



*This submission to the Department of the Environment, Heritage and Local Government's Working group on the cessation of turf cutting on 32 raised bogs is by the Carbon Cycles and Sinks Network (CCSN) which was established with DoEHLG funds to provide policy advice to government on the best ways of reducing greenhouse gas emissions from agriculture and other types of land use. A list of the members of the Network is on the website [www.carboncyclesandsinks.org](http://www.carboncyclesandsinks.org). It must not be assumed, however, that all members agree with its recommendations.*

### ***The carbon store in Irish Peatlands***

Peatlands cover less than 3% of the world's land surface but store more carbon than is contained in the vegetation of the world's forests<sup>1</sup>. Irish peatlands are approximately 17% of the country's land area<sup>2</sup> and store an estimated 1.2 billion tonnes of carbon<sup>3</sup> which equates to 4.4 billion tonnes of carbon dioxide (CO<sub>2</sub>). As total Irish greenhouse gas emissions were 69.205 million tonnes CO<sub>2</sub> equivalent in 2007, Irish peatlands contain 69 times the carbon in the country's annual emissions. **The Network believes that the threat of a damaging climate change means that not only must this carbon stock be preserved but that damaged bogs must be restored so that they can resume functioning as carbon sinks.**

Peatlands are the most important long-term carbon store in the terrestrial biosphere as they can sequester atmospheric carbon for thousands of years. In their intact or undamaged form they are the most efficient terrestrial sink for atmospheric carbon dioxide as their persistently high water table ensures that the carbon entering the system through photosynthesis is greater than the amount leaving as ecosystem

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<sup>1</sup> Matthews, E., Prescription of Land-Surface Boundary Conditions in GISS GCM II: A Simple Method Based on High-Resolution Vegetation Data Bases. NASA TM-86096. National Aeronautics and Space Administration. . 1984.

<sup>2</sup> Hammond, R. F. *Peatlands of Ireland, Soil Survey Bulletin*; 1979

<sup>3</sup> Based on total island of Ireland. Tomlinson, R.W. 2005 Soil carbon stocks and changes in the Republic of Ireland. *Journal of Environmental Management* 76 (2005) 77–93; M.M. Cruickshank, M.M., Tomlinson, R.W., Devine, P.M. and Milne, R.1998. Carbon in the vegetation and soils of Northern Ireland. *Proceed RIA*. Vol. 98B, NO. 1, 9–21 (1998).

respiration<sup>4</sup>. A crude estimate based on Wilson's data<sup>5</sup> is that annual sequestration by near-pristine bogs in Ireland could be anything between 60,000 tonnes and 140,000 tonnes of carbon. However when the peatland has been damaged by extraction, the water table drops within the peat causing increased emissions of carbon dioxide.

### ***Domestic Extraction***

The protection of peatlands is required by the EU Habitats Directive and the Ramsar and Biodiversity Conventions. Active raised and blanket bogs are considered to be priority EU Habitats that must be maintained at, or restored to, favourable conservation status, where peat formation is occurring and the typical species are maintained. Ireland is legally required to maintain the area and range of these habitats as they were when the Directive came into force in 1992. Some effort was made in 1999 when over 160,000 ha of bog were designated as Special Areas of Conservation (SACs). At present, the SAC area is estimated to have risen to over 220,000 ha<sup>6</sup>. However ownership of these sites remains largely in private hands and conservation depends on a management agreement between the State and the private owners<sup>7</sup>. This is not always a secure basis for conservation as the integrity of the reserves remains to a certain extent dependent on the goodwill of the owners.

In addition to the peat harvested by Bord na Mona, it is estimated that domestic peat extraction has affected around 46% of Irish peatlands, with an estimated 650,000 tonnes of sod peat being harvested per year<sup>8</sup>. The damage is generally more severe where small-scale mechanisation has been involved and less where traditional hand cutting of the peat has been carried out. If it is assumed that small-scale mechanisation could release around 2.3 tonnes C ha<sup>-1</sup> from the degraded areas of the peatland, then this would result in an annual emission of 1.25Mt C from peatlands in the Republic of Ireland. The domestic burning of this peat may result in a further release of 0.5Mt C to the atmosphere<sup>9</sup>. These losses of C represent a steady drain of the national peatland carbon stock, a loss that has been described as 'Death by a Thousand Cuts'. **Urgent action is required to halt the loss of carbon from all**

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<sup>4</sup> Wilson, D., Alm, J., Laine, J., Byrne, K.A., Farrell, E. and Tuittila, E.S., Rewetting of Cutaway Peatlands: Are We Re-Creating Hot Spots of Methane Emissions? *Restoration Ecology* 2007

<sup>5</sup> Wilson, D., Tuittila, E.-S., Alm, J., Laine, J., Farrell, E.P., and Byrne, K.A. , Carbon dioxide dynamics of a restored maritime peatland, *Ecoscience*, 14, 71-80. *Ecoscience* 2007., 14, 71-80

<sup>6</sup> Douglas, C., Fernandez, F., and Ryan, J. In *Peatland habitat conservation in Ireland*, International Peat Congress, 2008; 2008.

<sup>7</sup> Schouten, M.G.C. 2008. Peatland research and peatland conservation in Ireland: review and prospects. In: Feehan, J. (Ed.), 13th International Peat Congress. International Peat Society, Tullamore, Ireland

<sup>8</sup> Foss, P. J., O'Connell, C. A. and Crushell, P. H *Bogs and Fens of Ireland – Conservation Plan 2005*. Irish Peatland Conservation Council. Dublin; 2001

<sup>9</sup> Wilson, D. 2008. Death by a thousand cuts: small-scale peat extraction and the Irish peatland carbon store. In: Feehan, J. (Ed.), 13th International Peat Congress. International Peat Society, Tullamore, Ireland, pp. 700-704

**protected peatland.** Without such action, what does “protected” mean? **Medium term action is then required to stop all peat cutting altogether.**

### ***Impacts of turf cutting on the 32 raised bogs***

During the 1990s, in implementing the European Habitats Directive, 32 raised bog sites were designated as SACs. However, a ten year derogation was granted in 1999 which has allowed turf cutting to continue in the protected sites. The derogation is due to cease this year (2009). The total area of bogland available for cutting peat in Ireland is 850,000 hectares which includes all blanket bog and raised bog areas with the potential to extract turf. The maximum total area for which is proposed to end turf cutting now or in the future is 35,000ha or just over 4% of the available area. The total area of privately-owned raised bog habitat on the 32 bogs on which it is now proposed to end cutting by the end of 2009 is estimated to be 7,774 hectares or less than 1%. The State has already acquired a third of the area of these bogs<sup>10</sup>.

The impacts of turf cutting on the raised bogs are widespread. Over a ten year period, measurable impacts have been observed at Clara Bog at up to 600m from the cut area<sup>11</sup>. Research in Ireland has shown that the occurrence of actively peat forming conditions is positively correlated with the length of the flow path and negatively correlated with slope. Turf cutting tends to decrease flow path lengths and increase slopes due to changes in the bog topography as the peat loses water and the surface subsides. As long as turf cutting continues, the area of active raised bog will continue to decrease. This will continue for several decades after cutting and drainage ceases, until the remaining uncut bog area reaches a new hydrological equilibrium and subsidence ceases<sup>12</sup> **Turf cutting is therefore trebly damaging. Not only does burning the cut turf release more CO<sub>2</sub> into the atmosphere than any other fossil fuel, but the cutting process both dries out the bog, allowing the remaining peat to oxidise and release CO<sub>2</sub>, and also destroys the bog's effectiveness as a sink.**

## ***Policy Recommendations***

### ***Cessation of domestic peat extraction***

In order for Ireland to fulfil the international obligations under the EU Habitats Directive, the valuable peatland carbon store needs to be protected. Since 1999, domestic cutting for fuel has been allowed to continue for 10 years in the protected SACs and National Heritage Areas (NHAs). In 2003, domestic turf cutting was ongoing in over 80% (117 of the 139) of the designated raised bogs. It is estimated

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<sup>10</sup> EPA 2009

<http://www.environ.ie/en/Heritage/NationalParksandWildlife/News/MainBody,19872,en.htm>

<sup>11</sup> Ibid 7

<sup>12</sup> Ibid

that over 20,000 turbarry rights exist on these bogs of which over 2,500 were exercised in 2003<sup>13</sup>.

The National Parks and Wildlife Service (NPWS) introduced a voluntary scheme in 1999 to purchase turbarry rights. It has met with very limited success. Only about 5% of turbarry rights have been purchased since the scheme was introduced. This may be because the price available under the voluntary scheme - €3,500 per ha in SACs and NHAs – does not reflect the earnings potential the bog has for the landowner. It is said that a worked peatland can produce a profit of up to €1,000 per hectare per year<sup>14</sup>.

A greatly increased price would be needed to purchase turbarry rights with this potential. Accordingly the Network proposes that an annual tax should be payable by the owner of every bog where turf-cutting is being carried out or which has been drained so that it can be carried out. The tax would apply to all turf cutting, not just that in protected areas. The amount payable for each site would be based on an estimate of the emissions released by the oxidation of the bog as a result of the drainage plus the emissions from the combustion of any peat dug.

It is reasonable to impose such a tax as emissions from peatlands are likely to be included in the returns that Ireland has to make to the EU in future under the Effort-Sharing Decision, and the country is almost certain to have to pay a cost per tonne to buy permits to cover its failure to meet the reduction target set for it.

After the tax was in operation, the turbarry rights to the protected sites, and probably the sites themselves, would be bought by compulsory purchase in cases in which it had proved impossible to buy them voluntarily. The imposition of the tax would obviously reduce each bog's profit potential and thus the price paid for it, compulsorily or not. Moreover, the tax on drained but unworked bogs would encourage their restoration.

The Network believes that the owners of any intact peatlands which remain in private hands after the tax has been imposed and harvesting in the protected areas has ceased should be paid an annual maintenance fee to reward them for the carbon they are keeping safe. The income for this, and for the purchase of turbarry rights, could be paid out of the income that the state can expect to receive from the auctioning of EU ETS emissions permits after 2012. Alternatively, the Land Bond system once used by the Land Commission to buy out the landlords could be used to buy the turbarry rights or the entire bog. The bonds would pay their registered owner a fixed rate of interest.

Strong protests against the cessation of private turbarries in protected peatland areas have been voiced in the Irish media. To counter these and to justify the imposition of

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<sup>13</sup> Ibid

<sup>14</sup> According to Galway East Fine Gael TD Paul Connaughton “Turf ban will hurt Galway families”-Galway Independent March 2008.

the tax, an integrated education and communication programme which highlights the value of Irish peatlands as a carbon store should to be put before the public and the holders of the turbarry rights. This could also be funded out of the ETS revenue.

### *Summary of Recommendations.*

1. The medium-term aim should be to end turf cutting throughout Ireland. The immediate aim should be to end all turf cutting on protected sites.
2. A tax should be imposed on all holders of turbarry rights which are being exercised and on the owners of bogs which have been drained for turf extraction but are not being exploited. This would include Bord na Mona. The rates mechanism might provide a suitable legal basis for the tax. The amount of the tax should be based on the total emissions released as a result of the peat extraction, not just the emissions from the use of the peat as fuel, and reflect the price that the taxpayer would otherwise have to meet to buy emissions rights to cover the national failure to meet emissions targets.
3. Once the tax is in effect, compulsory purchase powers should be used to buy up the peatland in the protected areas and/or the turbarry rights to it if the purchase could not be made voluntarily. .
4. In cases where the owner or turbarry rights holder in a protected area is cutting turf for their own use, an additional sum would be payable as part of the compulsory or voluntary purchase settlement to enable the recipient to invest in insulating their house or installing non-fossil ways to heat it.
5. After the tax has taken effect, all turbarry rights holders and owners of peatlands should be invited to sell their rights, or their peatland plus the turbarry rights, to the state. Payment could be made with Land Bonds or using funds from the auctioning of ETS EUAs.
6. Any remaining private owners of intact peatland which is functioning as a carbon sink should be rewarded with an annual maintenance fee for the carbon they are safeguarding and for any annual increase. These payments should be funded from the auctioning of ETS EUAs. .
7. An integrated education and communication programme should be launched to explain the importance of the carbon stores and the need for the measures to protect them.