Teagasc Submission on

Forests, Products and People, Ireland's Forest Policy – a Renewed Vision

Contents

Introduction

Teagasc would like to reaffirm our ongoing support to achieving the aims and objectives of the national forest policy: 'Forests, products and people, Ireland's forest policy – a renewed vision'. We contributed to the formulation of this policy and our programmes of forestry research, education, development and advice are largely developed on the basis of achieving the strategic actions outlined in this policy document.

As part of the current consultation process we have already submitted to DAFM our input to the achievement of this policy and have identified over 67 strategic actions to which we have contributed or are currently acting upon.

We welcome the opportunity to revisit the document and agree that it is timely to do so in light of recent developments in the environment in which forestry operates. These include the need to continue to afforest not only because of the ongoing need for raw material but also the other range of ecosystem services offered by forests, including the capacity to sequester carbon. The enhancement of the multi-dimensional aspects of forests is central to the development of a sustainable forest sector into the future where the economic, social and environmental suite of services offered by different forest types is optimised and recognised.

Teagasc will be involved in, and contribute to, the ongoing series of consultations that will inform the review process. The Head of the Forestry Development Department, Dr. Nuala Ní Fhlatharta, contributes to the COFORD Forest Policy Review Group.

Chapter 1 – Expansion of the Forest Resource Area

Policy Statement

To increase the forest area, in accordance with SFM principles, in order to support a long term sustainable roundwood supply of 7 to 8 million cubic metres per annum.

Strategic Actions

	Existing Strategic Action
1.1	The afforestation target will be 10,000 ha per annum up to 2015 and 15,000 ha per annum for the period 2016 to 2046. This will, with reforestation of clearfell areas, provide a forest cover of 18%. Targets will be reviewed by DAFM every five years beginning in 2016 in the context of long term sustainable roundwood supply and other policy considerations.
1.2	Within the context of this policy and Food Harvest 2020 (Food Wise 2025), DAFM to develop an integrated approach to the achievement of these targets across land uses and schemes.
1.3	The broadleaf target remains at an area equivalent to 30% of the annual afforestation programme. To broaden the scope and responsibility for increasing the area of broadleaves, DAFM will introduce an overall indicative national target level of 10% broadleaf species in reforestation, taking into account economic and site suitability considerations. This will be monitored and reviewed periodically.
1.4	DAFM to encourage State organisations and Local Authorities to convert part of their land bank holdings to public purpose forestry and in particular native woodlands.
1.5	DAFM in collaboration with the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht (DAHG) to establish an appropriate annual target (minimum 150 ha) for the restoration and expansion of native woodlands focussing on alluvial and sessile oak woodlands. The expansion of native woodlands is additional to the afforestation target above
1.6	DAFM to commission a study in 2014 to examine the implications of forest support payments linked to management interventions and the delivery of products / services.
1.7	DAFM to introduce, as part of the afforestation grant application and forest management planning process, a template setting out owner and State objectives, outputs and levels of support, which would facilitate early owner involvement / awareness and serve as a basis for ongoing management review (by the owner) and preliminary input to the proposed Forest Management Planning process (see also 2.1).
1.8	DAFM to periodically review the cost basis for grant support for afforestation to ensure that efficiencies and technical advances are reflected in the approved rates and that the State obtains value for money. DAFM to examine the impact of amending future premium payments and of limiting premiums to 15 years with particular regard to achieving afforestation targets.
1.9	DAFM to review the incentives for planting larger areas and for consolidating existing forest areas to increase long term competitiveness and efficiency in harvesting and transport.
1.10.	DAFM to reduce the differential between farmer and non-farmer premiums and review annually to determine whether further differential adjustments are warranted to mobilise private sector and institutional investment.

1.11	DAFM in collaboration with the wood products and wood energy sectors and other stakeholders should regularly review the most appropriate species mix to meet expected market needs taking into account sustainable forest management and climate change adaptation needs.
1.12	DAFM to monitor and, in consultation with stakeholders, periodically review the overall average yield class for afforestation as set out in Growing for the Future in the light of the quality of land being afforested and the more widespread use of genetically improved planting stock with a view to increasing both the minimum and average productivity levels.
1.13	With a view to achieving the national afforestation target and roundwood supply potential and the development of a forest culture among farmers and other landowners, DAFM to undertake a concerted two year promotion campaign to encourage afforestation and more active forest management in collaboration with Teagasc, forest companies and owners representative organisations including for example harvesting demonstrations and field days which show the impact of forest management activities on cashflows.
1.14	The use of genetically improved planting material (see Glossary for definition) e.g. improved Sitka spruce, as distinct from genetically modified material, which will deliver improved timber quality and timber wood volumes will be supported
1.15	The potential for sequestered carbon to finance future afforestation will be investigated and, if appropriate, a carbon afforestation scheme which favours management systems and species with good long-term sequestration potential will be considered.
1.16	DAFM in collaboration with the Department of Communications, Energy and Natural Resources to undertake an appraisal of the appropriate balance between afforestation including short rotation forestry, biomass support schemes and other related measures such as agroforestry in meeting renewable energy, climate change mitigation and forest industry raw material needs, in the context of the overall level of roundwood availability.
1.17	DAFM to continue to support the dissemination of the CLIMADAPT species selection tool and any necessary updates.
1.18	DAFM will consider proposals for the establishment of riparian woodlands with a view to their function in mitigating flooding and enhancing water quality (see also 3.12).

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 1.1 / 1.13: The target of 18% forest cover and 15,000 ha per annum should be maintained in order to address climate change mitigation as well as roundwood supply. Research has shown that sufficient suitable land exists to meet such targets. Optimum benefits should be derived from the assessment of land resource availability for afforestation and related opportunities and constraints (Farrelly and Gallagher, 2015), especially the recommendations in terms of targeting resources and appropriate land types as well as forest models for achievement of planting targets.

   Teagasc recognises that forestry has a key role in improving the competitiveness of agriculture and the wider bioeconomy as well as supporting sustainable farming and contributing to the diversification of the rural economy driven by science based innovation.

   - Teagasc will lead a DAFM-supported industry wide 4 –year campaign to promote sustainable forest establishment over the period 2017-2020. To this end, Teagasc forestry advisors are organising a Forestry Clinic Campaign over six months of 2017 (January-March and mid-September to mid-December).

- Ongoing technical support will be provided to those involved in reforestation and its subsequent management.
- It is recognised that the replanting obligation can be a disincentive to plant for some farmers considering afforestation. Results from Wiemers and Behan (2004) suggest that economic factors can explain some farmers' decision not to afforest and that farmers may seek compensation for the irreversibility of the forestry investment. A study undertaken by Teagasc in 2012 on the Non-Activation of Afforestation Approvals found that the main reasons a farmer did not plant were land ownership issues (29%), family issues (17%), current level of premiums (13%) and the long-term nature of forestry (10%). Other issues included uncertainty over CAP, unenclosed land not qualifying, land required for farming, and lack of confidence in the return on investment (Casey and McHugh, 2013). It could be argued that the family and long-term nature of forestry concerns are inextricably linked to the permanent nature of the land use change.

2. Action 1.2: Ryan et al. (2016) describe the need for robust analysis and whole farm planning when assessing a long-term land-use change such as forestry. The authors describe the need for the inclusion of the full range of factors that affect the returns from forestry in such analyses. From an individual farm perspective, soil productivity and farming system both have a large impact on the long-term net return. The annual opportunity cost, in relation to loss of agricultural income on planted land over the lifetime of the forest is a key factor that varies with both farming system and soil type. Ryan et al. (2016) include the income foregone from the superseded agricultural enterprise as an opportunity cost in the farm afforestation decision. Taking the opportunity cost into account each year, the average afforestation income over the rotation is presented as the annual equivalised income generated from forestry net of agricultural opportunity cost over time. This shows that the net farm afforestation income is negative when the opportunity cost is high (as is the case for high income systems such as dairy) and positive for lower opportunity cost farm systems such as cattle and sheep systems. This analysis provides a long-term perspective, smoothing out annual fluctuations and delivering the robust analysis required.

3. Action 1.3: The withdrawal of ash from the planting programme creates a gap in the broadleaf target of the annual afforestation programme. The selection of alternative species needs to be based on robust science coupled with appropriate tree breeding programmes and source identified material aimed at improving stem quality and tree quality. In addition, further analysis is required to improve knowledge of site selection and the capacity of soils to grow various species. The promotion of further afforestation can be facilitated using improved planting stock and optimised establishment practices. Afforestation grant and premium categories such as Agroforestry and Forestry for Fibre should be actively promoted.

4. Teagasc is supporting the achievement of broadleaf planting targets in this regard. During 2017, the first birch plants from qualified and selected seed will be available for grant aided afforestation. Test sites have also been established to progress the status of downy birch from 'qualified' to 'tested'. Teagasc is actively promoting the use of improved birch and sycamore seed for afforestation in conjunction with commercial partners. Expansion of research on breeding of Chalara (*Hymenoscyphus fraxineus*) resistance in ash is ongoing and incorporates screening and selecting of resistant trees and developing of efficient vegetative propagation methodologies.

5. Action 1.5: Teagasc supports an appropriate annual target for the restoration and expansion of native woodlands focusing on alluvial and sessile oak woodlands. Bullock et al. (2016) advocate targeting incentives to where benefits are highest or most effectively achieved. The targeting of co-operative initiatives between neighbouring landowners/woodland owners could be deployed to extend planting adjacent to vulnerable stretches of river to protect and enhance water quality. This would provide complementary benefits in terms of habitat connectivity as well as efficiencies via economies of scale achieved.

6. Action 1.6: There are important public policy drivers for afforestation, including carbon sequestration to mitigate GHG emissions from agriculture. Forestry contributes directly to the rural economy through the transformation of biological and other inputs into a range of outputs. However, there are also many indirect benefits to rural areas and to society. The provision of these public goods such as carbon sequestration (among others), means that the benefits from planting forestry extend beyond those that apply to the farmer. Such public benefits arising from private land are known as externalities which can be positive in the case of public goods such as carbon sequestration, or negative in the case of atmospheric emissions or pollution. In the presence of positive externalities, those who receive the

benefit do not pay for it and there is a risk that the market may under-supply the product. Ryan and O'Donoghue (2016) therefore put forward a rationale for additional subsidy to farmers with forestry on the basis of forestry providing additional public good.

7. Action 1.9: Teagasc will continue to support, empower and collaborate with forest owner groups in order to achieve efficiencies through economies of scale which incorporates forest establishment initiatives.

8. Action 1.11: Teagasc advocates support for the provision of high quality genetic material and ongoing research on species suitability as well as genetic selection to inform decisions on alternative species. A review of the performance of appropriate mixtures is also recommended. Teagasc further recommends support for the establishment and ongoing management of seed orchards.

9. Action 1.14: Teagasc fully supports the use of improved genetic material. The use of genetically improved trees usually results in better returns due to one or more responses. These include higher growth rates, better timber quality and higher rates of carbon sequestration. Tree improvement programmes should focus on key conifer and broadleaf species of commercial value to ensure genetic quality and provision of adequate supply. Consideration should be given to the effect of both energy market trends and climate change impacts on genetic resources.

10. Action 1.15: Teagasc understands that this analysis has been completed for DAFM since publication of the current Forest Policy document. Forestry offers significant potential as a carbon sink and forest management practices that support this should be further investigated.

11. Action 1.17: Species selection should be based on expert scientific analysis of crop performance under Irish soils and climatic conditions supported by peer reviewed research. Teagasc is currently involved in cutting edge research which includes the projects on suitable alternative conifer and the performance of tree species on marginal soils. It is anticipated that the outputs from this work, combined with the application of new soil resources in Teagasc should provide valuable information on which informed decisions about species choice can be made. In addition, the choice of species has to be linked to the availability of high quality genetic planting stock, therefore, further improvement of genetic material for suitable tree species needs to be prioritised.

12. Action 1.18: It is anticipated that outputs from the Kerry Pearl Mussel LIFE + Project, specifically on riparian woodland establishment and buffer zone management actions will support and inform future proposals in relation to regulating ecosystem services. The latter include reducing flooding incidents, bankside erosion and contributing to the removal of pollutants from surface run-off (Dudley and Stolton, 2003, Calder 2007). Riparian woodland also regulates stream temperature (Bullock et al., 2016), provides nutrients from detritus to aquatic fauna (Lehane et al, 2002) and provides a range of invertebrate food for fish (Ryan and Kelly-Quinn, 2015). Such woodland is also a habitat for aquatic insects whose feeding activities regulate algal growth in aquatic systems (Bullock et al., 2016, citing Stuart et al., 2013). Opportunities to incorporate riparian buffers in Agroforestry Systems could be further explored.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. The work by Farrelly and Gallagher (2015) on land availability for afforestation could be further developed and used as a tool for assessing land resources and the evaluation of land use for afforestation. Further work on improving the scale of mapping, the use of productivity models for local scale use and the likely production of other tree species would be beneficial in informing future afforestation policies and their targeted promotion. This work would be useful for more specific identifying land types for specific afforestation goals.

2. The further development of genetically improved broadleaved and conifer material, that have come through research programmes should be emphasised and their use fully promoted as well as strategic research and development in terms climate change implications. The use of forestry research data should be fully exploited and further resourced to address sectoral needs in key areas. Such resourcing should include long term research.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Ryan and O'Donoghue (2016) support the development of long-term integrated land use policies. These can take into account the competing demands for land and its potential uses as well as its capacity to provide benefits such as carbon sequestration, fibre for timber processing/renewable energy and the provision of biodiversity and good water quality. Schulte et al. (2014) also recognise the varying capacity of different soils and environmental conditions to sustainably intensify land-based production of food, fibre and ecosystem services. New land use policies and objectives could be more effective if they spanned multiple CAP periods (Ryan and O'Donoghue, 2016). The authors suggest this could reduce a hurdle to afforestation if owners were confident that the planting of land would not disadvantage them in relation to future agricultural schemes.

2. In relation to the integration of agricultural and forest land use policies, the Food Wise 2025 dairy expansion targets present a challenge to farmers expanding production as this involves increasing agricultural GHG emissions. Annual EPA reports show that due to the predominantly ruminant based agriculture practiced in Ireland, agricultural GHG sectoral emissions account for over 30% of national emissions and have been increasing in recent years. However, the afforestation of agricultural land can be utilized as a mitigation measure for increased agricultural GHG emissions using suitable models under Irish conditions. Research is required to analyse the farm level consequences of the afforestation of different land use types and environmental conditions in relation to the mitigation potential of (a) afforestation and (b) displacement of emissions due to foregone agricultural production. Models of riparian forestry should be developed that could be integrated into dairy farms to help mitigate GHG emissions at a local level.

3. Ryan and O'Donoghue (2016) also suggest the linking of afforestation with agricultural land use decisions in a whole farm incentives approach. This could involve potential linking of forestry and agricultural incentives around actions such as the facilitation of land mobility and succession or the protection of watercourses using riparian buffers which could provide a 'win-win' outcome for landowners.

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Chapter 2 – Management of the Resource

Policy Statement

To ensure the sustainable management of the forest resource in accordance with best practice thereby ensuring its capacity to provide the full range of timber and other benefits.

Strategic Actions

	Existing Strategic Action
2.1	A system to standardise data requirements, on an electronic platform, for private woodland managers/ owners should be introduced from 2014 in consultation with sector stakeholders. This would include a mandatory requirement for standardised Management Plans for privately owned woodlands, with a commitment for provision and updating of same as a condition of afforestation from 2014 onwards and as a condition of roads and other support measures as well as a precondition for felling licences for thinning. The current format and scope of Management Plans will be revised to support SFM, facilitate certification, the forecasting of future roundwood supply, felling compliance and public good functions and incorporate their design, submission, updating, review and analysis into the iFORIS system while ensuring alignment between private and public sector management planning systems.
2.2	DAFM should establish a National Forest Inventory and Management Planning Unit with responsibility for ongoing national inventory, collation of private inventory data, SFM reporting, national reporting, national forecasting and the design and approval of forest management plans in the context of permitted activities.
2.3	Continue to repeat the NFI on a 5-year cycle, and based on active engagement with the private sector incorporate the collection of additional plot information which will facilitate the use of NFI data for reporting and forecasting purposes
2.4	Consideration will be given to support for projects and measures which improve the level of accuracy, reliability and relevance of timber forecasting.
2.5	Collaborative mechanisms for the management of privately owned forests will be actively encouraged and their use to enhance the delivery of the full range of forest benefits investigated.
2.6	Recognising the market failures which would prevent early production from private forests and the economic benefits of first (and subsequent) thinnings, funding for two consecutive priority 5-year harvesting roads programme, of at least 45,000 ha and 32,000 ha respectively for privately owned forests will be provided to enable access to and delivery of the forecast volumes in the COFORD all-Ireland forecast of net realisable volume 2011-2028.
2.7	DAFM to work with the Department of the Environment, Community and Local Government to ensure an efficient implementation of a unified consent system for forest roads and entrances that supports timber mobilisation and maintains the competitiveness of the sector (see also 11.1). This should be coupled with updating of relevant guidelines (see also 4.9). The implementation of the Environmental (Miscellaneous Provisions) Act 2011 needs to be reviewed in terms of how it is applied to the sector in order to maintain its competiveness.

2.8	DAFM to explore ways of linking existing and future premium payments for plantations over ten years with specified forest activities that provide for the active management and protection of the forest resource and the environment and appropriate reporting of timber inventory and other outputs (see also 2.1)
2.9	The current mechanisms of informing the forest sector and in particular forest owners will be reviewed, and where appropriate more effective initiatives and measures will be put in place including more direct collaboration with stakeholder representative organisations.
2.10	The conversion of plantations to continuous cover forest (CCF) will be supported by initiatives and measures to heighten awareness of and/ or promote alternative silvicultural systems.
2.11	DAFM will encourage the management of all broadleaves including native woodlands for timber production and where there is a particular conservation or protection requirement, shall, in cooperation with the National Parks and Wildlife Service and other Government agencies, facilitate management that is compatible with such objectives.
2.12	DAFM to establish a representative National Forest Genetic Resources Advisory Group to guide all aspects of future genetic requirements and advice on the management of reproductive material and tree improvement and breeding programmes including formalising the national tree improvement programme.
2.13	Integrate and develop the current monitoring schemes on forest health and biogeochemistry, climate change mitigation and adaptation, biodiversity, nutrient status and phonological observations within the NFI framework and use them to assess biodiversity, and monitor the impacts of climate change, thereby contributing to the improved future management of the forest resource.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 2.1 and 2.2. The introduction and implementation by the Forest Service (DAFM) of an adequately resourced 'quality control system' with analytical capacity will ensure that current strategic actions and regulations are adhered to and implemented.
2. Establishment and support grant schemes should be dependent on the above mentioned quality control system.
3. Quantify and evaluate all economic, ecological and social services provided by Irish forests, assisting in the implementation of SFM. For instance, the final report of the COFORD-funded ECOVALUE (Ecosystem valuation of Irish Forests) project undertaken by researchers in UCD, Teagasc, UCC and UL provides ecosystem valuations for timber and non-timber services provided by Irish forests. Ecosystem services evaluated include water, carbon, biodiversity, recreation and health.
4. DAFM to consider a programme to support national forecasting that could include the sampling and data collation of data to assist in more reliable forecasting of private forests. This would cover requirements outside the scope of the National Forest Inventory.
5. Action 2.5. Teagasc, in co-operation will all sectors of the forestry industry, is seeking to mobilise the private forest thinning resource through dissemination of research, training and the building of familiarity with and confidence in the harvesting and marketing of the timber resource. The empowerment of private forest owners through knowledge transfer, capacity building and a sense of ownership is central to the realisation of the private timber resource production potential and to the optimisation of ecosystem services. The continued support of private forestry owners through Forest Owner Groups and Knowledge Transfer Groups is essential to achieving these objectives.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. New policies and guidance are needed to ensure that environmental and social services provided by forests are optimised; i.e. economically viable, ecologically sustainable and socially acceptable. For instance, Forest Service (DAFM) to set out a research-based pathway for Irish forests to address the challenge of climate change through building resilience, increasing capacity and ameliorating potential climate change effects.
2. Support is required to assist under-utilised and under-performing existing forests and woodlands. This will lead to improved timber mobilisation while maximising biodiversity value.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Consider a mechanism that will facilitate sawmills to pay a premium for pruned conifer sawlog.
2. Action 2.10. Consider a funding scheme to support the conversion of some plantations to CCF systems.
3. Action 2.11. Extending the pruning grant for older broadleaf forests.
4. Restructure grant schemes to recognise all services provided (economic, ecological and social).
5. DAFM to support the implementation of a national group certification scheme ensuring transparency, trust and cost effectiveness.
6. Harvesting returns detailing stage of rotation, yields, etc. should be a condition of the felling licence. Without such information, KPIs for the mobilisation of the private timber resource cannot be accurately assessed.
7. The completed Forest Management Plan template, both in paper and electronic formats, should be implemented as soon as possible.
8. Greater transparency in terms of harvesting costs & timber prices, with tri-monthly updates, would boost forest owner confidence in the forestry sector and build trust amongst the various stakeholders.
9. Facilitate the underplanting of additional species into forests (broadleaf and conifer) to mitigate future disease risk, act as silvicultural tool (e.g. control of epicormics in oak), reconstitute under-performing plots, introduce more biodiversity, etc.
10. DAFM to support the development of appropriate alternative regeneration techniques thereby maximising biodiversity value.

Chapter 3 – Environment and Public Goods

Policy Statement

To ensure that afforestation, management of existing forests and development of the forest sector are undertaken in a manner that ensures compliance with environmental requirements and objectives and enhances their contribution to the environment and their capacity for the provision of public goods and services.

Strategic Actions

	Existing Strategic Action
3.1	The value of the complete range of non wood benefits to be quantified and included in a revised Cost Benefit Analysis of the planned afforestation programme
3.2	All relevant proposed EU regulations, EU Directives and national legislation should be subject to full stakeholder consultation and Regulatory Impact Assessment (RIA) as per RIA guidelines.
3.3	DAFM in collaboration with the main sector stakeholders to update the complete set of environmental guidelines with priority given to guidelines that address water quality, fertilisation and biodiversity. In the revision consideration should be given to structuring the guidelines so they can be used either at forest developmental stages (establishment, thinning, harvesting) or thematically to deal with water, biodiversity etc. The revised guidelines should be comprehensive, provide clarity regarding requirements including buffer zones as appropriate, permit procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework including inter alia the Water Framework Directive (including high status waters), the EIA Directive, the Birds Directive and the Habitats Directive.
3.4	DAFM to update the Code of Best Forest Practice and the National Forest Standard to reflect changes in the suite of environmental guidelines, changes in best practice, changes in the regulatory and compliance framework and as a means to support compliance with the principles of sustainable forest management and the ecosystem approach as elaborated in the 2008 MCPFE (now Forest Europe)/PEBLDS jointly adopted Pan-European Guidelines for Afforestation and Reforestation
3.5	The Irish National Forest Standard will be used as the basis for reporting on the state of Ireland's forests and on sustainable forest management.
3.6	DAFM, in collaboration with DoECLG, the NPWS and statutory bodies to develop a guidance document outlining the nature and use of current environmental and best practice compliance requirements.
3.7	Training will be provided to Forestry Inspectors in the first instance; and its rollout to forestry practitioners will be considered as appropriate, to enable the assessment of habitat types in afforestation proposals.
3.8	Procedures to be developed by DAFM for Approvals/Consents and Licences for afforestation, forest road construction and harvesting to ensure that all applications in and adjacent to Natura 2000 sites are subject to an appropriate assessment procedure.
3.9	Initiatives and measures which aim to enhance provision of recreation/tourism and landscape benefits from forests will be supported.

3.10.	Based on the findings of a Working Group to be established by DAFM in collaboration with Coillte and relevant stakeholders, introduce guidance and criteria for the identification and future management of peat areas currently afforested which are to be deforested to mitigate continued environmental degradation. The Working Group will also provide clear guidance on future afforestation of peat soils.
3.11	Facilitate the cost-benefit analysis process for identifying the most cost-effective measures for compliance with the Water Framework Directive
3.12	Initiatives and measures which aim to enhance the water and wetlands benefits of forests will be considered under the Native Woodland Establishment Scheme.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 3.1: In reviewing the range and value of ecosystem services from Irish forests, Bullock et al. (2016) apply the Common International Classification of Ecosystem Services (CICES, 2013) which is now the principal classification used by researchers and policy makers. This classification emphasises the relationship between provisioning, regulating and cultural Ecosystem Services as final services that supply goods and services for human well-being. This study examines the range of biophysical services provided by forests and the economic and social value of the final ecosystem services. For example, the young age of much of Ireland's forests leads to a high level of carbon sequestration during the trees growth. In its assessment of Ireland' environment, the EPA (2016) cites the National Policy Position Ireland paper - Climate Action and Low-Carbon. The latter sets out 'an approach to carbon neutrality in the agriculture and land –use sector, including forestry, which does not compromise capacity for sustainable food production. This explicitly recognises the challenges in decoupling food production from GHG emissions as well as the unique potential for carbon sequestration in biomass, soils and wood products through alternative land management and land use (EPA, 2016).
2. Action 3.1: The natural capital value of native woodlands is an important component to consider when quantifying the value of non-wood benefits in a planned afforestation programme. In their report, Bullock and Hawe (2014) quantifies for the first time, the economic value of the natural capital of native woodlands. The authors outline how Irelands existing area of native woodland has an economic value of at least €100 million and possibly €143 million per annum.
3. Action 3.1: The final report of the COFORD funded ECOVALUE (Ecosystem valuation of Irish Forests) project undertaken by researchers in UCD, Teagasc, UCC and UL provides ecosystem valuations for timber and non-timber services provided by Irish forests. Ecosystem services evaluated include water, carbon, biodiversity, recreation and health.
4. Action 3.3 New environmental guidelines have been implemented and further information at an individual site basis on the guidelines around water would help provide further clarity e.g. in defining types of water course etc. This could be done by clarifying guidelines where necessary and also through training inspectors and registered foresters.
5. Action 3.7: In relation to the assessment of habitat types in afforestation proposals, it is suggested that Teagasc Forestry Advisory staff also be included in training as it is rolled out to the Forestry Inspectorate as they are an essential first point of contact for many clients considering the forestry option. Such identification of habitat types can also be greatly enhanced through deployment of the increasingly available range of GIS datasets which can provide valuable backup support.
6. Action 3.9: This action might consider linking of adjoining private and/or public forest properties to develop a collaborative approach and economies of scale to potential recreational and tourism benefits. Existing recreational projects may also be used to deliver a positive message that can promote recreation and landscape benefits.
7. Action 3.11: It is suggested that outputs from the Kerry Pearl Mussel LIFE+ project, which incorporates assessment of the cost-benefit of conservation methods adopted over the course of the project can significantly assist in the achievement of this strategic action. The project also incorporates socio-

economic and added value elements such as economic opportunities, product branding and sustainable landuse. It will also consider the post LIFE+ potential in terms of forest planning, Agri-environmental schemes and continuation of the Pearl Mussel Conservation Actions.

8. Action 3.12 Planting of native species under the Afforestation Scheme and the NeighbourWood Scheme could also be considered under this proposed strategic action to enhance water quality.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Compliance with environmental requirements could be perceived by some stakeholders to impact significantly on the economic sustainability of the forest sector. Therefore a careful balance is needed to ensure the development of the sector is environmentally, economically and socially sustainable.

2. The promotion of forestry and afforestation should incorporate its benefits in terms of its environmental benefits and public goods. Bullock et al, (2016) advocates linking of the latter to targeted planting and management incentives which will positively contribute to our international policy obligations with regard to climate change, water quality, biodiversity and landscape. (e.g. Challenge Scheme of Northern Ireland).

3. A promotional and educational campaign highlighting multiple use and the non-timber benefits of forestry to forest owners and the wider public is suggested as a means to build positive attitudes to forestry incorporating the provision of environmental and public goods. This campaign should highlight the full suite of ecosystem services provided by different types of forests and should also acknowledge the economic, environmental and social trade-offs that may exist in the provision of different types of ES from different types of forests.

4. Facilitate the establishment of appropriate species mixes, allowing flexibility in design and management, to mitigate future forest health risks and climate impacts, and to support a more robust forest resource.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. The new environmental guidelines should be monitored over time to ensure their objectives are being achieved while at the same time facilitating sustainable forest management. This should be carried out on a macro on micro level i.e. national/ individual sites.

2. Teagasc is a key contributor to the recent initiative for the development of a Group Certification template which encompasses two certification groups, one located in the north and one in the south of Ireland. The successful establishment of these certification groups and their subsequent growth in terms of membership and forest area may provide a gateway and catalyst for wider private forest sector certification. The latter may facilitate good forest practice and help ensure that forests are sustainably managed, with timber and non timber products produced to appropriate environmental and social standards. Continued and appropriate support is suggested to develop the necessary momentum for group certification of private forests through forest owner entities is suggested to meet the future needs of the forestry sector and achieve sustainable sectorial growth.

3. Existing regulations and incentives have contributed to timber production and carbon sequestration. Such regulations can reduce the risk of soil disturbance and help minimise the use of fertilisers and pesticides that present a risk to aquatic water quality. Forest premium payments support the supply of Ecosystem Service benefits. The latter might also be strengthened through a renewed supply of incentives for proactive habitat management, invasive plant control and integrated deer management (Bullock et al., 2016). The authors also advocate targeting incentives to where benefits are highest or most effectively achieved. For example, the targeting of co-operative initiatives between neighbouring landowners could be deployed to extend planting adjacent to vulnerable stretches of river to protect and enhance water quality. This would provide complementary benefits in terms of habitat connectivity and provision of amenity and recreational facilities.

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Chapter 4 – Supply Chain

Policy Statement

To further develop an efficient, sustainable and environmentally responsible supply chain that is compatible with forecast volumes, which will enhance the competiveness of the processing sector and its wood paying capacity to forest owners.

Strategic Actions

	Existing Strategic Action
4.1	In consultation with stakeholders, DAFM will develop a National Roundwood Mobilisation Strategy to implement improved efficiency and logistics along the supply chain from grower to final end user, bearing in mind the increased volumes that will now come from the private sector; and taking account of best international practice.
4.2	Carry out a national survey of current harvesting and transport infrastructure capacity and identify the future capacity requirement in line with the forecast volumes and the increased thinning volumes from the private sector.
4.3	DAFM to commission a desk study to review the practice and consequence of licensing / permitting of harvesting contractors in other European countries to determine whether such systems have any application under Irish conditions.
4.4	DAFM should initiate discussions with Coillte and other forest owners to develop a framework to allow shared use of forest roads for forest operations (see also 12.3)
4.5	DAFM, in partnership with grower representative organisations, Coillte and the forest industry, should facilitate the development of a standard system for timber measurement and removals.
4.6	DAFM to investigate measures which will support the phased development of the harvesting infrastructure.
4.7	DAFM will support measures that encourage collaborative actions to improve economies of scale among forest owners.
4.8	Support the evaluation and testing of small scale harvesting equipment for the thinning of privately owned forests
4.9	Support measures, initiatives and awareness-raising aimed at achieving good practice in roundwood haulage.
4.10.	In consultation with stakeholders, provide support measures and initiatives to identify the most suitable roundwood transport routes and their co-ordination with Local Authorities.
4.11	Support measures to optimise the environmentally efficient and sustainable recovery of harvesting residues for energy.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 4.1 The proposed National Roundwood Mobilisation Strategy needs to be developed as a matter of urgency with a particular focus on sustainable wood mobilisation from small and infrastructurally

challenged private plantations. The Coford Timber Mobilisation Working Group is currently analysing the level of implementation of the recommendations of the Coford "Mobilising Ireland's Forest Resource" report (2015) and is due to report in 2018.

2. Action 4.2 With national timber production due to double over the next ten years, mainly from the private sector, the proposed national survey of the current and future harvesting and transport infrastructure capacity is urgently required.
3. Action 4.4 Investigate potential solutions for a collaborative approach to the use of forest roads and rights of way between Coillte and other forest owners to facilitate wood mobilisation including plantations neighbouring Coillte sites currently classified as Chronic Access Blocks.
4. Action 4.7 Continue support mechanisms for the sustainable development of Forest Owner Groups and KTGs with associated collaborative timber mobilisation and supply chain development.
5. Action 4.8 In addition to the evaluation and testing of small scale harvesting DAFM should investigate funding models to support the use of small scale thinning equipment based on a collaborative approach to the sustainable harvesting of private plantations.
6. Action 4.11 Support measures to optimise the recovery of harvesting residues to be cognisant of potential negative impacts on soil nutrient depletion including long term depletion.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Ongoing development of the accuracy of production forecast models is essential. A model such as the Coford funded Teagasc/UCD ForecastModel project which incorporates recent advances in yield modelling aims to build on developed methods to produce more accurate forecasts of private sector timber production. The accuracy of production forecasts such as ForecastModel improves market confidence and certainty and will encourage investment by harvesting contractors and timber hauliers in their operational infrastructure. The project also includes a survey of owners' management intentions helping to inform timber mobilisation projections and supply chain policy development.
2. Agreement on the consent system for forest road entrances to reside primarily with the Forest Service to be finalised as a matter of urgency as the current requirement for planning permission constitutes a significant blockage to private wood mobilisation.
3. Review of the system of forest road grant payment should be investigated to overcome cost issues that are becoming a significant barrier to the construction of forest roads with consequent impacts on wood mobilisation.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Strengthen communication channels between DAFM, industry and Local Authorities on planned timber harvesting to assist with road maintenance planning and reciprocal agreement on timber transport logistics.
2. Continue funding an Agreed Routes methodology to prove the concept as outlined in the FITG Managing Timber Transport Guide with the objective of its successful and broad adoption by Local authorities in partnership with forestry stakeholders.
3. Promotion of sustainable timber haulage through ongoing support for and promotion of the Variable Tyre Pressure grant scheme for the timber haulage fleet.
4. In consultation with HSA, development and adoption by haulage industry of revised best practice for the haulage of round timber.
5. Ongoing support for the role of the Forest Industry Transport Group (FITG) as an important voluntary partnership of the forestry sector, Local Authorities, Government departments and other stakeholders for sharing ideas and best practice on timber haulage issues.

6. Teagasc supports the industry wide adoption of guidelines for roundwood timber transport as outlined in the FITG's 'Managing Timber Transport, Good Practice Guide' to promote sustainable timber haulage to minimise impacts on the public road network, local communities and the environment.
7. Through a revision of the forest road manual to develop alternative innovative roading models to facilitate more practical and cost effective timber transport from private plantations where access is a barrier to wood mobilisation.

Chapter 5 – Wood Processing and Wood-Based Panels Sector

Policy Statement

To support the development of a competitive, innovative, value-added and market focused wood processing sector which provides sustainable solutions to a diverse portfolio of users in the construction, lifestyle, renewable energy, furniture and related markets.

Strategic Actions

	Existing Strategic Action
5.1	DAFM to facilitate a review of the wood processing and wood based panels sector with a view to improving long term sustainable roundwood supply from both the private sector and Coillte and identifying areas where collaboration can contribute to realising increased levels of supply from the private sector.
5.2	State agencies including Enterprise Ireland will support initiatives to add value, including niche markets, to the current range of timber products being processed and to the development of new and innovative products, including biofuels, which can be manufactured from existing and future raw materials.
5.3	State agencies will support measures aimed at forest product market identification and exploitation including markets and uses for small diameter hardwoods.
5.4	DAFM will facilitate projects and measures which lead to the development of more reliable forecasting tools and methodologies.
5.5	DAFM will give consideration to support for the supply of quality and added value fuels from the tending of broadleaved species, especially where this involves locally organised producer groups.
5.6	DAFM, in collaboration with Enterprise Ireland, SEAI and sector stakeholders to monitor the balance between forecast supply and demand across the wood energy, wood based panels and sawmilling sectors.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 5.1. There needs to be a collaborative approach between Irish financial sector, Irish banks, agricultural institutions, forest sector and forest owners on releasing capital held and stored in forests. As the private sector is the growth area in terms of timber production, it important that all resources are explored to ensure that all available timber is harvested in a sustainable manner.
2. Action 5.2. New products needs to be researched similar to the agri-food sector e.g. dairy sector's research on whey powder, to fully utilise all wood-based products right across all sectors. Food, pharmaceuticals, oils, resins etc. (e.g. AgriforValor Project), broadleaf timbers (e.g. Letterfrack College).
3. Action 5.3. The Teagasc Talking Hardwoods Event can be used as a vehicle to encourage and showcase new broadleaf uses and products.
4. Action 5.4 Teagasc is doing research with COFORD support including the Forecast Model project which aim to increase the accuracy of the national forecast. It covers many aspects of the supply chain from growth to access to predicting harvest potential of sites. Much of the research has potential application

to improve national forecasts. Decision support systems (FIVE) should be utilised to forecast economic growth of the forest. The recently launched conifer felling decision tool is a useful additional support.

5. Action 5.5. Identify other hardwood uses for small and large diameter broadleaves. Teagasc and NUIG researching this within the COFORD-funded EARTH project. Encourage niche trades (e.g. coopering).

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Consider "Financial Products" to release capital from forests. Continued assessments on broadleaf crops.
2. Identify and support research with Local Enterprise Boards for both timber and non-wood products. Encourage entrepreneurship in wood based sector through college courses and placement. Identify within forests and other sectors such as food, recreation etc.
3. Develop strategies that can explore new markets and help mobilise this timber resource. The recent EIP Operational Groups call may facilitate opportunities to identify new uses of timber.
4. Tax incentives and start-ups to encourage the development of new training programmes in order to cultivate forest programme developers of the future.
5. Incentivise the extraction and mechanisms of extraction of other products (oils and tannins) from wood. KTG wood mobilisation groups roll out may also be helpful.
6. Review and input to national renewables polices and the development of measures such as the Renewable Heat Incentive – and the need for a balanced approach between energy provision and raw material for board and sawn-wood manufacture.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Bio-fuel incentive structures that will mobilise timber needs to be in tandem with timber mobilisation.
2. Roll-out of wood mobilisation KTGs nationwide. Develop an all-Ireland timber mobilisation strategy Development of an Irish brand and incentives for the use of Irish Timber.
3. Marketing tool such as Bord Bia "Origin Green" for Irish forests and timber products.
4. Certification needs to be implemented throughout the KTGs.
5. Certification should be part of any Decision Support System. Renewable Heat Incentive needs to be monitored as regards timber production. A feedback mechanism related to felling licences needs to be developed.

Chapter 6 – Forest Protection and Health

Policy Statement

To maintain a healthy forest environment through sustainable forest management and early detection and control measures to prevent the introduction and spread of harmful invasive alien species, pests and diseases.

Strategic Actions

	Existing Strategic Action
6.1	A full-time National Deer Management Unit (NDMU) to be established within DAFM to coordinate deer management policy development and implementation, in consultation with stakeholders, and to lead the development of a professional deer management culture in Ireland.
6.2	The NDMU to undertake a national census of deer population distribution and density and based on this to develop an appropriate culling regime in the context of a national strategy for deer management, particularly in forest areas.
6.3	DAFM to update the format for the forest management plan to include an overall risk assessment (biotic and abiotic) and identification of appropriate mitigation and prevention measures.
6.4	The Forest Protection Guidelines and Forestry Schemes Manual to be updated in light of new and emerging threats to forests and supported where appropriate with public awareness campaigns and information targeted at forest owners, landowners and the general public.
6.5	The current forest fire warning risk assessment carried out by the Meteorological Office should be supported. DAFM in collaboration with the Local Authorities and relevant stakeholders to put in place guidance, in order to increase awareness and reduce the risk of forest fires, which would facilitate a co-ordinated system of fire plans (including dealing with fire outbreaks) for forest plantations and implement by 2014 the recommendations of the Land and Forest Fires Working Group.
6.6	The use of species and provenances with proven disease resistance to be favoured in grant-aided afforestation and encouraged in all planting.
6.7	DAFM to continue to identify and analyse forest pest and disease risks from abroad and to maintain monitoring, biosecurity and phytosanitary measures to reduce the risk of entry and establishment of harmful non-native pests, diseases and invasive alien species and, depending on impending threats, consider the establishment of a Biosecurity Taskforce.
6.8	DAFM/COFORD to implement a decision support system (DSS) to facilitate the selection and planting of most appropriate species in the light of the potential impact of climate change and to guide the forest industry accordingly.
6.9	DAFM/COFORD to consider support of field scale evaluation of non-chemical measures including nematodes, and silvicultural practices and following this indicate appropriate measures for the control of the large pine weevil.
6.10.	DAFM to co-ordinate efforts across the forest sector to collaborate with the NPWS and other organisations in the early identification and control of invasive alien species which represent a

	threat to forest biodiversity and economic development.
6.11	In the light of the new regulations (SI 477 of 2011), DAFM to consider providing support for the control of rhododendron and other IAS in all forests and on lands adjacent to forests which act as a seed source. Where appropriate, support for control should be considered under the new CAP reform measures.
6.12	DAFM should evaluate the option of licensing the cutting and use of rhododendron for decorative purposes, especially in the area of 'proof of origin'.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 6.1. With regard to deer management, a Forestry and Agricultural Impact Group should be established, for the purpose of knowledge transfer, with an emphasis on management techniques and accredited courses.
2. Forest owners should be provided with the opportunity to learn methods of overall risk assessment (biotic and abiotic) and identification of appropriate mitigation and prevention measures.
3. There is a requirement for further research to find Chalara 'tolerant' ash and to conduct research into alternative conifer and broadleaf species to encourage a more species-diverse national forest estate.
4. Biotic and abiotic risk mitigation could be increased through adoption of proven silvicultural management techniques and systems such as adaptive thinning intensity, IPM and early thinning.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Facilitate the underplanting of additional species into plantations (broadleaf and conifer) to mitigate future disease risk, act as silvicultural tool (e.g. control of epicormics in oak), reconstitute underperforming woodlands, introduce more biodiversity, etc.
2. Develop new research-based guidance so that Irish forests can be made more resilient to climate change.
3. The development of revenue streams from ecosystem services would encourage their protection and maintenance.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. There are significant ongoing threats to our forestry sector from emerging pests and diseases. It is essential that national policy includes the provision of current information concerning the level of risk of introduction and the threat posed by each organism, on a regular biannual basis. The policy should include the development of action plans for dealing with each threat and specification of the roles for each of the forestry stakeholder groups in the event of outbreaks in Ireland.
2. All new forest plantations should be cognisant of the control requirements of ungulates such as deer and goats. Expanding populations will colonise new plantations into the future and the design of forests should reflect this ongoing issue.
3. A cohort of experienced manager/ landowners is required if any geographically-based, integrated deer management plan is to be implemented.
4. Co-ordinate an approach with other previous and current tree planting schemes (REPS, GLAS) to identify and manage disease in all tree crops.

Chapter 7 – Support – Education, Training and Research

Policy Statement

To ensure the availability of suitable programmes of education and training across the sector and research programmes targeted at identified needs.

Strategic Actions

	Existing Strategic Action
7.1	Support measures and initiatives to establish an overarching forest sector body which will guide and co-ordinate activities relating to research and development, training and education across the sector with a focus on innovation, added value and increased competitiveness.
7.2	In order to increase the level of involvement of the forest sector in funding research DAFM will examine the feasibility of the sector part-funding national forest research.
7.3	DAFM will evaluate the findings from the 2011 FTEI training needs analysis for the forest sector and issues raised by the Farm Safety Partnership Advisory Committee and prepare a phased implementation plan to address prioritised needs, including competency based training and certification systems.
7.4	The wood industry in collaboration with IFFPA and Irish Business and Employers Confederation (IBEC) should put in place a training programme, utilising Skillnets and other initiatives as appropriate, to meet the needs of the wood industry.
7.5	Teagasc in collaboration with the HSA and other public bodies to heighten awareness among forest owners of their responsibility regarding employment of contractors and health and safety issues.
7.6	DAFM to consider the possibility of supporting a network of forestry demonstration farms.
7.7	DAFM to maintain, in real terms, the current level of State-led investment in forest research over the coming decade.
7.8	National forest research and development priorities will be established by DAFM in consultation with the membership of COFORD council, other government agencies and stakeholders.
7.9	DAFM, in cooperation with the COFORD Council to examine the feasibility of establishing long-term research programmes involving partnerships between State agencies and third level institutions.
7.10.	Ensure that ecological and environmental aspects of forestry are adequately covered in education and training courses.
7.11	The COFORD council, in collaboration with forest industry, relevant State agencies and sector stakeholders to undertake a review of the Strategic Research Agenda with a view to prioritising areas for investment in research and development across the sector.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. The implementation of the strategic actions already identified above will support the needs of the sector.
2. This will necessitate the provision of adequate resources on an ongoing basis to implement the strategies.
3. Develop a co-operative approach to promotion by all training/education providers.
4. Support the development of the harvesting operatives QQI training course in Teagasc Ballyhaise to contribute to addressing the current shortage of skilled harvesting operatives critical to achieving efficient timber mobilisation.
5. Continue consultation with stakeholders regarding research priorities and needs.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Promote forestry as a viable career at all levels.
2. Facilitate more industry co-operation and participation.
3. Facilitate the availability and accessibility of up to date technologies.
4. Develop entrepreneurial and communication skills.
5. Fulfil the demand for refresher and up skilling training.
6. Make provision for specialised forest management and skills – CCF, Native woodland, tree care etc.
7. Consider the introduction of a mandatory requirement for forest management training of forest owners currently in receipt of forestry premiums.
8. Investigate and analyse the effectiveness of forestry KT techniques and social media and other online channels for the training of forest owners.
9. Investigate opportunities to introduce forestry training element into appropriate agricultural schemes e.g. GLAS and farmer discussion groups.
10. Facilitation of long-term research programmes to meet the needs of the forest sector on key issues and retention/continuity of experienced research staff required.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Provision of blended learning opportunities.
2. Adaptation and investment in technology.
3. Forestry in-service training for B&T advisors within Teagasc.
4. Modification to farm planning cost control planner, carbon navigator and E-Profit Monitor to include forestry as a standard farm detail.
5. Inclusion of forestry in agriculture courses at all levels e.g. Green Cert.
6. Teagasc to consider developing a Better Forest demonstration model promoting best forest management practices, economic practice and training for forest owners and forestry and agricultural professionals.
7. Provision of training skills infrastructure targeted to young/new forestry contractors in forest management skills e.g. safe use of chainsaws; sustainable harvesting and silviculture with emphasis on broadleaves.
8. Health and Safety awareness training for forest owners.

9. Conduct an assessment of forestry professionals' training needs to guide future training provision.
10. Infrastructure and funding mechanism are required to accommodate long-term research needs in forestry that are not met by the shorter term current research funding model.
11. The career opportunities for forestry researchers need to be improved if forestry research is to become an attractive option for forestry graduates.

Chapter 8 – Quality, Standards and Certification

Policy Statement

Forest products, forest services and the management of the forest resource will have a strong, market-led, quality focus.

Strategic Actions

	Existing Strategic Action
8.1	DAFM to facilitate voluntary forest certification through the structure and content of environmental guidelines, an updated Code of Best Forest Practice and forest management planning systems, and through other measures, in order to facilitate access to market.
8.2	DAFM will engage in and support the development of forest product and other standards of relevance to the Irish forest sector.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Implement the strategic actions already identified above.
2. Continue consultation with all stakeholders regarding quality, standards and certification priorities and needs.

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Teagasc supports a new policy enabling forest owners to implement relevant certification schemes and / or standards thereby facilitating access to new and existing markets.
2. Quantify and evaluate all economic, ecological and social services provided by Irish forests, assisting the implementation of SFM.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Provide a mechanism to facilitate the roll-out of the certification process e.g. awareness raising, training and upskilling of forest owners and foresters.
2. Ensure that the new FMP template meets all current and future requirements of EUTR and (FSC and PEFC) certification schemes.
3. DAFM to support the implementation of a national group certification scheme ensuring transparency, trust and cost effectiveness.
4. Participate, strengthen and advocate EU Timber Regulations reducing future dependency on third party certification schemes.
5. DAFM to support the development of an accredited timber harvesting quality assurance standard (including trained and accredited drivers and transparent timber sale). This will greatly assist timber mobilisation by creating confidence and trust.

Chapter 9 – Policy Implementation and Review

Policy Statement

Policy will be implemented through ongoing monitoring and reporting of progress in consultation with stakeholders, and the policy will be updated to meet changing needs and circumstances.

Strategic Actions

	Existing Strategic Action
9.1	Establish a Forest Council, representative of the forest and related sectors, with a permanent secretariat and three subordinate committees (a) research and sectoral development, (b) schemes and measures and (c) environment, which would have the responsibility for ongoing monitoring and reporting of progress on policy implementation against agreed indicators of achievement and providing advice on the updating of policy and or strategic measures.
9.2	Establish a Task Force to consider the establishment of a stand-alone government body or agency which could have the responsibility of addressing development and promotion of the forest sector and forest products nationally and internationally. The Task Force would report to DAFM through the Forest Council.
9.3	The level of implementation of the recommendations from the BioForest report would be assessed by the environment group.
9.4	The Forest Service to publish five year and annual business plans which clearly set out the work programme for the coming period, indicators of achievement and the funding arrangements.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. Action 9.2. Teagasc is central in the area of development and promotion of forest sector. Teagasc would like to contribute to any consideration around the forming of a task force to consider the establishment of a stand-alone government body or agency with the responsibility of addressing development and promotion of the forest sector.
2. Action 9.3. This action in dependent on the establishment of a Forest Council. However the Bioforest Project was published in 2007 and so the relevance of its findings would have to be reassessed in the context of updated environmental guidelines etc. (*https://www.epa.ie/pubs/reports/research/biodiversity/bioforestfinalreport/*).

What new policies are needed to deal with current and future opportunities and/or threats to the sector?

1. Industry wide coordinated promotion of the forest sector should become an important element within this revised policy statement to ensure its sustained implementation.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Detailed monitoring of the forest resource needs to be central to any policy instrument to develop the sector.
2. The full impact of investment companies purchasing/managing private forests should be assessed. Monitoring of the efficacy of Forest Owner Groups in mobilising timber, knowledge transfer and capacity building, should inform future timber mobilisation policy.
3. Ongoing cooperation with local authority and relevant government departments will be essential to facilitate sustainable development.

Chapter 10 – Cost Appraisal and Funding

Policy Statement

To support the development of the forest sector through a combination of funding and fiscal arrangements including joint EU funding, direct State funding and facilitating private investment.

Strategic Actions

	Existing Strategic Action
10.1	The tax treatment of forestry should be examined taking into account the timing and scale of timber revenues and reforestation costs to ensure that tax treatment does not act as a disincentive for the achievement of national policy goals in particular forest cover, roundwood supply to industry and climate change mitigation
10.2	The recommendations of the review of tax schemes (Department of Finance 2006) and the Commission on Taxation (2009) in relation to thresholds to be implemented.
10.3	DAFM to explore financial and funding mechanisms to encourage a greater level of institutional investment in afforestation and in mobilising wood supply from the existing private forest estate.
10.4	DAFM and the Forest Service to work with Coillte and other bodies to explore the viability and cost of a national carbon-based afforestation scheme.
10.5	Government to examine possibility of multi-annual funding for afforestation and forest road schemes.
10.6	DAFM to examine the feasibility of co-funding the afforestation programme and support measures under the Rural Development Regulation.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

An analysis in the following areas could provide valuable information to help promote and incentivise further afforestation:

1. Ryan and O'Donoghue (2016) suggest an examination of policies that could link a reduction in the tax-payable to expanding dairy farmers on the increase in value of their herd if it was offset by afforestation (either on their own land or another farmer's land). For the expansion to be carbon neutral, research suggests that one hectare of forest would need to be planted for every 5 additional livestock units (Lanigan and Richards, 2014). This incentive of tax reductions associated with increasing stock values through stock relief has already been introduced as an incentive for behavioural change for young farmers and partnerships. It could also be considered for afforestation associated with carbon neutral dairy expansion.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. Action 10.2. There continues to be a pressing need for independent and objective advice on taxation and whole farm planning.

2. Previous agricultural and forest income calculations have been undertaken on the basis of gross income i.e. net of income tax. The development of a model to calculate net agricultural and forest incomes and tax scenarios should significantly improve the relative value of forest and agricultural incomes.

3. Action 10.3. Sound advice must be backed by rigorously tested production & financial models, accommodating full & partial crop rotation scenarios.

4. Action 10.4. The valuation and promotion of the basket of ecosystem services provided by different types of forests should be taken into account when assessing any potential national carbon-based afforestation scheme.

5. Research is required to evaluate the trade-offs that exist between the provision of economic, environmental and social ecosystem services.

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Chapter 11 – Legislation

Policy Statement

To ensure that forest related legislation is relevant to the needs of the sector and underpins the principles of sustainable forest management while recognising the multifunctional nature of forestry.

Strategic Actions

	Existing Strategic Action
11.1	DAFM to address implementation of Planning and Development Act in line with Strategic Action 2.7.
11.2	DAFM to ensure that the Forestry Bill includes provision for forest management plans and their use for simplified permitting procedures for the undertaking of forest operations including thinning, clearfelling and regenerative fellings.
11.3	DAFM to ensure that the Forestry Bill provides for a transparent and independent appeals procedure.
11.4	DAFM to include provisions in the Forestry Bill for a more flexible approach to the removal of areas from forestry to other land use types.
11.5	DAFM to ensure that the implementing legislation for the EU Timber Regulation takes full account of forest certification and chain of custody and does not adversely impact on the wood paying capacity within the sector.

What changes are required to existing strategic actions so that current and future potential needs of the sector can be addressed?

1. The overarching legislation that related to Irish forestry at present is the Forestry Act 1946. The new Forestry Act 2014 is due to be commenced shortly and will address many of the legislative issues that arose in the policy document currently under review. It will be important that appropriate transition arrangements are in place following the commencement of the Act and Teagasc will support DAFM in providing information and awareness around the new Act. This Act should also facilitate dovetailing of forestry legislation with other related legislation including environmental and planning laws.
2. The introduction of the Forest Management Planning system will support the sustainable development of the sector and contribute to improved forest management practices and increase the level of mobilisation of forest biomass. Teagasc will support the rollout and information and awareness raising necessary around this important initiative.

What new policy instruments or changes to existing instruments should be considered in order to ensure the future sustainable development of the sector?

1. There is an ongoing need to ensure that forestry legislation and other policy instruments are updated and address emerging issues as they arise. These include e.g. threats from biotic and abiotic factors. This is essential for the sustainable development of the sector.