An Taisce
The National Trust for Ireland

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DG Clima - Directorate General for Climate Action
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18.06.15

Re: Submission on Greenhouse Gas Emissions from Agri / LULUCF

Dear Sir/Madam,

An Taisce would like to make the following comments on GHG emissions from agriculture and land use, land use change and forestry (LULUCF) which we request are taken into consideration in formulating the EU 2030 Climate and Energy policy framework.

We would appreciate notification of further consultations, meetings and opportunities to discuss and engage with the outcomes of this process.

Yours sincerely,

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An Taisce
The National Trust for Ireland

Submission to DG Clima
Addressing Greenhouse Gas Emissions from Agriculture and Land Use, Land use Change and Forestry (LULUCF) June 2015

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An Taisce, the National Trust for Ireland, is a membership-based charitable organisation committed to enhancing our quality of life, heritage and environment.

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Q1. In your view, which of the multiple objectives of agriculture, forestry and other land use will gain most in relative importance by 2030?

It is difficult to make any concrete assertions about the change in relative importance of agriculture, forestry and other land uses by 2030 at an EU level given the array of policy reforms which may emanate from this process. The future outlook will depend to a large extent on the decisions and actions taken by industry, policy makers and stakeholders during the intervening time period. However it is the belief of An Taisce that agricultural food production will remain the dominant land use within the EU by 2030. Globally agricultural output will have to respond to the increasing demand for food from a steadily increasing world population.

The global food system is linked to some of the most pressing challenges of our time. Food systems contribute 19%–29% of global anthropogenic greenhouse gas (GHG) emissions, releasing 9,800–16,900 megatonnes of carbon dioxide equivalent (MtCO2e) in 2008.

Agricultural production, including indirect emissions associated with land-cover change, contributes 80%–86% of total food system emissions, with significant regional variation. (Vermeulen et al., 2012). Overfishing has led to the collapse of important fish stocks and threatens the stability of marine ecosystems. It is essential that increased food production occur in a sustainable manner, respecting national and EU GHG emissions limit obligations, and maintaining and enhancing existing agricultural carbon sinks, biodiversity and ecological services.

While increased agricultural production in the EU can improve EU food security, it would not necessarily contribute to global food security. It should be noted that based on FAO statistics the EU is currently a net importer of food energy (i.e. the potential energy required for humans and animals to derive food). In the consultation background document, Figure 2.1 shows a reduction in the agricultural GHG intensity in the EU since 1990. The explanation for this is not however solely due to increased efficiency. It can largely be explained by a marked shift away from ruminant meat to non-ruminant meat, as is clear from FAOSTAT data. Since 1990 beef/sheep meat production in the EU has decreased by 2.5Mt (24%) while non-ruminant meat from chicken/pig etc has increased by 6.9Mt (23%). A further move from ruminant to non-ruminant meat would lead to even lower GHG emissions intensity. But this would be at the expense of food security.

Production of non-ruminant meat requires high levels of cereal feed. Since 1990 EU consumption of animal cereal feed has increased by 31Mt (23%). The EU has been a net exporter of cereals between 1990 and 2011, however these exports have reduced by 12Mt (44%). Policies supporting increased production of non-ruminant meat as a GHG mitigation tool will increase demand for cereal feeds and will cause the EU to become a net cereal importer, which will further increase the net food energy imports of the EU, impacting adversely on global food security.

It is important to note that agriculture was responsible in 2012 for one third (32.1%) of Ireland's total climate emissions. This is much higher than our transport, energy or industrial sectors. Ireland's Environmental Protection Agency projects an increase of 12% in agricultural emissions by 2020 as a direct result of dairy expansion and agricultural intensification. Globally the livestock sector is estimated to account for 15% of global greenhouse gas (GHG) emissions, 80% of which originate from ruminant animal systems due to high emissions of methane (CH4) from enteric fermentation and manure management (Persson et al., 2015). The global warming potential of ruminant emissions varies greatly depending on the methodology and timescale under consideration however what remains clear is that emissions associated with meat based production systems need to be greatly reduced if we are to avoid a 2°C rise in average global temperatures.

Policies supporting increased production of vegetal food and reduced consumption of meat would yield substantial benefits for human health and global land use, but can also play an important role in future climate change mitigation policies (Stehfest et al., 2009). This transition should be promoted through both education and policy programmes within the EU (Persson et al., 2015).

Increasing supply does not of course imply an increase in access to food or increase in the quality of that food. EU policies around food production and consumption must address obesity and diet-related diseases while continuing to reduce hunger and malnutrition. There is obviously a need to reduce food waste. Evolving policy around the sustainable use of our marine ecosystems must be strengthened and deepened, appreciating the ecological limits of marine ecosystems while also appreciating the multifaceted ecosystem services they provide. The land and water imprint of our various food production systems will have to be factored into the debate.

Absolute reductions in food related GHG emissions will have to be achieved, as simply improving the unit efficiency of environmentally destructive food production systems will not go nearly far enough to address the multitude of evolving issues. It is accepted that we are living through a mass extinction event of our own creation. The EU's agricultural policies over the preceding decades have been one of the main drivers of biodiversity loss across Europe. All future policies relating to agriculture, forestry and land use must be compatible with the protection and restoration of biological diversity within the EU.

Given the interconnected nature of the challenges we face and various competing needs for limited resources we need to drastically reconsider the way we produce food, re-evaluate our food governance systems and change our consumption patterns.

Gill, M., P. Smith, and J. M. Wilkinson. "Mitigating climate change: the role of domestic livestock." Animal 4.03 (2010): 323-333.

Persson, U. Martin, et al. "Climate metrics and the carbon footprint of livestock products: where's the beef?." Environmental Research Letters 10.3 (2015): 034005.

Stehfest, Elke, et al. "Climate benefits of changing diet." Climatic change 95.1-2 (2009): 83-102.

Vermeulen, Sonja, et al. "Climate change, agriculture and food security: a global partnership to link research and action for low-income agricultural producers and consumers." Current Opinion in Environmental Sustainability 4.1 (2012): 128-133.

Q2. How can the contribution of agriculture, forestry and other land use to the production of renewable energy and raw materials be optimised, while fully exploiting the mitigation potential in these sectors?

New policies need to be developed that reflect the complexity and conflicting demands that exist for resources and land uses. In agriculture the priority should be sustainable low-input food production and consumption whilst maintaining/enhancing biodiversity and ecosystems.

The use of bioenergy should be capped at a level based on an estimation of the sustainable potential of EU domestic resources. Support should be given only to bioenergy uses and feedstocks that can demonstrate effective emission savings, taking into account indirect land use change and C debt. The assumed C neutrality of current policies for biomass for power and heat need to be scrutinised. Between now and 2020, countries should account properly for emissions in the energy sector. Member States (MS) must provide information on the type, source and country of origin of their biomass, in order to provide a clearer picture of emissions and their scale. All biomass use must deliver clear verifiable emissions reductions. Biomass should be considered within the energy sector. For the C storages of forests, unconstrained bioenergy drives decreases in forests C stocks and sinks, undermining the overall aim.

To prevent a 2°C rise in global temperature the potential of C sinks to mitigate climate change must be maximised in a sustainable way while land uses which increase GHG emissions must be addressed. If the C sequestration potential of afforestation is to be considered then emissions originating from other land uses must also be scrutinised, i.e. emissions associated with the drainage and afforestation of peatlands, the drainage of wetlands, the harvest of peat both for industrial and domestic use, loss of soil C due to agricultural intensification, the loss of species-rich grassland and the burning of scrub and vegetation. GHG emissions resulting from a multitude of land uses are underrepresented in the LULUCF debate.

The world's forests are a significant C sink and a key component of the GHG balance. The functioning and management of forests will be critical for climate change mitigation. Forestry management and local conditions can significantly affect the C balance on site. Policies and C accounting must reflect the complexity of the reality of the situation. Inaccuracies will undermine EU LULUCF policy and ultimately run counter to efforts to reduce emissions. Establishing permanent native woodlands on mineral soils would sequester C, enhance biodiversity as well as supplying a host of other ecosystem services. In order for a full GHG budget to be made for forestry the emissions associated with the management, felling, transport and finally the treatment and manufacturing of the wood

must be considered. From a C sequestration point of view long-lived products would be favourable. Many wood products are poor C sinks while even construction materials may only last between 57-92 years (Byrne et al., 2004; Hargreaves et al., 2003). Forestry on the scale envisioned by LULUCF will lead to unintended environmental and socioeconomic impacts that could jeopardise the overall value of C mitigation projects. Concerns include decreased food security, reduced stream flows, biodiversity loss and reduced (?) local incomes, increased soil salinisation and acidification (Canadell & Raupach, 2008; Jackson et al., 2005). Principles of sustainability must govern the resolution of trade-offs that may arise from ancillary effects in order to simultaneously maximise climate change protection and sustainable development.

The ability of peatlands to store large amounts of C over long time spans makes them the most important long term C sink in the terrestrial biosphere (Holden, 2005; Parish, et al., 2008). Covering a mere 3% of the world's terrestrial surface, peatlands contain 550 Gigatonnes of C. This is equal to 30% of all soil C, as much C as all terrestrial biomass, and two times the C sink of all forests in the world (Holden, 2005; Parish, et al., 2008). The ability of peatlands to store C for long periods of time means they are capable of slowing the rate of climate change. The drainage and degradation of pristine peatlands causes the release of considerable amounts of GHG.

Drainage however also causes a reduction in CH_4 emissions as the result of increased oxidation in the peat profile. This decrease in CH_4 and an initial increase in CO_2 sequestration associated with an increase in primary productivity such as when a peatlands is afforested may appear to cause a decrease in the GWP of peatlands over short time periods however the inevitable loss of C stocks and the loss of the C sequestration capacity of peatlands through the minimisation and erosion of the peat profile mean that over longer time spans peatland degradation positively forces global warming. The biomass and litter stores of forests in temperate and boreal regions usually reach C equilibrium after 100 years but the cumulative C losses from oxidised peat will dominate the GHG balance over longer timescales (Hargreaves et al., 2003; Parish et al., 2008).

The UNFCCC estimates that 3 Gt of CO_2 may be emitted from degraded peatlands annually. This is equivalent to over 10% of the total global anthropogenic CO_2 emissions from 1990 or 20% of the total net 2003 GHG emissions of the Annex 1 Parties to the UNFCCC. The rewetting and restoration of peatlands has the capacity to secure existing C stocks and reinitiate their C sequestration capacity. **The absence of any real debate about the importance of peatlands in the LULUCF debate hugely discredits the whole process.**

Byrne, K. A. et al., EU Peatlands: Current Carbon Stocks and Trace Gas Fluxes, Viterbo: Carboeurope-GHG (2004)

Canadell, Josep G., and Michael R. Raupach. "Managing forests for climate change mitigation." science 320.5882 (2008): 1456-1457.

Hargreaves, K. J., Milne, R. & Cannell, M. J. R., Carbon balance of afforested peatland in Scotland. Forestry, 76(3), (2003): 99-317.

Holden, J., Peatland hydrology and carbon release: why small-scale process matters. Philosophical Transactions of the Royal Society, Volume 363, (2005): 2891-2913.

Jackson, Robert B., et al. "Trading water for carbon with biological carbon sequestration." Science 310.5756 (2005): 1944-1947.

Parish, F. et al., Assessment on Peatlands, Biodiversity and Climate Change. 1st ed. Wageningen: Global Environment Centre & Wetlands International. (2008)

Q3. How can the new framework ensure a fair and equitable distribution among Member States of action for mitigation in agriculture, forestry and other land use and reflect biophysical, geographical, and socio-economic variability and differences among Member States?

Any new EU framework should take account of the original UNFCCC commitments which were to reduce emissions and protect and enhance sinks. Due to the very large variations in national factors and conditions, undifferentiated EU-wide measures are unlikely to be effective or equitable. The framework should therefore continue on the lines of fulfilment of obligations by individual member states. In the interests of being fair and equitable to the broader global community LULUCF must not be allowed to be used as an excuse to avoid reductions in total emissions. An Taisce's concern is that at there are no plans to reduce agricultural emissions and LULUCF will be hijacked to allow further intensification within the sector. Off-setting sinks against agricultural emissions should not be permitted. Protection and enhancement of sinks should be pursued as an environmental good in its own right, as originally envisaged in the UNFCCC Article 4.2(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".

The possibility of using forestry and other land-use off-sets was subsequently introduced in Article 3 of the Kyoto Protocol. Continued use of such off-sets would reduce the transparency of the national mitigation efforts and confer unfair advantage on those member states where afforestation and other land use activities have large accounted short-term sinks. It is questionable if allowing afforestation to offset emissions is itself fair or equitable in that it rewards countries like Ireland which have low forest cover as the result of historical deforestation. As is clear from the information in the background consultation document it is difficult to significantly enhance the LULUCF sink on the EU scale, and this sink has been stable at 300MtCO2eq since 1990. In this context it is not helpful for short-term fluctuations in sink rates in individual member states to be appropriated as off-sets against specific sectors such as agriculture. A focus must be kept on the long-term enhancement of the total EU carbon sink. Peatlands and wetlands must

be given greater attention. The potential to sequester carbon in the EU marine environment by restoring overfished ecosystems should be explored.

Re-allocation of agricultural GHG emissions rights between member states based on efficiency factors would prove extremely complex and divisive. Similarly introduction of trading mechanisms for agricultural GHG emissions would be complex, and could undermine the food security of member states. The final outcome of any such agricultural GHG trading regime would also be completely unpredictable. A simple and equitable approach would be to continue with the present policy framework whereby member states are responsible for reducing their own GHG emissions caused by agricultural and forestry activities.

Separate accounting of LULUCF sinks at the national level would also serve to insulate other economic sectors from the effects of natural fluctuations in the annual sink rates.

In the interests of fairness and equality the principle of Climate Justice must be acknowledged in all EU climate change related policies. Our moral obligations to the broader global community must be acknowledged.

Q4. What are the most promising and cost-effective greenhouse gas reduction measures related to agriculture, forestry and other land use? Are there any technologies that would deserve special attention in research and technology development?

GHG mitigation must not be considered in isolation but must also consider global social and environmental concerns. These include human nutrition, biodiversity, water use and animal welfare. For any given mitigation measure, decision makers will need to consider the extent to which it moves us away from, or towards, achieving a more resilient, healthful, and morally attentive system of food production and consumption.

Policies that prevent the degradation of carbon sinks is one of the most cost-effective ways of preventing emissions. The ongoing greening of the CAP and pillar two payments should be utilised to a greater extent to protect, restore, create and re-create C sinks. Ecosystems such as peatlands which are of conservation concern and also effective long term C sinks should be the focus of special attention. Establishment of riparian woodlands will help to meet our objectives under the WFD while also increase C sequestration and helping to mitigate against climate change-related increase in floods and droughts.

While C sequestration will have to play its part prevention is always better than cure. The most cost-effective and promising way to reduce emissions is to ensure that they are never created. Key measures include reducing energy consumption across all sectors, investing in green technologies and subsidising actions that reduce emissions.

Reform of bioenergy policies taking into account the true C balance of bioenergy including changes in nature's C sinks, Indirect Land Use Change and C debt would have significant

emission reduction potential. Use of waste and residues-based bioenergy rather than direct use of crops or primary wood for energy should be preferred.

As has been identified in the EU policy document on "Measures at farm level to reduce greenhouse gas emissions from EU agriculture" a range of mitigation measures have already been acknowledged as reducing on-farm emissions (http://www.europarl.europa.eu/RegData/etudes/note/join/2014/513997/IPOL-AGRI_NT(2014)513997_EN.pdf). These include: introduction of leguminous plants on arable land, conservation agriculture, implementation of cover crops, manure storage, manure management systems, biogas at farm level, use of biomass for heating needs, photovoltaic installation, fuel reduction, electricity reduction and other low carbon agri-environmental measures and improved livestock feeding strategies. Biochar has the potential to help mitigate climate change via carbon sequestration, an increase in soil fertility of acidic soils and increased agricultural productivity.

The greenhouse gas–mitigation and carbon sequestration potential of agroforestry has been recognised. The greater efficiency of agroforestry's integrated systems in resource capture and utilisation than single-species systems will result in greater net C sequestration. The potential to bring areas of unproductive crop, grass, and forest lands as well as degraded lands under agroforestry across the EU should be explored.

The two greatest drivers of the world's environmental crisis are overpopulation and overconsumption. It is imperative that these two issues are addressed. Our lifestyles must be brought in line with the finite nature of the earth's resources. Policies must prioritise long term sustainability and respect the rights and needs of an increasing world population. The principle of Climate Justice must be a fundamental component of any such policies given the need for cooperation. According to Garnett (2011) the food system contributes significantly to global GHG emissions. While all stages in the supply chain contribute, it is the agricultural stage which is the single biggest emitter of GHG emissions. Meat and dairy products are the most GHG-intensive food types. Technological improvements, while essential, will not be sufficient to achieve the necessary levels of GHG emission reductions. In addition changing technologies may foster new and unsustainable patterns of consumption. An immediately effective strategy to reduce emissions would be to reduce the production of ruminant meat, and to reduce meat production generally. Low input models of agriculture should be encouraged to minimise requirement for artificial nitrogen. Organic farming methods should be actively supported. Provide supports for waste management to minimise GHG emission, including anaerobic digestion. Greater education is needed to change global consumption patterns.

The climate and environmental footprint of any given food production system could be reflected in the cost of that food. This would provide financial incentives to the producer and consumer to adopt behaviours that favour more environmentally-friendly food production systems. Such a move would have to find a compromise between the need to

- instigate behavioural change
- meet the nutritional needs of a growing global population

- support viable rural communities throughout the EU

The level of debate around addressing overpopulation at both UN and EU levels is wholly inadequate. The social benefits of reducing overpopulation are as important as the environmental benefits. Addressing overpopulation is possible through widespread availability of family planning, spreading awareness of the causes and effects of overpopulation, providing access to birth control devices and implementing social norms, such as social marketing strategies, to educate the public, particularly in developing countries, about overpopulation. Empowering women in developing countries through increased female education has been proven to be an effective tool to reduce birth rates. While family planning and education for women is an important way to curb overpopulation it is less effective when compared to comprehensive education through secondary school (Subbarao and Raney, 1995). The European Union must work with our partners in the developing world and the NGO sector to carry out programmes that will address the global environmental, social and climate change crises of the 21st Century.

Garnett, Tara. "Where are the best opportunities for reducing greenhouse gas emissions in the food system (including the food chain)?." Food policy 36 (2011): S23-S32

Subbarao, K. and Laura Raney. "Social gains from female education: A cross-national study." Economic Development and Cultural Change 44 (Oct 1995) 105-128

Q5. What are the main obstacles and barriers to the implementation of emission reduction measures in agriculture, forestry and other land use?

The fact that drivers of increased emissions in the land sector come from various sectoral policies such as agriculture and energy is an obstacle. The false incentives should firstly be fixed in the driving policy, especially in the case of energy policies and bioenergy.

EU agriculture and fisheries policies have historically failed to prioritise the long-term sustainable use of our natural resources or recognise the natural constraints of our environment. EU policies have failed to incentivise mitigation and continue to support actions that increase emissions. Under the new CAP and despite the obligation for Member States to integrate climate objectives in their RDP, effort seems to be focused on unsustainable climate adaptation measures (e.g. irrigation) rather than mitigation. Forest management accounting rules are perverse and measured against a business-as-usual projection in which many states include emissions from harvesting for bioenergy, thereby ensuring that vast amounts of emissions are not accounted for.

Agriculture and forestry operate within a global market. This presents the main obstacle to implementation of GHG reduction measures within the EU. It is likely that agricultural and forest production within the EU which complies with environmental and GHG targets will be more costly than alternative models in other countries who do not have GHG or environmental obligations. EU supports will need to be maintained and actively directed at low GHG agriculture and forestry.

The current policy framework is a major obstacle to meaningful action to address climate change. There is a lack of targets and long term decarbonisation strategies. The current approach has been insufficient to drive cross-sectoral emission reductions to date. Availability of abundant flexibilities in the ESD has been an obstacle to drive emission reductions in agriculture. The lack of sectoral targets at a member state level is a serious challenge to meaningful GHG reduction.

According to a Teagasc report 'Carbon-Neutrality as a horizon point for Irish Agriculture; a qualitative appraisal of potential pathways to 2050 (Schulte et al., 2013), the potential for offsetting through carbon sequestration in Ireland depends on four potential carbon sinks. Namely:

Grassland: the sequestration potential for grasslands is estimated to equate to 6.5 Mt CO2eq per annum by 2030, rising to 6.8 Mt CO2eq per annum by 2050. It is noted that increased weather volatility could substantially reduce this sink.

Cropland: for the purpose of this exercise, we (Teagasc) assumed that the net sequestration potential of cropland is and remains zero.

Peatland/wetland: in collaboration with the EPA, net national emissions from peatlands/ wetlands were (roughly) estimated at 2.2 Mt CO2eq by 2050 throughout this study. The fact that there is no national or EU policy to effectively address peatland/wetland emissions is a major obstacle.

Forestry: both carbon sequestration in forest biomass, litter, deadwood, soils, and sequestration of carbon into harvested wood products and fossil fuel replacement abatement using forest fuelwood were considered. If fossil fuel displacement by forestry by-products is excluded, the sequestration potential for forestry is estimated to equate to 2.6 Mt CO2eq per annum by 2030, falling to 0.8 Mt CO2eq per annum by 2050. Including fossil fuel displacement, the sequestration potential for forestry is estimated to equate to 4.2 Mt CO2eq per annum by 2030, falling to 1.6 Mt CO2eq per annum by 2050.

Defined by the difference between gross agricultural emissions and agricultural offsetting, the emissions gap is likely to equate to c. 13 Mt CO_2eq or two-thirds of total agricultural emissions by 2030. It is of concern that the emissions gap is projected to widen between 2030 - 2050, and amount to c. 16-17 Mt CO2eq or 75% of total agricultural emissions by 2050. This would largely be the result of the projected decline in the offsetting potential of existing forestry during this period.
The widening of the emissions gap 2030-2050, the declining potential of existing forestry to offset emissions and the conflicts previously identified in increasing forest cover on a large scale are all obstacles in an Irish context. The failure at both national and EU level to address wetland and peatland emissions is a serious issue. Replacing cropland with other land use systems will raise food security issues inside and outside the EU.

The predominant economic system within the EU prioritises short-term economic gain over long term sustainability or the wellbeing of the majority of its citizens. Key principles at the core of society are the desire to increase consumption and the accumulation of material assets. Such a system does not sit well with the reality that we live on a planet with

environmental constraints and finite resources - resources that are quickly being exhausted by overconsumption and overpopulation. Our unsustainable lifestyles are the major driver of the world's social and environmental issues. This obviously includes climate change. The inaction of the global political leadership is a reflection of the unwillingness of society at large to accept that many of the core principles of western civilisation are unsustainable and ultimately destructive. This unwillingness to change our lifestyles, consumption patterns and our relationship with our environment is a major obstacle to us moving towards a more sustainable future. As long as we refuse to meaningfully address the underlying drivers of environmental degradation we will fail to respond to the multitude of interconnected environmental and social issues that will plague us over the course of the 21st century. Half-hearted watered-down policies emanating from Brussels or from individual member states will most likely fail to address these issues to the detriment of all life on earth. The scale of change required is vast given the consequences of maintaining the status quo and the time-frame is short for implementing the changes required.

Schulte, R P O, et al. Carbon-Neutrality as a horizon point for Irish Agriculture. A qualitative appraisal of potential pathways to 2050. Teagasc Working Group on Greenhouse Gas Emissions. Carlow: Teagasc , 2013. Document.

Q6. On the basis of experience with the present set of rules on accounting, targets and flexibility, how could the present rules be improved, and which aspects could be maintained and which should be rejected in future?

Given the complexity and uncertainties in LULUCF accounting there is merit in partitioning LULUCF carbon accounting completely from other national GHG emissions. Such an approach would also preclude flexibility in the form of off-sets. LULUCF should continue to be dealt with separately to avoid leakage and potential lowering of efforts in the other sectors. Policies aimed at the preservation and enhancement of LULUCF sinks should be promoted as environmental and social goods in their own right. A target should be set on this pillar to encourage countries to take measures in the sector. In addition, well-designed subsidies are needed and it must be ensured that perverse existing subsidies (such as the CAP) do not undermine the climate mitigation potential of these sectors. Where possible existing subsidies should be brought in line with climate change policy. Such a policy will ensure that the maximum value for money is achieved. Accounting in general should preferably be land-based rather than activity-based, in line with the Convention and ensuring comprehensive coverage of emissions and removals.

Any LULUCF policy must be fully compatible with the EU's other environmental policies. The potential exists to exploit the mutually beneficial synergies that exist between environmental protection and carbon sink utilisation. A risk with the present flexible accounting is that the focus is taken off achieving actual reductions in activity-related GHG emissions. Also, the uncertainties in LULUCF accounting are so large that actual verifiable sink capacities may not be known for many decades and significant errors may be

introduced into national GHG net emission accounts. The balance of GHG emissions within peatlands is for example very complex and will vary when different peatlands, local conditions and temporal timeframes are considered. A balance must be struck between implementing policies that will deliver a reduction in atmospheric greenhouse gas concentration in the immediate future in order to prevent a 2°C rise in global temperature but which are also cognisant of the impact of all policies on long term-carbon dynamics. Myopic timescales will fail to consider the trade-off between the different global warming potentials of CH4, N2O and CO2 and their residence times in the atmosphere. Policies which favour actions against CH4 in the short term such as draining peatlands and wetlands will ignore the long term loss of carbon sink and carbon sequestration. The risk of runaway carbon dynamics will be an issue unless policies take into account the ultimate fate of long term C sinks.

Issues already exist with the GHG accounting for bioenergy and forestry while other significant carbon sinks are largely ignored for economic rather than scientific reasons. These contradictions fundamentally undermine LULUCF as a policy and weaken confidence in the ability of LULUCF to contribute meaningfully to climate change mitigation. The strong incentive to manipulate GHG calculations in order to allow a business-as-usual approach within other sectors is one of the biggest challenges to LULUCF implementation. All policies must be scientifically rigorous and reflect the local situation in each member state. The participation of stakeholder groups such as the environmental NGO sector will increase the level of scrutiny and accountability. Capacity and resource issues as well as a lack of meaningful engagement with local governments are significant constraints within the NGO sector currently.

The present set of rules for calculating sinks within forestry by using a business-as-usual projection (projected reference level) contains many loopholes. As in all other sectors, emissions and removals should be accounted for against an historical baseline on a net-net basis. An issue with the historical baseline approach is that countries which have historically destroyed many of their carbon sinks will have the reward of a lower baseline and so much greater potential for carbon sink creation.

Q7. How could an element of flexibility in terms of using credits from LULUCF activities in the 2030 climate policy framework be introduced in a way that fully ensures the environmental integrity of the system?

Emissions need to be reduced across all sectors. No flexibility is needed within LULUCF and any flexibility will most likely be used to reduce efforts in another sector. This would ultimately have a negative effect on the EU's efforts to move to a low carbon economy. Inclusion of the sector in the 2030 framework must not be used as a tool to undermine the necessary efforts needed in other sectors. Already agreed targets must be attained as a bare minimum. LULUCF must not be allowed to undermine efforts to reduce non-CO_2 emissions within the agricultural sector.

The inclusion of a new sector which addresses the need to account for carbon sinks and emissions resulting from land use change should be pursued as an end in itself. The inclusion of LULUCF activities in the 2030 climate policy framework should be used as an opportunity to raise the ambition level of the EU's reduction targets not to compromise them.

LULUCF targets should be independent of sectoral targets while still acknowledging that cross-over between sectoral efforts and LULUCF will exist. As in all other sectors, emissions and removals should be accounted for against an historical baseline on a net-net basis. The complete separation of LULUCF from agriculture would be a more robust approach and would ensure that accounting uncertainties in LULUCF, which may not be resolved for many decades, do not lead to an unsustainable agricultural model.

At a minimum the existing sinks should be maintained. Ambitious targets should be set to increase the capacity of existing sinks, restore degraded sinks and create or re-create sinks where possible. All sinks must be verified by unbiased scientific advice and reviewed on a decadal basis. There is significant government investment in Ireland into research to justify the use of forestry as a carbon sink. In contrast there is virtually no investment into research criticising the government's position from a carbon sequestration, environmental, conservation or social perspective. The lack of scientific research into the potential for carbon sequestration in Ireland's peatlands is deeply concerning and highlights that influence of vested interests in the decision-making process. The potential of Ireland's peatlands in terms of carbon sequestration is vast. According to Ireland's Bogland report (2011) peat soils cover 1,466,469 ha or 20.6% of the national land area. These peatlands are a huge carbon store, likely containing more than 75% of the soil organic carbon in Ireland. The study went on to conclude that near-intact peatlands may actively sequester, on average, 57,402 tC/year (equivalent to 0.21 Mt CO2). However losses of carbon from degraded peatlands and associated activities (e.g. combustion of peat and afforestation) mean that, at a national level, Irish peatlands are a large net source of carbon estimated at 2.64 Mt C/year (equivalent to 9.66 Mt CO_2). The EU's LULUCF climate policy framework must rise above member state politics and assess various approaches based on their scientific merit and their ability to make a positive contribution to emissions reduction and sequestration.

Given the potential negative environmental impacts of incentivising drastic land use change across the EU most notably in the form of intensive forestry plantations, environmental integrity must be understood to go beyond integrity of emissions savings. Effective safeguards are needed to ensure that credits from LULUCF activities as a minimum respect EU environmental legislation and have a net positive impact on biodiversity and ecosystems. This must be demonstrated through an environmental impact assessment and a Natura impact assessment. While there are likely to be a multitude of cases demonstrating the negative impact of afforestation on the biodiversity of marginal agricultural land, the current conservation status of the Hen Harrier (Circus cyaneus) in Ireland should be given particular attention. The Hen Harrier is an Annex I species under the Birds Directive and as such Ireland (under duress) designated six SPAs for its conservation. The Hen Harrier population declined by 18% within the six SPAs between

2005 -2010 (Ruddock et al, 2012). It is now known that this decline is being driven by habitat loss due to afforestation and as a result a Threat Response Plan is being drafted to prevent the species from going extinct in the next 20 years. 53% of the six SPAs are afforested compared to a national average of 11%. Ireland's national target to increase the level of forest cover from 10.7% to 18% is a serious threat to Ireland's upland biodiversity and is at odds with our conservation objectives under the Habitats and Birds Directives (Forest Service, Department of Agriculture, Food and the Marine, 2014). Similar conflicts are likely to exist across the EU and are likely to be exacerbated by the incentive provided by LULUCF.

BOGLAND: Sustainable Management of Peatlands in Ireland: Protocol Document. Environmental Protection Agency, 2011

Forest Service, Department of Agriculture, Food and the Marine. (2014). Forestry Programme 2014 – 2020: Ireland. Dublin : Department of Agriculture, Food and the Marine

Ruddock, M. & Dunlop, B.J., O'Toole, L., Mee, A., Nagle, T. (2012) Republic of Ireland National Hen Harrier Survey 2010. Irish Wildlife Manual, No. 59. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Q8. What could be the main advantages and disadvantages of the three policy options outlined above, and which option(s) should be further developed or modified?

Option 1 LULUCF Pillar: This is the most promising option. It appears to be the most reliable option from the three on the basis of long-term planning. It permits robust targets to be set with respect to sinks, and would prevent the current large LULUCF accounting uncertainties from undermining efforts in other sectors. The specifics of how a LULUCF pillar would work will need to be further developed taking into consideration the risk of undermining efforts in other sectors. A separate target needs to be set in order to truly incentivise active mitigation measures. As in all other sectors, emissions and removals should be accounted for against an historical baseline on a net-net basis.

Option 2 merged LULUCF and Agricultural Pillar:

This option would have a disastrous effect on attempts to reduce emissions from the agricultural sector. For domestic emissions the aim of climate action must be to reduce total net emissions of sources minus sinks. If there are any doubts about the efficacy of sinks then the extreme seriousness of climate risk would indicate that offsetting is a risky strategy compared with reducing emission sources. If, as may happen, forests prove to be a carbon source in two decades, it would also pose severe compliance problems for

agriculture. This option would undermine the imperative to tackle agriculture emissions. It is strongly likely that allowing emissions to be offset through afforestation would give a free pass to increased emissions in the livestock and arable sectors. This is certainly the case in Ireland where there is no intention to reduce absolute emissions within the agricultural sector. It is hoped by the Irish authorities that the ongoing intensification of the dairy sector will be facilitated by a merged LULUCF and Agricultural Pillar. This would allow Ireland to offset agricultural emissions by increasing the amount of plantation forestry in the country, while simultaneously ignoring emissions emanating from the destruction of our peatlands.

The lack of certainty around much of the LULUCF carbon accounting being put forward is a serious issue. The independence of the scientific research being carried out should also be scrutinised. There are huge knowledge gaps in the area of carbon sequestration that need to be addressed. It many cases it will take several decades to monitor fluctuations in carbon sinks. The carbon dynamics of many habitats will vary greatly due to the high level of variability in local conditions. This local variability is a serious challenge when designing a pan-continental policy. This variability and other unknowns in terms of future forest harvesting cycles would make LULUCF an unreliable accounting partner for agriculture. Given the scale of agricultural emissions particularly CH_4 it would be irresponsible to allow for an easing of efforts when there is so much uncertainty around certain carbon sinks. Tackling agriculture emissions independently of a LULUCF pillar would also bring associated benefits in terms of air quality, biodiversity, soil quality and water.

Option 3 Effort Sharing: This is the least desirable option as there are a number of risks associated with it. Including LULUCF in effort sharing based on aggregate net GHG accounting is not advisable due to the large uncertainty in LULUCF carbon accounting. Should it transpire that LULUCF sinks differ substantially from those currently projected the whole EU GHG mitigation efforts will have been undermined. The option would be likely to undermine efforts in other sectors by allowing use of sinks of the LULUCF sector offset emissions in the other ESD sectors. Carbon emissions in the land sector also largely differ from emissions falling under the ESD in terms of time and monitoring.

Q9. Which is your preferred option? Why?

Option 1 — LULUCF pillar

Option 2 — land use sector pillar

Option 3 — effort sharing

A combination of options

No preference

Please, provide an explanation for your choice in Question 9

Option 1: LULUCF Pillar, with no flexibility to other sectors is the preferred option

Option 1 is the preferred option as it incentivises action to be taken to address emissions emanating from land use and it allows actions to be taken that enhance carbon sequestration; all the while not undermining efforts in other sectors. If issues around the scientific rigour of certain proposed land use changes in forestry and peatland management are addressed then the potential exists to sequester vast amounts of carbon while also restoring precious ecosystems that will provide a host of other ecosystem services to society. Mitigation actions in the land sector and their associated accounting rules, must be robust and comprehensive. The accounting of all land categories should be based on an historical baseline rather than a projected reference level.

The pillar should also be accompanied with national programmes for measures planned in the sector to reduce emissions that would be subject to a strategic environmental assessment (SEA) to ensure its overall environmental integrity. The time scale for verification of LULUCF sinks is inherently in the order of decades. Keeping LULUCF as a separate pillar means that uncertainties in LULUCF accounting do not propagate into agricultural or fossil fuel GHG emissions accounts. It also removes the dubious off-setting crutch and encourages a focus on achieving actual GHG reductions from agriculture and other emissions sectors. The GHG balance of all policy options should be considered over a variety of timescales. This is due to the variation in global warming potential of various greenhouse gases and their residence time in the atmosphere. The global warming potential of CH4 must not override the long term CO2 sequestration capacity of many wetlands and peatlands. Irrespective of the outcome of this process, efforts need to be made to address emissions emanating from land use change. One of the worst case scenarios for climate change is the risk of runaway carbon dynamics. Emissions emanating from deforestation and the melting of permafrost have the potential to tip us beyond the point of no return. The carbon budget remaining to prevent a 2°C rise in global temperature is being exhausted very rapidly. The potential to offset emissions in the long term through sequestration must not take away from what should be the immediate priority of reducing anthropogenic emissions and preventing the further release of emissions from land use change.

ENDS