Submission to the Public Consultation on Carbon Budgets

8th February 2022

1. Executive Summary

- Irish agriculture is a world leader in sustainable food production and a highly emissions-efficient food production model. Maintaining a sustainable and competitive agriculture sector, while meeting the carbon reduction targets by 2030 must be priority when setting the carbon budget and emission ceiling for the sector.

- The Climate Action and Low Carbon Development (Amendment) Act 2021 obliges the Minister and Government to ensure that the formation of the carbon budgets do not threaten food production and enable economic development to proceed in a sustainable manner.

- Achieving the proposed carbon reduction targets will be extremely challenging for Agriculture and is more complex than mitigation in other sectors. The sector is less consolidated (approximately 140,000 farm families) and mitigation measures involve the reduction of emissions which are produced naturally as part of biological processes, thereby limiting the emission reduction options.

- The difficulties in accurately measuring and accounting the reduction impact of the proposed measures for Agriculture in the Climate Action Plan 2021, within the EPA emissions inventories is recognised in the Climate Change Advisory Council (CCAC) Carbon Budget Technical report to "represent a very significant challenge".

- The report also acknowledges that the scope to mitigate emissions, particularly of methane emissions, is challenging over the first two carbon budget periods.

- To provide a sufficient timeframe for adoption and in recognition of the economic and social importance of the sector, the lower carbon reduction target of 22% is needed. This would allow the sector to continue to improve efficiencies, adopt new technologies and innovative practices without needing to reduce output to meet climate objectives which could undermine competitiveness.

- A late-action trajectory would provide time for developing technologies and innovations to be adopted, measured and verified to deliver additional migration potential. This would preserve economic productivity while significantly reducing methane emissions beyond 2030.

- IFA welcomes recognition in the report that a requisite element in addressing climate change is to provide appropriate incentives for action. This very much echoes the findings of the Teagasc MACC report which identified incentives and training as key enablers to encourage and support farmers to change practices and uptake mitigation measures.

- Farmers are crucial decision makers in the LULUCF process. Agriculture is unique in its ability to remove carbon from the atmosphere by carbon sequestration through enhancing carbon sinks.

- The scale of the ambition in LULUCF is clearly evident when considering the rate of acceleration required to meet the afforestation targets. In 2021, the afforestation programme was approximately 2,000 hectares of which farmers planted just 380 hectares (19%). A quarter of 8,000 target in Climate Action Plan 2019 and 10% of 20,000-hectare programme referenced in the Carbon Budget Technical report.

- Accelerating the afforestation programme will require the current forest programme and regulatory framework to be reformed. It will also be necessary to consider all suitable land types, including the significant area currently under-utilised (unenclosed land).

- The recently published European Commission report on carbon farming shows that result-based carbon farming can contribute significantly to meeting carbon reduction targets. It has the potential to be win-win situation, increasing carbon sequestration and storage while offering new income opportunities for farmers. The success of a carbon farming scheme in Ireland and the scale of adoption will be dependent on the level of financial incentive introduced.

- A major disadvantage for the sector is that there is no measurement, reporting and verification (MRV) for carbon sequestration in Irish grassland or peat soils. The establishment of National Agricultural Soil Carbon Observatory, which commenced monitoring in 2021 will take a number of years before evidence-based measurement, reporting and verification can be achieved.

- 'Net Net' accounting methodology is currently used in both Ireland and the EU in calculating emissions and removals for the LULUCF sector, this must be maintained in the accounting methodology in the carbon budgets. There is no current EU requirement to change the way that Ireland accounts for emissions and removals under LULUCF.

- The single biggest barrier to meeting the climate action targets is the financial vulnerability of many farms. A recent KPMG report, commissioned by the Irish Farmers Journal, concluded an emission carbon reduction target of 30% would reduce agri-food economic output by €3.8 billion and reduce employment predominantly in rural areas by 56,400 jobs, possibly threatening the long-term competitiveness of the sector.

- New funding mechanisms need to be established to support the additional societal and environmental asks that are being imposed on farmers to meet the carbon reduction targets.

- IFA supports Climate Change Advisory Council (CCAC) position as set out in carbon budget letter to Minister Ryan that provision should be made in the regulations for review and adjustment of carbon budgets and sectoral emissions ceilings if and when EU reporting requirements are revised based on best available science, particularly with regard to the impact of short-lived greenhouse gases such as methane.

- The recent IPCC report acknowledges that new emission metric approaches such as Combined Global Temperature Change Potential (CGTP) and Global Warming Potential* (GWP*) give a better account for the different physical behaviours of short and long-lived gases.

- Irish farmers are fully committed to playing their part in reducing emissions, however the carbon reduction target set for the sector must be achievable without undermining the economic viability of the family farm. With appropriate supports farmers can continue to innovate and adapt in Ireland's transition to a climate neutral economy.

- Agriculture's unique potential to offset emissions and be a major part of the transition to a climate neutral economy through on-farm renewables, carbon farming and forest should be maximised to strengthen the sustainability credentials of Irish food production whilst reducing the impact on climate.

2. Introduction

The Irish Farmers Association is Ireland's largest farming organisation with approximately 71,000 members in 940 branches nationwide. We welcome the opportunity to make a submission to the public consultation on carbon budgets.

In agreeing the carbon budgets it is important to reflect the commitment in the Climate Action and Low Carbon Development (Amendment) Act 2021 that the Minister and the Government shall carry out their respective functions in a manner that is consistent with Article 2 of the United Nations Framework Convention on Climate Change which states that the ultimate objective is the *"....stablisation of GHG concentrations.....should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".*

Irish farming is a world leader in grass-based food production and is a highly emissions-efficient, sustainable food production model[1]. Maintaining a sustainable and competitive agriculture sector, while meeting the carbon reduction targets by 2030 must be priority when setting the carbon budget and emission ceiling for the sector.

3. Farming's Environmental Credentials

Irish farming is a world leader in grass-based food production and is a highly emissions-efficient, sustainable food production model. In dealing with the climate change challenge, it is imperative that Irish farmers' current sustainability credentials are fully acknowledged at the outset. These include the following:

- Irish dairy and beef output is extremely efficient from a carbon footprint perspective. Irish milk has the lowest carbon footprint in the EU while Irish beef has the fifth lowest. Despite what many would lead us to believe, the carbon-efficient expansion of milk production in Ireland has helped displace approx. 4 million tonnes of carbon which would have been emitted had the equivalent dairy product been produced outside of Ireland[2].

- The majority of Irish farms are not intensively stocked, over 60% of Irish livestock farms in Ireland are stocked at less than the equivalent of 0.33 cows per acre[3].

- Ireland's overall livestock numbers have remained relatively static over the last 30 years. Over the 20-year period from 1999-2019 the number of cattle in Ireland remained the same. During the same period, Irish vehicle numbers rose by 75% (CSO) and the number of passengers through Dublin airport increased by 155% (Dublin Airport Authority).

- Irish farming is a predominantly grass-based system. As a result, the use of direct energy (e.g., electricity) on Irish farms, at 56% of EU average, is very low by European and international standards[4].

- Irish farmers have a strong track record in participating in agri-environment schemes. Today, 33% of Ireland's land is farmed under agri-environment measures compared to a 13% average

[1] KPMG (2020). Sustainability 2050 *How to meet our 2050 sustainability targets while feeding 10bn people*. https://assets.kpmg/content/dam/kpmg/ie/pdf/2020/05/ie-agribusiness-report-2020.pdf.
[2] Teagasc (2019) Taking stock of sustainable growth. https://www.teagasc.ie/media/website/publications/2019/Taking-stock-of-sustainable-growth.pdf.
[3] CSO (2018). Farm Structure Survey 2016. https://www.cso.ie/en/releasesandpublications/ep/p-fss/farmstructuresurvey2016/.
[4] Department of Agriculture, Food and the Marine (2021). Draft SWOT Analysis Preparations for Ireland's CAP Strategic Plan 2023-2027.

at EU-27 level. Over 50,000 farmers participated in the Green Low-Carbon Assurance Scheme (GLAS), the most recent agri-environment programme.

- Irish farmers, through the Origin Green programme, were the first internationally to complete annual sustainability audits. To date, over 212,000 carbon audits have been undertaken on Irish dairy and beef farms. These audits show dairy farmers and beef farmers have reduced their carbon footprint per unit of produce by 9% and 5% respectively since 2014[5].

4. Review Agricultural Emissions

In 2020, agricultural emissions accounted for 37% of total Irish GHG emissions. This reflects the relative importance of agriculture to Ireland's economy, and the lack of heavy industry in comparison to other Member States.

Emissions from the sector, as a percentage of total emissions, have remained relatively static since 1990. While in the same period, emissions from for example Transport have more than doubled from 9% to 19%.

Since 1990 Irish farms combined have increased their output by approximately 40%. In spite of the increase in production total agricultural emissions by the sector have remained static with 19.5 million tonnes CO_2e from the sector in 1990 and 21.4 million tonnes CO_2e in 2020[6].

The increased production was achieved by improving efficiency and reducing the emission intensity of Ireland's food production model. The emissions footprint per kg of Irish milk and meat are low by international standards, with one EU study showing Irish milk to have the joint lowest carbon footprint in the EU and the 5th lowest footprint for beef[7].

5. Carbon Leakage

The Climate Action and Low Carbon Development (Amendment) Act 2021 carbon leakage is defined as *'the transfer, due to climate policies, of production to other countries with less restrictive policies with regard to greenhouse gas emissions".*

In light of the increasing demand for food, due to projected population growth, any contraction of food production in Ireland to meet the carbon reduction target may simply displace production elsewhere, potentially to countries with a higher carbon footprint, resulting in higher overall global emissions. An unintended consequence of our climate policy must not result in substantial carbon leakage.

Irish farming is a highly emissions-efficient food production model and a world leader in sustainable food production. In Ireland emissions from beef production vary from 18.9 – 21.1 kg CO2-e kg beef[8] while Brazilian emissions are more than 30 kg CO_2-e kg beef. The potential shift of 50% of current Irish beef exports to production in South America would result in a net increase of global emissions by 3.6 Mt CO_2eq per annum, this is equivalent to 20% of total current Irish agricultural emissions.[9]

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[5] Bord Bia (2020). Origin Green Project Update Report. https://www.origingreen.ie/globalassets/origin-green/og-publications/origin-green-progress-update-report-ir.pdf.

[6] EPA (2021). Ireland's National Inventory Report 2021, Greenhouse Gas Emissions 1990-2019. https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Ireland_NIR-2021_cover.pdf.

[7] Teagasc (2019) Agriculture and climate change. https://www.teagasc.ie/media/website/publications/2019/TResearch_Winter2019_AgriAndClimateChange_Web.pdf.

[8] Teagasc (2011). Irish Agriculture, GHG Emissions and Climate Change: opportunities, obstacles and proposed solutions. Retrieved from: https://www.teagasc.ie/media/website/publications/2011/51_ClimateBillSubmission.pdf.

[9] Sonesson et al. (2009). GHG Emissions in Animal Feed Production. Klimatmärkning för mat, Svenskt Sigill, Stockholm, Sweden. Retrieved from: https://www.klimatmarkningen.se/wp-content/uploads/2009/12/2009-2-feed.pdf.

Temperate grass-based dairy systems such as those we have in Ireland emit less than half the amount of GHG emissions as tropical grassland dairy systems (e.g., Latin America and South-East Asia) or arid grassland dairy systems. The carbon footprint of Irish milk is 74% more carbon efficient than milk produced in India and 42% more carbon efficient than Chinese milk[10]. Leakage of dairy production from Ireland to these regions would increase the emissions associated with the same volume of product.

Since 1990, it is estimated that 420 million hectares of forest has been lost worldwide through deforestation. South America had the second-highest average annual rate of net forest loss with approx. 19 million hectares deforested since 1990[11]. The regional trend mostly reflects changes in Brazil, where cattle ranching is the leading cause of deforestation in the Amazon rainforest accounting for 63% of the deforestation.

The Carbon Budget must recognise the emission efficiency of our beef and dairy systems and set a reduction target that does not result in substantial carbon leakage. A carbon reduction target that can be achieved through improved in resource efficiencies, adoption of new technologies and innovative practices rather that reducing output.

6. Proposed carbon reduction targets for Agriculture

The proposed carbon reduction target for Agriculture is to reduce emissions by between 22% to 30% by 2030 from the 2018 baseline of 23 million tonne of CO_2 (Mt CO_2) to between 16 – 18 Mt CO_2.

Achieving the proposed carbon reduction targets will be extremely challenging target for Agriculture and is more complex than mitigation in other sectors. Agriculture is also less consolidated than other sectors and requires action by approximately 140,000 farm families to meet targets. In addition, agricultural mitigation involves the reduction of emissions which are produced naturally as part of biological processes, thereby limiting the emission reduction options.

The Climate Action Plan 2021 has identified potential measures to deliver emission reductions including actions primarily based on the Teagasc Greenhouse Gas Marginal Abatement Cost Curve (MACC)[12] which are set out in AgClimatise – A Roadmap Towards Climate Neutrality[13]. These have the potential to reduce emissions by approximately 2 MtCO_2.

The proposed measures focus on farmers optimising efficiency using current technologies to improve carbon footprint by changing farming management practices, particularly in relation to pasture nutrient management such as optimising pH, reduced fertiliser use, increased use of protected urea, establishing multi-species swards and increased use of Low Emission Slurry Spreading (LESS).

A key barrier to the uptake of these mitigation measures will be around farmers concerns that changes to farming practices and/or investment in mitigation technologies will negatively impact production and income. With only 34% of farms deemed to be economically viable, many farmers will not be in a position to take the risk of changing management practices.

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[10] Mazzetto et al. (2021). Mapping the carbon footprint of milk for dairy cows. https://www.dairynz.co.nz/media/5794083/mapping-the-carbon-footprint-of-milk-for-dairy-cows-report-updated.pdf.

[11] FAO (2020). Global Forest Resources Assessment 2020. http://www.fao.org/documents/card/en/c/ca9825en.

[12] Teagasc (2018). An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030. https://www.teagasc.ie/media/website/publications/2018/An-Analysis-of-Abatement-Potential-of-Greenhouse-Gas-Emissions-in-Irish-Agriculture-2021-2030.pdf.

[13] Department of Agriculture, Food and Marine (2020). 'Ag Climatise' – National Climate & Air Roadmap for the Agriculture Sector.

IFA welcomes recognition by the Climate Change Advisory Council that a requisite element in addressing climate change is to provide appropriate incentives for action. It will be crucial that farmers are supported to transition towards more sustainable farming practices.

Other potential measures identified focus on improved animal health, reducing crude protein in feedstock utilising newly developed feed additives during housing period, earlier finishing of cattle and increasing organic farming. These have the potential to mitigate emissions by 3 - 3.5 Mt CO_2. However, these proposed measures, particularly around earlier slaughter, are less developed and how they will be implemented at farm level is unclear.

The difficulties in accurately measuring and accounting for the impact of all of these measures within the emissions inventories prepared by the EPA in recognised in the Carbon Budget Technical Report to "represent a very significant challenge". This concern is very much shared by the IFA.

Major scientific research and technological innovation in mitigation is ongoing in Ireland and globally particularly around pasture-based additives and breeding, and is expected to yield positive results in the coming years. It is envisaged that these near-mature low-emission alternatives could potentially deliver reductions of between 1.5 - 3.5 Mt CO_2.

It is evident based on the proposed measures set out in the Climate Action Plan 2021 that the maximum potential emissions reduction, from currently available mitigation measures, is 5.5 Mt CO_2.

To achieve this rate of reduction it would require full adoption of the various measures set out in the Climate Action Plan, which is highly challenging particularly within the timeframe provided. In addition, the ability to accurately measure the emission reduction impact from this new practices and technologies is a leading barrier to achieving the proposed reduction targets.

A late-action trajectory to meet the emission reduction targets is required to provide time for these new practices and technologies to be adopted, measured and verified.

The CCAC Carbon Budget Technical report acknowledges that the scope to mitigate emissions, particularly of methane emissions, is challenging over the first two carbon budget periods. To provide a sufficient timeframe for adoption and in recognition of the economic and social importance of the sector as well as the technical challenges to measure emission reduction the lower reduction target of 22% needs to be attributed to Agriculture.

6.1. Developing technologies to deliver additional mitigation in the future

There are major research programmes ongoing both in Ireland and Internationally with some of the research already demonstrating significant reductions in biogenic methane per animal. For example, there has been success with feed additives such as Bovaer, an organic compound that inhibits cows' methane production. Researchers have found that adding tiny amounts to a cow's daily diet can reduce methane production by between 30% and 90% depending on the feed type.

There are dozens more livestock methane interventions under development, but only a handful – including Bovaer have reached the market to date. Even here, there's still fine-tuning to be done. Other solutions may still be years from commercialisation such as anti-methane vaccines. There is also the challenge of how to scale these up cost-effectively without putting extra pressure on farmers already operating on tight margins.

In Ireland, the Irish Cattle Breeding Federation (ICBF) is working with Teagasc and UCD to identify livestock that are naturally low-methane emitters for future breeding. 'RumenPredict' is the first large-scale measurement of methane emissions in Irish beef cattle. It is also one of the largest conducted worldwide. Animal breeding that exploits natural variation in methane emissions is an additional mitigation solution that is cost-effective, permanent, and cumulative. This research is showing positive results and demonstrates the future potential to breed beef cattle with lower methane emissions.

The opportunities provided by the vast body of research that is underway in Ireland and Internationally, to preserve economic productivity while significantly reducing methane emissions must be provided time to develop to allow agriculture to recognition of its economic and social importance.

6.2. Long-term competitiveness of the sector

According the United Nations the world's population is projected to grow from 7.7 billion in 2017 to 8.5 billion in 2030 (10% increase) to 9.7 billion in 2050 (26% increase)[14]. This growth will drive global food demand, which is expected to increase anywhere between 59% to 98% by 2050[15]. It is projected that 58% more milk and 73% more meat will be required by 2050 compared with 2010 consumption levels[16].

In light of the increasing demand on food due to projected population growth, any contraction of food production in Ireland to meet the carbon budgets and sectoral emissions ceiling may simply displace production elsewhere, potentially to countries with a higher carbon footprint, and undermine the long-term competitiveness of the sector.

The lower carbon reduction target of 22% would permit the sector to continue to improve resource efficiencies, adopt new technologies and innovative practices without needing to reduce output to meet climate objectives and undermine competitiveness.

7. Proposed carbon reduction targets for LULUCF

The proposed carbon reduction target for Land Use and Land Use Change and Forestry is to reduce emissions by between 37% - 58% by 2030 from the 2018 baseline of 4.8 million tonne of CO_2 (Mt CO_2) to between 2 - 3 Mt CO_2.

Farmers are crucial decision makers in the LULUCF process. Agricultural land, land under grass and crops, accounts for approximately 65% of the total land area. While forests account for approximately 11% of the total land area, of which 50% is predominantly owned and managed by farmers.

Agriculture is unique in its ability to remove carbon from the atmosphere by carbon sequestration through enhancing carbon sinks. Agriculture's green transition will require a production system redesign and diversification to meet emission reduction targets in LULUCF.

The scale of the ambition is clearly evident when looking at the afforestation targets. In 2021, the afforestation programme was approximately 2,000 hectares of which farmers planted just 380 hectares (19%). This represents a quarter of the Climate Acton Plan 2019 target of 8,000 hectares and 10% of the afforestation target referenced in the CCAC Carbon Budget Technical report.

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[14] United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019: Highlights. ST/ESA/SER.A/423. https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf.

[15] Valin et al. (2013). The future of food demand: understanding differences in global economic models. https://onlinelibrary.wiley.com/doi/abs/10.1111/agec.12089.

[16] FAO (2011). World Livestock 2011 – Livestock in Food Security. http://www.fao.org/3/i2373e/i2373e.pdf.

Accelerating the afforestation programme to meet the LULUCF targets will require farmers to re-engage with forestry as a viable land use.

The current forest programme and regulatory framework is not fit for purpose and needs to be reformed to support planting at farm level. To assist in the achievement of the afforestation targets, it will be necessary to consider all sources of land, including a significant area currently under-utilised (unenclosed land).

The recently published European Commission report[17] showed that result-based carbon farming can contribute significantly in the EU's efforts to tackle climate change, bringing benefits in terms of carbon sequestration and storage while offering new income opportunities for farmers. It has the potential to become a win-win situation however the success of a future carbon farming scheme in Ireland and the scale of adoption will be completely dependent on the level of financial commitment from the Government.

A major disadvantage for the sector is that currently there is no measurement, reporting and verification (MRV) for carbon sequestration in Irish grassland or peat soils. The establishment of National Agricultural Soil Carbon Observatory, which commenced intensive monitoring of carbon emissions and removals in 2021 across a range of Irish soils. However, it will be a number of years before evidence-based measurement, reporting and verification of carbon sequestration can be achieved.

7.1. Retention of 'Net Net' carbon accounting methodology

'Net Net' accounting methodology is currently used in both Ireland and the EU in calculating emissions and removals for the Land Use Land Use Change and Forestry (LULUCF) sector. The Act[18] states that the carbon budgets will have regard for the rules applied by the European Union in relation to the of calculating and accounting for such emissions.

There is no current EU requirement to change the way that Ireland accounts for emissions and removals under LULUCF.

Changing the accounting methodology to 'Gross Net' would substantially increase the challenge facing Irish society to meet the climate targets, especially when we do not have accurate data on carbon storage. The change to Gross Net accounting would transform Land Use from a sink (approx. -2 Mt CO_2) to a substantial source of emissions (approx. 5 Mt CO_2).

The EU "Fit for 55" proposals include a change to 'Gross Net' accounting from 2026 – however, these remain just proposals and have not been approved.

Ireland has only commenced measurement and verification of carbon stocks in our soils through the State-funded National Agricultural Soil Carbon Observatory (NASCO). The results, which will provide proper scientific information on the carbon removals will not be available for at least 5 years.

The retention of the Net Net' carbon accounting methodology should be maintained in the accounting methodology in the carbon budgets.

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[17] European Commission (2021). Technical guidance handbook: Setting up and implementing result-based carbon farming mechanisms in the EU. https://data.europa.eu/doi/10.2834/12087

8. Investment Required for Transition

The single biggest barrier to meeting the climate action targets is the financial vulnerability of many farms. Financial vulnerability has an impact on the ability of farmers to adopt more sustainable practices as it limits their ability to adopt new practices and stifles innovation due to financial constraints.

A recent KPMG report[19], commissioned by the Irish Farmers Journal, concluded that going beyond an 18% carbon reduction target would require a reduction in herd numbers, based on currently available technologies and efficiency measures in Ireland, resulting in significant implications on rural economies and farmer income and livelihoods.

The analysis concludes that an emission carbon reduction target of 30% would reduce agri-food economic output by €3.8 billion and reduce employment predominantly in rural areas by 56,400 jobs, possibly threatening the long-term competitiveness of the sector.

In the absence of viable alternative agricultural opportunities or income streams, as shown in the KPMG report meeting the carbon reduction targets will lower agricultural output, lower agricultural incomes and lead to reductions in employment in the sector.

New funding mechanisms need to be established to support the additional societal and environmental asks that will be imposed on farmers to meet the carbon reduction targets.

Emerging voluntary and regulatory ecosystems services payments such as the proposed carbon farming schemes need to be developed to appropriately incentivise farmers if progress is to be made along the transition pathway.

The CCAC Carbon Budget Technical report highlights new opportunities exist for Ireland to further develop exports arising out of the low carbon transition including alternative proteins, low carbon dairy end products, bio-economy products and carbon credits/carbon management.

Farmers view considerable potential in renewable energy, either to produce energy for their own use but also to diversify their farm income by selling excess energy to the grid and enhancing the sustainability of their farm business. farmers to be central players in Ireland's energy transition.

Ireland's adoption of renewable technologies at farm level is well below the European average. In 2018, Ireland ranked 23rd out the EU-27 countries for renewable energy from agriculture, producing just 2.6% compared with the EU-27 average of 12.1%. Considering that Agriculture is our largest indigenous industry it shows with increased financial resources and removal of multiple barriers to grid access to potential offered to reduce both national emissions.

9. The Role of Different Gases – Biogenic Methane

IFA supports Climate Change Advisory Council (CCAC) position as set out in carbon budget letter to Minister Ryan that provision should be made in the regulations for review and adjustment of carbon budgets and sectoral emissions ceilings if and when EU reporting requirements are revised based on best available science, particularly with regard to the impact of short-lived greenhouse gases such as methane

[19] KPMG (2021). Ireland's 2030 Carbon Emissions Targets — An Economic Impact Assessment for the Agriculture Sector. https://assets.kpmg/content/dam/kpmg/ie/pdf/2021/11/ie-ireland-2030-carbon-emissions-targets.pdf.

The recent IPCC[20] report acknowledges that new emission metric approaches such as Combined Global Temperature Change Potential (CGTP) and Global Warming Potential* (GWP*) give a better account for the different physical behaviours of short and long-lived gases.

The report states that expressing methane emissions as CO_2e emissions such as GWP100 overstates the effect of constant methane emissions on global surface temperature by a factor of 3-4 over a 20-year time horizon. While it understates the effect of any new methane emission source by a factor of 4-5 over the 20 years following the introduction of the new source.

It also notes that the ambiguity in the future warming trajectory of a given emission scenario can be substantially reduced by using CGTP or GWP* compared to where emissions are aggregated using GWP100 or other pulse metrics.

There is *high confidence* that reaching net zero GHG emissions when quantified using the new emission metric approaches would lead to an approximately similar temperature evolution as achieving net zero CO_2.

10. Conclusion

Irish farmers are fully committed to playing their part in reducing emissions, however the carbon reduction target set for the sector must be achievable without undermining the economic viability of the family farm. With appropriate supports farmers can continue to innovate and adapt in Ireland's transition to a climate neutral economy.

Agriculture's unique potential to offset emissions and be a major part of the transition to a climate neutral economy through on-farm renewables, carbon farming and forest should be maximised to strengthen the sustainability credentials of Irish food production whilst reducing the impact on climate.

We trust that these comments are useful. If you wish to discuss any aspect of this submission, please contact [redacted] by email on [redacted] or on [redacted]

Ends.

[20] IPCC: Climate Change 2021 (2021). The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.