



Kilcatherine, Eyeries, County Cork
<http://www.friendsoftheirishenvironment.org>

Friends of the Irish Environment
Submission to National Climate Policy Development Consultation

By email only: climateconsultation@environ.ie

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Friends of the Irish Environment wishes to take the opportunity of this consultation to emphasise the importance of the protection of Ireland's peatlands as a major sink and store of soil carbon. This issue does not fit within the framework of the questionnaire set out by the Department and therefore we are submitting it as a stand-alone document.

This document concludes:

In conclusion, we emphasise that the groundwork has been done. The importance of peatlands for the climate protection agenda is clear. The core recommendations are waiting for adoption. We urge the Government to integrate a strategy for the protection and restoration of Ireland's peatlands into its climate change policy.

Respectfully yours,

Caroline Lewis and Tony Lowes
(Directors)

Protection of our peatlands is an international law obligation of Ireland.

We refer in particular to the obligations set out in Article 4 of the United Nations Framework Convention on Climate Change:

ARTICLE 4

COMMITMENTS

1....All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

(d)...Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

2....The developed country Parties and other Parties included in Annex I commit themselves specifically as provided for in the following:

(a)...Each of these Parties shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs.

Unfortunately, a lack of willingness to take on vested interests, even where the short-term public benefits are clear, has led to ongoing large-scale peat extraction incentivised by an ongoing cross-subsidy without which peat extraction for electricity generation would have ended. FIE's attempts to prevent the construction of new peat-fired power plants were unsuccessful and the public continues to pay the cost.

Under the EPA STRIVE Programme 2007-2013 a major multi-disciplinary study of Ireland's Peatlands was carried out, entitled 'BOGLAND: Sustainable Management of Peatlands in Ireland.' One of the objectives of the study was the making of recommendations in relation to the management of peatlands. We would like to draw your particular attention to the elements of the Study which relate to the role of peatlands as carbon sinks and stores.

Key factual findings of the study include the following:

- In light of future climate change, the most important function of peatlands in the 21st century is that of a carbon store and sink. Covering only about 3% of the Earth's land area, they hold the equivalent of half of the carbon that is in the atmosphere as carbon dioxide (CO₂) (Dise, 2009). It is estimated that the carbon

stored in peatlands represents some 25% of the world soil carbon pool (i.e. 3–3.5 times the amount of carbon stored in the tropical rainforests (Parish et al., 2007)).

- Irish peatlands are a huge carbon store, containing more than 75% of all the national soil organic carbon.
- A constant, high water table, which restricts aerobic decay, is a prerequisite for sequestration and long- term storage of carbon in peatlands.
- Natural/Undamaged peatlands help to regulate the global climate by actively removing carbon from the atmosphere but this function is reversed (i.e. there is a net release of carbon) when the peatland is damaged.
- Near-intact peatlands may actively sequester on average 57,402 t C/year over the whole country.
- A raised bog area damaged by domestic peat cutting emits six to seven times more carbon dioxide than in a near-intact part of the peatland via peat oxidation.
- As the majority are degraded to some extent, Irish peatlands are a large source of carbon, estimated currently at around 2.64 Mt C/year (without accounting for peat soils under forestry and agriculture).
- Damaged peatlands result in a persistent loss of carbon dioxide and remedial management, including full restoration, may be effective in maintaining the carbon storage of peatlands and to recreate conditions whereby the peatland may actively sequester carbon in the future.
- The carbon cycling of degraded peatlands may be more vulnerable to future climatic changes than that of natural peatlands.
- Policies affecting peatlands have been determined only by the market value of peat, namely the value of peat as combustible fuel. These policies are at odds with the other international and national government policies and conventions, specifically those addressing climate change, biodiversity protection and environmental sustainability.
- There is no public awareness of the relationship between peatland and carbon and the contribution of peat extraction to climate change.

The first recommendation of the report is the adoption of a National Peatland Strategy, integrated with Climate Change Policy:

1. A much needed National Peatland Strategy

A National Peatland Strategy is clearly required if the proposed protocol for sustainable management of peatlands is to be implemented. The ensuing National Peatland Policy should be integrated into other government policies, such as the Climate Change Policy, the Renewable Energy Policy, the Strategy for Invasive Species and the Water Framework Directive. The Peatland Strategy would be subject to the requirement of the Strategic Environmental Assessment Directive.

Since then, a Peatlands Forum has been established with a remit to develop a Peatlands Strategy. Unfortunately it appears that no progress has been made.

However, the recommendations from the BOGLAND study itself are carefully considered and well thought through. Therefore we recommend that these recommendations and actions be taken as a first draft of the Peatland Strategy and that the Forum set about a workplan for expanding on these recommendations as necessary, engaging in an SEA process and leading to the adoption of the Peatlands Strategy as Government Policy.

Key detailed recommendations in relation to the role of peatlands as carbon sinks and stores include the following:

Response 9: All the protected sites should be first and foremost restored to their full functioning status so that as many as possible raised and blanket bogs in their natural state are passed on to the next generation and contribute to mitigate the impacts of climate change.

The ultimate objective for these sites should be to restore the site to a fully functional peatland. While this could be a difficult task, it should be attempted as much as possible on these protected sites so that the efforts and timescale required (over 30 years in most cases) are not compromised. This option will require ultimately some hydrological management as correct hydrological conditions (keeping the water table near the surface) are critical for the success of peatland restoration. This, in turn, may require managing the whole catchment so that the integrity of the priority habitat is maintained. The key to successful restoration is first of all the setting of well-stated and realistic goals which will form part of a broader comprehensive and rigorous process for planning, developing, implementing and evaluating the restoration project. Impacts and possibilities of restoration management are still poorly known but as research is increasing and more sites are being restored, such management should become more and more successful.

Response 10: Consideration for the protection and conservation of peatland biodiversity should be integrated across government policies, such as climate change policy, renewable energy policy, strategy for invasive species and Water Framework Directive.

This research, corroborated by others studies elsewhere (Strack, 2008), demonstrates that efforts should be made to actively repair damaged peatlands to minimise the persistent loss of carbon dioxide and to create conditions whereby the peatland may actively sequester carbon in the future. Cuts in carbon emissions made by avoiding peat soil degradation have been actively recognised and supported by national and international bodies and have been discussed at the Climate Change talks.

Response 11: The first option for after-use of cutaway peatlands ought to promote, where possible, the return to a natural functioning peatland ecosystem.

Peat-forming conditions often develop locally in cutaways (Feehan et al., 2008). Spontaneous regeneration of peat-forming vegetation occurred on a Bord na

Móna industrial cutaway blanket bog in the west of Ireland where full restoration techniques (e.g. drain blocking, ridging on gravel hills and slopes, stabilisation of the peat through acceleration of revegetation) have enhanced peat-forming conditions (Farrell and Doyle, 2003). However, the scope of restoration of peat-forming ecosystems on industrial cutaway milled raised bogs in the Midlands is limited as conditions for spontaneous *Sphagnum* regeneration occur less naturally. The current climate in the Irish Midlands is drier than the climate prevailing when the raised bogs developed and thus less conducive to successful restoration (Robroek et al., 2007). Other hydro-physical characteristics are essential to facilitate the restoration of peat-forming conditions on cutaway raised bogs. At least 1.5 m of fen peat must be left behind, and the flow of water out of the system must be staunched by the blocking up of drains, but without preventing surface run-off and system-linked discharge which maintain the oligotrophic status of the ecosystem. Where necessary, peat dams may be erected to retain water. A further requirement is a seed bank; under natural conditions, this would be provided by the adjacent intact bog. These requirements underline the importance of planning for regeneration from an early stage. A survey to identify sites with restoration potential should be carried out over the whole cutaway peatland resource (owned by Bord na Móna and other private companies).

Response 13: Managing cutaway peatlands for climate change mitigation.

Peat extraction transforms the peatland into a significant source of carbon dioxide which is likely to increase with climate change predictions. Unless it is restored or rehabilitated as a carbon sink ecosystem, cutaway peatland could remain a significant carbon source even with the regeneration of dryland habitats (Wilson and Farrell, 2007; Renou-Wilson et al., 2010). A strategy to mitigate climate change would involve growing a crop that sequesters more carbon than is lost by the degraded ecosystem and could also be used for energy to offset fossil fuels. Such a strategy has been brought forward rapidly without any sound scientific assessment and was therefore further investigated in the BOGLAND project (see Chapter 3.9, End of Project Report). The authors concluded that several agro-climatic obstacles preclude the reclamation of industrial cutaway peatlands for the growth of energy crops such as willow and *Miscanthus*. The intensive management required in growing energy crops in terms of cleaning weeds and fertiliser application, as well as the uncertain yield due to climatic conditions (late-spring frost) and variable peat substrate, is a key obstacle. The short time window to harvest energy crops is also a major problem as weather conditions are usually poor in March/April. It is also likely that these production systems will release more GHG to the atmosphere (from the oxidation of the peat after cultivation and the application of fertiliser releasing nitrous oxide) than fossil fuels (Shurpali et al., 2008). On the other hand, forestry and paludiculture present potential sustainable management options for cutaway peatlands. Naturally regenerated birch and scrub could be managed with low-cost inputs in order to increase yield which would help the carbon balance of these ecosystems (so far being carbon sources). Paludiculture is probably the after-use option that can have the most benefit from a climate mitigation point of view: avoiding carbon emissions from the degraded peatland by re-wetting, from the displaced fossil fuels and also from the transports of peat/biomass (Wichtmann and Joosten,

2007). While harvesting still remains a major obstacle to growing biomass on re-wetted peatlands,

paludiculture offers far more advantages than any other after-uses. While initial results from Bord na Móna exploratory trials show poor yield of reed canary grass, further research using different seed sources and other species and appropriate regimes of fertilisation should be encouraged. In addition, paludiculture with tree crops such as alder should be further explored. Finally, the BOGLAND study concluded that major obstacles preclude any soon development of algae production on cutaways, mainly due to climatic, substrate conditions and required inputs affecting yields.

In conclusion, any particular option for cutaways will only provide an element to any climate change mitigation strategy if it is economically, environmentally and socially sustainable, which remains to be ascertained.

The actions associated with these recommendations are below:

5-3.2 Management of Peatlands for Carbon, Climate and Archives (MPC)

5-3.2.1 Observations

Irish peatlands are a huge carbon store, containing more than 75% of the national soil organic carbon. A constant high water table that restricts aerobic decay is a prerequisite for long-term storage of carbon in peatlands and preserving the information stored in the peat (archaeological and palaeo-environmental archives).

Peat soils are sensitive to degradation processes such as erosion, compaction and contamination. Studies in the BOGLAND project demonstrated that natural or undamaged peatlands help to regulate the global climate by actively removing carbon from the atmosphere but this important function is reversed (i.e. there is a net release of carbon) when the peatland is damaged. Disturbances, such as peat extraction, drainage or flooding, have considerable impact on carbon cycling within the peat soil with implications for their potential for sequestration and storage of carbon. Peat extraction transforms a natural peatland, which acts as a modest carbon sink, into a cutaway ecosystem which is a large source of carbon dioxide. An area of raised bog damaged by domestic peat cutting may emit as much as six to seven times more carbon dioxide than in a near-intact part of the peatland, due to peat oxidation intensified by the lowering of the water table.

In addition, the carbon cycling of degraded peatlands may be particularly vulnerable to future changes in climatic inputs compared to intact peatlands. However, considerable uncertainty exist in predicting the effects of future climate change on the carbon stores within peatlands, partly due to the complexity of the climatic system itself but also as a result of response variations both between and within individual peatlands.

Restoration may be an effective way to reduce carbon dioxide emission and maintain the carbon storage of peatlands. While natural peatlands are able to buffer the impact of external perturbations such as small changes in climate, they are unlikely to survive as carbon sinks, with large magnitudes of changes in precipitation and temperature.

5-3.2.2 Targets

- To retain, enhance and maximise the value of peatland as a carbon store (Actions MPC1, 2, 3, 6, 7, 10);
- To promote carbon dioxide absorption by the peatland vegetation and to encourage carbon accumulation in the peat (Actions MPC2, 3, 9, 10);
- To decrease carbon emissions and other carbon loss (through fluvial, erosion or burning processes) from degraded peatlands (including cutovers and cutaways) (Actions MPC1, 2, 3, 4, 6, 7, 9, 10);
- To restore the hydrological integrity of degraded peatlands (Actions MPC1, 2, 3);
- To safeguard the archaeological and palaeo- environmental information stored in the peat (Actions MPC1, 2); and
- To mitigate potential climate change effects including the spread of invasive species (Actions MPC2, 5, 8, 10).

5-3.2.3 Actions – 2. Management of peatlands for carbon, climate and archives (MPC)

		Priority	Remit	Link
MPC1:	Strict protection of peatlands sites that have been designated for conservation is critical for the maintenance of their carbon storage and sequestration capacity and associated ecosystem functions. This requires (1) stopping and removing any disturbances on these sites, and (2) setting up a management plan with the aim of maintaining the active peatland system and restoring the full functioning status of the peatland.	High	GOV	MPB2 MPB3
MPC2:	Peat oxidation should be stopped in all protected peatlands as well as in degraded peatlands where possible as protected peatlands are only a minor part of the total area of peatlands. This requires a programme of restoration which should follow an adaptive management approach, i.e. assessing individual sites and developing individual management plans to maximise the natural functions of each as each peatland is different.	High	GOV	MPC1 MPB4 MPS1 MPS2 MPW3

MPC3:	In order to combat carbon dioxide emissions from peat oxidation, water management in degraded peatlands should be optimised (reduce drainage) and preserve the palaeo-information within the peat. Water management for restoration purposes needs sufficient time and resources to take cognisance of the local hydro- geology which has often very localised conditions.	High	GOV	MPC1 MPC2 MPW2 MPW3
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MPC4:	Invasive species should be actively removed from protected sites and appropriate long-term management should be set out for those sites in relation to updated climate change scenarios.	Medium	GOV	MPB1 MPC1
MPC5:	An appropriate form of rehabilitation or restoration should be a licensing condition for any exploitive use of peatlands.	High	GOV	MPL6
MPC6:	Measures to reduce peat (carbon) loss from degradation such as erosion should be introduced at management plan level (e.g. commonage) and in other policies (agri- environmental).	Medium	GOV	MPB7
MPC7:	Burning of peatland as a management practice to facilitate the extraction of the peat or to increase the population of grouse (promoting heather growth) should be strictly controlled. The Muirburn Code (Scottish Natural Heritage, 2005) should be used as best practice in using fire as a management tool to avoid accidental fire and additional carbon emissions.	Medium	GOV	
MPC8:	The establishment of a network of protected areas representing the geographical distribution of peatland types should be a priority in order to offset climate change threats.	High	GOV	MPB1
MPC9:	The first option for after-use of cutaway peatlands should be to promote, where possible, the return to a natural functioning peatland ecosystem. The	Medium	GOV	

	favoured management option should therefore involve re-wetting or the creation of a wetland.			
MPC10:	New production techniques such as paludiculture (growing biomass in a wet environment) should be developed and promoted to generate production benefits from cutaway and cutover peatlands without diminishing their environmental functions. Paludiculture is probably the after-use option that can have the most benefit from a climate mitigation point of view: avoiding carbon emissions from the degraded peatland, from the displaced fossil fuels and also from its transports.			

In conclusion, we emphasise that the groundwork has been done. The importance of peatlands for the climate protection agenda is clear. The core recommendations are waiting for adoption. We urge the Government to integrate a strategy for the protection and restoration of Ireland's peatlands into its climate change policy.