investment is needed in some cases. Stating a defined payback period is challenging as geographical location may have a bearing on such. If the technology does not deliver on what was promised it leads to mistrust amongst farmers. We have seen the introduction of funding from Co-ops for renewable energy equipment and it is welcomed. As young farmers we are very open to the idea of renewable and sustainable energy production. It is essential however that appropriate funding is made available to support such investment. The inclusion of realistic maintenance costs and payback times is also very important. New technologies need also to be included in the funding provided. We have seen in recent years that there are more efficient technologies available to farmers in this area that may not be included under grants/funding.

Q 6: Have you any feedback on how uptake of these actions can be encouraged and facilitated?

It is very important to ensure that there is capacity in providers to meet the uptake of any new technologies, and that the relevant expertise are incorporated into the relevant farm advisory services. Farmers do not expect their farm advisor to have all the answers, but knowledge of the action or knowledge of the relevant body is essential. Lessons can be learned from the farmers who have already invested in renewable technology and their experiences in such. A consultation with a group of these farmers will shed more light on the area and help to prevent reoccurring issues in the future. From Macra Na Feirme's engagement on the issue the following have been identified as concerns:

- Understanding and the perceived ability to adopt the technology
- Additional investment in facilities to support the new technology
- Limited grant subsidy
- Red tape associated with accessing grants/funding
- Long term payback time and the maintenance cost

- Cost of repairs (with the advice steering towards new products instead of fixing the existing ones, which is adding to the cost)
- Training needs to be provided on best use of the technology
- The technology seems to become 'old' very quickly and parts to fix seem to more difficult to obtain
- Proof of value (it can be difficult to attribute savings to the technology directly in some cases)
- Previous bad experiences with new technology

This is not a comprehensive list, but some of the issues identified by our members. Ongoing consultation will be necessary to ensure continued learning both on the farmer side and on the dept side in relation to adoption and problem solving.

Many of these issues can be addressed by establishing the position of Continual Professional Development for farmers as Macra na Feirme has demonstrated through Skillsnet funding.

Given the agricultural sectors low credit availability, measures to support these actions must be prioritised by credit lender, eg through the European Investment Bank credit lines. There is a clear need for the use of financial instruments within the Rural Development Programme to increase uptake of these actions.

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

The expectation at EU level and it appears at government level that farmers will do more under the next CAP with a significantly reduced budget does not balance. The pursuit of a cheap food policy both in this country and across the EU has negatively impacted on the sustainability of farmers. We as young farmers are more than willing to engage with climate friendly measures. However, expecting us to do engage with a reduced overall budget and with no commitment to maintain and increased the proportion of the CAP budget that's set aside for young farmer's is unacceptable. Additional funding must be allocated to protecting the safe food supply chain that exists in the EU. Trade deals which include beef from regions with lower standard to climate shaming of farmers does not facilitate a good relationship and undermine the stated commitment of the Irish State and EU to achieve climate action. So, using the reform of the CAP to help farmers achieve maximum progress is a welcome statement, however feasible action is required by our representatives to bring about actual budget increases for additional measures that will be required of farmers. Of these additional measures ones which achieve greater generational renewal and land mobility should be prioritised as these achieve most multiple outcomes.

We welcome the active engagement with all stakeholders and the acknowledgement that industry has a role to play. The inclusion of the farmer's voice in the climate strategy is important and critical to its adoption. It is noted that a recent peoples forum on climate change only included one farmer. Trust needs to be restored in the bodies that represent farmers on a global scale in marketing Irish produce. A review of the return on investment would establish the importance of these bodies. Having bodies representing Irish produce abroad is essential but farmers need to know that these bodies are returning real results. Given the current low price of Irish beef it is important that farmers have belief in the bodies that are getting access to high end markets for their produce. Following this review consideration may be given to 'set stretch targets' for participants. It is hard to expect farmers to meet additional requirements of a scheme if there is not a real feasibility study carried out on existing requirements. Determining what the consumer wants is essential in this, not the processor or the retailer's but the end consumer. There is also room for improvement for these bodies to further highlight the level of climate efficiency that Irish farmers are already operating at.

Farmers are dependent on industry to process and purchase their raw produce, so it is important that farmers are considered in any requirements placed on industry. Industry can definitely play its part in the circular economy to ensure that there is no waste from the processing of product. Farmers are actively engaging in the idea of a circular economy and industry should also be not exempt from this. Sourcing energy for Industry from renewable is a measure which will have a trimetric benefit, to the environment, industry and also offer farmer's an outlet for energy which they can produce. This can come in the form of AD or feed into the grid directly. In terms of wastewater management, the incorporation of AD will allow the waste from treatment be included in the mix in the plant. The biomass created can then be spread on agriculture land and used as a fertiliser. Collaboration across all levels of the food supply chain is necessary so that the changes are spread evenly across all players in the chain.

Q 8: Are these actions sufficient, or are there others you think that Industry should pursue?

Action 17 is a very welcome commitment to building on what farmers are already doing. The real life practical examples of farmers who are already implementing these practices are important to get more farmers to buy in. As stated above farmer's are reliant on industry to make available the products particularly in relation to fertiliser to allow us to implement the recommendations of the MACC. The on farm sign posting is crucial in getting the message across to farmers. Also embracing digital media outlets to get the information to farmers is important to get more reach.

The role diet and breeding plays in emissions needs to be examined further, including the inclusion of feed additives in feed mixes to reduce enteric emissions. These will likely increasingly become important strategies as these additives leave research and enter the commercial market. State bodies must ensure their licensing for use is rapid and evidence based. This again depends on industry buy in, to invest in such additives and present them to farmers at a competitive price.

In relation to mitigation of hedgerows and woodlands, these first need to be included in our National Inventory. Secondly management of these needs to be considered, some of the best practice guidelines currently available are not compatible with farming practices. As included earlier there also needs to be research conducted in the ability of crops/grassland to sequester carbon into the soil. Tradition action based schemes have not taken account of existing environmental benefits, Macra supports the move toward more result based schemes as means to properly reward farmers ongoing management. There may be more potential for sequestration in soils with improved management that may be conducive to improved production.

Animal health management presents the biggest risk to farmers and also the greatest opportunity. With a reducing number of antibiotics available to farmers it is crucial that policy and funding promote prevention of disease. It is essential that farmers are supported in vaccination programmes and improved herd management. Animal breeding will also play an important role. Research into resistant strains within breed has already provided farmers with information about resistance to certain diseases. Further developing and investment in this area will aid farmers in reducing the reliance on medicines and improve our environmental impact.

Animal breeding for lower emissions through higher feed efficiency along with selection for lower methane output must be supported through funding into research, however uptake by farmers is also key. One area where rapid gains can be made in feed efficiency is through the 56% of Irish beef supplied from dairy herd.

Reducing the number of low feed efficiency dairy bred stock can be reduced and displaced by high feed efficiency dairy beef bred livestock by encouraging uptake of sexing technology.

Balancing food production with climate impact is very important. With expanding world population and then demand for food expected to grow by 70% by 2050 it is crucial that policy support food production in areas of the world where they are most efficient at producing it. This is the responsibility of our representatives to ensure the message is conveyed to both consumers and international policy makers. Alternative land use is an area that needs to have farmer buy in rather than forced change. Tradition plays a significant role amongst farmers and this must be taken into consideration when designing policy. Tourism and energy supply land use is an area of considerable interest among Macra Na Feirme members, this offers sustainable income streams and diversification, but needs to be considered carefully.

Engaging with rural communities is essential in getting an insight into how land use changes that have already happened have impacted communities. Given the land type in some areas, there tends to be a focus on afforestation or agro forestry. However, conifer plantations for miles on end do not make for interactive neighbours. Incorporating a strategy that includes land use changes, geographical location and energy production is essential so that there is a varied spread of land use and activities in communities.

Q 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?

Industry has a role to play in the delivery of fertilisers that are proven to reduce nitrous oxide emissions. There needs to be investment in supplying farmers with these products. There are members in Macra Na Feirme who have experienced resistance in getting such products previously. There is also a role for industry and advisory services to engage with farmers in the role out of nutrient management plans and their application. Engagement with media outlets for sign posting is an important way in disseminating information to farmers.

Industry also have a role to play in animal health and breeding strategies. Macra Na Feirme have already met with the government on the issue of sexed semen facilities in Ireland. This is a huge issue in relation to improving breeding policies. It can lead to reduced age at slaughter, reduced age at first calving amongst others. The issue of transport of semen units to and from the closest facility in the UK has been identified as a key issue in reducing fertility rates of the product therefore reducing use. The State may need to provide funding for the establishment of such a facility through industry support which can then be operated by the technology providers to all AI companies.

There is also a need for industry to work with advisors and farmers in promoting good practice and possible provide incentives for famers to engage in climate friendly measures.

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

Recent times have seen considerable anger and frustration among farmers towards the price they receive for their produce. Irish farmers have engaged positively with market requirements in the past and have been frustrated with the return which they have received. All levels in the food supply chain have substantial profit margins except the primary producer. The lack of transparency in the supply chain is a

huge concern for farmers, there is no oversight. It is crucial now that the DAFM commissioned examination into the beef sector's supply chain and profitability at each stage be carried out with full compliance by industry. This would add clarity for farmers about what the market is returning. Creating 'new' incentives for farmers when existing bonuses and incentives are not returning for farmers would be futile. Clarity needs to be created around existing market supports and incentives to restore farmers confidence. Once this is achieved new market incentives can be introduced to reward the primary producer.

Additional incentives from a new pot of funding will be necessary to encourage a change in practices. Redistributing funds that are already there is not going to be a welcome move and a step in the wrong direction. Additional incentives for farmers who produce goods that meet additional environmental requirements would fast forward uptake. As young farmers we are most likely to adopt these new practices. Therefore, an incentive specifically for young farmers would be hugely beneficial to get practices on the ground and then use these farms as demonstration farms for farmers in general.

Farmers also need our representative bodies who are in negotiations in potential new markets to communicate the message around what we as primary producers are doing. While independent research continues to show the high standard of Irish produce and high compliance with regulation of Irish farmers, we continually see farm gate price below EU averages. It is extremely difficult for farmers to equate top quality produce to receiving a substandard price. There is also an inherent contradiction that Irish farmers together with EU farmers are putting in practices that are environmentally beneficial, while countries we are doing trade deals with increase their rate of deforestation. It is baffling to understand this to Irish farmers. Why are we as young Irish farmers being subjected to such regulations and scrutiny whilst our elective representatives make trade deals with countries where there is little or no quality controls. Should this policy continue there will be no farmer buy in and farmers will refuse to engage with policies.

Q 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?

In terms of agricultural mitigation, land use mitigation and sustainable resources, Macra reemphasises the need for either market return directly or State support for these changes. As highlighted above agriculture remains a low margin sector with little capital or credit available to make substantial investment. Ensuring these obstacles are address must be key to State support of uptake of new measures.

In terms of principle 4, the lack of young people entering the sector remains the greatest obstacle to rapid uptake or change in practices. The voices of young farmers through Macra na Feirme must be a key part of any consultation.

In Principle 5 and 6 the key barrier to both aims remains communication of these measures. Ireland not only must become a world class leader in research but also in Knowledge Transfer and communication to farmers.

There needs to be a significant emphasis included along with the six principals in relation to communicating to the end consumer what it is that we as farmers are doing. Producing top quality produce is no good unless there is a market willing to pay for that produce. Consumers need to know the statistic behind the story of Irish agriculture. There has to be this inclusion. There also needs to be a link directly from the market back to the farmers and a link to policy makers at an EU level. Greater joined up thinking is needed at a global level in relation to emissions and the environment. There is no sense in reducing production in

Ireland where we are low emitters per unit produced and moving this production to a high emitting country.

Technology undoubtedly will play a major role and encouraging adoption must be a focus of the strategy. This equates to both education alongside additional supports for farmers. Research also needs to be focused on areas where we are lacking in knowledge for example carbon sequestration in soils. Preparing for the future must also include the ability to negotiate the removal of the ceiling on mitigation which is currently at 2.68MTCO2 per annum and inclusion of non-forestry woodland into National Inventories. Encouraging engagement from farmers and then not being able to attribute the changes they make to mitigation is a slap in the face for those farmers.

Q12: 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?

As stated above Actions 27 and 28 can only be achieved via rapid product approval for commercialisation by the State where an evidence base is established through appropriate trials and scientific verification. New crop production systems must include the development of new forage varieties for use in meeting market demand and sustainability challenges such as demand for feed protein. The use of forage based feed protein has a specific benefit to Ireland which is not recognised internationally due to our ruminant based agriculture system

Both Action 29 and 30 must not create unfair competition for land with young farmers who already have specific challenges to entering the land market. However, these land use may prove a viable option for progression young farmers to develop new markets and income sources.

Macra supports the widespread use of DNA testing in support of breeding aims including increased feed efficiency and therefore reduced emission intensity. However, these measures cannot place onerous financial obligations and must be supported by industry initiatives and State supports. The continuation of the BDGP is vital to this Action as is similar efforts rewarding those in dairy beef systems

ASA Submission in response to

‘AgClimatise’
A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond

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The Agricultural Science Association (ASA) is the professional body for graduates in agriculture, horticulture, forestry and food science and technology. Our almost 2,000 members are employed across the entire agri-food industry, most notably within government departments, research, advisory, education and training, agri-business, rural organizations and the media. The ASA has considerable interest in and an important part to play in the shape of Ireland’s agri-food industry into the future. ASA members are committed to the development of a profitable, sustainable and competitive Irish agri-food sector that meets current and future needs. To this end ASA appreciates the opportunity to make a submission in response to DAFM’s public consultation on Ireland’s ‘Ag-Climatise’ document: A Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond

Part 1: Implementing Changes Now

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?

In general, the ASA agree with the suggested actions and that they are aligned to the previous national strategies and consultations related to climate change and sustainability, while also ensuring an increased performance and efficiency for the primary producers.
Other suggested actions include the need to ensure the effective and joined up promotion of these practices. Examples including promotion of EBI and genomic testing of dairy replacement heifers. Increase the use of sexed semen to reduce the number of dairy x dairy bull calves born on Irish dairy farms.
The integration of these kinds of action into a dual purpose programme that will improve sustainability as well as primary producer profitability will support credibility in the eyes of the primary producer.

Question 2

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

The ASA fully support the approach of collaboration and partnerships in encouraging and facilitating engagement for these actions. The better the alignment of voices engaging with farmers on best practice, the stronger the impact those voices will have. Mixed messages will decrease buy-in for the primary producer and industry.
To promote uptake of EBI continued messaging around the benefits of higher EBI cattle – the AI companies, Teagasc and ICBF should work together to organise a series of farm events prior to the start of the breeding season to promote this. Joint promotion of practices such as milk recording and AI can amplify the efficiencies on farm and improve sustainability. Linking initiatives to milk price bonus payments as seen already in the industry is another innovative way of progressing the sustainability agenda.
Promotion of genomics through incentives will be required to subsidise the cost of genomic testing of dairy cattle (similar to the scheme in operation in beef herds). The AI companies and DAFM need to evaluate the feasibility of establishing a sexed semen laboratory in Ireland to increase the range of fresh semen bulls available for AI.

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?

The ASA would suggest that their needs to be recognition for the land farmers are using for woodland and habitats in BPS or other schemes. Small biotopes can offer significant benefits in terms of biodiversity while also reducing overall nutrient loading across the total farm area and impacting positively on carbon sequestration, however the current ineligibility of such land for Pillar 1 CAP payments means there is a disincentive for farmers to retain these biotopes.
Delayed indication or leadership in introduction of the new CAP programme are also delaying environmental actions on farms as many primary producers wait to identify what practices are recognised when the new CAP beings instead of taking actions now that may not be acknowledged.
Further research into the opportunities in silvopasture on commercial livestock farms in portions of the farm not always suitable for grazing is required, in line with practices like min till or reduced input farming and what may be possible in the future should regulations change. Collaboration and partnerships with cooperatives in forestry and dairy or utilising existing complimentary knowledge in the forestry sector to help educate around woodland for livestock farms.
Research and support to adoption of good carbon sequestration practices such as cultivation techniques to maximise carbon build-up or reduce loses in the soil is required for improved soil health

and fertility but to contribute to the emissions reduction of farms as a whole. Prioritising funding for measures and proving such practices is required to provide guidance to both policy and markets. Investigate the many roles and advantages of multi-species forage as well as grass varieties less dependent on inputs- if this is the direction future legislation happens to take.

ASA considers that long term support will be essential to encourage the permanent (set as permanent restriction on land use to preserve into future ie SAC or SPA type approach) creation of ponds and wetlands to offset the production of carbon elsewhere in food production.

In arable or tillage farming consider the role and reward for buffer strips to minimise organic matter erosion loss, help retain soil carbon levels and increase biodiversity. The role of cover crops and management of them needs to be promoted throughout the industry.

Question 4

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

The ASA suggest that a scheme to compensate farmers for rewetting peat based agricultural soils and look at how to engage communities in these areas in projects that either measure habitats or biodiversity to provide an alternative role for the landowners in managing these spaces.
Nutrient Management Planning and the grass management software should be linked together to ensure best practice liming and fertiliser spreading decisions occur when in the field and not just use the NMP as a regulation necessity. Consider developing a scheme to subsidise lime application of farms engaging in Nutrient Management Planning schemes.
Financial incentives should be introduced to encourage growing cover crops on tillage farms.

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?

The ASA believe it is most important that the opportunity to generate electricity must not be given to big business over farmers but rather supporting groups of farmers to work together to achieve a goal at an efficient and cost-effective way. This will be important in a scenario where currently non-viable farmers are to be encouraged to diversify into energy production. Incentivising methane capture through anaerobic digesters on larger livestock farms and utilising the energy to do so can become an aspect of a community project or cooperative amongst family farms of different enterprises.

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.

The suggested actions made by the ASA here depend on significant support and motivation from all aspects of the industry, multiple departments and farm organisations.

Fact-based, professional and consistent programmes are needed to raise awareness and understanding of the potential benefit of such actions and the responsibilities carried by those causing carbon release including manufacturing processes as well as farming.

Is there a need for a more sophisticated carbon tax approaches to address the possible distortions in the energy market which do not recognise the environmental damage caused. Oil and coal used for space heating might attract a higher charge for carbon emissions as against renewals. Their use in areas where no practical alternatives are available could attract a lower or zero carbon tax such as heavy transport and agriculture.

Financing of energy projects will be a major barrier to entry for many farmers. The upfront costs of getting planning and a connection to the grid are outside the realms of affordability for many. There is a need to review approaches to feed-in tariffs in order to support the uptake of such technologies. Credit unions or co-operatives for funds less than 50-100,000 that benefit the supply chain carbon footprint /emissions – SII schemes offered through some co-ops are an attractive option but not available to all farmers. Other financing options could be EIB funding for Banks for projects that need security but designate funding targets for specific initiatives that benefit our climate emissions

Education of these actions is critical for future awareness and attractiveness into agriculture an increasingly broadened scope of skills are required. There are currently very few B.Agr.Sc teachers in Ag. Science syllabus for secondary schools which need further support as Ireland and the world require more people to be innovative in this space into eh future. Department of Education and Department of Agriculture, IASTA and ASA should form a forum to progress same with a five year plan

Part 2: Acting in Partnership

Question 7

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

A number of the nine CAP Post-2020 specific objectives are closely related to climate and environment concerns (and therefore carbon management) and progressing them will facilitate a greater role for all players in achieving their aims.

The CAP compliance requirements require applicants to actively farm marginal land where declared for payment. This is in many cases uneconomic production. It can encourage illegal burning in order to be deemed eligible for payment. Considerable carbon is released and biodiversity is impacted. A low rate of CAP Pillar 2 payment to appropriately manage such land might be economically and environmentally justified and could be determined from a form of self-declaration (already there in the land use requirements). Precautions against abuse would be important to ensure that non eligible land is not included.

A more environmentally focused CAP would give direction to farmers in view of the climate implications and with good use of resources help agriculture to mitigate the GHG release and adapt to climate change requirements. Some elements such as the greening and protection of permanent pasture requirements are a current benefit to climate action, but the current direct payment itself, might be considered not sufficiently focused or linked to climate action. It is most important that CAP money is not moved from farmers to industry in delivering such initiatives. Government should fund that separately from CAP.

If society accepts that climate action is important and that agriculture needs to make a further contribution, then the CAP tool may offer an opportunity to give direction and get further returns from CAP funds. Elements of the current CAP Cross Compliance do have some focus on biodiversity, soils and water so the idea of using CAP to this end is not new.

Could carbon payment elements be introduced for:

- Use of appropriate procedures for incorporation farm or other wastes in soil
- Use of digesters on farm to offset other sources of energy
- Hedge and tree planting on arable farms to sequester carbon for tillage GHG loses
- Use of cover crops where appropriate for incorporation
- Use of combinations of min-till, direct drill or strip-tillage etc, as appropriate for the crop, in view of the damage to carbon reserves that are caused by traditional ploughing
- Carbon positive use of fertilisers (Organic and inorganic)
- Use of GHG positive feeding rations
- Use of grassland grazing practices which maximise carbon sequestration.
- Use of carbon positive genetically tested breeding stock
- Use of land to permanently sequester carbon from industry.

Question 8

Are these actions sufficient, or are there others you think that Industry should pursue?

Although there are a number of significant actions mentioned here the ASA would suggest that as many are related to people, behaviour change and collaboration that they require expertise in this field to moderate collaborative groups in order to gain the best possible outcomes. Previous work looking at Johnes disease and grass measurement technologies were investigated through social research that involved farmers, researchers and advisors together to create easy to understand models. Frameworks that are more inclusive of people from different disciplines as well as including more than just a male representative of the farm can carry significant power towards implementing change.

In addition, these are challenges that have many opportunities for new SMEs and entrepreneurs to get involved in. Public-private partnerships would be welcomed and would need to be encouraged by the larger, traditional entities in the industry in order to gain traction. An inclusive policy towards innovating and problem-solving solutions for a more sustainable food system would be strongly welcomed by the ASA.

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?

Given the limited resources available within CAP, the ASA agrees with the principle that industry should incentivise and encourage certain environmental changes. To best progress this ASA believes there is a need for DAFM to facilitate a general discussion involving Dairy Industry Ireland, Meat Industry Ireland, The Irish Grain and Feed Association, the main Farm Organisations, Teagasc, Ornua, NDC, ICOS and Bord Bia and others if appropriate. Industry plans in this regard should be

developed to be coherent with and complement what will be proposed in Ireland's CAP Strategic Plan.

While each independent actor should maintain their own discretion, the ASA believes there is significant merit in seeking to agree a common approach at industry level to address certain challenges and achieve maximum national impact.

Measures appropriate for industry incentivisation will require full industry buy-in. In ASA's opinion they must be verifiable, tangible, and easy to implement by industry as it seeks to reduce its GHG emissions. Appropriate measures may include milk recording, herd health, genetic improvement, lean management principles, soil fertility and nutrient management planning.

Encouraging food processors to engage with and support local community environmental initiatives could also be considered.

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?

In ASA's opinion we are moving to a situation where customers for Irish food and society in general will demand progress on necessary actions as a prerequisite for market entry. This may limit the potential for the market to reward those who are implementing measures; it may more so serve to penalise those that aren't.

If the market is going to reward change the industry must be involved from the outset in scoping out the actions involved and the overall proposed targets. It will then be a case of establishing the current baseline for the selected criteria, encouraging and rewarding change, monitoring progress and communicating achievements through publication of national statistics and specific case study examples. A co-ordinated national approach will be required to leverage maximum impact. This ties into the answer to Question 9 above.

The most immediate reward would need to be the demonstration and recognition of progress or work that is being undertaken to highlight the stories of people or businesses that are making a success of local or regional projects and thus sharing ideas for others to take on. It is important that local communities and the Irish citizen are aware of the action and progress being made as much as the primary producers. Effective communication with the public and customers for Irish food and drink will be critical to develop and maintain the supports Ireland's agri-food sector requires to effect change.

Prioritise state funded projects by the range in collaboration with public/private or private/private partnerships that include diverse skillsets and people to encourage innovative thinking and problem-solving. The main source of reward for the primary producer is the price they receive for their produce. The policy changes need to compliment the market motivations also and communicating the market recognition for the extra actions or investments that take place in relation to sustainability is important for people to recognise why they are doing what they do.

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 principles are comprehensive and set a clear framework for work going forward. However, they need to be communicated effectively and consistently to the industry, customers for Irish food and the wider society.

The 6th principle talks about 'Knowledge Transfer' which in itself is an outdated term that is disempowering to primary producers, who themselves have a lot of knowledge already that is exchanged or shared with one another. To invest effectively in knowledge sharing frameworks, expert sociologists on the topic of adult learning and behaviour change, should be included in the conversations about the most effective investments and models going forward.

Each of the six guiding principles are essential and can contain highly scientific and technical information. Each action within them requires people and collaboration to achieve success. The over-riding theme for each principle should be a focus on effective communication, collaboration and facilitation or exchange of ideas and experiences. To achieve this, there is a need to involve scientists, technical experts and people with softer skills that are capable of bringing people along with them. The ASA believes these softer skills are often undervalued at present in the agri-food industry.

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?

The Irish agri-food industry needs to learn from success stories in similar industries globally, as well as non-agricultural sectors that embrace networking, collaboration and investment. There is a growing recognition that local peer-to-peer learning is one of the most effective ways to encourage change at farm level. With this in mind the emphasis on "sign-post" demonstration farms within the draft "Ag Climatise" is welcome. It is however, essential that these farms demonstrate the opportunities in sustainability are intrinsically linked with profitable commercial farming too and not separate conversations.

Embracing diverse and alternative skillsets into the industry will help us to innovate effectively. This plan does and can align more closely with national strategies on diversity and inclusion which encourage a wider breadth of people having a seat at the decision-making table and hence leading to more innovative problem-solving.

A key issue will also be improving farmer uptake of innovation and research outcomes. The ASA believes agricultural science graduates working at all levels of the industry as well as those within the State and private advisory services have the potential to play a key role in this regard, particularly if further supported and upskilled in effective communication of science and best practice.

Ag Climatise 2020 Submission

10th January 2020

[redacted]

The Ag-Climatise roadmap represents an important and welcome step in outlining the nature and scale of the challenge that we face in addressing climate change in the agricultural sector in Ireland, and in proposing some strategies to address these challenges. We are grateful for the opportunity to comment on the roadmap and we hope that our feedback will be viewed in the same constructive spirit in which it was compiled. We recognise the daunting challenges that lie ahead for all of us and we are willing to support the collective effort to address these challenges in a positive and inclusive way.

Having read through the roadmap we would like to make the following comments:

Nature-based solutions

As an overarching point, we feel that addressing the climate crisis cannot be done in isolation from addressing the deeply interrelated **farmland biodiversity crisis** and we feel that the report needs to place much more emphasis on nature-based solutions to climate change. The **role of healthy, functioning habitats in sequestering Carbon and delivering additional ecosystem services** (including adapting to some of the consequences of climate change such as increased flood and fire risk) can not be taken for granted and needs to be highlighted much more in the roadmap. There are few if any applicable actions in the roadmap relating to extensive agricultural areas - this is a real missed opportunity particularly in the context of need to enhance the development of sustainable land management practices by delivering abatement through LULUCF actions. We believe that by putting in place targeted support structures (financial incentives, technical support and advice – see below) we can greatly improve the functionality of farmland ecosystems, particularly on 'high nature value' (HNV) areas. This will help support climate action and biodiversity and go a long way to addressing the **farm income crisis** in these extensive farmlands while renewing the sense of purpose of farmers in these areas which have so much to offer in delivering essential Ecosystem Services.

Enhanced CO2 removal in the landscape through increasing the carbon sequestration potential of our land and forests is listed as part of the 5 key areas where action is required. However, the role of semi-natural vegetation on farms (extensive pastures, wetlands, woodland and scrub) is undervalued throughout the document. In particular, the role of HNV farmland dominated by semi-natural vegetation is not recognised in the plan apart from reference to it in the appendix. There is a significant opportunity to **protect, maintain and enhance C storage** in these areas across farms. Areas of semi-natural vegetation on farms are continually under threat (land use change, inappropriate management) and undervalued (conversion is rewarded and no value is placed on existing services provided by this land) in the current agricultural policy context. There must be a specific action to address this situation in the drafting of our **CAP strategic plan** post 2020. Within the Strategic plan there is also an urgent need to review Pillar I eligibility issues as these are contributing significantly to habitat loss and reduced Carbon sequestration on Irish farms. Specific areas of action include revision of land eligibility rules, enhancement of baseline conditionality, targeted incentives to reward retention and good management through eco-schemes and agri-environment-climate (AEC)measures.

Soils on HNV farmland across EU have significant higher carbon content than conventionally managed farmland areas and research has shown that the higher carbon content on HNV grasslands compared to conventional grasslands is particularly evident in Ireland and the UK context. **It is essential that existing C stores are protected. Less intensively managed systems increase the potential for soils C accumulation** (Gardi et al 2016). The role of healthy soils – and the potentially negative impact of slurries, fertilisers and heavy machinery – in sequestering carbon, absorbing excess water and producing more nutritious food must be emphasised in the roadmap and measures put in place to improve their condition. We also need to quantify existing soil C stores and potential sequestration from extensive agricultural areas of the country.

One important habitat that is mentioned in the roadmap are **hedgerows,** rightly so due to their high cultural, biodiversity and carbon sequestration value. These values are, however, largely dependent on the condition of the hedges which is often sub-optimal. Measures need to be put in place to encourage wider, taller, fuller hedgerows which are trimmed only every few years. The (ongoing) removal of hedgerows should no longer be tolerated.

In terms of improving ecosystem service delivery on Irish farmland (including climate change mitigation and adaptation services) in Ireland we are fortunate to have tried and tested solutions. These include **results-based payment agri-environment payments (RBAPS)** for environmental services, proven to deliver in different areas and for different objectives, such as in the Burren Programme, the Hen Harrier and Freshwater Pearl Mussel projects among others. Here, the use of result-based payments (often in conjunction with targeted actions) to deliver defined environmental outcomes has proven merit in delivering these outcomes in a very cost-efficient way and with far better levels of farmer engagement. These programmes have developed simple scoring systems which are the basis for payment to farmers based on the conditions of ecosystems.

These RBAPS programmes are designed so that improved condition = higher biodiversity, improved water quality and improved carbon storage. There needs to be targets and actions in this plan to scale up these initiatives. We have an estimated area of 1.5 million ha of potential High Nature Value farmland (Matin et al 2020) in Ireland that could be targeted with these measures post 2020. Improving the ecological condition of such a large proportion of the country through results-based payments would be a game changer in terms of the interrelated climate, biodiversity and income crises. EIP operational groups are also piloting very significant climate-smart farming solutions across the country: such pilots need to continue into the next CAP and successful EIPs from the current CAP must also be supported to continue. Some of these EIPs look at **multifunctional land uses** such as silvopastoralism, low-till and no-till farming systems, all of which offer huge potential, as do other EIP innovations such as biochar and biogas production.

A more integrated and sustainable approach

As pointed out in recent Irish Times article we are facing three interrelated crises of climate change, biodiversity loss and income (https://www.irishtimes.com/news/science/to-tackle-the-biodiversity-climate-and-farm-income-crises-we-need-to-farm-with-nature-1.4068352). The solution to these interrelated crises is a more **integrated land use strategy** across the forestry and agriculture sectors but also to land management in general. Having such a strategy would help integrate what are a complex suite of ecosystem services that we need our farmers to manage on their land. Burrascano al 2016 pointed out that current EU policies are unlikely to jointly foster carbon sequestration and protect biodiversity. The authors made a few key recommendations for EU policy that are equally applicable to this plan which appears to be following the same trajectory. These include the need for better harmonisation of policies targeting forest and grassland/pasture ecosystems promoting alignment of decision across different policy sectors; focus on a range of ecosystem services and biodiversity issues not carbon management only; and valuing systems managed at low-intensity for their multi-functionality (Burrascano et al. 2016). Well planned integrated approaches can tackle air (Ammonia), water, climate and biodiversity challenges. In the roadmap, synergies with other environmental priorities need to be incorporated into main text and not just dealt with as an appendix.

The roadmap rightly points out that agriculture is expected to deliver food security, support rural economies and private income for farmers, but it needs to stress that all of these are at risk from climate change. Inaction and maintenance of the status quo is not an option. Predictions for increased extreme weather events (drought and flooding) will make it difficult for farmers at or exceeding the current capacity of the land to maintain production without depending on high levels of external inputs, particularly in years when these extreme events occur. More resilience needs to be built into the system. **This will necessitate reducing the intensity of production in areas where farmers are operating at or beyond the limits of the carrying capacity of the farm**.

Most of the actions concentrate on enhanced efficiency to reduce GHG emissions but these are ineffective alone. There needs to be a greater focus on actions to **stabilise livestock numbers**, **reduce**

total volume of slurry to be spread on land and **reduce total synthetic fertiliser use**. In terms of **reducing our overall emissions** it is clear from the scenarios presented in figure 3 that there is no scope for increase in numbers and that reducing our emissions even with the concentration on emission efficiency in the roadmap requires stabilising livestock numbers and reducing synthetic fertiliser use. The obvious actions that are missing here is a cap on livestock numbers and a reduction in the maximum level of synthetic fertiliser permitted on farms. Current intensification of agriculture particularly in last 3-4 years is unsustainable by any metric (total GHG emissions rising, water and air quality deteriorating, biodiversity loss continuing, farm income crises year on year).
Some of the **proposed actions in the roadmap could potentially have the opposite effect** (i.e. increasing overall emissions from agriculture) when applied to some farm settings. Some of the points under "1. Reduce agriculture emissions" could paradoxically lead to an overall increase in emission. For example promoting the use of the Grass 10 as a model for extensive beef and sheep farms could lead to an increase in intensification and net emissions. Very few sheep and beef farms have the capacity to produce 10t/ha of utilisable grass even with significant increases in synthetic fertiliser, increased land drainage and reclamation. All of which would lead to an overall increase in emissions, loss of biodiversity and exacerbate flooding resulting from predicted more frequent extreme weather events. Use of the Grass 10 model on existing extensive beef and sheep farms could actually lower the potential of soils on these farms to accumulate carbon. This model is only applicable on the areas of the country with fertile agricultural soils where this level of intensification can be supported by the capacity of the land. At most, this is applicable to one third of the agricultural area of the country.

Working together

In addition to delivering on our obligations to reduce emissions we must provide for an effective defence against the most serious negative impacts of climate change. Extreme weather events are likely to be more frequent as climate change progresses, the risks from floods, droughts and wildfires will increase as a consequence of this. The policy drivers that influence land management decisions made by individual farmers and foresters have the potential to exacerbate or mitigate the impacts of these events. As a society our ability to manage the negative effects on our economy, on agriculture and on the delivery of ecosystem services is dependent on co-ordinated and pre-emptive action guided by appropriate policy instruments. In this regard our decisions on land use policy will be decisive, the negative impacts of floods and wildfires will extend far beyond the boundaries of individual farms or forests. Programmes that operate only at the level of the individual holding will not be adequate to meet the scale of the challenges ahead. We have an urgent need to build structures capable of addressing issues at a landscape or catchment level.

The solutions to many of these will require co-ordinated action by multiple actors operating at the catchment or landscape level. The cooperation of farmers, foresters, local authorities, Fire and Rescue Services and State Agencies such as the National Parks and Wildlife Service and the Dept. of Agriculture, Food and the Marine and others to address specific local or regional challenges is essential. Specialist technical support for such co-ordinated local responses will be necessary and should be provided for in the roadmap. The importance of a **well-trained farm advisory service** in advising farmers on the optimal use of their land for ecosystem services should receive greater emphasis, as should innovations such as farmer discussion groups around the theme of climate.

Economic sustainability

In terms of the income crises, the incentives to farmers through the EU CAP post 2020 (€10 billion over the programming period 2020-2027) must create a landscape where the pathway out of the red is green. We need to support extensive farming systems to enhance the C storage, improve biodiversity, water quality and air quality while maintaining the green landscape infrastructure that is the foundation of our tourism in many parts of the country e.g. Wild Atlantic Way. Greater emphasis should also be placed in the roadmap on the potential for Irish farms to generate renewable energy – including solar, wind and biogas – with the proper supports. As well as

'restrictions', we need to recognise and promote the fact that there will also be potential opportunities for farmers in this crisis.
The roadmap highlights the speed at which many of our competitors are responding to the challenge. The scale of ambition in this document is lacking if we want to maintain **our sustainability credentials on world markets**. The document points out that customers associate sustainability with "protecting the planet" and "protecting the environment". We are at risk of fatally undermining our quality assurance programmes linked to Origin Green if there is continued deterioration in environmental quality including increased GHG emissions. There is currently no financial reward for improving environmental quality on the farm. We risk losing market credibility particularly as we see competitors such as France with ambition to transition their agriculture systems to agro-ecological and nature based approaches (https://agriculture.gouv.fr/agriculture-et-foret/projet-agro-ecologique).

Influencing farmer behaviour

Behavioural barriers to farmers adopting climate-smart farming activities are mentioned in the roadmap and are hugely significant. If we fail to engage farmers in addressing Climate Change then the roadmap will really struggle to realize its objectives. A major investment is needed in education and training to engage farmers as leaders in climate action and away from the prevailing 'siege mentality'. Given the challenges that we face, we need to **recognise, support and reward farmers as 'first responders' to these crises**. Great examples of how to achieve this are available from the Burren (Burren Programme, Burrenbeo Trust), AranLIFE, Hen Harrier and Freshwater Pearl Mussel projects, to name but a few. The pioneering work of the Farming for Nature (www.farmingfornature.ie) project also offers great potential in this regard and also in engaging the broader public in supporting farmers in addressing environmental challenges.

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Contact Details and Main Activities of Signatories to Submission

[redacted]

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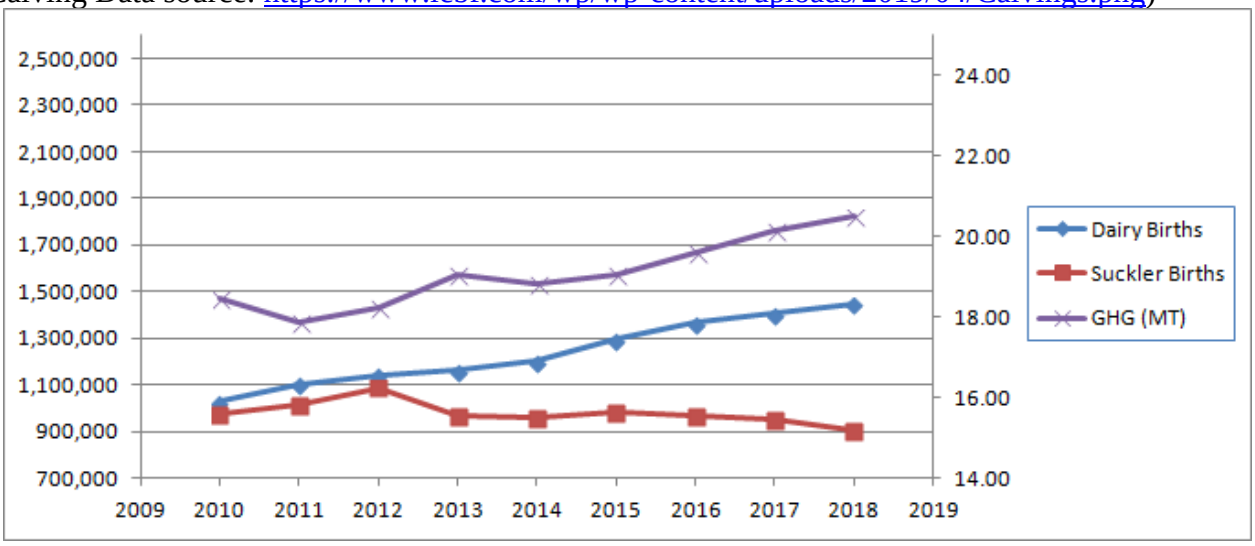
Irish Agricultural Emissions

Irelands GHG[4] emissions target for 2030 (17.5 to 19 MT) was easily achieved as recently as 2011, when our when agriculture generated 17.8 MT of CO2 equivalent. In that year there was over 1 million calves born from the suckler herd. Every year from 2004 to 2012 (excluding 2010) there were over 1 million suckler births and in that time our GHG emissions from agriculture dropped by 2 Mt CO2 equivalent (10% reduction). It was in 2011 that the Joint Research Centre (JRC) of the EU commissions identified that Irish milk had the lowest Carbon footprint in the EU.

By 2018 there had been a 31.1% increase in dairy births and a reduction of 10.8% in births from the suckler herd. This equated to a net increase of 11% in total births, but significantly a 14.7% increase in GHG emissions to 20.5 MT.

Year	Dairy	Beef	Total	GHG (MT)
2010	1,029,600	977,532	2,007,132	18.48
2011	1,103,019	1,012,986	2,116,005	17.88
2012	1,144,666	1,087,911	2,232,577	18.25
2013	1,163,672	969,350	2,133,022	19.07
2014	1,201,665	960,260	2,161,925	18.84
2015	1,296,056	984,847	2,280,903	19.08
2016	1,365,571	966,402	2,331,973	19.60
2017	1,405,904	948,723	2,354,627	20.15
2018	1,446,590	903,175	2,349,765	20.51

(Calving Data source: https://www.icbf.com/wp/wp-content/uploads/2019/04/Calvings.png)



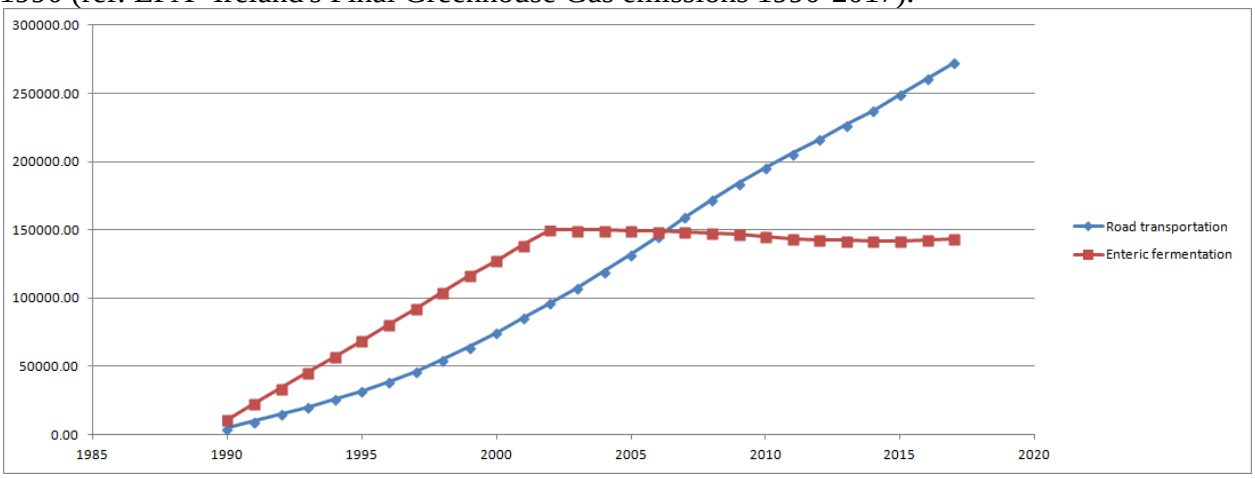
Blaming suckler farming for our increased emission is dishonest and will be counterproductive for our environmental goals. Since 2011 all the increase in our agricultural emissions have been caused by the dairy sector and because the suckler herd are generating less emissions per head, a greater number of suckler cows would have to be removed to achieve a reduction.

Why are we blaming cows for climate change?

In the past year a huge focus has been put on the proportion of Ireland's emissions coming from agriculture especially the methane (CH4) produced by cattle. The reality is that in 2017 the total GHG effect from ruminants was less than what was produced by our road transport. A more important point that needs to be made is that the lifespan of methane in the atmosphere is estimated to be less than 12 years. By comparison the lifespan of CO2 in the atmosphere is hundreds of years.

[4] Green House Gas

This means that all the methane produced by all ruminants on the planet prior to 2008 has now dissipated; yet some of the CO2 from the industrial revolution (over 150 years ago) continues to heat our atmosphere.
People are fixated on what we produce each year when the focus needs to be on the cumulative effect of our emission; it is the build up of GHG in the atmosphere that is causing the warming. The following graph plots the cumulative effect of Co2 from transport and CH4 from agriculture since 1990 (ref: EPA- Ireland's Final Greenhouse Gas emissions 1990-2017).



The graph above is only based on the past 30 year's data; the reality is that if we were to look over 100 years of data the effect of our CO2 would render our CH4 emissions as miniscule.

If we are to survive we have to focus honestly on where our emissions are being generated.

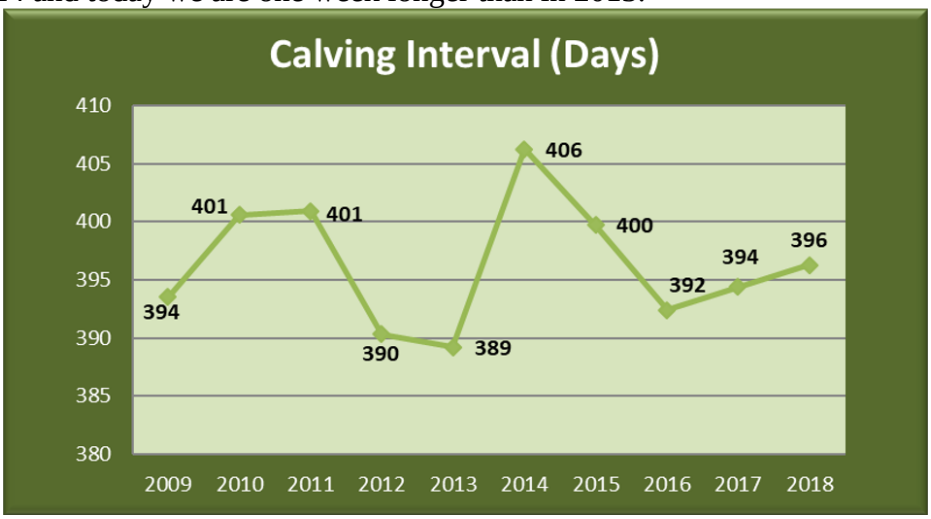
The Emissions of the Dairy Sector

The dairy sector is polluting so heavily that it has already been protected from paying carbon tax in EU. This mechanism "carbon leakage" is there to protect sectors that are so carbon intensive that they would ceases to be profitable if they had to pay tax on the carbon that they produce. Dairy processing has far greater carbon foot print than beef due to the emissions associated with drying milk into powder form for export. Other examples of industries that have this protection are cement production or glass manufacturing. If there fails to be an adequate decline in global warming, these protections will be removed if the future of the planet is at stake.
The rapid expansion of the dairy herd is not sustainable and EBI[5] which drives dairy breeding is environmentally damaging. 70% of calves born in the dairy herd are destined for beef production yet only 8% of the EBI are for carcass traits. This issue cannot be resolved completely by using different sires because there is a 50% correlation between the cows live weight and the carcass weight of her offspring calf. This implies that while the EBI continues to promote smaller cow types, the dairy calves will continue to be carbon intensive to finish. Any analysis of the environmental efficiency of the EBI must consider its knock on effect on the efficiency of dairy beef production.
The Dairy Beef Index which is being promoted as a solution to this challenge will also have a negative effect on the terminal efficiency of calves from the dairy herd. Calving difficulty accounts for more than half of the DBI[6] which causes sires with good terminal qualities to rank lower than lesser sires if they have a higher calving difficulty figures. In total 63% (53% for calving difficulty and 10% for gestation) of the index is irrelevant after the calf is born, which leaves only 37% of the index to improve the terminal qualities of the calf.

The Beef Data and Genomics Program

[5] Economic Breeding Index
[6] Dairy Beef Index

The introduction of the €300M BDGP[7] environmental scheme in 2015 has had a damaging effect on the performance of the beef suckler population. Teagasc have come to the conclusion that the first crosses from the dairy herd are not suitable as a suckler cow due to the high cost associated with finishing their calves. The fact that these cows have a breeding value that is €32 higher than the average beef cows confirms that it is not suitable as a beef improvement scheme.
Allowing the scheme to continue without any independent review of its efficacy has been a major mistake and set the sector back years. ICBF have been using 2014 as the reference year for the BDGP scheme despite knowing that the suckler herd performance was negatively affected by the 2013 fodder crisis. It appears that ICBF have to use the data from that year to hide how poorly the suckler herd is performing if compared with 2012/13. For example the calving interval increased by 17 days in 2014 and today we are one week longer than in 2013.



(Ref: https://www.icbf.com/wp/?p=11810)

The proportion of O and P grade carcasses from the suckler herd has increased by 3.4% between 2015 and 2017. By making a carcass conformation worth only 3% of the Replacement Index they are breeding it out of the national cow population.

[7] Beef Data and Genomics Programme

The Environmental Cost of Weight Limits

The focus must now shift towards the CO2 cost per Kg of beef. This will be achieved by maximizing amount of beef/carcass at the youngest age with the lowest amount of inputs. One of the largest obstacle that is preventing us from achieving our goal is the carcass weight limits that are being applied by the factories.

Kepak recently introduced a limit of 400Kg for young bulls which on 2018 figures means that the vast majority of bulls grading u- or greater will be penalized.

2018	1-	1=	1+	2-	2=	2+	3-	3=	3+	4-	4=	4+	5-	5=	5+
E+	0	515.9	473.1	0	0	545.6	0	0	0	0	0	0	0	0	0
E=	555.2	450.7	449.4	468.9	469.4	478.6	489.9	501.6	492.2	515.2	477.6	0	0	0	0
E-	401.6	413.6	433.5	445.5	450.5	457.3	462.6	467.1	480.7	495.3	470.1	459.2	0	0	0
U+	375.5	400.9	410.3	418.3	424.7	430.5	436.7	444.4	449.6	457	456	459.1	467.9	0	0
U=	367.6	382	391.7	400.9	411.9	417.6	423.4	430.6	434.3	434.9	437	459	452.6	0	0
U-	363.8	345.4	367.6	380.3	389.6	397.9	403.8	409.4	413.4	416.7	423.8	432.2	422.7	350.1	0
R+	322.8	334.7	352.1	363.7	373.9	380.2	385.8	390.1	396.8	402.4	408.6	412.5	444.8	0	0
R=	293.5	313	327	340.8	351.6	358.8	364.8	368.8	380.2	385.7	390.5	400.3	428.7	436.5	0
R-	268.2	287.4	309.1	324.3	329	337.4	346.5	353.6	360.8	371.6	375	386.8	349.3	0	0
O+	269.1	271.4	292.5	304.5	315.7	323.9	331.9	339.2	349.2	354.5	366.2	359.9	335.7	0	0
O=	243.6	273.2	283.6	295	303.9	311.2	317.2	324.2	335.4	340	335	321.1	0	0	0
O-	232.7	258	271.5	284.4	290.8	300	307.5	316.2	326.6	330.9	331.4	368.9	333	0	0
P+	214.8	244.7	261.6	273	283.3	290.8	296.3	302.7	308.7	312.8	341	0	0	0	0
P=	213.4	237.2	254.1	262.4	274.1	282.1	285.4	292.4	311	305.9	343	316.1	0	0	0
P-	198.8	233.3	247	258.1	270.7	292.8	286.1	266.9	259.5	293	0	0	0	0	0

(Above data based Department of Agriculture 2018 report)

The application of weight limits has a huge environmental cost because there is a direct correlation between Feed Efficiency and kill-out percentage to the carcass weight and carcass grade.

The table below is based on the data of the 1537 bulls that were trailed in Tully since 2012.

Grade	No of Samples	slaughter_age	Carcass Weight	Carcass Weight Daily Gain	Average Daily Gain	Feed Efficiency	% Kill Out
O-	2	741	315	0.43	0.78	9.26	51.8
O=	7	732	309	0.43	0.77	9.47	52
O+	11	716	319	0.45	0.8	5.43	52.3
R-	12	596	318	0.56	1	7.93	52.4
R=	30	519	327	0.66	1.11	7.51	54.9
R+	80	476	351	0.75	1.24	7.53	56.2
U-	181	481	375	0.79	1.29	7.24	57.1
U=	307	482	389	0.82	1.32	6.63	58
U+	659	490	410	0.85	1.34	6.71	59.4
E-	166	493	430	0.88	1.35	6.53	61.6
E=	82	498	446	0.9	1.35	6.14	63.1

(Note: The FE[8] figures are based on the trial results and in the case of lower grade carcasses can be misleading. This is due to there being less samples and the fact that those animals are starting the trial at a similar weight to others but a much older age which allows them to have more "compensatory growth" on trial. The Daily Gain figures are based on the animal's full life, not the trial daily gain.)

From the previous table there is a clear correlation between grading and terminal efficiency; the E= bulls are creating double the carcass weight per day when compared to all O grade samples and had a 30% more efficient feed conversion on trial despite being 243 younger at the end of the trial.

The Importance of Age of slaughter.

The age of slaughter has a massive impact on the carbon foot print of beef, due to the fact that all animals consume a quantity of feed each day just to maintain themselves. This figure is reported to be in the order of 2-4% of their body weight and dairy breeds tend to be in at the upper range due to their higher metabolism.

Looking specifically at two batches of bulls that were tested in Tully; Intake 44 was a batch of suckler bulls slaughtered in October 18 and Intake 47 was a batch of Dairy bred bulls slaughtered in March 19.

Intake ID	Type	No of Samples	Age at Start	Weight at Start	Daily Gain Pre-Trial	Age at End	Weight at End	Daily Gain On Trial	Feed Efficiency On Trial	Carcass Weight
44	Suckler Bulls	57	344	396	1.04	434	616	2.2	6.5	351.76
47	Dairy Bulls	30	637	461	0.66	726	629	1.7	8.52	330.32

[8] Feed Efficiency

By applying the FE[9] from the trial to the daily gain before/on the trial and allowing 2.5% of live weight each day as maintenance cost; the suckler bulls had a feed intake of approx 16.6 Kg per Kg of carcass while the Dairy bulls had a feed intake of approx 28.2 Kg per Kg of carcass weight.

[9] Feed Efficiency

The Profitability of Offal.

The profitability of offal is having a major negative impact on the carbon efficiency of beef production. The processors do not pay for the offal and any resulting sales have no raw material cost which makes it very lucrative product. As highlighted above as carbon sufficient high grade animals also have very high kill-out percentages which mean the processors is getting less for free.

Looking at the Bord Bia 2018 annual report it can be argued that the processors are making more from offal exports than from carcass exports.

> Total production of Irish beef is estimated to have risen by approximately 3% in 2018 to 633,000 tonnes. This growth was anticipated early in the year due to growing calf registrations and relatively low calf exports in 2016. 579,000 tonnes (excluding offal) of beef was exported in 2018 with a total value of €2.32bn – an increase of 2% year on year.
>
> The value of offal exports dropped slightly to €230m, under pressure from lower prices, particularly in the Hong Kong market. The total value of beef exports, including offal, was just over €2.5bn, an increase in value of 1% overall on 2017.

Based on the above snippet of the report we can conclude that the average price per Kg of beef exported was €4.01 and the average slaughter price per Kg would need to be less than €3.61 in order to have the same gross margin as the offal exports.

Ireland's Green Image

Ireland must protect our green image; climate action is about saving the planet not protecting the most powerful agriculture industries. Dairy practices such as derogation, zero-grazing coupled with footage seen in Cherbourg earlier this year is not helping our image. We continued to produce unviable jersey calves while, countries like Denmark are making it illegal to not use sexed semen on Jersey cows from 2021 onwards.

On the other hand suckler farms have preserved our rural heritage by not converting traditional field systems into electric fence paddocks. The extensive nature of most of suckler farms has meant that large areas of rural Ireland have not changed in over 50 years. Suckler beef production would be financially sustainable if the dairy sector was forced to be environmentally sustainable; if not the diary sector will actually cost the earth.

Miscellaneous Final Items:

My name and address is to be considered confidential information for the purpose of publication of my submission. Therefore, I would be obliged if you would keep my personal information confidential in line with GDPR and redact all such information from any publication of this submission.

I would also be very much obliged if you would confirm that you are in safe receipt of my submission within 14 days from the date hereof and that you will consider and implement the contents. In the event that you do not consider any part of the submission relevant to the forthcoming legislation to be implemented to transpose the Directive into Irish law, or any other legislation to give proper effect to the protections now required, please report to me why and please confirm when suitable legislation will be enacted.

The practical implications of a failure by the Government of Ireland to take this opportunity to review and implement proper legislation in order to protect farmers like me and my livelihood and the livelihood of my family and the many farm families across Rural Ireland are too great. The current intolerable state that farming is in cannot continue without proper protection. A huge effort and focus is necessary to ensure bargaining power is rebalanced.

I await hearing from you.

Yours Faithfully,

What say the experts?:

Minister,I don't think your experts who came up with the AgClimatise proposals understand modern Arable farming,discing or use of a tine cultivator is more efficient,uses less diesel Andy therefore better for the climate.
Regards sowing the crops a lot of farms are changing to direct drilling or minimum drill methods. Ploughing reduces moisture and worms in the soil,dries it out.Direct drill/min till increases soil nutrition,worm count,more efficient use of fertilisers.
discing or use of a tine cultivator is more efficient,uses less diesel and therefore better for the climate.
Regards sowing the crops a lot of farms are changing to direct drilling or minimum drill methods. Ploughing reduces moisture and worms in the soil,dries it out.Direct drill/min till increases soil nutrition,worm count,more efficient use of fertilisers.
Even all slurry tanks are covered too and trailing shoes/dribble bars,they are common sense.

Do you ever attend the Climate Committee?

Dear Sirs,

please accept this cover email and the linked documents for consideration for the above consultation.

Proposal one: Transition a Vegan Agricultural system:

This will benefit

- Environment: free up 75% of land, reduce Water use by 50% and reduce waste water by 80%, reduce antibiotic contamination of water by 90%, would stop biodiversity loss, reduce pesticide use and contamination by 90%
- The farmer would earn 50% more / hectare
- The economy: exports would
- The health of the nation (see below)
-

James O'Donovan, the present chair of the Cork Environmental forum has produced a document which summarizes the benefits of a transition to a vegan agricultural system: please read his full report here: http://naturerising.ie/transition-to-an-irish-vegan-agriculture-system/ (please insure this report is fully considered as all the necessary facts are within!).

From a health perspective ***a change to a vegan food system*** would improve our nation's health by:

- Achieving a normal body weight
- 30% reduction in heart attacks and other cardiovascular mortality!
- 18% reduction in cancer incidence
- 60% reduction in diabetes
- Improved well being due to healthy gut-microbiome and effect on mental health through serotonin and gut-brain-axis
- Higher fitness levels and quicker disease and injury recovery

Full summary here : https://plantbasedhealthprofessionals.com/wp-content/uploads/2019/07/plant-based-diet-benefits.pdf

Proposal two: Hemp.

There was already a well-received conference of the use of hemp in Ireland https://www.teagasc.ie/news--events/news/2019/premier-irish-industrial-.php

Land freed up by moving to a vegan agriculture could be either re-wilded or used for hemp which would be used for :

- Fabrics: https://hempfabriclab.com/blogs/news/hemp-sustainable-industrialisation
- Batteries: https://www.bbc.com/news/science-environment-28770876
- Concrete: https://www.sciencedirect.com/science/article/pii/S0959652619327222
- Many items presently manufacture from environmentally toxic plastics can be replaced by hemp products: https://hashmuseum.com/en/the-plant/industrial-hemp/hemp-based-plastic
-

Thus planting hemp could help the Irish people and nation to improve their environmental impact and health.

Best regards

[redacted]

Consultant Obstetrician & Gynaecologist

Methane - How Potent a Greenhouse Gas?

1. Introduction

As a major food exporting country with relatively little heavy industry, Ireland has methane emissions that are large compared with its carbon dioxide emissions on an EU scale. In greenhouse gas (GHG) accounting, a country's methane emissions in a given year are multiplied by a weighting factor to obtain the carbon dioxide equivalent emissions in terms of climate impact. Using the EU-prescribed value of 25 for the weighting factor, or potency, of methane relative to carbon dioxide on a tonne per tonne basis, Ireland's methane emissions are currently assessed as being equivalent to about 34% of its carbon dioxide emissions.

Clearly, the value assigned to the potency of methane has very important policy implications for this country, both domestically and internationally. In this note, some aspects of the current GHG accounting method used in Ireland are first described. Other possible accounting methods, drawn from the IPCC (2013) report and from the more recent scientific literature, are then examined. It is pointed out that the question of how to assign the most appropriate value for the potency of methane is one of great uncertainty and one on which the science is still evolving.

2) The current GHG accounting method used in Ireland

Annual Irish emissions of the various greenhouse gases (GHGs) are calculated by the Central Statistics Office (CSO) as a carbon dioxide equivalent (CO_2eq) total using the formula

$$E_{eq} = \sum_i E_i P_i \qquad (1)$$

where

E_i = emissions of GHG_i in megatonnes (Mt) in the year in question,
P_i = potency of GHG_i relative to CO_2 on a mass basis (Mt per Mt).

In this note, attention is confined to carbon dioxide and methane (CH_4), the latter being the main Irish agricultural GHG.

The CSO gives the following Irish emission figures for 2016:

E_{CO_2} = 39.928 Mt/yr

E_{CH_4} = 0.5482 Mt/yr.

https://www.cso.ie/en/releasesandpublications/er/eaae/environmentalaccountsairemissions2016/

Thus, in terms of mass the emissions of methane are a small fraction of the emissions of CO_2:

$$E_{CH_4} / E_{CO_2} = 1.4 \times 10^{-2} = 1.4\% \qquad (2)$$

However, when the potency factor, P_{CH_4}, is introduced, the influence of methane on climate appears as a much larger fraction. The CSO currently uses the EU-prescribed potency

$$P_{CH_4} = 25 \qquad (3)$$

This figure is close to the Global Warming Potential of methane relative to carbon dioxide with a time horizon of 100 years (GWP_{100}) as given in IPCC (2013) [see Section 3(i) below].

Thus, for carbon dioxide and methane alone, Ireland's CO_2eq emissions for 2016 are calculated as

$$E_{eq} = 39.928 \times 1 + 0.5482 \times 25 = 39.928 + 13.705 = 53.63 \text{ Mt/yr} \qquad (4)$$

In this accounting system, it is seen that the CH_4 contribution to E_{eq} amounts to 34% of the CO_2 contribution. This large CO_2eq contribution of methane is the main reason why Ireland appears as being the EU's third worst GHG emitter per capita. It also makes achievement of Ireland's climate action commitments disproportionately difficult.

3) Other GHG accounting systems

(i) Global Warming Potential as presented in IPCC (2013)

The IPCC's Fifth Assessment Report [IPCC (2013), Section 8.7] follows previous IPCC reports in presenting values for the Global Warming Potential (GWP) of various GHGs in relation to CO_2 for various time horizons[1]. As with the quantity P_{CH_4} used in Section 2 above, GWP is a potency metric in the mass based (e.g., Mt per Mt) system. Here, attention is confined to CH_4 in relation to CO_2 and to two time horizons, 20 years and 100 years. Applied to CH_4, the GWP is defined as the integral over the chosen time horizon of the radiative forcing (RF) due to a pulse emission of CH_4, relative to a pulse emission of an equal mass of CO_2. The symbols GWP_{20} and GWP_{100} denote the GWP for the two selected time horizons.

The GWP can be expressed as the product of an RF ratio in the mass based system, $R_{mass} = RF(CH_4)/RF(CO_2)$, and a duration ratio, $\mathcal{D} = D(CH_4)/D(CO_2)$, where the duration factors D involve the time horizon and, in the case of methane, allow for some indirect effects associated with its chemical breakdown; thus,

$$GWP = R_{mass}\, \mathcal{D} \qquad (5)$$

In IPCC (2013), the radiative forcing of CH_4 relative to that of CO_2 on a molecule per molecule basis can be seen from Table 8.A.1, column 4, (p. 731)[2], to be

$$R_{mol} = 26.5 \qquad (6)$$

To obtain Rmass, R_{mol} must be multiplied by the ratio of the molecular weights, to take account of the fact that a given mass of CH_4 contains 44/16 times as many molecules as the same mass of CO_2. Thus,

$$R_{mass} = (44/16)R_{mol} \qquad (7)$$

Using (6), this gives the following value of the IPCC (2013) mass based RF ratio:

$$R_{mass} = 73 \qquad (8)$$

Since CH_4 decays by chemical reactions in the atmosphere much faster than CO_2 (its characteristic decay time [e-fold time] is about 12 years, whereas CO_2 persists for hundreds of years), a pulse of methane emitted at t=0 exerts a much greater influence in relation to CO_2 on a 20-year time horizon than on a 100-year time horizon. This is reflected in the relevant values of the ratio $\mathcal{D}$ in IPCC (2013)[3]. Table 8.A.1 of IPCC (2013) gives the following derived values of GWP_{20} and GWP_{100}:

$$GWP_{20} = 84 \qquad (9)$$

$$GWP_{100} = 28 \qquad (10)$$

The EU value of P_{CH_4} given by (3) is seen to be approximately equal to the IPCC's GWP_{100}, while being much smaller than GWP_{20}.

IPCC (2013, p. 710-711) stresses that there is no universally accepted methodology for combining all the relevant factors into a single global warming potential for GHG emissions. In particular, the choice of time horizon is a value judgement because it depends on the relative weight assigned to effects at different times. Note that in the GWP method, any amount of methane emitted in a given year adds to the cumulative CO_2eq emissions for that and subsequent years, regardless of the trend in methane emissions. This is no longer the case in the Oxford accounting system – see below.

Statements have recently been made on the Irish media that, on a molecule per molecule basis, methane is 80 times more powerful than carbon dioxide as a GHG. It can be seen from the analysis above that any such statement is misleading; not only is a figure of 80 large by comparison with the IPCC value of R_{mol} given by (6), but such a statement mistakenly suggests that, on a Mt per Mt basis, methane is 80(44/16) (i.e., 220) times more powerful than carbon dioxide.

(ii) The Oxford Accounting System

Recent research by an Oxford-based group (Allen et al., 2018a, b) shows that, because of the short atmospheric lifetime of methane compared with that of carbon dioxide, the use of the conventional GWP for weighting methane emissions in relation to carbon dioxide emissions has strong limitations. This is especially the case if the emissions of methane are falling. The group introduces a new system to estimate more accurately what they see as the actual effects of methane.

Their results indicate that methane emissions declining at a small rate of 0.3% each year make no contribution to warming and can be equated to a CO_2eq emission of zero. Methane emission rates declining at a rate faster than this actually cause cooling and can be equated to a removal of carbon dioxide from the atmosphere. An upward trend in methane emissions causes warming and can be equated to an annual addition of CO_2, but by an amount that differs from the CO_2eq amount calculated in the GWP accounting system.

The results show that it is possible to keep on emitting methane in such a way as to balance the sources (from ruminant livestock) with the sinks (from oxidation in the atmosphere). In such circumstances, no additional global warming due to the emitted methane would occur.

4) Conclusions

The unsettled nature of the science on which current values of the potency of methane relative to carbon dioxide are based is a fact acknowledged in Chapter 8 of IPCC (2013) and borne out by subsequent published scientific studies referred to in this note. This is being further extended by as-yet unpublished work known to be underway in the US and Canada. Therefore it would be unwise to make any far-reaching political decisions affecting the future of Irish agriculture based on the currently-assigned value of the potency of methane. There are strong reasons for deferring any such decisions until the science reaches a more settled state.

Symbols and Abbreviations

CO_2 = carbon dioxide
CH_4 = methane
CO_2eq = carbon dioxide equivalent (emission)
CSO = Central Statistics Office (Ireland)
D = duration factor for an emitted pulse of a specified GHG [used in defining GWP; see IPCC (2013), Supplementary Material, Section 8.SM.11].
$\mathfrak{D}$ = $D(CH_4)/D(CO_2)$, ratio of duration factors for methane and carbon dioxide.
$\mathfrak{D}_{20}$ = $\mathfrak{D}$ for a 20-year time horizon
$\mathfrak{D}_{100}$ = $\mathfrak{D}$ for a 100-year time horizon
E_{eq} = annual Irish CO_2eq emissions in Mt

E_i = annual Irish emissions of GHG_i in Mt

E_{CH_4} = annual Irish emissions of CH_4 in Mt

E_{CO_2} = annual Irish emissions of CO_2 in Mt

GHG = greenhouse gas

GWP = Global Warming Potential [following the definition of IPCC (2013), Section 8.7]

GWP_{20} = GWP for a 20-year time horizon

GW_{100} = GWP for a 100-year time horizon

IPCC = Intergovernmental Panel on Climate Change

Mt = megatonne

P_i = potency of GHG_i relative to CO_2 in the mass based system of measurement (Mt per Mt)

P_{CH_4} = potency of CH_4 relative to CO_2 in the mass based system of measurement (Mt per Mt)

RF = radiative forcing per unit mass of a specified GHG [often expressed in $W/(m^2kg)$]

R_{mol} = radiative forcing of CH_4 relative to CO_2 on a molecule per molecule basis

$R_{mass} = RF(CH_4)/RF(CO_2)$ = radiative forcing of CH_4 relative to CO_2 on an equal mass basis.

References

Allen, MR, Shine, KP, Fuglestvedt, JS, Millar, RJ, Cain, M, Frame, DJ, & Macey, AH (2018a): A solution to the misrepresentations of CO_2-equivalent emissions of shortlived climate pollutants under ambitious mitigation. Climate and Atmospheric Science, 1(1), 16. https://doi.org/10.1038/s41612-018-0026-8

Allen,M, Cain, M, Lynch, J, and Frame D (2018b). Climate Metrics for Ruminant Livestock. A Programme Briefing published by the Oxford Martin Programme on Climate Pollutants. https://www.oxfordmartin.ox.ac.uk/downloads/reports/Climate-metrics-for-ruminant-livestock.pdf

IPCC (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

Footnotes

[1] IPCC (2013), Section 8.7, also discusses an alternative potency metric, the Global Temperature change Potential (GTP), whose values for methane are smaller than those of GWP. This metric is not discussed in this note, although it may emerge as being an important matter as the science develops.

[2] The radiative forcings of CO_2 and CH_4 on a molecule per molecule basis are calculated by incrementally increasing the atmospheric concentrations of these gases (e.g., on a parts per billion by volume basis). The corresponding increments in the net downward radiative flux at the tropopause, after allowing the stratospheric temperatures to readjust to radiative equilibrium, are then calculated (in W/m^2) using radiative transfer models. All surface and tropospheric properties are held fixed at their unperturbed values in doing the radiative calculations. The stratospheric readjustment takes place rapidly on a climate timescale. The resulting radiative forcings [e.g., in units of $W/(m^2ppbv)$] can then be regarded as being instantaneous in a climate change context. The ratio of the CH_4 to CO_2 forcings thus calculated give R_{mol}.

[3] Using (5) it is seen that $GWP_{20} = R_{mass} \times \mathcal{D}_{20}$ and $GWP_{100} = R_{mass} \times \mathcal{D}_{100}$. Without going into the details of how the duration ratios $\mathcal{D}$ are calculated [these are given in the Supplementary Material for Chapter 8 in IPCC (2013)], one can determine their values by working backwards from the final results. Thus, using (8), (9) and (10), it can be seen that the IPCC (2013) values of the duration ratios are $\mathcal{D}_{20} = 1.15$ and $\mathcal{D}_{100} = 0.38$.

Consultation input to the Draft National Climate & Air Roadmap for the Agriculture Sector to 2030 and Beyond

by

BHSL

BHSL is an Irish company that has developed innovative technology primarily aimed at food , agri sector and waste sector. Its fluidised bed technology has been successfully deployed in the poultry sector allowing producers use manure generated on their farm as an energy source and in that process generating a nutrient rich ash which is now presented as pathogen free organic fertiliser.
It has generated whole banks of data through its continuous monitoring system out of its base in Kantoher, Limerick that provides comprehensive evidence on the environmental and husbandry benefits on this approach to dealing with emissions from agriculture issues. Ammonia /carbon/fossil fuel reduction and many life cycle analysis have been compiled to show this impact , information it is most willing to share with the key stakeholders setting out to deal with the issues facing the Irish Agri Sector.
It has worked closely with the Department of Agriculture Food and the Marine, (DAFM) and the Environmental Protection Agency,(EPA) , in pursuing new EU regulations to which promote take up of the Best Available Technologies ,(BAT).
Two such major pieces of regulation have successfully come through the EU in the recent years

- *COMMISSION REGULATION (EU) No 592/2014 of 3 July 2014*
- *COMMISSION REGULATION (EU) 2017/1262 of 12 July 2017*

The company continues to work closely with DAFM on further solutions to the many other potential uses from agri residues and is a leader in maximising the many opportunities that are presented when tackling the targets which are now set out by Ireland in its Climate action plan.
As a follow up to this Public consultation it is offering

- Access to the banks of date generated over ten years showing a major reduction in ammonia produced in the poultry sector
- Details on the impact and life cycle analysis on removing the need to land spread manure and instead use it as a local energy source removing the need to import fossil fuels and also allowing the ability to recover the phosphorus a depleting resource in the nutrient rich ash by product .
- Its expertise in helping to bring about 'sensible' legislation that allows such technologies as developed by BHSL to be deployed ensuring there are no adverse effects to humans, animals or the environment and helping Ireland meet the targets it has set.
- Its network in Ireland, Europe and Globally to present new possible solutions and technologies that can help meet the objectives set out in the Climate Action plan.

- Continued collaboration with Universities in Ireland and Europe to examine how we maximise and extract more value in providing solutions to our emissions from agriculture issues.

In question 5 of consultation we are most familiar on how we can contribute to sustainable energy and decarbonisation of energy systems
We would add to the suggestion in Action 7-13 by promoting the link up of the agri sector with the local community in providing locally generated energy. We have plans in Kantoher to provide a mini district heating system using agri residues as the fuel source in small scale FBC to provide heat for local housing , school , community hall and GAA facility , this model is very replicable all over Ireland in vibrant communities that are embracing change and seeking better environmental solutions to local energy.
Question 6
Promoting take up of energy efficiency and renewable technologies

- Reward early adopters (there is no big pot of funds for incentives as in other countries so we have to use our limited finance resources in more prudently) , by rewarding early adopters the many benefits are witnessed encouraging followers to get on board at a less incentivised rate and then, finally , incentives can be removed and pressure brought to bear on the last movers to take up what is by then a very worthy proven energy efficient solution to a problem

Question 7
DAFM have been to the forefront in working with BHSL on researching new technologies .Linking with the universities has allowed Ireland be leader in providing this valuable new information on changes that can benefit the agri sector . We encourage further research allocation with the realisation that industry needs the necessary time and resources to justify getting involved in the first instance – a research project can take up to five years to validate the merits of the technology being tested while the time frame also allows industry set aside the necessary budgets over this period of time
Question 10
Incentivising coop based structures should be a focus on providing solutions .There are many rural co-ops already very organised and structured to take up this proposal
An incentive that rolls on based on high standards achieved in phase one would be recommended