An Taisce
The National Trust for Ireland

20141015-DAFM-FORESTRY

Forest Service
Department of Agriculture, Food and the Marine
Johnstown Castle Estate
Co Wexford

Email: forestryprogram2014-2020@agriculture.gov.ie

15th October 2014

Re: Consultation on the Forestry Programme 2014-2020

Dear Sir/Madam,

An Taisce welcomes this consultation period on the Department's **Forestry Programme 2014-2020** and the opportunity to make a submission with regard to same.

Please acknowledge receipt of this submission and advise us further of any forthcoming consultations in relation to the above report.

Yours sincerely,

Ian Lumley
Built Environment & Heritage Officer
builtenvironment@antaisce.org

Consultation on the Forestry Programme 2014-2020

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1.0 Introduction

An Taisce recognises the important role that the Forestry Programme 2014-2020 has to play in supporting the development of rural economies. An Taisce welcomes the opportunity to contribute to this public consultation programme as the sector looks to build on the previous Forestry Programme 2007-2013. As a statutory consultee in the forestry consent system under the European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. 558 of 2010) An Taisce are well placed to comment on the shortcomings and virtues of the proposed programme.

The new Forestry Programme aims to encourage planting by private landholders in order to achieve a forest cover of 18% by the year 2046. The Forestry Programme 2014-2020 proposes the establishment of over 46,000 ha of new forests, the construction of 960km of forest roads and improved levels of support for the establishment and conservation of native woodlands. All of this must be achieved while adhering to the overarching EU Policy Framework Europe 2020 strategy for "smart, sustainable and inclusive growth". Under the EU's Strategic Environmental Assessment Directive, the Department of Agriculture, Food and the Marine (DAFM), as the programming authority, must assess the likely significant effects of its plans and programmes on: "the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship of the above factors" including "secondary, cumulative, synergistic, short, medium, and long-term, permanent and temporary positive and negative effects".

An Taisce is deeply concerned the that many aspects of the proposed programme fall short of the overarching objectives to achieve a sustainable and environmentally friendly forestry sector. Indeed many aspects of the programme are just a continuation of Ireland's current unsustainable forestry model whose practices over the preceding decades have negatively impacted on biodiversity, landscape and water quality. Commercial forestry plantations have a number of negative impacts on the environment. They are high consumers of water, increase acidification, drive biodiversity loss through habitat loss and in general sustain low levels of biodiversity compared to native ecosystems and traditional land use methods. In order to claim that the forestry sector is sustainable, Ireland needs to move away from the failed model of monoculture plantations of non-native species. Unsustainable fisheries did not benefit the marine environment or the traditional coastal communities that relied on the ocean's bounty. Likewise DAFM's unsustainable intensification of agriculture under FH2020 and Forestry under the Forestry Programme 2014-2020 will in the long term benefit neither the Irish people nor the environment that supports us.

In relation to the specific proposed measures, An Taisce requests that you take consideration of the following:

2.0 Proposed Measures

2.1 Agro-forestry (GPC 9)

There are however some positive aspects to the new programme, one of the most obvious being the increased focus that has been placed on developing the agro-forestry sector within Ireland. The combined research has highlighted that agroforestry can reap substantial benefits both economically and environmentally, producing more output and proving to be more sustainable than forestry or agricultural monocultures. An Taisce is in favour of agroforestry as it has the benefit of supplying services such as carbon sequestration, soil enrichment, biodiversity conservation, and air and water quality improvement for not only the landowners or farmers, but for society at large. While the introduction of Agroforestry to the sector is a progressive step An Taisce would question the level of ambition in the proposed agroforestry option. For example the agroforestry option is described as a pilot. There is no need to develop an agroforestry pilot scheme in Ireland. We are not inventing the wheel; agroforestry has a proven track record the world over. Greater efforts need to be made to increase the take up of this option by farmers because in its current guise the addition of agroforestry appears to be a tokenistic attempt to add a bit of green to an unsustainable model.

More specifically it is proposed that acceptable broadleaf species will include oak, sycamore and cherry while other species, including conifers, will be considered on a site by site basis. An Taisce suggest that in order to improve the biodiversity value of this option the list of potential native species should be expanded. There is no justification for such a restricted list of species. The reference to Oak is vague as there are two native species of oak within Ireland, namely *Quercus petraea* and *Qurecus robur* . The oak species chosen should match whatever species is naturally found in the surrounding area. The reference to conifers is vague and worrying. The use of non-native conifers should be avoided due to their comparatively negative effect on the environment compared to native species. Scots pine (*Pinus sylvestris*) should be favoured as the conifer of choice given its native status. Scots pine also casts less shade than many non-native conifers like sitka spruce (*Picea sitchensis*). Broadleaves are also recommendable in grazing systems as there are none of the acidification issues associated with conifer leaf litter and as broadleaves are bare in winter they will allow greater levels of sunlight to reach the grass/crops in winter.

The preference for free draining mineral soils which have no requirement for additional drainage is a positive aspect from a sustainability point of view. Focusing the expansion of agroforestry on well drained sites on mineral soil should help prevent the historical negative impact that forestry has had on water quality. It should also avoid the destruction of peatland and wetland habitats. Encouraging low fertiliser input is another commendable aspect of the outlined forestry programme. In reference to the practices

proposed for protecting sapling An Taisce would encourage the industry to reducing its reliance on plastic based tree protectors and plastic mesh. Plastic materials are not biodegradable and their reliance on the fossil fuel industry is not sustainable in the long term.

To reiterate, the use of non-natives should be discouraged on such sites given the proliferation of such species in the Irish landscape and their accepted negative environmental and aesthetic qualities.

1.2 Forestry for fibre (GPC 10)

An Taisce is in favour of forestry for fibre in principle as there is a recognised need for society at large to move away from fossil fuels. In addition to this, the dependence of some parts of the country on turf is driving many of our peatland habitats towards national extinction. The use of fibre for energy will hopefully provide an alternative to turf and other fossil fuels. As in the case with GPC 9 the paucity of native species within the list of potential species for forestry for fibre is hard to comprehend given the sustainability principles that are supposed to be at the core of this programme. An Taisce calls upon the forestry services to justify their preference for non-natives via a benefit analysis. There are a number of native willow species (*Salix Sp.*) for example as well as *Alnus glutinosa* that would be fit for purpose as well as being superior choices from a biodiversity point of view.

1.3 Reconstitution Scheme

Forests provide multiple ecosystem goods and services such as timber, freshwater, clean air and biodiversity. Forests influence ecosystem services by modifying stand structure and species composition. Climate change is expected to intensify forest disturbances such as bark beetles, fire, wind throw and drought, both through changes in mean values of e.g. temperature and precipitation, and through an increase in extreme events. The current model for forestry in Ireland is for the most part focused on densely planted monocultures of non-natives. These plantations are more susceptible to catastrophic disease/pest outbreaks and wind throw. Given that such forest disturbances are likely to increase as global greenhouse gas emissions continue to rise one can predict that reconstitution pay-outs will also increase over time. An Taisce believes that moving the focus of the forestry sector towards plantations that are composed of multiple native species would be more sustainable in the long run.

1.4 NeighbourWood Scheme

An Taisce agrees that investment in amenity forests for public use will have many social benefits. The operations supported under Element 3 of measure 4.4 include footpaths,

signage, way markers, car-parking, seating or picnic tables, fitness or playground equipment, bird watching hides and mountain bike tracks. An Taisce would recommend that options are included that would provide funding to increase the biodiversity value of forests. An example of possible measures would be the establishment of native groves within plantations, glades and rides, ponds, bird and bat boxes etc. An Taisce believe that funding should also focus on improving the quality of national trails which pass through forestry land. It is interesting to take the Wicklow Way as an example of how improvements can be made in this regard. The Wicklow Way is Ireland's oldest long distance hiking trail and attracts many visitors boosting the local and national economy. Large stretches of the Wicklow Way pass through commercial forestry. Despite the importance of this hiking trail it appears that in many areas little consideration has been given to its presence. In many Coillte plantations dense stands of sitka spruce have been planted right up to within a few feet of the trail. In many sites overhangs have been afforested above the trail creating a health and safety issue. Clear felling is practised along the trail creating scenes of devastation that do little to promote Ireland as a green or sustainable country. An Taisce would recommend that where trails pass through afforested land that the trail should be bordered with a permanent buffer of mixed native woodland. This would also have spin off benefits for biodiversity as well as buffering the trail from run-off. Indeed many areas will not be suitable at all for forestry due to their popularity with hikers. This should be alluded to in the new forestry programme. Forestry should not come at the expense of the environment and tourism.

1.5 Continuous Professional Development

In order to reduce the negative impact that forestry is having on biodiversity there needs to be an improvement in the ecological knowledge of forestry advisors. An area that needs particular attention is site evaluation and the appropriate assessment procedure. Appropriate assessments are a requirement under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011. In an alarming number of cases the forestry services are failing to carry out proper appropriate assessments. Shockingly, appropriate assessments are not being carried out even in cases where large areas of Annex I and Annex II habitats are being afforested with sitka spruce monocultures. When appropriate assessments (or screening exercises) are carried out they frequently appear inadequate and rarely consider in combination or cumulative effects. Ireland has a moral and legal obligation to protect habitats and species in and outside of our NHA and Natura 2000 network both under national and EU law. Improved knowledge and the ability to properly identify protected habitats and species at an early stage are essential to ensure that green image of the sector. A sector that is a major contributor to habitat and species loss will have little opportunity to contribute to the DAFM's green marketing drive. The NPWS obviously have considerable ecological expertise and comment on many forestry applications that have the potentially to negatively impact on biodiversity. It is a well-known fact however that the NPWS are overstretched and under resourced and despite their best intentions local conservation rangers are unable in

many cases to carry out the site visits necessary to identify species and habitats which may be destroyed by afforestation. For this reason more resources need to be invested in improving the knowledge of those carrying out screening for assessment and appropriate assessments themselves.

3.0 General Measures

3.1 Forestry and Biodiversity

There are some positive elements of the Forestry Programme 2014-2020 such as the Native Woodland Establishment scheme and Agroforestry scheme. Both have the potential to have spinoff benefits for the environment and biodiversity. They are so minuscule compared to the Afforestation programme however that they appear tokenistic. The Afforestation target for the end of the programme is 52,300 ha which dwarfs the 3,075 ha target laid out for the Native Woodland Scheme. An Taisce would encourage an increase in native woodland cover as Ireland has currently the second lowest woodland cover in the EU after Malta. An Taisce are deeply concerned with DAFM's policy of promoting the use non-native conifer species such as sitka spruce (*Picea sitchensis*), lodge pole pine (*Pinus contorta*) and Japanese larch (*Larix kaempferi*). This policy is regrettably resulting in the situation where afforestation may now be considered as a significant threat to Ireland's biodiversity. An Taisce believe that the Agriculture and Forestry Sectors land use policy is unsustainable. The intensification of the dairy sector under FH2020 requires that the vast majority of good agricultural land be utilised in intensive pastoral faming systems. This is driving the forestry sector to target marginal land for afforestation with conifers. At both a regional and national scale this marginal land is all too often the land that has seen the least intensification. These low input areas are unfortunately the last refuges for many species which have been marginalised by the intensification of agriculture. In this way afforestation is resulting in the direct loss of endangered habitats and species. What An Taisce is observing on a weekly basis is that High Nature Value farmland including Ireland's designated SACs and SPAs are being afforested. This deleterious trend is most obvious in our uplands and riparian SACs. An Taisce is aware that unenclosed lands are being earmarked for further afforestation. This would be disastrous for biodiversity should this policy go ahead and it would be catastrophic for the image of the sector as in no way could it be claimed that such a policy is sustainable or in line with our obligations to preserve biodiversity.

An Taisce would like to call into question the forestry sector's record in Identifying Areas Suitable for Forestry. Afforestation has in the past occurred on many sites throughout the country that are identified as being unsuitable for afforestation according to the Indicative Forest Statement (IFS) for Ireland (Fig 1). Extensive areas of land have in the past been afforested with non-native conifers despite the fact that the land is recognised as either:

- Category 3 - Suitable, where appropriate, for nature conservation and/or amenity forests; and
- Category 4 - Unsuitable, unproductive or unplantable areas.

Figure A: Forest Land Cover

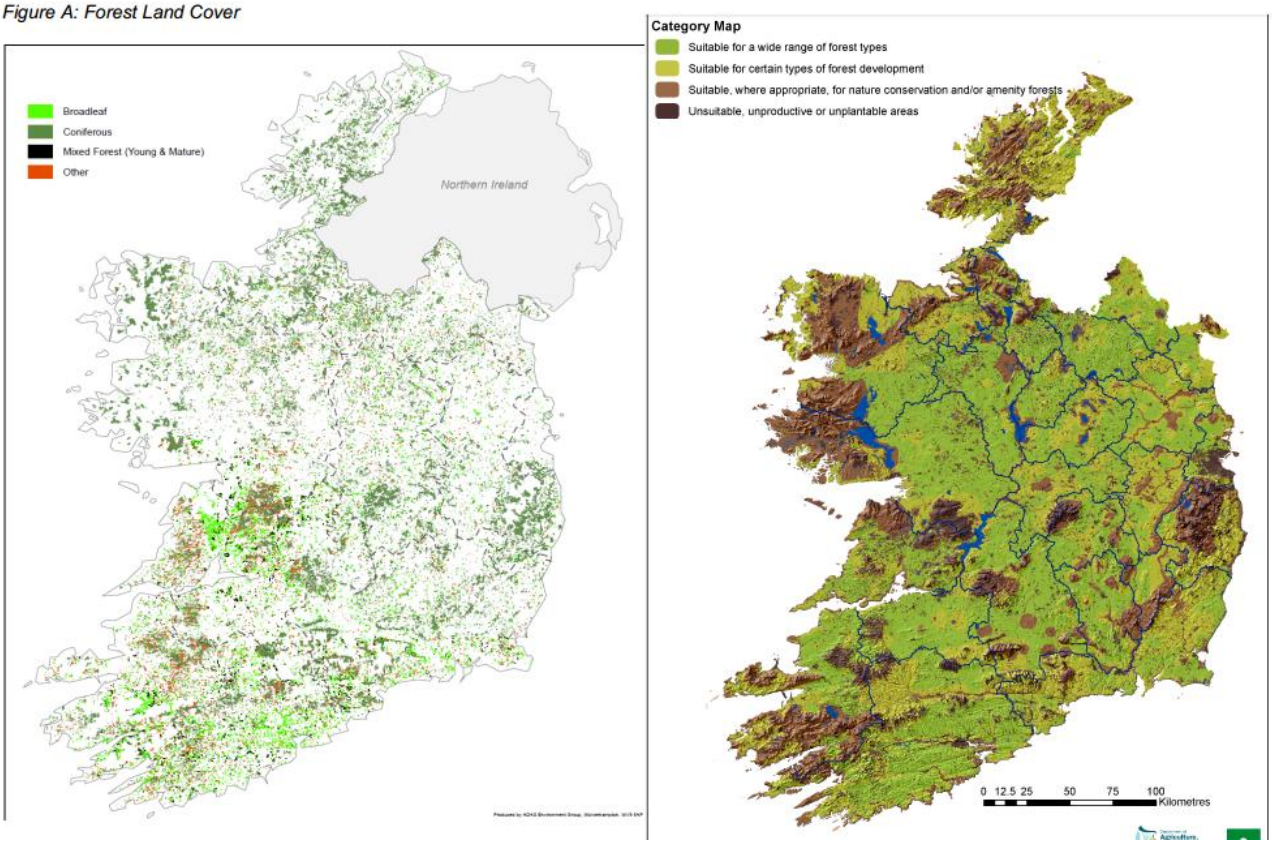


Figure 1 - On the left is Ireland's Forest Land Cover. On the Right Ireland's Indicative Forest Statement (IFS) Map.

In addition to this many of these areas have been afforested despite the fact that they have been designated as part of Ireland's Natura 2000 network. Many of these sites have been designated for the protection of habitats and species which are completely incompatible with forestry.

It is well accepted that forestry activities are putting pressure on many habitats and species which are listed under Annex I, II and IV of the Habitats Directive and under Annex I of the Birds Directive in Ireland. All indications are that the next forestry programme will be worse than those in the past. The drive to increase forest cover is at odds with the DAFM's objectives under FH2020 to increase the area of land under agriculture. Increased demand for land under FH2020 raises the question of where the land will come from to increase forest cover from 10.7% to 18% by 2046. This situation is leading the forestry sector to afforest marginal land. All too often this is the land that has seen the least intensification in the past and as a result it is often the land that supports the highest levels of biodiversity within the landscape. This is an oversimplification but in general it holds true at both a local and national level. An Taisce are concerned that a land grab is under way where Ireland's Natura 2000 network and unenclosed lands are being targeted for afforestation. It seems clear that this Draft FP will adversely affect threatened habitats and species. Potential effects include the loss of (protected and/or sensitive)

habitat through afforestation, felling/thinning and new forest roads; the drainage of bogs through afforestation; the diffuse pollution of surface and groundwater through afforestation, thinning and use of fertilisers; and the spread of pests and invasive species. Species most likely to be affected include Freshwater Pearl Mussel, Hen Harrier, Merlin, Marsh Fritillary and the Kerry Slug.

The forestry programme states that afforestation on Annex I habitats (Habitats Directive), or the habitat of Annex I birds (Birds Directive) or Annex II species (Habitats Directive) should be avoided, and afforestation on intermediate value habitats should favour sites which result in improved biodiversity compared to the previous habitat (this should be monitored at project level). The Forestry and Water Quality Guidelines also state that "Planting is not permitted in SACs or SPAs". While this may be the espoused policy it is certainly not the reality on the ground. Figures 2 and 3 are sourced http://www.globalforestwatch.org/ and show the changes in forest cover within the Slieve Bloom Mountains and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle area over the space of a decade.

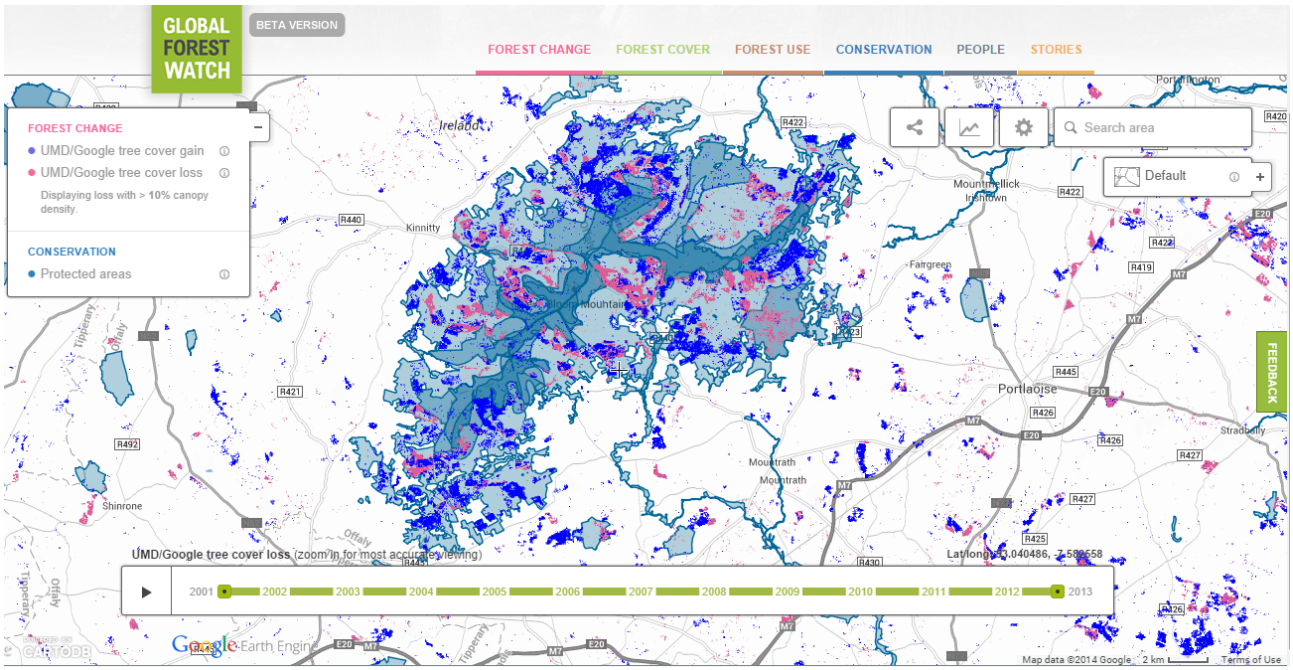


Figure 2 - The changes in forest cover within the Slieve Bloom Mountains over the last decade. Dark blue indicates afforestation, pink indicates deforestation and light blue indicates a protected site.

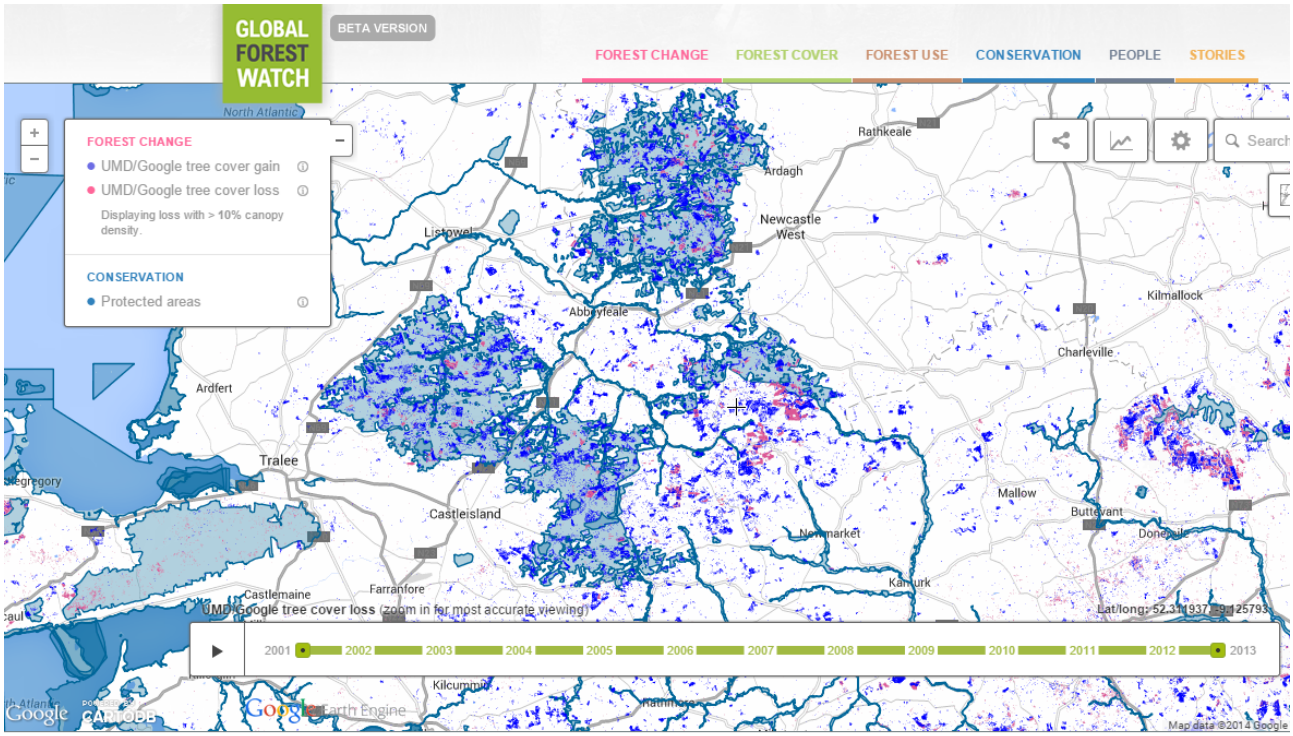


Figure 3 - The changes in forest cover within the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA over the last decade. Dark blue indicates afforestation, pink indicates deforestation and light blue indicates a protected site

Both areas are designated under the Birds and Habitats Directives as they support designated upland species and habitats. The NPWS (The Status of EU Protected Habitats and Species in Ireland, 2013) have identified further afforestation as the greatest threat to their conservation status. Despite this An Taisce continues to receive a litany of applications for afforestation on a daily basis for plantations in some of Ireland's most precious protected areas. The seriousness of this situation is highlighted by the current prohibition on afforestation in hen harrier (*Circus cyaneus*) SPAs. Habitat change is the biggest single factor implicated in biodiversity loss today and is of critical importance to Hen Harriers, which are traditionally birds of open heathers and moors and depend on open habitat for foraging. Over the past 60 years, many previously open upland areas in Ireland have been extensively afforested, with total national forest cover rising from less than 2% to over 10% during this period. While the early stages of plantation forests can form suitable habitat both for breeding and foraging Hen Harriers it has been shown in that second rotation pre-thicket forest (young forests planted on land from which a first rotation has already been harvested) was associated with low levels of breeding success. This may be due to local factors related to predation, disturbance or prey availability. Closed canopy forest also has a negative impact on Hen Harriers as being a species of open habitats such as upland blanket bog they require open spaces in order to breed and forage. For these reasons the NPWS have identified further afforestation as the greatest

threat to Hen Harriers in the Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle (SPA) (site Code:004161) and the Slieve Bloom Mountains SPA (Site Code: 004160). It has been said that forest maturation in Ireland's SPAs over the next decade will result in a substantial decrease in the proportion of suitable habitat in many of these areas.

Ireland's Natura 2000 network is extremely important not only in terms of the biodiversity it protects but also in terms of the ecosystem services it provides. Non-native species are more often than not completely inappropriate within these sites of national and European importance. In many cases afforestation is disastrous due to the fact that it results in the direct loss of habitat as well as habitat fragmentation and deterioration in soil and water quality. Deteriorating water quality is particularly problematic as it affects freshwater ecosystems. The fresh water pearl mussel (*Margaritifera margaritifera*) for example is threatened with extinction due to the fact that very few rivers exist within Ireland which are clean enough for them to reproduce. Forestry has unfortunately played a significant role in the deterioration in water quality in many catchments. An Taisce would like to see that in situations where the appropriate procedures have been followed and it is deemed that afforestation will not have a significant negative effect on the integrity of a Natura 2000 site that native species are used. The Forestry sector has a responsibility to develop in a sustainable way. This is not the case at the moment; policy appears to be set by groups from within the industry and by groups like the IFA .

Specific criticisms An Taisce would like to make are that currently the in combination and cumulative assessment of afforestation is inadequate. The site inspections and ecological assessments during the appropriate assessment procedure are inadequate. An Taisce considers that the appropriate assessment procedure currently being used by the Forestry Service is not stringent enough or transparent enough. All too often afforestation is approved despite the fact that it will clearly have a significant negative effect on one or more Natura 2000 sites. An Taisce proposes that a database be established similar to the E-Planner online database that is currently used by the local authorities in the planning system. This would involve the Forestry Service uploading documentation relating to their site visits and any submissions made by NGOs, government bodies such as the NPWS or the general public. This database would be open access. This would in our opinion significantly increase the transparency of the appropriate assessment procedure.

An Taisce believes that the continued proliferation of non-native tree species is not environmentally sustainable and as such it runs counter to many of the Department's advocated goals. The proposed Forestry for Fibre (GPC 10) programme for example will involve the establishment of even greater areas of non-natives such as Italian alder (*Alnus cordata*), Hybrid aspen (*Populus tremula*) and Eucalyptus species. An Taisce would strongly encourage the use of native species of willow (*Salix*), alder (*Alnus glutinosa*), and birch (*Betula pendula and Betula pubescens*) using coppicing for management.

An Taisce also considers that the deleterious effect that commercial forestry has on soil and water quality has to be adequately quantified. Further research is needed so that the existing Forestry and Water Quality Guidelines (2000) can be further refined.

An Taisce are fully supportive of the measure to invest in improving the resilience and environmental value of forests:- Native Woodland Scheme. Native woodlands provide a wide range of economic, environmental and social benefits. Support for the establishment of new, and enhancement of existing, native woodlands is desirable.

Forestry is one of the tools which must be fully utilised nationally to deal with the threat posed by climate change. By increasing Ireland's forest cover a significant carbon sink will be established. Forestry must also be utilised to help mitigate against the increased threat of flooding. Riparian forests and wetlands are an underutilised tool to prevent flooding and alleviate soil erosion. At the moment aquatic buffer zones of broadleaves are often established between a plantation and a watercourse to prevent deterioration in water quality. This usually consists of two rows of birch trees. The riparian planting of linear forests of mixed native species such as birch, alder and native willow species would increase the capacity of these buffer zones to prevent nutrient run off and erosion as well as increasing their biodiversity value.

3.2 Climate Change and the role of Forestry in Carbon Sequestration

The DAFM hope to implement an approach to agriculture and land-use which would reflect the improved methodologies available and increased confidence in the science which supports the estimation of GHG emissions and removals from land use, including activities relating to food production. The ongoing development of an Agriculture, Forestry and Other Land Use (AFOLU) Pillar has opened up the possibility for Ireland to offset greenhouse gas emissions through the carbon sink that has developed in Irish forestry over decades.

It is accepted that globally forests are hugely important to the carbon, water and energy cycles and have substantial impacts on habitats and ecosystems. The removal of forests releases CO_2 into the atmosphere, while growing trees absorb CO_2 from the air. Other GHGs such as methane and nitrous oxide are also exchanged between forests and the atmosphere, so forests are a key component of the planet's GHG balance. Therefore the functioning and management of forests are critical for climate change mitigation, and contribute to the reduction of net GHG emissions into the atmosphere. The total carbon reservoir or store in Irish forests currently exceeds one billion tonnes of carbon dioxide, most of which is in the soil. Annual removal of carbon dioxide from the atmosphere by Ireland's forests exceeds 6 million tonnes per annum, or 3.6 million tonnes net of carbon dioxide removed in roundwood harvest. While Irish forests are both a significant carbon sink An Taisce believes that the carbon accounting being put forward at the moment does not sufficiently reflect the real world situation in the Irish landscape. The DAFM consider

land use change as a means to sequester C through afforestation but if they are to take a balanced view they also have to consider the emissions caused by land use change which is driven by agriculture and forestry. This would include the drainage and afforestation of blanket peats, the drainage of wetlands, the loss of species rich grassland and its replacement with intensively managed grassland, the burning of scrub and scrub clearance. Forestry can sequester carbon in forest biomass, litter, deadwood, soils and sequestration of carbon into harvested wood products (HWP) & fossil fuel replacement abatement using forest fuelwood. However forestry can also be a net source of emissions depending on local conditions. A large proportion of Ireland's forestry has been developed on peat soils. Moving forward the majority of mineral soil will continue to be utilised by the agricultural sector meaning that marginal land will continue to be targeted for forestry. We understand that discussions are ongoing within government (under pressure from the industry) regarding the development of a framework for assessing the potential for afforesting unenclosed lands. This is a worrying development and a strong indication that the mistakes of the past will continue to be repeated by the forestry sector. An Taisce is concerned that Ireland's precious upland (and other) peatlands will increasingly be targeted for afforestation. Such a move would be a catastrophic policy failure. The idea that peatlands should be afforested in order to facilitate carbon sequestration is unscientific as the afforestation of peatlands in fact causes a net increase in greenhouse gases emissions over time.

In a peatland in Scotland the Carbon balance of an undisturbed peatland was compared to a newly drained and afforested peatland. The pristine peatland accumulated ~0.25 t C $ha^{-1}a^{-1}$. The drained peatland emitted 2 - 4 t C $ha^{-1}a^{-1}$ but became a sink of ~3 t C $ha^{-1}a-1$ 4 – 8 years after afforestation (Hargreaves et al., 2003). Despite this accumulation in above ground biomass however the peat continued to decomposing at a rate of ~1 t C $ha^{-1}a^{-1}$. The slow rate of peat decomposition means that afforestation will cause the plantation to be a net carbon sink in tree, litter, forest soil and products for 90–190 years (Hargreaves et al., 2003).

Byrne et al. (2004) calculated the Global Warming Potential (GWP) of different management regimes on European peatlands in both temperate and boreal zones. The study revealed that that ombrotrophic bogs had a GWP of -10.5 CO_2 eq kg ha^{-1} yr^{-1} over the next 100 years (CO_2 = 0.19 CO_2 eq kg $ha^{-1}yr^{-1}$ (n=8), CH_4 = 234.15 CO_2 eq kg $ha^{-1}yr^{-1}$(n=14), N_2O = 12.4 CO_2 eq kg $ha^{-1}yr^{-1}$(n=7)). It was found that drained and afforested minerotrophic fens had a GWP of 4.2 CO_2 kg eq ha^{-1} yr^{-1} (CO_2= -0.2 CO_2 eq kg $ha^{-1}yr^{-1}$ (n=4), CH4 = -1.05 CO_2 eq kg $ha^{-1}yr^{-1}$ (n=13), N_2O = 12.4 CO_2 eq kg $ha^{-1}yr^{-1}$ (n=20)). A 100 year time period is used to calculate the GWP for afforested sites as this is the normal time scale which the IPCC uses to calculate GWP. Given the high productivity of forests compared to peatlands the CO_2-fixation rates of the plantations are significantly higher than those of undisturbed peatland vegetation. The high C sequestration rates will cause the forests to become slight net sinks for CO_2 if the fixation rate is greater than the carbon C lost through the decomposition of the peat (Byrne et al., 2004; Parish et al., 2008).

However this is when the timescale under consideration becomes very important as the biomass and litter stores of forests in temperate and boreal regions usually reach C equilibrium after 100 years. As the mineralisation of the peat continues the cumulative carbon losses will dominate the GHG balance and exceed the C gained due to forestry if a long enough time scale is considered (Cannell et al. 1993; Hargreaves et al., 2003; Joosten & Clarke, 2002; Parish et al., 2008). The wood is normally harvested and the biomass is removed long before even this equilibrium is reached as forestry rotations are usually 60-100 years (Minkkinen et al., 2008; Parish et al., 2008). Undisturbed peatlands may in comparison continue to accumulate carbon over millennia (Byrne et al., 2004).

The carbon storage capacity of wood products has been used to increase the C sequestration capacity of forested peatlands. It is important to note that wood products from peatlands or drained peatlands are typically short lived products like paper, furniture or construction materials which may only last between 57-92 years after which point the C they contain will be decomposed and returned to the atmosphere (Byrne et al., 2004; Hargreaves et al., 2003). Because the forestry sector in Ireland is based around non-native soft woods the end products that are produced have a short lifetime. For example in 2012 Ireland was the largest exporter of MDF and the second largest exporter of particleboard and OSB to the UK. The C stored in these products will be returned to the atmosphere in a comparatively short time. Therefore their contribution to the carbon sequestration contribution forestry is negligible in the medium to long term.

Another point that is important is that in order for a full GHG budget to be made for forestry on peatlands the emissions associated with the management, felling, transport and finally the treatment and manufacturing of the wood should be considered. These emissions may be vast. The total GHG emissions associated with the forestry operation in the Pacific Northwest for example have been calculated to be 1.6 Mg CO_2 eq ha^{-1} per 100 m^3 (Sonne, 2006). Ireland's policy of clear felling also leads to the loss of large amount of carbon through fluvial systems. This is a factor that is mistakenly overlooked when carrying out carbon accounting studies.

The analysis of the GHG dynamics of plantations on peatlands over short time spans is myopic. Over time spans of a century the increases in peat and tree stand C sequestration and indeed the decrease in CH4 emissions from peatland after drainage will cause afforestation to have a negative radiative forcing on global warming (Minkkinen, 1999). If short time scales are under consideration the greater radiative forcing of CH_4 and N_2O compared to CO_2 will overshadow the GHG balance of the peatlands and the long term C sequestration ecosystem service will go underappreciated as has been the case with many studies on the GHG dynamics of pristine peatlands (Byrne et al., 2004; Hargreaves et al., 2003; Minkkinen, 1999; Von Arnold et al., 2005). The transformation of peatland to plantation may be irreversible. Timber extraction not only damages the peatland vegetation but also the peat soils (Moore, 2002, Minikkinen et al., 2008). If considerable damage is done to the peatland it may become impossible to recreate the C and GHG sink

function of certain peatlands (Worrell et al., 2011). The C sequestration capacity and the ability of certain peatlands to sequester carbon over millennia may therefore be lost forever.

In order to offset the levels of CO_2 proposed by the DAFM in its low Carbon Road Map we would need to continue afforestation at a level in the region of 15,000 hectares per annum for the next two decades. All past evidence suggests that this is impossible. Even if it were achievable the environmental impact of carrying out this level of afforestation alongside FH2020 would be completely unsustainable from an environmental point of view. An Taisce believe that greater efforts have to be made to invest in long term sustainable methods of sequestering carbon through our native terrestrial ecosystems. This could be achieved through establishing native woodland on mineral soils, protecting species rich grassland and wetlands. The most significant opportunity for carbon sequestration in Ireland lies in the wise use of our peatland ecosystems. Peatlands are one of the world's most important ecosystems. Covering a mere 3% of the world's terrestrial surface, peatlands contain 550 Gigatonnes (Gt) of carbon making them the most important long term carbon sink in the terrestrial biosphere. This ability of peatlands to store CO_2 and other GHGs means they have a net cooling effect on the global climate. It has been estimated that since the last Ice Age, ~10,000 years ago, the atmospheric carbon sequestered in peatlands has had a cooling effect on global temperatures of about 1.5 – 2 °C. In terms of terrestrial carbon sequestration Ireland is well placed. The Republic of Ireland is third only to Finland and Canada in proportional area of peatland cover. According the EPA's BOGLAND report (2011) peat soils cover 20.6% of Irelands national land area and contain more than 75% of the national soil organic carbon. Near-intact peatlands may actively sequester C. 57,402 t C/year over the whole country.

Unfortunately, the current management of peatlands in Ireland is unsustainable. Disturbances in the form of industrial and domestic peat extraction, private afforestation, overgrazing, wind farms and recreational activities have had and are having major negative impacts on the hydrology and ecology of these habitats. The current area of active raised bog stands at a mere 2,000 ha, less than 6% of the protected raised bog area. It is estimated that between 2% and 4% (40–80 ha) of this active area is being lost every year mainly as a result of turf cutting. Even if turf cutting were to cease, peat oxidation would continue due to drainage. It would be necessary to implement specific measures in order to stop and reverse the deterioration. Damaged peatlands act as a source of carbon dioxide (CO_2) and, at the national level, Irish peatlands are estimated to have net carbon emissions of 2.64 Mt C/year.

Peatland restoration projects have been recognised by the Kyoto Protocol and should be incorporated into Ireland's national greenhouse gas reduction strategy. The Kyoto climate change talks have agreed that carbon sequestered through peatland restoration may be used to meet emissions reduction targets. Indeed, carbon dynamics should be a key driver of national climate change policy and there are ample incentives making peatland

restoration and management a hugely beneficial option for Ireland. Indeed, the rewetting and restoration of peatlands has the capacity to secure existing carbon stocks and revive the C sequestration capacity of degraded peatlands. Active and remedial management options, such as avoiding drainage (conserving) and re-wetting are effective ways to maintain the carbon storage of peatlands and to recreate conditions whereby the peatland may actively sequester carbon in the future. The rewetting and restoration of peatlands has the capacity to secure existing carbon stocks and reinitiate the C sequestration capacity of degraded peatlands. Restored peatlands therefore have the potential to ameliorate the global warming. The contribution that restored peatlands can make to carbon sequestration in Ireland is underappreciated. The potential for peatland conservation and restoration to act as a negative forcing on climate change is at this stage a well proven science. Ireland is lagging behind in the field of peatland restoration. Given our rich peatland resource we are missing out on a huge opportunity. The IUCN UK Peatland Programme has an established track record in this area and their work should be a reference for Irish policy makers. Nationally Bord na Mona, Coillte and the NPWS have considerable expertise in the area of peatland restoration. An Taisce encourages all relevant department to work together to develop ecosystem restoration as a national policy for combating climate change. Such an ecosystems level approach would bring additional benefits in terms of biodiversity conservation, ecosystem services, and rural investment. It would be in the national best interest to focus our efforts to sequester carbon in peatland restoration rather than in commercial forestry where the science is shaky at best. Any further afforestation of Ireland's peatlands will not deliver the sought for carbon sink but will rather undermine our most significant terrestrial carbon sink.

3.3 Landscape

The European Landscape Convention (ELC) was signed into force by thirty member states of the European Council in Florence, Italy on 20 October 2000. In the convention it was noted that the 'protection, management and planning' of landscape can aid in job creation, cultivating and maintaining local identity, achieving unity and cooperation between member states, human well-being, quality of life, and responsibility. Furthermore the concept of 'landscape' now represents natural, rural, urban, peri-urban, outstanding, every day and blighted landscapes. Under the Planning and Development Act 2010 landscape has the same meaning as it has in Article 1 of the ELC.

Under the convention, it not enough to consider landscapes which are simply outstanding or beautiful as, unlike many past attempts to create a suitable landscape strategy, the ELC does not stick to the traditional methods of protectionism; rather, it sets a requirement to survey, record and understand the everyday landscape. It is considered that Ireland has failed to comply with the Convention. Most notably, Ireland has failed to put in place the implementation measures set out in Article 6E of the Convention:

To put landscape policies into effect, each Party undertakes to introduce instruments aimed at protecting, managing and/or planning the landscape.

No national legislation, policy or guidelines have been produced by the State to respond to the ELC. Whereas local authorities have placed certain designations on landscapes as a result of Section 204 of the Planning & Development Act 2000, as amended, this is discretionary and largely fragmented across councils, often with the subjective influences of vested interests instead of the public interest, and in the interest of complying with the ELC.

The State has failed to set a clear methodology for how landscape should be assessed, protected and managed. With no more than vague policies, and lacking legislative tools, it is difficult to guide the process. To date only a small number of outstanding areas have been designated. Covering only limited pockets, this protection of isolation sites has not aided the protection of Ireland's landscape as a whole. With the failure to comply with the ELC, the Forest Service has been left with no basis to assess the impact of the proposal on the landscape. It crucial, therefore, that the Forest Service consider and make public their policy guidance on the 'protection, management and planning' of landscapes being impacted by forestry.

3.4 Archaeology

Serious consideration must be given to all of the above when considering a programme for forestry. General guidelines are required for archaeological evaluation and mitigation under this programme. Archaeological evaluation needs to be a core consideration in evaluating site suitability at application stage, this goes beyond consideration of single Recorded Monuments and Places (RMP) and the creation of buffer areas.

The impact on the built environment needs to be fully considered, and forestry planned in a manner sensitive to those landscapes. In this regard An Taisce is conscious of:

- County Development Plan designations (incl. archaeological, architectural; landscape; views);
- National Monuments;
- Historic Houses, their demesnes and associated landscapes and views;
- Historic Gardens and their associated landscapes and views;
- All records / structures on the National Inventory of Architectural Heritage;
- Protected Structures; and
- Cultural heritage.

Consideration of archaeology needs to give attention to post 1700 as much as pre 1700 settlement and features. Potential post 1700 features would include country house demesnes, farming settlement, potato ridges, abandoned 'famine' settlements and historical mining activity. Furthermore, there is a requirement to but address both the physical and landscape impact of planting schemes. For particular categories of monuments or features landscape setting is an important consideration and standard

buffer area guidelines would not be applicable. This would apply in particular to neothlitic tombs or later stone circles and alignments which are major features of West Cork and South Kerry. For these types of monuments landscape setting and the potential relationship and line of sight between two monuments is an intrinsic part of their significance. Accordingly, landscape evaluation on the setting of archaeological monuments, groups of monuments and landscapes is an essential requirement

4.0 Conclusion

The Forestry Programme 2014-2020 must provide a transition to a low-carbon society and economy and to mitigate the significant risks associated with climate change. The Forestry Programme 2014-2020 must be methodical, evidence-based in approach and demonstrate rational 'joined up' assessment for Ireland's future. Ireland can no longer afford to continue the pursuit of the failed, short-sighted policy approaches of the past and must ensure that our collective future will build resilience. The success or otherwise of the forthcoming Forestry Programme 2014-2020 can only be judged against verifiable and implementable criteria which are subject to ongoing monitoring.

5.0 References

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