An Taisce
The National Trust for Ireland

Public Consultation on Carbon Budgets
Climate Division – Carbon Budgets
Department of the Environment, Climate and Communications,
29-31 Adelaide Road,
Dublin,
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Sent by email to: carbonbudgetconsultation@decc.gov.ie

8th February 2022

To Whom It May Concern,

An Taisce welcomes the opportunity to respond to the Public Consultation on the Climate Change Advisory Council's proposed Carbon Budgets.

Please acknowledge our submission and inform us of any further consultation periods.

Kind regards,

Kevin O'Farrell
Chair, Climate Committee
An Taisce – The National Trust for Ireland

Sinéad Loughran
Climate Committee
An Taisce – The National Trust for Ireland

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Glossary

ATCC	An Taisce Climate Committee
CCAC	Climate Change Advisory Council
CDR	Carbon Dioxide Removal
CH4	Methane
CO2	Carbon dioxide
CO2Eq.	Carbon dioxide equivalent
ESD	EU Effort Sharing Decision
ETS	EU Emissions Trading Scheme
GHG	Greenhouse Gas
GWP100	Global Warming Potential over 100 years
LULUCF	Land use, land-use change and forestry
MtCO2Eq.	Million tonnes of carbon dioxide equivalent
N2O	Nitrous oxide
NETs	Negative Emissions Technologies
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

An Taisce welcomes the opportunity to provide a written response to the public consultation on carbon budgets. An Taisce recognises that the Climate Change Advisory Council (CCAC) prepared the carbon budgets under a difficult timeframe and that the carbon budgets presented so far by it should be regarded as a work in progress. The Climate Act[1] requires the CCAC and Government to comply with its strongest provisions, which requires that carbon budgeting must be consistent with Articles 2 (the temperature limit goal) of the Paris Agreement – "on the basis of equity" and "best available science". However, the CCAC's "Paris Test" falls short of doing so adequately or clearly, and it therefore now falls to the Government to do so and to ensure that the budgets are deliverable and effective.

Overall, An Taisce presents the following policy positions in regard to setting the proposed carbon budgets, relative ambition over time, and the urgent need for faster reporting, assessment and policy response:

1. That the proposed budgets can only be said to comply adequately with the Climate Act's strong legal requirement for carbon budgeting to be "consistent with" the Paris Agreement Article 2 goal if the CCAC and Government clearly set out reasoning on the basis of equity and best available science, particularly in respect to prudence, historic responsibility, and the treatment of international aviation and shipping emissions.
2. That the proposed carbon budgets require to be reduced and more front-loaded to ensure that the precautionary principle is catered for in achieving at least the CCAC's recommended carbon budgets to 2030. This is necessary in view of the high risk that the built-in assumptions as regards LULUCF will not be realisable.
3. That the five-year carbon budgets will only be effective in driving climate action if the carbon and nitrogen drivers of emissions are effectively limited. Current reporting is too slow to ensure policies can affect rapid course correction as necessary. It will be crucial to establish a simplified framework of: monthly reporting of key quantities via CSO data; ongoing CCAC or EPA comparison with target carbon budget pathways for CO2, N2O and CH4; and a Government mechanism for rapid-response policy course corrections, if needed, by the responsible Ministers.

Our Consultation submission, specifically addressing the questions to which the Minister welcomes responses, is structured as follows:

1. The CCAC Technical report accompanying the proposed carbon budget programme.
2. How effort is shared to meet the 51% emissions reduction by 2030 across the first two carbon budgets, 2021-2025 & 2026-2030.
   NOTE: Under the Act, the 51% reduction only relates to the CCAC's initial provision of the carbon budgets, so it ceases to be relevant once the five-year carbon budgets are set.
3. The third carbon budget for 2031-2035 being consistent with the national objective for a climate neutral economy by no later than 2050.
4. Any other observations.

[1] Climate Action and Low Carbon Development Act 2015 (as amended 2021)

Summary of key recommendations:

1. The proposed carbon budgets for 2021–2030 need to be reduced significantly to provide a genuine good faith effort based on the best available science and an adequately prudential approach to limiting our global warming contribution in line with the 1.5°C Paris Agreement goal. This would require a reduction of
    I. at least 27 MtCO2Eq. from 495 MtCO2eq to 468 MtCO2Eq. to align with the Programme for Government and
    II. a further reduction of 40 MtCO2Eq. to allow for Ireland's projected international shipping and aviation emissions, as allowance must be made for these with regard to the Paris temperature goal even though they are not covered by the Regulation.
    III. a reduction equivalent to the emissions of all other economic activities (including for example, bottom trawling) which currently contribute to global GHG emissions but are not currently accounted for in the national process.
2. The proposed budgets need to use a reference year of no later than 2015, the year of the Paris Agreement, to indicate a "minimally equitable" consideration for global fairness as a basis for Ireland's 'fair share' of the remaining global carbon budget[2].
3. Under the Act, consistency with the Paris Agreement (the 'Paris Test') must adequately consider equity-based action, the principle of common but differentiated responsibilities and respective capabilities, and climate justice. This necessitates the CCAC and Government to fulfil its legal obligation in providing explicit detail for the unavoidable value judgements in its Paris Test regarding prudence (the accepted probability of limiting to 1.5ºC), historical responsibility, equity and global climate justice.
4. It will be crucial to establish a simplified framework of monthly carbon budgeting accounting, quarterly assessment and accountability relative to target GHG pathways, and, if off-track, a clear mechanism for policy course-correction.
5. An Taisce strongly advises against focussing narrowly on the projected annual emissions in 2030, and instead urges that budgets should focus on the emissions trajectory and warming impact of the differing GHG reductions in the allocation of sectoral emissions ceilings.
6. The proposed carbon budgets require a much more front loaded approach to ensure that the precautionary principle is adopted to achieve at least the required reduction by 2030.
7. Nitrogen budgeting, monitoring and limiting nitrogen usage (via fertiliser and feeds) in total and by catchment is strongly recommended to limit GHG, ammonia and nitrate pollution.
8. Unproven technologies for methane or N2O reduction, or carbon dioxide removal (CDR), must not be relied on in meeting targets and should be explicitly detailed as to expected total budget impact over time, with timelines for technology, and investment cost
9. Protecting existing carbon storage in standing forest and drained organic soils is now crucial to limit near-term land carbon losses that are currently projected to rise until 2035. Given the climate emergency, serious consideration must be given to limiting forest harvest to 2030 and removal of inappropriate forestry to ensure that the annual sequestration rate in forest related sinks is maintained while biodiversity and water quality are protected.
10. 'Natural carbon sinks' and nature-based sequestration measures, particularly *carbon farming* (soil carbon sequestration) should have significantly less prominence in carbon budgeting due to the uncertain nature of the carbon storage longevity of these methods in an increasingly volatile climate that has the potential to cancel such investments rapidly.

[2] McMullin et al, A.H., 2019.. Mitig Adapt Strateg Glob Change. **25**, pp. 579–602

1. The CCAC Technical report accompanying the proposed carbon budget programme.

There are a number of biases included in the CCAC's calculations, that effectively amount to carbon budgets which are insufficient to meet Ireland's legal and moral climate requirements. The candidate budgets proposed by the CCAC do not meet Ireland's national target as set out by the Programme for Government. Furthermore, they do not meet Ireland's international legally binding obligations, nor do the budgets provide any meaningful consideration to Ireland's historical responsibility for global climate change.

Ireland has delayed effective action so the proposed budgets do not represent the second most ambitious targets in the world as some sources have suggested, with serious questions on integrity in our moral obligations and our responsibility to deliver on climate justice. The CCAC Technical Report states that their approach used a test which provides "a minimum level of consistency with the Paris temperature goals[3]" or "broadly consistent with the legislated criteria regarding the UNFCCC and the Paris Agreement. However, this Council approach does not meet the strong requirement of, the Climate Act to be "consistent with" the Paris Agreement goal. A genuine test of consistency with the Paris Agreement would include other parameters beyond merely the temperature goals of the Paris Agreement, and value judgements which would lead to greater clarity as to what the proposed carbon budgets can legitimately claim to deliver. This section of the submission will focus on the proposed budgets' consistency with the Paris Agreement across a number of critical areas.

A) Relative historical responsibility for climate change and global equity

The selection of the reference year to be used in calculating carbon budgets plays a significant role in the integrity of the budgets as it affects the degree to which the budgets proposed are consistent with the Paris Agreement. It is also important in acknowledging the relative historical responsibility for climate change and the need to attain equity between countries in this regard. In adopting 2020 as the reference year, the obligation to consider relative historical responsibility for climate change is ignored in the CCAC's calculations by essentially wiping Ireland's historical emissions slate clean at 2020. The Technical Report does not provide a reasoning for the choice of reference year, but it has highly significant implications for global equity and the proposed emissions reductions.

If Ireland is to truly "play its part" to "keep the possibility of limiting warming to 1.5 degrees alive" as was promised by An Taoiseach at COP26, immediate action must be taken to deal with the stark reality we are facing. Despite the recognition of a state of climate emergency, our delay in realising meaningful climate action continues to pillage future well-being in a stable climate, the most fundamental global commodity, from the developing countries of the world, countries whose development depends on access to the remaining global carbon budget. Despite Ireland's position as a rich, developed nation, and therefore its obligations and capacity to act under the principle of Common But Differentiated Responsibility, Ireland's position as one of the highest emitting EU nations in 1990 remains unchanged based on 2020 emissions, with average annual emissions almost 20% higher than they were in 1990[4]. Terrestrial carbon emissions per capita in Ireland are approximately 17% above the average for the EU27, with a total carbon footprint for a typical Irish citizen (based on 2019 data and driven largely by energy and agriculture emissions) that is 75%

[3] CCAC Technical Report on Carbon Budgets 25.10.2021, p.75. https://www.climatecouncil.ie/media/climatechangeadvisorycouncil/Technical%20report%20on%20carbon%20budgets%2025.10.2021.pdf

[4] Professor Kevin Anderson (2022) 'Submission to the Joint Committee on Environment and Climate Action "to inform their consideration of Ireland's carbon budgets"'. 12 January.

above the global mean, 27% higher than an average Chinese citizen, and over ten times higher that of a typical African person[5]. Based on Ireland's historical responsibility for climate change, our 'fair share' of the remaining global carbon budget will be exhausted in 3-5 years' time. Against this backdrop, questions regarding 'feasibility' of delivering on climate action are irrelevant; the planetary climate system does not acknowledge human preferences and moreover, our emissions to date have put us in a position of carbon debt to the detriment of developing nations of the world. Ireland's fair share of the remaining global carbon budget should be the basis upon which carbon budgets are based[6].

The CCAC Technical Report stated that "In its deliberations, the Committee considered the question of what Ireland's appropriate contribution would be to the global effort to reduce greenhouse gas emissions. Any such determination has implicit or explicit implications around climate justice, historical responsibility, equity and equality. It is not the job of the Council or the Carbon Budget Committee to make such value judgements[7]." However, recent legal analysis stresses that this exclusion amounts to a 'fundamental legal flaw' in the CCAC's approach, pointing not only to the Paris Agreement's obligations for equity-based action and specific obligations for developed countries to take the lead in undertaking economy-wide absolute emission reduction targets, but also pointing to the CCAC's national legislative obligations under the Climate Act[8] that require it to operate in alignment with the Paris Agreement "to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances."[9]

B) Disparities with international and national legislation and policy requirements

In addition to the moral and global equity issues of wiping Ireland's historical responsibility slate clean, the selection of 2020 as the reference year also impacts the integrity and effectiveness of the carbon budgets proposed. Using 2020 as a reference year does not correlate with legislative or policy requirements, and does not align with research findings and arguments assessing consistency with the Paris Agreement. The Programme for Government outlines 2018 as the reference year, and 2018 has been adopted as the reference year in the Climate Act[10]. As outlined by the Consultation Paper on Carbon Budgets[11], "the carbon budgets must be consistent with the legally binding abatement targets established under the Act. The first two carbon budgets, proposed by the CCAC, bringing us up to 2030, must provide for a 51% reduction in emissions relative to 2018 levels, while the provisional third budget, bringing us up to 2035, must be consistent with establishing a credible pathway to net-zero emissions by 2050. Any feedback submitted under this consultation should be consistent with these legally binding requirements." Research passed by peer review has argued that

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[5] ibid.

[6] McMullin, B., Price, P., Jones, M.B., McGeever, A.H. (2019) 'Assessing Negative Carbon Dioxide Emissions from the Perspective of a National 'Fair Share' of the Remaining Global Carbon Budget. Available at: http://www.eeng.dcu.ie/~mcmullin/etc/MASGC-McMullin-2019-AAM/MASGC-McMullin-2019-AAM.pdf

[7] CCAC Technical Report on Carbon Budgets 25.10.2021, p.72. https://www.climatecouncil.ie/media/climatechangeadvisorycouncil/Technical%20report%20on%20carbon%20budgets%2025.10.2021.pdf

[8] Climate Action and Low Carbon Development Act 2015 (as amended 2021).

[9] Dr. Andrew Jackson (2022) Joint Committee on Environment and Climate Action: Consideration of carbon budgets proposed by the Climate Change Advisory Council – Written Statement. 12 January.

[10] Climate Action and Low Carbon Development Act 2015 (as amended 2021)

[11] Department of Environment, Climate and Communications. 'Public Consultation on Carbon Budgets – Consultation Paper, p.4, 22 December 2021 https://www.gov.ie/en/consultation/42eaf-public-consultation-on-carbon-budgets/

2015, while overlooking the differential contributions to emissions in the atmosphere up until that point, is an appropriate "latest possible" reference year to claim as being at least "minimally equitable" when calculating national emissions reduction requirements, as this reflects when the UNFCCC process achieved global political agreement on limiting global warming to "well below 2°C" through the adoption of the text of the Paris Agreement[12]. If the CCAC or Government wish to argue for a later year on some basis of equity then they need to do so on a referenced basis.

The CCAC's assumptions in assessing the proposed budgets against the Paris Agreement allows that all but one of the five scenarios laid out in the technical report satisfy the Paris Test. To highlight the disparities caused through the selection of an inappropriate reference year, recent analysis provides an illustrative insight. In using the same input data and the same approach as the CCAC, but critically utilising 2015 as the reference year, this analysis indicates that all but one of the five scenarios fail this "minimally equitable" Paris Test. This highlights that in reality, the proposed budgets may need to be significantly reduced in order to comply with the Act, and rely on the disregard for Ireland's historical responsibility for climate change to satisfy the Paris Test[13].

It is important to note that 2018 is not stated as a reference year for a Paris Test or for long-term carbon budgets, the Climate Act only requires that 2018 is used as the reference year in providing for a 51% reduction in total CO2eq emissions. Once the five-year carbon budgets are set they then become the legally binding five-year totals to be met by Government action and the 51% reduction and the base year cease to be relevant to national carbon budgeting.

In reference to the Programme for Government, it targeted a 51% reduction from 2021 to 2030 on the basis of a sustained 7% per annum reduction rate. The carbon budgets proposed by the CCAC will aim for just under 6% reduction in emissions per annum. Furthermore, neither the proposed budgets nor the Programme for Government stack up to the EU's reduction requirements; the EU requires a 55% reduction in emissions by 2030 based on 1990 levels. Although 2015 has been argued as a "latest possible" and so "minimally equitable" reference year, there is a strong argument for utilising 1990 as a more appropriate reference year. This marks the year that the IPCC First Assessment Report was released, a report that was officially noted by the UN General Assembly and prompted the process that led to the UNFCCC[14], and as noted, this is the reference year adopted by the EU's 2030 requirement to reduce emissions by 55%. The reference year for EU ETS and ESD accounting was 2005. It is important to avoid a shifting baseline approach that causes confusion and makes the proposed budgets' 2030 target look ambitious whereas, in reality, the proposed budgets would equate to an emissions reduction of 44.5% in 2030 compared to the 1990 level (that is, from 60.37 MtCO2Eq. in 1990 to 33.5 MtCO2Eq. in 2030)[15].

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[12] McMullin, B., Price, P., Jones, M.B., McGeever, A.H. (2019) 'Assessing Negative Carbon Dioxide Emissions from the Perspective of a National 'Fair Share' of the Remaining Global Carbon Budget. Available at: http://www.eeng.dcu.ie/~mcmullin/etc/MASGC-McMullin-2019-AAM/MASGC-McMullin-2019-AAM.pdf

[13] Professor Barry McMullin (2022) 'Opening statement for the Oireachtas Joint Committee on Environment and Climate Action'. 12 January.

[14] McMullin, B., Price, P., Jones, M.B., McGeever, A.H. (2019) 'Assessing Negative Carbon Dioxide Emissions from the Perspective of a National 'Fair Share'
of the Remaining Global Carbon Budget. Available at:
http://www.eeng.dcu.ie/~mcmullin/etc/MASGC-McMullin-2019-AAM/MASGC-McMullin-2019-AAM.pdf

[15] Andrew Jackson, Written Statement JOCECA Consideration of carbon budgets proposed by the Climate Change Advisory Council, 12th January 2021.

C) Exclusion of shipping and aviation

The Climate Act allows that accounting for international shipping and aviation emissions should not be included in the budgetary framework. However, the carbon budget process is required to operate in line with the obligations of the Paris Agreement. The Paris Agreement obligations extend to "economy-wide absolute emission reduction targets" and as pointed out by recent legal analysis commissioned by the Brussels-based Transport and Environment NGO, the responsibility for monitoring and tackling these emissions falls squarely with each state[16]; the responsibility cannot be offloaded to an international offsetting organisation or simply ignored. In order to comply with this Paris obligation, therefore, the proposed budgets should be reduced by at least the contribution of shipping and aviation to Ireland's emissions, i.e. a reduction in the proposed budgets of no less than 40 MtCO2Eq. over the period from 2021 to 2030[17].

D) Bottom trawling and "economy-wide absolute emission reduction targets"

As outlined above, shipping and aviation, as part of the economy, are required to be included in the emissions accounting of all parties to the Paris Agreement. Just as shipping and aviation must be included in our emissions accounting, so too should carbon sources, including the carbon released from bottom trawling within Irish waters. Sediment in the seafloor can contain up to twice as much carbon as its equivalent in terrestrial soil and when disturbed through the process of bottom trawling some of this sediment carbon is remineralised to CO2. This ecologically devastating practice also comes with a huge carbon price tag. One study assessed the top 100 countries and territories in terms of the gains in carbon benefits accrued from their exclusive economic zone (EEZ). This study found that Ireland ranks 25th in terms of the percentage of its "EEZ within the most important 10% of the ocean to safeguard carbon stocks", with over 80% of Ireland's EEZ within that 10% of global priority areas for ocean carbon stocks[18]. The leading author of this study recently advised that annually bottom trawling in Ireland releases the equivalent of 23% of annual land-based emissions (14 million tonnes)[19]. To not include this in our emissions accounting is a dangerous oversight, and completely at odds with the Paris Agreement's economy-wide obligations. This fishing practice is rampant throughout the EU including in marine protected areas. If there is to be any integrity to our climate action and our Paris obligations, Ireland needs to fully account for all economic activities and sectors.

E) Prudence

In terms of adhering to the Paris Agreement's lower temperature goal of 1.5°C of warming above pre-industrial levels, it is questionable whether the CCAC's Technical Report takes an adequately prudential approach, applying only a 50% probability that the budgets proposed reflect ambition to limit warming to 1.5°C. The need to ensure that global warming does not cross the critical threshold of 1.5°C cannot be overstated in light of the IPCC's Special Report on Warming of 1.5°C. This critical threshold is assigned a probability no greater than a coin toss under the proposed carbon budgets

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[16] Transport & Environment (2021). Don't sink Paris: Legal basis for inclusion of aviation and shipping emissions in Paris targets. Briefing paper NDCs legal advice Aviation Shipping Final 2021 (transportenvironment.org)

[17] Professor Barry McMullin (2022) 'Opening statement for the Oireachtas Joint Committee on Environment and Climate Action'. 12 January.

[18] Sala, E., Mayorga, J., Bradley, D. et al. (2021) 'Protecting the global ocean for biodiversity, food and climate'. Nature, 592, 397–402 (2021). https://doi.org/10.1038/s41586-021-03371-z.

[19] Based on 2019 emissions data. Enric Sala (2021) 'Saving our seas with Enric Sala'. 1 June. Available at: https://iwt.ie/what-we-do/communication/webinars/

calculations and if this is not deemed adequately prudential, the carbon budgets should be reduced further to facilitate an adequately prudential approach[20]. There remains significant scientific uncertainty on the relationship between the temperature threshold and the permissible GHG budget, and from that perspective prudence and the precautionary principle should be imperative to the setting of budgets.

2. How effort is shared to meet the 51% emissions reduction by 2030 across the first two carbon budgets, 2021-2025 & 2026-2030

Before providing a response to this area, clarification is required on the assumption made by the consultation statement regarding how effort is to be shared to meet 51% emissions reduction by 2030 across the first two carbon budgets. As outlined above in response to the CCAC's Technical Report, the carbon budgets proposed will aim for just under 6% reduction in emissions per annum, as opposed to the Programme for Government which commits to a 7% per annum (average) reduction or a 51% reduction by 2030. As noted in the previous section, the Programme for Government and the Climate Act use 2018 as the reference year in calculating emissions reductions to 2030, while the CCAC's carbon budgets use 2020 as the reference year. While the latter proposes a carbon budget of 495 MtCO2Eq. over the 10 year period to 2030, analysis conducted shows that utilising 2018 as the reference year would allow a cumulative 10-year total of 468 MtCO2eq, and the proposed budgets should therefore be reduced by at least 27 MtCO2Eq. to align with the Programme for Government[21].

It is worth noting that the Programme for Government's annual reduction ambition already fell short of the UNEP's 2019 estimate that recommended at least a 7.6% per annum reduction in emissions, and fell short of the EU's 55% reduction target based on 1990 levels. The CCAC's recommended budgets reduce the ambition further as outlined above, by equating to a 44.5% reduction in emissions based on 1990 levels. The Climate Act does not set an upper limit on the CCAC's carbon budget recommendations up to 2030[22], and a more ambitious and morally responsible carbon budget would indeed go beyond the Programme for Government's 7% per annum (average) reduction ambition.

Critical to the integrity of the carbon budgets and achieving genuine climate action, is not just the achievement of the annual emissions target in 2030, but also the trajectory of emissions reductions and the makeup of emissions contributing to the carbon dioxide equivalent reductions. As discussed below, reduced ambition in the first carbon budget period will have significant knock-on impacts to the second budget period. The longer action is delayed and diluted, the more difficult decarbonisation becomes, and the greater the emissions and associated warming becomes. Illustrative modelling on the effects of focusing narrowly on the projected annual emissions level in 2030 highlight that budgets which intend to achieve the 2030 requirement of 51% reduction in emissions, can do so with varying levels of ambition, including zero cumulative mitigation, but with significant implications for the rate and scale at which decarbonisation must take place[23]. The

[20] Professor Barry McMullin (2022) 'Opening statement for the Oireachtas Joint Committee on Environment and Climate Action'. 12 January.
[21] Professor Barry McMullin (2022) 'Opening statement for the Oireachtas Joint Committee on Environment and Climate Action'. 12 January.
[22] Barry McMullin, John Sweeney, Andrew Jackson 8th June 2021. PfG transposition 2.pdf (google.com)
[23] ibid.

Programme for Government commitment also incorporated a good faith basis of "best available science" which would not be realised if a narrow focus on projected annual emissions reductions of 51% by 2030[24] was the only parameter utilised in assessing the effectiveness of the proposed carbon budgets.

The CCAC has provided five illustrative scenarios to demonstrate some of the potential budget distributions between Agriculture and Energy (including electricity, transport and heating), as these are the two highest emitting sectors. The scenarios, while not prescribing sectoral breakdowns, provided insight into how achieving the 2030 target would equate to various compilations of GHGs with different global warming potential. In these illustrations, scenarios which allowed a higher proportion of sectoral emissions to Agriculture ultimately resulted in greater absolute levels of warming, suggesting that such scenarios would increase the risk of failing the Paris Agreement consistency test on temperature increase[25]. While the CCAC's Paris test is flawed based on its selection of reference year and its inadequately prudential approach (as discussed in the previous section), even by the CCAC's own terms for the Paris test, the one carbon budget scenario which failed the test, was the budget which allowed Agriculture the greatest sectoral emissions allowance.

It is readily apparent from the CCAC Technical Report Figure 4-3 temperature impact charts that a substantial reduction in annual methane emissions has the greatest net effect on GHG impact by enabling substantial warming reduction (equivalent to CDR). Therefore, it is absolutely essential that total agricultural methane is reduced by 35% or more by 2030 and by about 50% by 2050[26] (in addition to net zero CO2+N2O) to align climate action with an equitable 1.5ºC goal.[27] This means that CH4 mitigation cannot be simply replaced by N2O or CO2 reduction on a GWP100 basis as GWP100 does not usefully reflect temperature impact. At present, Climate Action Plan actions in agriculture target reductions in N2O at a greater rate than CH4 - this is inadequate. Moreover, larger and earlier reductions in CH4 and N2O are needed by 2025 and 2030 than are currently planned.

The allocation of sectoral budgets requires major changes in the organisation of society, and has the potential to create equity issues in responsibility for decarbonisation both across and within sectors. As the main emitter, the emissions reductions in Agriculture will play a determining role in the allocation of emissions reductions targets for the rest of society. As outlined in the recent Joint Oireachtas Committee on the Environment and Climate Action discussion, a 15% reduction in Agriculture emissions would oblige the rest of society to achieve an 80% emissions reduction, with a 10% reduction in Agriculture emissions (similar to what is proposed by Food Vision 2030), placing an impossibly heavy burden on the rest of society to make up the emissions reduction deficit[28].

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[24] Professor Barry McMullin (2022) 'Opening statement for the Oireachtas Joint Committee on Environment and Climate Action'. 12 January.

[25] ibid.

[26] UCC and DCU researchers agree that targeting a 50% reduction in annual CH4 emissions by 2050 would align with an equitable 1.5ºC goal provided CO2+N2O reach net zero before 2050.

[27] Ch. 7 in: McMullin, B., Price, P., 2020. Synthesis of Literature and Preliminary Modelling Relevant to Society-wide Scenarios for Effective Climate Change Mitigation in Ireland 2016-CCRP-MS.36 (EPA Research Report No. 352). Environmental Protection Agency.

[28] Professor Emeritus John Sweeney (2022) JOCECA Carbon Budgets 'Opening Statement'. 12 January.

% Reduction in Agricultural Emissions 2021-2030	Remaining % Reduction Burden on other sectors (Transport, Residential, Energy, Industry, Waste)
51	51
33	60
15	80
10	??

Taken from the Opening Statement on the Joint Oireachtas Committee on Environment and Climate Action on Carbon Budgets of Professor Emeritus John Sweeney. 12 January 2022.

Furthermore, if the Methane Pledge which Ireland signed at COP26 is not adhered to, the implications for reducing Agriculture emissions elsewhere grows substantially. A 10% reduction in methane (as opposed to the 30% pledge that was agreed to in signing the Pledge in Glasgow), would require a 77% reduction in emissions across the rest of the Agriculture sector[29].

3. The third carbon budget for 2031-2035 being consistent with the national objective for a climate neutral economy by no later than 2050.

The backloading of emissions reductions to the second budget period from 2026-2030 poses a serious risk that the necessary reductions will not be realised by 2030, and this consequently has a knock-on effect on the third budget period from 2031-2035. Therefore, right now, it is more essential for Government to address the previous arguments for clarity in defining exactly how Ireland's carbon budgeting programme is prudently and equitably aligned with the Paris Agreement's Article 2. It is likely that legislative requirements for "economy-wide absolute emission reduction targets" (as laid out by the Paris Agreement) will require amendments and further reductions to the third carbon budget.

The responses in previous sections also illustrate some critical aspects of the carbon budgets programme which will be key to understanding Ireland's actual achievement of its emissions reduction obligations. Ultimately, the first two carbon budgets do not set Ireland on an adequate emissions reduction trajectory, and this will substantially affect the ability of further carbon budgets, including the third carbon budget period from 2031 to 2035, to achieve consistency with the national objective of climate neutrality by no later than 2050.

4. Any other observations you wish to make

Slippage

Of great concern is the practice of backloading the carbon budgets, with a much greater emissions reduction required in the second budget period. The proposed budgets require an average annual reduction of 4.8% required in the first budget period from 2021 to 2025, increasing to 8.3% annually

[29] Professor Emeritus John Sweeney (2022) JOCECA Carbon Budgets 'Opening Statement'. 12 January

for the second budget period from 2026 to 2030. This creates two major concerns and risks, namely the risk of delaying radical wide-ranging action, and the risk of slippage where inadequate performance during the first carbon budget period would further increase requirements for the second period. The proposal of backloading emissions reductions to the second budget period disregards the need to apply the Precautionary Principle (Article 191 of the Treaty on the Functioning of the European Union), and the rejection of a linear reduction pathway based on technical and feasibility grounds is wholly inconsistent with the current state of climate emergency[30].

The risk of slippage in the first carbon budget period, which would make the burden of the second budget period 'extremely onerous', is particularly high especially as the Climate Action Plan allows that legally binding national and sectoral carbon budgets will be incorporated into the Plan no sooner than Q4 2022, after almost 40% of the first carbon budget period has elapsed[31]. Furthermore, the ongoing time-lag in access to national emissions data affects the work of the CCAC and the preparation of Climate Action Plan updates, providing a very narrow window for consideration of the previous year's emissions in publishing the following year's actions[32].

Mitigative inertia based on unproven future technologies and carbon storage

Linked to the practice of backloading effort and reduction targets through distribution choices across budget periods, is the practice of placing the responsibility of action on future governments and generations, and on the availability of unknown and unproven technologies that are assumed to relieve some of our carbon emissions through carbon capture and storage. Both backloading and 'negative emissions technologies' effectively kick the responsibility for action further down the road. Emissions reductions solutions of this kind do not adhere to the Precautionary Principle and should not be factored into budgets. There is huge uncertainty surrounding any such future technologies and the scale at which they would be required. Reliance on such non-existent technologies to remove our emissions at a later date places a huge risk on our climate system by failing to take effective mitigative action now. Building capacity in negative emissions technologies that would provide emissions removal to scale that is required by most global models, would require an industry, based on highly speculative and at best pilot-scale technologies currently, to expand to almost the equivalent of today's global oil and gas industry within a few decades[33].

The IENETS project (EPA Report 354) suggests that a "prudent, upper policy assumption for NETs (Negative Emissions Technology) potential in Ireland should be gross removals of no more than 200 MtCO2" up to 2100.[34] This is a very limited amount[35] and any greater carbon budgeting dependence on NETS would require investment in research and development to reliably assess increased potential.

The definition of a climate neutral economy should move towards reflecting a "real zero, not a net zero" emissions economy as far is possible, and this is particularly promising in energy as Ireland has

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[30] Professor Emeritus John Sweeney (2022) JOCECA Carbon Budgets 'Opening Statement'. 12 January.
[31] ibid.
[32] ibid.
[33] Professor Kevin Anderson (2022) 'Submission to the Joint Committee on Environment and Climate Action "to inform their consideration of Ireland's carbon budgets"'. 12 January.
[34] McMullin, B., Jones, M.B., Price, P.R., McGeever, A., Rice, P., 2020. IE-NETs: Investigating the Potential for Negative Emissions Technologies (NETs) in Ireland (EPA Research Report No. 354). Environmental Protection Agency.
[35] By comparison the CCAC Technical Report Paris Test indicates that a permanent 50% reduction in methane emissions by 2050 would reliably deliver the warming reduction equivalent of over 500 MtCO2 in removals.

a disproportionate advantage in terms of producing renewable energy[36]. Reliance on negative emissions technologies and carbon capture and storage should be removed from the accounting process.

Even the more regularly discussed and currently utilised offsetting practices that involve using natural resources as 'carbon sinks' are not reliable enough on which to place significant expectations for effective carbon sequestration. A reliance on carbon sinks and sequestration measures, assumes that land carbon storage (for example, afforestation) and fossil carbon storage (that is, geologically stored carbon that remains in the earth for millions of years until it is removed through human extraction) are equivalent in their storage potential. Regardless of accounting approaches that incorporate sequestration measures, land carbon storage and fossil carbon storage are simply not fungible[37]. To adequately respect the Precautionary Principle, and to recognise the ever-looming potential of climate shocks and tipping points in the planet's climate systems, it is imperative that we do not assume that 'nature-based solutions' we invest in today will remain into the future[38]. Furthermore, the intended land use changes that the proposed carbon budgets imply raise serious concerns on feasibility of utilising land as a carbon sink. Currently, Irish land use produces net emissions of approximately 4.5 million tonnes per year and this is expected to increase to 7.1 million tonnes per year. However, the CCAC's proposed budgets assume very unrealistically that these emissions would fall by 51% according to the overall budget; a reduction in emissions of 2.4 million tonnes per year by 2030[39].

There is also a question on the physical feasibility of such measures concerning the location of this large scale afforestation and the availability of suitable soils to support this afforestation without encroaching on carbon budgets of wetland areas. The wider environmental and biodiversity implications of land use changes have been disregarded somewhat, and while the CCAC have provided models in Agriculture, Forestry and Energy, these are siloed. Integrated modelling strategies akin to what has been available in Europe for the past decade would allow an integrated view of the trade-offs between different sectoral models in these areas and would also allow for the incorporation of social and economic aspects, and consider biodiversity implications[40].

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[36] Professor Kevin Anderson (2022) 'Submission to the Joint Committee on Environment and Climate Action "to inform their consideration of Ireland's carbon budgets"'. 12 January.

[37] Paul Price during the Joint Committee on Environment and Climate Action. Carbon Budgets Discussion (Resumed). 12 January 2022. p.22. Available at: https://data.oireachtas.ie/ie/oireachtas/debateRecord/joint_committee_on_environment_and_climate_action/2022-01-12/debate/mul@/main.pdf

[38] Professor Emeritus John Sweeney during the Joint Committee on Environment and Climate Action. Carbon Budgets Discussion (Resumed). 12 January 2022. p.28. Available at: https://data.oireachtas.ie/ie/oireachtas/debateRecord/joint_committee_on_environment_and_climate_action/2022-01-12/debate/mul@/main.pdf

[39] Professor Emeritus John Sweeney during the Joint Committee on Environment and Climate Action. Carbon Budgets Discussion (Resumed). 12 January 2022. p.20-21. Available at: https://data.oireachtas.ie/ie/oireachtas/debateRecord/joint_committee_on_environment_and_climate_action/2022-01-12/debate/mul@/main.pdf

[40] ibid.