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DCHG DAFM Briefing 01/05/20 [GP]

Response to query from Francis Noel Duffy

This response deals with two broad categories of land.

Drained Carbon Rich Soils Used for Agriculture

Firstly, it is estimated that there are approximately 300,000 ha of drained carbon rich soils used for agriculture. This land is predominantly located on cutover area on the periphery of raised bogs in the midlands, with the majority used for grazing. Reduced management intensity (rewetting) of such land would keep the organic matter in the soil consistently moist, to limit oxidation and lower CO₂ emissions. The prevention of emissions is the primary objective in the first instance followed by sequestration.

Further research is required to monitor and validate GHG emission fluxes on these drained organic soils. However, the Teagasc Marginal Abatement Cost Curve estimates that rewetting 40,000 ha of organic grassland soils would reduce emissions by 440,000 tons of CO₂. This is equivalent to 11 tons CO₂ per ha. Reduced management intensity of this 40,000 ha is among the actions provided for in the Climate Action Plan 2019. This action will be needed if Ireland is to avail of the credit of 26.8 Mt afforded to it by the EU for land use, land use change and forestry, when calculating Ireland's share of EU GHG emissions reductions in the period to 2030.

Teagasc's calculations use Tier 1 values from the Intergovernmental Panel on Climate Change. They include direct CO₂ emissions, offsite CO₂ emissions from Dissolved Organic Carbon (DOC) in drainage water, CH₄ emissions from both soils and open drainage ditches, as well as direct N₂O emissions from soils. They subtracted the CH₄ emissions associated with re-wetting.

Active Raised Bog

NPWS suggest that in a best-case scenario, 1,000 Ha of restored active raised bog would sequester c. 1,850 tonnes of CO₂ per year (-1.85t CO₂/Ha/yr). If this active bog was restored from a very degraded condition, then the reductions of CO₂ emissions would be in the order of 6,000 tonnes per year (6t CO₂/Ha/yr).

Thus, in a best-case scenario this is a cumulative saving of c. 7,850 tonnes of CO₂ per year over each 1000 ha. However, due to variability in site conditions (such as topography, hydrology etc), significant management works would be required to reach the maximum GHG reduction and carbon sequestration potential across the full spectrum of designated sites (c.27,000 ha).

Nevertheless, it is likely that restoration efforts to achieve optimum savings in GHG emissions will be possible across significant areas of the circa 40,000 ha of commercially exploited Bord na Móna peat fields.

It is important to note that the Teagasc and NPWS figures are not directly comparable, as we understand that NPWS do not include DOC in their calculations. This is a GHG emission from organic soils through the loss of organic carbon dissolved in water. It is thought that the magnitude of this loss is as high as the gaseous losses of CO₂ referred to above, particularly from peat extraction sites. Whilst research is ongoing on this issue, management would significantly reduce this form of GHG loss.

In addition, the estimated sequestration figure of -1.85t CO₂/Ha/yr from NPWS assessments may take up to 20 years to fully establish after restoration has been carried out.

These removal figures are estimations with ongoing research and measurement required to validate and verify carbon removal.

Cost

The costs of measures such as those detailed here is difficult to calculate with precision. In the interests of providing some indicative comparators, however, the following might be useful:

- NPWS suggest a potential once off cost of €2,000 per ha, based on its current Irish Raised Bog LIFE project, to restore protected raised bog. This would cover restoration works, resources, once-off compensation costs and voluntary land purchases.
- No detailed costings have been undertaken by DAFM on the rewetting of land currently used for agriculture. Incentives would be required however, potentially with support levels similar to those under current GLAS actions such as Low Input Permanent Pasture or Traditional Hay Meadows. While such costs could potentially be covered within a reconfigured GLAS or equivalent scheme in the future, payments may need be very long term or indefinite, as it is unlikely that a farmer would keep potentially more productive land wet if not compensated to do so.

There would also be an additional monitoring, reporting and verification cost annually to monitor and verify the land use changes and further improve the reliability of figures.

DCHG DCCAE Rewetting Bogs Briefing 09/03/20 [GP SF] **Questions for Gov. Departments Arising from Political Party Discussions**

1. What is the scale of investment needed in rewetting the bogs?

Given the varying nature of bogs in Ireland, and the lack of robust data, further research, data collection and assessment of wetlands in Ireland will need to be undertaken in order to address this

specific query. However, this note provides some context in relation to emissions from Ireland's bogs and outlines some of the ongoing work in this area.

Baseline emissions

Emissions from wetlands fall under the inventory sector of Land Use, Land Use Change and Forestry (LULUCF). Under the UNFCCC methodology, Ireland's emissions from LULUCF were 4.9 MtCO₂ eq. in 2017. Of this, wetlands accounted for 3.2 MtCO₂ eq. These figures are calculated using the global UNFCCC values, which are not specific to Ireland, and present Ireland's LULUCF sector as a net emitter of emissions. However, under the EU Effort Sharing approach, Ireland has been allowed to claim a credit of 2.68 MtCO₂eq. p.a. for the period 2021 to 2030 – a flexibility granted to Member States in recognition of the lower mitigation potential for emissions from the agriculture sector and calculated based on the share of Member States' agricultural emissions. Thus, there is significant uncertainty about Ireland's actual emissions from the LULUCF sector.

Potential mitigation

Despite the uncertainty of emissions from Ireland's LULUCF sector, it is clear that wetlands play a vital role, *inter alia*, in mitigating climate change effects. This is recognised in the 2019 Climate Action Plan, which includes the following supporting measures:

- Undertake further research to assess the potential to sequester, store and reduce emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the National Peatlands Strategy
- Upgrade land-use and habitat mapping systems to establish the baseline condition of wetlands and inform the development of best-practice guidelines for wetland management, including the management of degraded sites and peatlands currently exploited for energy peat extraction
- Ensure robust reporting and accounting of the emissions impact to meet relevant international reporting requirements (this will be done under the National Land Cover and Habitat Mapping Programme)
- Develop further measures to help rehabilitate exploited and degraded peatlands, including as part of national land-use planning and the new Common Agricultural Policy, and recognising that strategies may need to differ between regions

Some recent work carried out in relation to the above has seen:

- The Department of Culture, Heritage and the Gaeltacht undertake a 5 year restoration project on 12 raised bog Special Area of Conservation sites with funding provided under the EU LIFE programme.
- The Department of Culture, Heritage and the Gaeltacht undertake restoration measures on land in State ownership within designated raised bog sites. Restoration measures on State owned land have been completed in three raised bog Special Areas of Conservation (SACs) and in one raised bog Natural Heritage Area (NHA).
- Draft rehabilitation plans prepared on a bog by bog basis across the entire State and Bord na Móna is currently engaging with stakeholders to update and further detail those plans.
- An Eddy Covariance (EC) tower set up at Clara Bog raised bog Special Area of Conservation by the Department of Culture, Heritage and the Gaeltacht in collaboration with Trinity College Dublin, enabling long-term monitoring of CO₂ exchange from the bog. An EC tower has also been set up at Lullymore, a former production peat-bog, by University College Cork.

Furthermore, Budget 2020 announced €5m for bog restoration and rehabilitation which will restore bogs to their natural habitat and help to capture carbon. With the injection of this funding, the Department of Culture, Heritage and the Gaeltacht intends to restore over 1,800 hectares of protected raised bog in 2020 and install an additional EC Tower on a bog to observe the exchange of gas, energy and momentum between the ecosystem and the atmosphere.

In terms of potential emissions savings, there is some ongoing work across the Department of Culture, Heritage and the Gaeltacht, Bord na Móna, and Coillte to understand the precise interventions suited to Ireland's peatlands and to assess the potential emissions impact. Although this work is preliminary, high-level estimates suggest potential to reduce wetlands emissions by ~60% to 2050.

In light of the above, there is a clear need to better understand Ireland's LULUCF position in order to more accurately determine the overall sink versus source position in relation to defining a potential emissions reduction pathway and begin to establish associated costs.

Briefing- Burning Vegetation under Heritage Act 04/03/20 [GP]

Burning of Vegetation under the Heritage Act, 2018

1. **Section 7(1) of the Heritage Act, 2018** provides that the Minister may make Regulations to allow the burning of vegetation during such periods in the month of March and in such parts of the country as specified in the Regulations.

2. The 2018 Act was signed into law on 18 July 2018 and in accordance with Section 7 (4) (a), Section 7 “*remains in force until the expiration of 2 years from the date of the passing of this Act and then shall expire.*”
3. The question arises as to whether to introduce regulations under the Act to allow burning into March 2020 -which is outside the normal prescribed period when burning is allowed (September to February). It is to be noted that the power to make regulations under Section 7 (1) is a discretionary power and there is no obligation on the Minister to make such Regulations. The Minister did not make regulations to extend the burning season into March 2019, based primarily on the exceptionally dry weather in the six months under review at that point.
4. There are no specific criteria set out in the Heritage Act 2018 as to what factors are to be taken into account in determining whether or not to allow burning in March.
5. The intention behind the burning provision in the Act was that it could potentially be used as a mechanism to facilitate landowners to burn vegetation during March if weather conditions during the prescribed open period for burning could be deemed to prevent such burning.
6. While the prescribed period for burning is September to February inclusive, the latter part of this period (January to February) is the period where traditionally most burning within the prescribed period would be carried out. While February to date has seen above average rainfall and three large storms, January had been drier than normal. Accordingly, landowners would have had opportunity to burn in January. In the East, where there is a tradition of upland burning, for example in Wicklow, NPWS staff observed burning in January indicating weather was not an absolute preventative factor then.
7. The reason a prescribed period was included in the Wildlife Acts in the first instance was to allow cutting and burning of vegetation during times of the year when it would have least impact on habitats and. The provision was designed as a failsafe mechanism to be deployed to facilitate landowners to burn vegetation during March if weather conditions during the prescribed open period for burning were such as to prevent such burning.
8. At Committee stage in the Dáil on 25 April 2018, the Minister said “*it might be beneficial to reiterate the main reason for the burning provision is to allow people who manage land to burn, for proper land management purposes, in March where, for example, poor weather has*

prevented this". At Report Stage in the Dáil on 3 July 2018, the Minister indicated that the regulations would apply "*only in years¹ when winter rainfall is higher than average*"

9. The Department has collated data which is publically available from Met Eireann on rainfall from the 25 weather stations across the country in order to inform decisions as to whether allowing controlled burning in March is necessary. In this note, rainfall is considered for 2 periods: (i) September 2019 to February 2020 and (ii) January to 22 February 2020.

10. Sept 2019 to February 2020:

A table showing rainfall at each of the weather stations in each month during the period when it was permissible to burn under the law (i.e. from September 2019 to February 2020) is attached at Appendix 1. This table also compares each of these monthly rainfall figures with mean rainfall for the same weather station for the same month over the last 30 years*. Some key data from the Table is that during the 6 months September to February:

- Nationally rainfall for the 6 month period was some 21.40% greater than the 30 year mean.
- In 24 of the 25 weather stations actual cumulative rainfall was greater than the mean and in only one weather station (Mace Head in Galway) was actual cumulative rainfall lower. (Given the fact that the published figures for this weather station are out of kilter with all other weather stations we contacted Met Eireann and were informed that the weather station in question is under-reading rainfall by approximately 30% as it is located on a rock.
- In those 24 weather stations which had cumulative rainfall greater than average, some 17 had rainfall 20% greater than average (and 8 of those had rainfall over 30% greater)

January to February 2020

While as indicated above, rainfall in the September 2019 to Feb 2020 period was greater than the 30 year mean it is relevant to note that the latter part of this period viz. January to February is the period where traditionally most burning within the prescribed period would be carried out. Accordingly, it is relevant to look specifically at this period. The table at Appendix 2 shows the data for each of the weather stations in January and February. The table shows that:-

¹ (The World Meteorological Organization (WMO) recommends that climate averages are computed over a 30 year period of consecutive records. The period of 30 years is considered long enough to smooth out year-to-year variations.)

DCHG collated briefing submitted to DoT for PfG Talks

- January has been a very dry month with rainfall nationally being some 20% less than normal with 23 of the 25 weather stations recording weather drier than the 30 year mean.
- February on the other hand has been very wet with rainfall being some 140% greater than the 30 year mean; each of the 25 weather stations recorded higher than average rainfall
- Overall nationally rainfall in the Jan/Feb period has been some 20% greater than the mean.
- Data for the final week of the month of February has yet to be factored in. Significant rainfall and extensive flooding will be recalled from that week.

Rainfall PDF Sept 1 to Feb 22 04/03/20 [GP]

PDF Attached

Rainfall (2) PDF Sept 1 to Feb 22 04/03/20 [GP]

PDF attached