

# Forestry Programme 2014 – 2020: IRELAND

*Submitted in accordance with European Union Guidelines on State aid for agriculture and forestry and in rural areas 2014 to 2020*



*“To shape a future where all European forests are vital, productive and multifunctional. Where forests contribute effectively to sustainable development, through ensuring human well-being, a healthy environment and economic development in Europe and across the globe. Where the forests’ unique potential to support a green economy, livelihoods, climate change mitigation, biodiversity conservation, enhancing water quality and combating desertification is realised to the benefit of society.” - Oslo Ministerial Decision on European Forests 2020*

**Forestry Division, Department of  
Agriculture, Food and the Marine  
1/1/2015**

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# 1 Executive summary

This document represents Ireland's proposals for 100% State Aid funding for a new Forestry Programme for the period 2014 – 2020. The measures proposed within this document are consistent with the recently published "Forests, products and people Ireland's forest policy – a renewed vision". The document has also been completed in accordance with the following rules, guidelines and priorities:

- i) Department of Public Expenditure and Reform's Public spending code;
- ii) European Union Guidelines on State aid for agriculture and forestry and in rural areas 2014 to 2020 addressing in particular the Common Assessment Principles;
- iii) Regulation (EU) no 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) no 1698/2005.

The main driver of the layout of this document has been the European Commission's "Guidelines for Strategic Programming for the period 2014 – 2020", which addresses the requirements set out in (iii) above. As a first step in preparing this proposal, the following four needs have been identified in relation to Ireland's forest sector:

- Increase on a permanent basis, Ireland's forest cover;
- Increase and sustain the production of forest-based biomass to meet renewable energy targets;
- Support forest holders to actively manage their plantations;
- Optimise the environmental and social benefits of new and existing forests.

To meet these needs the following measures are being proposed:

- i) Afforestation and Creation of Woodland: Support for establishment and 15 premium payments for the creation of new forests. This measure includes commercial afforestation, agro-forestry, forestry for fibre, and native woodland establishment.
- ii) NeighbourWood Scheme: Provides support for the development of attractive 'close-to-home' woodland amenities for public access, use and enjoyment. This measure is aimed primarily at local authorities.
- iii) Forest Roads: Support for the construction of forest roads is provided under this measure.
- iv) Reconstitution Scheme: Support for forest holder to restore and maintain forests following significant damage by natural causes.
- v) Woodland Improvement (Thinning and Tending): This scheme provides support for forest management operations for broadleaf woodlands.
- vi) Native Woodland Conservation: Supports the protection and enhancement of existing native woodlands and where appropriate, the conversion of conifers forests to native woodlands.
- vii) Knowledge Transfer and Innovation: Supports the setting up of knowledge transfer groups, continuous professional development, and training.
- viii) Producer Groups: Support is provided under this measure to help forest holders to work together to create a critical mass for forestry operations and mobilising timber;
- ix) Innovative Forest Technology: Support for early adopters of new technology, e.g. variable tyre systems, inventory equipment.

- x) Forest Genetic Reproductive Material: Annual payment towards the cost of managing and conserving registered seed stands and establishing seed orchards.
- xi) Forest Management Plans: Support for forest holders to prepare management plans for their forest holdings.

Objectives for proposed new actions are as follows (Option D):

Scheme	2015	2016	2017	2018	2019	2020	TOTAL	Total €
Afforestation, ha	8,370	9,520	9,625	9,965	10,000	10,000	57,480	329,050,625
of which afforestation	7,800	8,900	8,900	8,900	8,425	8,425	51,350	301,995,325
of which NWS establishment	500	500	500	525	525	525	3,075	18,634,500
of which Agro-forestry	20	20	25	40	50	50	205	1,010,800
of which forestry for Fibre	50	100	200	500	1,000	1,000	2,850	7,410,000
Forest Roads (m)	180,000	180,000	180,000	180,000	180,000	180,000	1,080,000	37,800,000
Special construction works (no. applications)	100	100	100	100	100	100	600	3,000,000
Thinning and tending	1,500	1,500	1,500	1,500	1,500	1,500	9,000	6,750,000
Reconstitution, ha	200	200	200	200	200	200	600	4,668,000
Native Woodland (Conservation), ha	60	60	60	60	60	60	360	2,530,800
Neighbourwood Scheme, no. of projects	10	10	10	10	10	10	60	3,000,000
Investment in Innovative Forestry Technology	30	30	30	30	30	30	180	1,440,000
Forest Genetic Reproductive Material, ha	350	350	350	350	350	350	2,100	420,000
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000	3,000,000

In addition to the above a further €1.5m per annum is proposed for funding knowledge transfer groups, training, continuous professional development (CPD), advisory and promotion services, forest sector development. The total cost of the programme is estimated at €739 million<sup>1</sup> for the period 2015 – 2020 (2014 is already provided for under the previous scheme). This compares to €688 m of actual expenditure for the 6 year period 2008 – 2013. The above table however does not represent a multi-annual budget commitment. Expenditure on the programme will continue to be based on funds made available as part of the existing annual budgetary process. It therefore follows that funding for each of the measures outlined in this plan and the extent to which these can be implemented, is entirely dependent on the budget allocated for each individual year.

Key aspects of the new Forestry Programme are as follows;

- The payment of 15 premiums instead of 20 under the Afforestation Scheme;
- An increase in the premium rate of 3% for plantations less than 8ha and 10% for plantations greater than or equal to 8ha;
- The introduction of a single rate (i.e. no distinction between farmers and non-farmers);
- Large companies can participate but must prove incentive effect and proportionate aid;
- The availability of a special construction grant for forest road construction;
- Additional 30m allowance for bellmouths where proposed road is 2m below entrance;
- Funding for roads to connect to the Coillte or other existing forest road networks.

Regarding the Afforestation Scheme, while these changes will result in higher premium payments on a year-to-year basis, they will deliver savings over the longer term as only 15 premiums are paid, not 20. Also, the introduction of a single rate will encourage greater participation by non-farmers in the scheme. It is expected that both of these initiatives (higher

<sup>1</sup> This includes historic premium liabilities.

premiums and single rate) will address the dual risk to the success of the afforestation programme posed by: (i) land availability issues; and (ii) the reduced number of premium payments that can be paid. New schemes introduced under the afforestation and creation of woodlands measure will also attract an annual premium payment. This will be 5 years for agro-forestry and 10 years for forestry for fibre.

The main justification for providing 100% state support for forestry under this programme is market failure. Despite the many benefits that forestry brings, most accrue towards the end of the forest cycle; typically 30-40 years from planting when the forest reaches the optimum financial rotation. This time lag between investment in afforestation and benefits arising creates a difficulty in securing investment. The attractiveness of forestry to farmers is further diminished as farmers in general wish to remain in the business of producing traditional agriculture products which delivers a revenue stream on a shorter rotation than that provided by forestry. Furthermore, once a farmer plants his land with trees the land must remain in forestry, this is a condition of the felling licence. Taking land out of agriculture on a permanent basis is also a factor in preventing farmers from planting their land with trees. It is in this context that non repayable grants and premiums are regarded by the Department as the most effective way to incentivise land owners to plant their land with trees. Without these incentives only a very small amount of land would be planted, this is borne out by the low level of planting that took place before the 1980's and before the introduction of the western package afforestation scheme.

While the programme is based on 100% state aid support, the Department of Agriculture, Food and the Marine will work closely with NewERA during the course of the programme to explore and where appropriate develop other sources of institutional, industry and private funding/investment for afforestation.

## 2 Main Details

Title: Forestry Programme 2014-2020 (Ireland)

Geographic area: The programme covers the total territory of Ireland

Competent Authority: Forest Service, Department of Agriculture, Food and the Marine  
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### 3 Strategic Context of the Forestry Programme 2014 – 2020

#### 3.1 National Policy

##### 3.1.1 DAFM's, Statement of Strategy 2011-2014;

The Department's Statement of Strategy includes the following goal: "*Promoting economic, social and environmentally sustainable farming, fishing and forestry*". Strategic actions under this goal include the following:

- Develop and implement measures, schemes and services that underpin a rural economy.
- Collaborate with other organisations to deliver policies on environmental sustainability and biodiversity.
- Enhance the development of a sustainable and diverse forestry sector.
- Implement measures to promote use of non-food crops for energy production.

The measures proposed in the new programme are consistent with these goals. Forest management is largely a rural activity and spending on the new Forestry Programme will filter down to rural communities. The creation of new forests will also fuel future economic activity in these areas. All forestry activities funded under the programme must be conducted in line with the principals of Sustainable Forest Management (SFM). In this regard, foresters and forest owners must adhere to the 'Code of Best Forest Practice – Ireland' and the suite of environmental guidelines (currently under review). The new Innovative Forest Technology Scheme will assist in the development of a sustainable forestry sector by providing support for technologies that promote the protection of our environment (e.g. variable tyre pressure systems for forest machinery). Forestry for fibre, agro-forestry, and the tending and thinning of broadleaf woodland all contribute towards meeting Ireland's renewable energy targets through increased use of forestry biomass to generate heat and power, both commercially and domestically.

##### 3.1.2 Forest products and people – Ireland's forest policy – a renewed vision

The document entitled "Forest Products and People - Ireland's Forest Policy – A Renewed Vision" is a review of forest policy in Ireland. It sets out a number of action points, as follows:

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

The Afforestation Scheme described in this document is the principle response to this action.

- *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.*
- *To ensure that afforestation, management of existing forests and development of the forest sector are undertaken in a manner that enhances their contribution to the environment and the capacity to provide public goods and services.*  
Support for afforestation and forest roading are subject to the principals of SFM, as described in the Code of Best Forest Practice and the suite of environmental guidelines.
- *To maintain a healthy forest environment through sustainable forest management, early detection and control measures for pests and diseases.*

Support for forest reconstitution will contribute towards this aim. For example, the Reconstitution of Woodland (*Chalara*) Scheme provides support to forest owners to clear effected ash plantations and to replant with an alternative species.

- *To ensure the availability of suitable programmes of education and training across the sector and research programmes targeted at identified needs.*  
Knowledge transfer and information actions as well as support for producer groups will address the need to support forest holders to manage their forests in an appropriate and sustainable way.

### 3.1.3 Food Harvest 2020

National policy is also framed by the Smart, Green Growth message of “Food Harvest 2020”. Proposed measures aimed at addressing these objectives are as follows:

- *Smart* – Knowledge transfer and innovation features strongly in proposed measures such as Knowledge Transfer Groups, Targeted Training, and Advisory Services. Combining measures may also feature, in order to gain synergies between complementary activities.
- *Green* – Support for the creation of new forest and woodlands will contribute to resource efficiency and the shift to low carbon economy, by providing a sustainable and renewable raw material for industry and renewable energy<sup>2</sup>. Support for native woodland establishment and conservation will contribute to the expansion, protection and enhancement of Ireland’s native woodland ecosystems. The Forest Genetic Reproductive Material measure will support the conservation of native forest genetic material and improve the resilience of Irish forest species to disease and the effects of climate change.
- *Growth* – The range of measures proposed provides for a number of supports aimed at encouraging growth and maintaining viability. Investment in new technology and the restructuring of the Afforestation Scheme are designed to attract more land holders into forestry, thereby increasing the number of applications and the size of forests planted, and are examples of the growth-oriented measures being proposed. Support for forest management plans will help to plan for the future development of forestry in Ireland and facilitate the mobilisation of timber resources to processors in accordance with best practice. Management plans can also be used in support of felling licence applications. The Forestry for Fibre measure will help to increase the supply of small diameter roundwood.

### 3.1.4 Irelands Prioritised Action Framework (PAF) For NATURA 2000

Priority measures for NATURA 2000 set out under Ireland’s Prioritised Action Framework (version 2, 2014) include the following:

- Development of measures, within appropriate schemes, to improve conservation condition and consolidate existing woodland habitats and increase connectivity.

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<sup>2</sup> Analysis relating to carbon throughout the document is based on research undertaken for the forestry policy review exercise entitled “Forest products and people – Irelands forest policy – a renewed vision”.

- Implementation of measures to restore/maintain and expand woodland habitats of high conservation value in order to reduce fragmentation and encourage connectivity.
- Development of practical mitigation and alternative forestry practices in the top freshwater pearl mussel catchments.
- Implementation of specific forestry measures/plans for species.

Measures included in this new Forestry Programme will contribute to these aims. Afforestation and agro-forestry supports will help connect existing woodlands and other natural and semi-natural habitats within the landscape, thereby reversing habitat fragmentation and increasing connectivity. The establishment and conservation elements of the Native Woodland Scheme can be used on a strategic basis in this regard, particularly in relation to highly sensitive areas such as NATURA sites and sensitive waterbodies, etc.. The Native Woodland Conservation measure has been incorporated into the Catchment Forest Management plans for the priority eight Freshwater Pearl Mussel Catchments. These plans are being developed to ensure that all forestry activities within these areas are consistent with the aim of protecting the Freshwater Pearl Mussel and its habitat. With careful planning, the creation of new native woodland and conversion of conifer forest to native woodland, on strategically located sites along watercourses will help intercept sediment and nutrient runoff from surrounding land, thereby delivering wider ecosystem services relating to the protection and enhancement of water quality.

Funding has recently been approved for the KerryLIFE+ project, entitled “Sustainable land use management for the conservation of the freshwater pearl mussel” (LIFE13 NAT/IE/000144). This project aims to demonstrate sustainable management techniques for forestry and farming in FPM Caragh and Kerry Blackwater catchments, aimed at restoring the FPM to favourable conservation condition. This project has significant potential to inform future policy decisions on best practice regarding forestry in FPM catchments. KerryLIFE is a partnership project involving National Parks & Wildlife Service, the Forest Service (DAFM), Nitrates, Biodiversity & Engineering Division (DAFM), Coillte, Teagasc and the South Kerry Development Partnership, and will focus heavily on securing ownership of the project amongst the local community within the project area. KerryLIFE will run from July 2014 to December 2019. Its overall budget is almost €6 million. Almost half of the €550k commitment by the Forest Service to this project is for native woodland creation under both elements of the Native Woodland Scheme.

### *3.1.5 Government policy on renewable energy*

Bioenergy is anticipated to play a significant role in further displacing fossil fuels, especially in the larger heat users in the commercial and industrial sector, stimulating local economic activity and improving the country’s net trading position. The National Energy Efficiency Action Plan and National Renewable Energy Action Plan scenario for renewable heat assumes that the historic rate of deployment of biomass use for heat continues to 2020. Further, additional biomass CHP installations are likely, driven by the feed-in tariff for biomass CHP and the expected contribution from building regulations requiring some renewable heat.

Other drivers of forest-based biomass demand will include co-firing for electricity generation. In line with Government policy, Bord na Móna has gradually increased the proportion of co-firing with biomass at its Edenderry plant, achieving 22% co-firing in 2012. On the domestic front, the Carbon Tax, which was extended to solid fuels from the 1st May 2014, has a strong role in incentivising the use of renewable such as wood fuel.



Strategic Goal number 2 of Ireland's Strategy on Renewable Energy 2012 - 2020 calls for "A sustainable bio energy sector supporting renewable heat and power generation". Support for forestry is seen as a key contributor in meeting this goal. Forest roads, forestry for fibre, and the tending and thinning scheme will all help to increase the level of supply of forest-based biomass and to sustain it into the future. These schemes also support the national climate policy launched in April 2014, which calls for sustainable development, climate adaption and resilience.

A new Bioenergy Strategy (unpublished at the time of drafting) is also expected to support the aims and objectives set out in this plan for increasing the supply of forest based biomass.

## 3.2 EU Policy Framework

### 3.2.1 Europe 2020

"Europe 2020, A Strategy for Smart, Sustainable and Inclusive Growth" sets the strategic views of the European Union for the next programming period. It defines precise objectives and corresponding targets for the EU to be achieved by the year 2020. All Union policies (including CAP) are expected to contribute to the objectives and targets of Europe 2020.

The following table summarises how this programme will contribute to Europe 2020.

Europe 2020	Contribution of the new Forestry Programme
Smart Growth	<p>Potential contribution of the new Forestry Programme to the SMART Growth Priority, specifically through:</p> <ul style="list-style-type: none"> <li>• Actions promoting the uptake of technology, building skills and collaborative working through advice and knowledge transfer activities, should promote the forestry sector to become more competitive and economically sustainable. This should support knowledge and innovation and contribute to future increases in employment and value added in the forestry sector.</li> </ul>
Sustainable Growth	<p>Potential contribution of the new programme to the SUSTAINABLE Growth Priority, specifically through:</p> <ul style="list-style-type: none"> <li>• Actions targeting the increase of biomass energy in the forestry sector, which will assist in the Europe-wide push to promote the use of renewable energy.</li> <li>• Additional afforestation will secure carbon sequestration for the longer term.</li> <li>• Actions specifically targeting the sustainability of the forest ecosystem, which includes action to increase habitat and other actions which will improve environmental quality.</li> </ul>
Inclusive Growth	<p>Limited contribution to the INCLUSIVE Growth Priority, specifically through:</p> <ul style="list-style-type: none"> <li>• Some consistency with actions which include social well-being as an objective (e.g. the creation of local woodland amenities under the NeighbourWood Scheme) and the role the forestry sector can play in this through promoting and increasing accessibility to the forest resource (e.g. forest road construction and subsequent use for forest access).</li> <li>• The programme may also provide wider employment opportunities, but the investment in this element is modest.</li> </ul>

**Table 1: Programmes contribution to Europe 2020**

### 3.2.2 CPR, Rural Development Regulation and State Aid

The Common Strategic Framework sets the strategic vision of the EU for the use of five funds provided for under the EU's Cohesion Policy, the Rural Development Policy and the Maritime and Fisheries Policy (European Structural and Investment Funds known as ESI funds). The Common Provisions Regulation (CPR) represents the common strategic guidelines of the Union for all the ESI funds for the next programming period. In this way, the five funds will better contribute to reaching the Europe 2020 objectives for smart,



sustainable and inclusive growth. The CPR aims to achieve this through the setting of 11 thematic objectives, some of which are linked to the six priority or focus areas set out in the Rural Development Regulations. These are as follows:

<b>Focus Area 1: Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas</b>	
<b>Focus Areas of Rural Development Regulation</b>	<b>Thematic Objectives of the CPR</b>
(a) Fostering innovation, cooperation and the development of the knowledge base in rural areas	1. Strengthening research, technological development, innovation
(b) Strengthening the links between agriculture, food production and forestry and research and innovation, including for the purpose of improved environmental management and performance	1. Strengthening research, technological development, innovation
(c) Fostering lifelong learning and vocational training in the agricultural and forestry sectors	10. Education, skills and lifelong learning
<b>Focus Area 2: Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and the sustainable management of forest</b>	
(a) Improving the economic performance of all farms and facilitating farm restructuring and modernisation, notably with a view to increase market participation and orientation as well as agricultural diversification	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
(b) Facilitating the entry of adequately skilled farmers into the agricultural sector and, in particular, generational renewal.	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
<b>Focus Area 3: Promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture</b>	
(a) Improving competitiveness of primary producers by better integrating them into the agri-food chain through quality schemes, adding value to agricultural products, promotion in local markets and short supply circuits, producer groups and organisations and inter-branch organisations	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
(b) Supporting farm risk prevention and management	3. Enhancing the competitiveness of SMEs, the agricultural sector and fisheries and aquaculture
(a) Restoring, preserving and enhancing biodiversity, (including in Natura 2000 areas, in areas facing natural or other specific constraints), high nature value farming, and the state of European landscapes	5. Promoting climate change adaptation, risk prevention and management <sup>3</sup>
(b) Improving water management, including fertilisers and pesticides management	5. Promoting climate change adaptation, risk prevention and management
(c) Preventing soil erosion and improving soil management	5. Promoting climate change adaptation, risk prevention and management
<b>Focus Area 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors</b>	
(a) Increasing efficiency in water use by agriculture	6. Protecting the environment and promoting resource efficiency
(b) Increasing efficiency in energy use in agriculture and food processing	4. Supporting the shift towards a low-carbon economy in all sectors
(c) Facilitating the supply and use of renewable sources of energy, of by-products, wastes and residues and of other non-food raw material, for the purposes of the bio-economy	4. Supporting the shift towards a low-carbon economy in all sectors
(d) Reducing green house gas and ammonia emissions from agriculture	4. Supporting the shift towards a low-carbon economy in all sectors
(e) Fostering carbon conservation and sequestration in agriculture and forestry	4. Supporting the shift towards a low-carbon economy in all sectors
<b>Focus Area 6: Promoting social inclusion, poverty reduction and economic development in rural areas</b>	
(a) Facilitating diversification, creation and development of small enterprises, as well as job creation	8. Promoting employment and supporting labour mobility
(b) Fostering local development in rural areas	9. Promoting social inclusion and combating poverty
(c) Enhancing the accessibility, use and quality of information and communication technologies (ICT) in rural areas	2. Enhancing access to and use and quality of information and communication technologies

**Table 2: Focus areas and thematic objectives**

The Forestry Programme set out in this document will be 100% State Aid funded and is therefore not part of the Rural Development Programme. However, the rules that govern the programme must be in line with the RD Regulation in order to be consistent with the internal market. Therefore, the specific measures set out within this document will be clearly linked to the focus areas described in Table 2 above. This will also demonstrate the contribution that these activities will have towards achieving CPR objectives and goals of Europe 2020.

### 3.2.3 EU Forest Strategy

The EU Forest Strategy identifies the key principles needed to strengthen SFM and to improve competitiveness and job creation, particularly in rural areas, while ensuring forest protection and the delivery of ecosystem services. The new Forestry Programme has been designed with these principles in mind:

- *Fostering the competitiveness and sustainability of the EU's Forest-based Industries, bio-energy and the wider green economy*

The afforestation policy outlined in this document will not only support Ireland's efforts to reach the demanding greenhouse gas emission reduction targets but will also reduce dependence on fossil fuels and support the transition to a low carbon economy.

Schemes under the Afforestation and Creation of Woodlands measure along with the Forest Roads measure, implemented in accordance within the principles of SFM, will encourage the development of a sustainable forest sector. Additional forests and forest roads will help Ireland achieved a total sustained timber production target of between 7- 8 million m<sup>3</sup>. This level of cover will create the critical mass required to support an indigenous industry that can achieve a real rate of return on the investment in terms of processing capacity and employment. The Forestry for Fibre Scheme will deliver additional forestry biomass for energy, thereby helping to replace fossil fuels in the production of heat and power. Forest roads will facilitate thinning, thereby ensuring that this material is also available for renewable energy purposes. The Woodland Improvement Scheme is also aimed at accessing more timber for fuel, as well as promoting the proper management of broadleaf woodlands and leading to healthier and more productive broadleaf forests.

- *Forests in a changing climate*

Ireland has only 11% forest cover as opposed to the EU average of 38%. This low level of forest cover limits the contribution that forests in Ireland can make to climate change issues such as flood alleviation and climate change mitigation. The measures being introduced in this Forestry Programme can contribute towards climate change mitigation in the following ways:

- Increasing forest carbon absorption (sequestration) capacity, by planting trees on un-forested land (i.e. afforestation and creation of woodland, native woodlands) and by increasing biomass accumulation through better forest management (Forest Roads, Woodland Improvement, Forestry for Fibre).
- Conservation of existing forests under the conservation element of the Native Woodland Scheme.
- Support for seed stands and seed orchards will help develop improved planting material for future forests.

Forest Management Plans (FMPs) based on the principles of SFM are being supported under this Forestry Programme. The Native Woodland Scheme in particular will also contribute to soil protection and improving water quality.

The above actions are also supportive of the EU's strategy on adaptation to climate change.

### 3.2.4 *EU Biodiversity Strategy*

The new forestry programme has taken into account the aims and objectives of the EU's Biodiversity Strategy. This can be demonstrated as follows;

- The Afforestation Scheme requires a minimum of 10% broadleaf component. Furthermore, sites over 10 ha must have 15% open space and retained habitat, smaller sites generally achieve this target also. The 30% broadleaf target has been set for the overall Afforestation and Creation of Woodland measure.
- Support for Forest Management Plans is being provided. These plans must adhere to the principles of SFM which in Ireland are underpinned by the National Forest Standard, Code of Best Forest Practice and the supporting suite of environmental guidelines (currently being reviewed).
- Approvals for afforestation within Hen Harrier SPAs will not issue, pending the formulation of the Threat Response Plan for the species, led by National Parks and Wildlife Service (NPWS), unless otherwise agreed by NPWS and the European Commission.
- The Forest Service is currently drafting Catchment Forest Management Plans for the Priority 8 Freshwater Pearl Mussel Catchments. Based on the Forest Service Appropriate Assessment Procedure and a forestry operations options matrix, all measures supported under this Forestry Programme for sites located within these catchments will incorporate the protection of FPM and its habitat.
- The Forest Service Native Woodland Scheme (NWS) is aimed at protecting and expanding Ireland's native woodland resource. Two separate elements under the scheme provide funding to landowners for: (i) the appropriate restoration management of existing native woodlands (including conversion of non-native forest to native woodland) (NWS Conservation); and (ii) the creation of new native woodland on 'greenfield' sites (NWS Establishment). As well as promoting native woodland ecosystems, these elements can be used strategically to deliver additional eco-system services on a landscape level, such as increasing connectivity between natural and semi-natural habitats and the protection and enhancement of water quality in relation to, e.g., the Water Framework Directive and Freshwater Pearl Mussel.
- The agro-forestry measure will also contribute towards the preservation and enhancement of biodiversity, by creating new broadleaf woodland habitats.

### 3.2.5 *EU-2020 renewable energy and greenhouse gas emission targets*

#### 3.2.5.1 Renewable energy

Under the Renewable Energy Directive, Member States have taken on binding national targets for raising the share of renewable energy in their energy consumption by 2020. Ireland's target is 16%, while the target across the EU is 20%. The Forest Road Scheme is aimed at encouraging private forest holders to build roads and access first thinnings. This timber is an important source of material for domestic firewood as well as forest-based biomass for CHP and power-only generation. The scheme will therefore contribute towards

Ireland's efforts in reaching this target. The Woodland Improvement Scheme aimed at the tending and thinning of broadleaf woodlands, will have a similar effect.

Commission proposals for post-2020 renewable energy targets are currently being discussed. The European Commission has proposed a 27% target for the market share of renewable energy sources. The European Parliament supports a figure of at least 30% renewable energy sources. Member States and stakeholders are divided over the appropriate level of ambition and over the need for binding targets for renewables. Regardless of the target figure agreed or whether the target is binding or not, energy prices are increasing and the move to renewable energy is very much in Ireland's interest (Ireland's fossil fuel imports are valued at €6.5 billion per year, SEAI). Forests planted under the Afforestation Scheme set out in this Forestry Programme will contribute to meeting renewable energy targets post-2020.

#### 3.2.5.2 Climate change mitigation

The ability of forests to store and sequester atmospheric carbon and to provide fuels and solid wood products are an important means of reducing greenhouse gas concentrations. Forests are included in the accounting framework for the second commitment period of the Kyoto Protocol (2013-20). Forestry and land use and land-use change (LULUCF) is not included in the EU Effort Sharing Decision (2013-2020), but stock changes must be reported under the EU LULUCF Decision. The Decision states that "... *The Decision should therefore, as a first step set out the accounting rules applicable to greenhouse gas emissions and removals from the LULUCF sector and therefore contribute to policy development towards the inclusion of the LULUCF sector in the Union's reduction commitment.*"

In a recent statement in May 2014, the Environmental Protection Agency advises that even under the best case scenario, where all relevant policy measures are adopted and fully implemented, Ireland will not reach this target. This is likely to increase the level of emission reductions required post-2020, when the inclusion of LULUCF can play a role in addressing the level of ambition.

This area is developed more fully in the Section 4.

#### 3.2.6 EU Policies relating to land use

Europe 2020 Strategy has the following aim: "*By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050.*" The 7th Environment Action Programme for the EU calls for targets to be set to limit land take. To respond to these political mandates, the Commission is working to bring together the common elements from these processes to ensure that EU land management is based on sustainable principles. This is expected to result in a communication on "Land as a resource" in 2015. The aim is to:

- Raise awareness about the value of land as a resource for crucial ecosystem services (provisioning, regulating, cultural, etc.), about how the gap between land demand and the availability of the resource can increase, particularly in the context of global challenges, and about how to deal with synergies and trade-offs between land multiple functions;
- Provide pointers for further action at EU level. Through evaluating the effectiveness of current policy instruments at National, EU and global levels, it would define the sustainable level of ambition for a set of objectives and assess options for EU contribution to a more sustainable management of land as a resource.

The measures presented in this Forestry Programme document are consistent with these aims, as forestry is a multifunctional resource that delivers social, environmental and economic benefits. Furthermore, the establishment of forestry under the new Forestry Act will give the Minister powers to ensure that clearfelled forests are replanted, thereby helping to prevent more land being converted into artificial areas.

### 3.2.7 NATURA 2000 and Water Framework Directive

#### 3.2.7.1 NATURA 2000

Ireland has a rich natural heritage as outlined in the Actions for Biodiversity 2011 – 2016 report. It is home to over 31,000 species, with only 10% of these being familiar species such as mammals, plants or birds. There are at least 7,000 species of algae and fungi which have not yet been fully described. The strategic plan for Ireland's biodiversity is *“That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally.”*

Almost 10% of the country is considered to be of prime importance for nature conservation. This comprises 423 SACs, 154 SPAs and 45 Ramsar sites. Of Ireland's SACs, 36 have woodland as the predominant habitat type, and half of these are located in the counties of Cork, Galway and Wicklow. Additionally, there are 75 Natural Heritage Areas (NHAs) and 630 proposed Natural Heritage Areas (pNHAs) in Ireland. Ireland has a significant number of internationally important habitats totalling 58 of those listed in Annex 1 of the Habitats Directive. Of these, 16 are deemed to be priority habitats at the national level, including limestone pavements, machair, turloughs and active peatlands,

There are four native woodland habitat types found in Ireland that are recognised under the EU Habitats Directive as being critically rare and restricted in their distribution, not just in this country, but across the entire European Union;

- Alluvial Woodland
- Bog Woodland
- Yew Woodland
- Ash-hazel woodland associated with Limestone Pavement

Under the EU Habitats Directive, these habitats are given “priority” status. These woods are of extremely high nature conservation value and provide habitat, shelter and food to many plant and animal species. In some cases, these species are now themselves rare and rely on priority woodland

Forestry is not listed as one of the key threats to protected habitats or annex species in the National Parks and Wildlife Service Report “The Status of EU Protected Habitat and Species in Ireland”, but is identified as a pressure on both. Forestry does, however, have the potential to adversely impact on species such as the Freshwater Pearl Mussel and the Hen Harrier, particularly in regard to inappropriate forest operations.

The Freshwater Pearl Mussel is protected under Annex II and Annex V of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive). There are two types of FPM mussel: *Margaritifera margaritifera*, which is the more common species and present in 139 of Ireland's rivers; and *M. durrovensis*, which is unique to Ireland and extremely rare, only being present in the River Nore. FPM is listed as critically endangered in the Republic of Ireland and it is recognised that forestry activity

represents a potential source for sediment and nutrients that can enter the watercourse and damage FPM populations. As a consequence of this risk, eight catchments have been prioritised for their conservation in Ireland and proposals made for detailed Catchment Forest Management Plans for each. These plans are currently being drafted by the Forest Service. Nationally, the Native Woodland Scheme will form an important part of the forest sector's strategy in protecting this species.

Hen Harriers are also a listed species and are on the Annex 1 of the Birds Directive (79/409/EEC). The species is classed as vulnerable at a European scale (Forest Policy Review Group, 2013a). Historically, afforestation put pressure on the bird species as it removed significant areas of suitable habitat consisting of heather moors and extensive farmland. As a result, the species has had to adapt to nesting in young conifer plantations. However, evidence suggests that nests in second rotation forests have low breeding success. A Threat Response Plan is currently being prepared for the Hen Harrier and no planting within these SPAs is being approved at the time of drafting this programme.

Otters (*Lutra lutra*) are protected under the Wildlife Act 1976, and are listed in Annex II and Annex IV of the EU Habitats Directive (92/43/EEC). The deliberate disturbance of otters and the destruction of their resting and breeding places is an offence. A total of 44 Special Areas of Conservation (SACs) have been designated for the species.

Kerry slug (*Geomalacus maculosus*) is listed in Annex IV of the EU Habitats Directive (92/43/EEC), meaning that it is strictly protected wherever it occurs. It is an offence to deliberately disturb the species or damage or destroy its breeding or resting place. It is also an offence under the Wildlife Act 1976 to deliberately destroy or damage the slug or its habitat. A total of 7 SACs have been designated for the Kerry slug.

As required under the Habitats Directive, in relation to SACs and SPAs, all applications for forestry approvals / licences and grant aid are subjected to screening, and where required, appropriate assessment, to ensure no possibility of a significant effect on a NATURA site, either alone or in combination with other plans or projects. Full details of the Forest Service Appropriate Assessment Procedure (AAP) are set out in the Forest Service AAP Information Note (consolidated version, March 2013).

#### **3.2.7.2 Water Framework Directive**

The Water Framework Directive (WFD) is aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, and coastal waters. WFD implementation requires the development and implementation at national level of River Basin Management Plans (RBMP). They are valid for a six year period and the current plans run from 2009-2014. Eight RBMPs have been identified on the island of Ireland for the purpose of implementing the Directive. Three of these are shared with Northern Ireland (Shannon, Neagh Bann, and North Western), four RBMPs are wholly within the state (Eastern, South Eastern, South Western and Western) and one is wholly within Northern Ireland (North Eastern).

The plans summarise the waterbodies that may not meet the environmental objectives of the WFD by 2015 and identify which pressures are contributing to the environmental objectives not being achieved. The plans describe the classification results and identify measures that can be introduced in order to safeguard waters and meet the environmental objectives of the WFD.



Measures for Forestry (including specific forestry legislation) is set out in the document entitled *Programme of Measures & Standards for Forest & Water* (November 2008), compiled by the Western River Basin District Project on behalf of the WFD National Programmes of Measures – Forest & Water Working Group. The Forest Service has recently reported on its progress towards implementing these measures.

On the specific issue of aerial fertilisation, this activity has been subject to a licensing system since 2006, with the European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I.125/2012) revoking and consolidating previous regulations. Under S.I.25/2012, the aerial fertilisation of forests in Ireland requires a licence from the Forest Service. These regulations set out the statutory licensing system involved, and detail various operational and technical stipulations that apply. These include application limits for P, N and K, restrictions on timing (unless exceptional circumstances apply, aerial fertilisation can only take place between 1 April and 31 August) and required exclusion zone widths (e.g. 100 metres from drinking water abstraction points, 50 metres from an aquatic zone). Applications for aerial fertilisation are assessed by District Inspectors based on the iFORIS GIS database system and an assessment of the silvicultural requirements of the crop and the environmental sensitivities of the site. AA Screening is applied in relation to SACs and SPAs, following the Forest Service Appropriate Assessment Procedure. If issued, licences may exclude sensitive areas of the site or sections of the crop deemed not to require fertiliser application.

As set out in the UK Forestry Research document *Woodland for Water: Woodland measures for Meeting Water Framework Directive objectives* (2011), considerable scope exists for the use of woodlands and forests to proactively contribute to protecting and enhancing water quality. The Forest Service promotes the delivery of this eco-system service, primarily through the Native Woodland Scheme, thus contributing towards the aims of the Water Framework Directive.

## 4 Climate Change Mitigation and National Policy objectives

The role of forestry in reducing the effects of climate change both in terms of carbon sequestration and as a replacement for fossil fuels is one of the principal supporting arguments for state funding of the Forestry Programme. This section examines the role forestry plays both in climate mitigation and in addressing any potential shortfall in Ireland's carbon emission balance sheet.

### 4.1 *Scientific background – the Intergovernmental Panel on Climate Change*

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change<sup>4</sup> (IPCC) has assessed changes in the earth's climate and atmosphere since meteorological observations have begun. Working Group I, which was tasked with summarising the Physical Basis of Climate Change, has concluded:

*Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since AR4. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.*

Mitigation of climate change was dealt with by Working Group III, which concluded, inter alia:

*AFOLU (agriculture, forestry and land use) plays a central role for food security and sustainable development. The most cost-effective mitigation options in forestry are afforestation, sustainable forest management and reducing deforestation, with large differences in their relative importance across regions. In agriculture, the most cost-effective mitigation options are cropland management, grazing land management, and restoration of organic soils*

### 4.2 *International and EU processes and national reporting modalities*

Forestry and land use is included in accounting for the second Kyoto Commitment period (2013-2020), which the EU has committed to ratifying. Accounting for all managed forests is a mandatory requirement. Significant research on forests and climate change has been carried out in Ireland over the past two decades, which has resulted in the development of CARBWARE - the national forest carbon reporting tool. This enables high level reporting of carbon stock change in Irish forests, in conjunction with the National Forest Inventory. CARWARE also enables the impact of afforestation rates on future climate change mitigation by forests and forest products to be estimated.

Negotiations towards a new international climate change agreement for the post 2020 period have been underway for some time. The goal is to agree a new global agreement on tackling climate change by the end of 2015. Land use and forestry is referred to in the current Ad-hoc

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<sup>4</sup> Source documents available at <http://www.ipcc.ch/>



Durban Platform (ADP) negotiation texts. A number of developed and developing country Parties have indicated a potential role for the forest sector in a post 2020 regime, through measures such as afforestation and avoidance of deforestation (particularly in developing countries).

Land use, land-use change and forestry (LULUCF) is not part of the EU Effort Sharing Decision (406/2009/EC). However under Decision 529/2013/EU Member States must report carbon stock changes resulting from LULUCF. It is largely a transcription of UNFCCC Durban Decision 2/CMP.7. It covers the period up to the end of 2020.

The Commission Communication - *A policy framework for climate and energy in the period from 2020 to 2030* - covers the post 2020 period. The role of forests in climate change mitigation is dealt with in Section 4.2: “To ensure that all sectors contribute in a cost-effective way to the mitigation efforts, agriculture, landuse, land-use change and forestry should be included in the GHG reduction target for 2030. In the period up to 2020”. The communication also deals with possible frameworks for the inclusion of LULUCF post 2020 in an effort sharing type arrangement, in a separate pillar, or a combination of both. Consultations and negotiations are ongoing on the form of inclusion of LULUCF.

### ***4.3 Marginal abatement costs and expected and potential mitigation contribution from forests and forest products***

Previous work undertaken by SEAI and McKinsey<sup>5</sup> has indicated the large scale mitigation potential of forests and forest products in Ireland, with an associated marginal abatement cost in the region of €30/ t CO<sub>2</sub> (2009).

Appendix 5 of the forest policy review provides scenario analysis of the impact of afforestation rates on future wood supply and planting rate of 15,000 ha/yr as being needed to avoid a significant supply slump. Similar analyses of the impact of afforestation rates on the forest sink<sup>6</sup> show a significant fall off in the strength of the forest sink post 2035, which can be attenuated by afforestation rates being maintained at around the 10,000 ha/yr level for the period up to 2035 (and beyond)

The future contribution of forests and forest products in Ireland in mitigating climate change has been estimated by Black<sup>7</sup>. The underlying assumptions are an afforestation rate of 8,000 ha/yr to 2030 (based on historic patterns) and a deforestation rate of 400 ha/yr (based on the recently completed second National Forest Inventory). In round numbers the annual mitigation potential from new forests (afforestation) established since 1990 averages 5.3 million tonnes of CO<sub>2</sub> per annum over the 2021-2030 period. The vast majority of the lands where the mitigation arises were used for agriculture before being converted to forest.

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<sup>5</sup> [http://www.seai.ie/Publications/Renewables\\_Publications\\_/Low\\_Carbon\\_Opportunity\\_Study/Irelands\\_Low-Carbon\\_Opportunity.pdf](http://www.seai.ie/Publications/Renewables_Publications_/Low_Carbon_Opportunity_Study/Irelands_Low-Carbon_Opportunity.pdf)

<sup>6</sup> Hendrick and Black. 2008. Climate change and Irish forestry. COFORD Connects Note. COFORD, Dublin.

<sup>7</sup> Black 2013. Greenhouse gas emission/removal projections for the Irish forestry sector 2012-2030, Paper submitted by DAFM to DG Clima, May 2013.

Year	ARD				FM			
	kHa Area	Total excl HWP	Gg CO <sub>2</sub> eq HWP	Total incl HWP	kHa Area	Total excl HWP	Gg CO <sub>2</sub> eq HWP	Total incl HWP
2012	294.03	-3,418.04	-266.03	-3,684.06	457.44	-1,764.49	-645.52	-2,410.00
2013	302.03	-3,712.29	-241.72	-3,954.01	457.04	-1,561.87	-745.91	-2,307.78
2014	310.03	-3,775.33	-396.39	-4,171.73	456.64	-1,224.39	-753.63	-1,978.02
2015	318.03	-3,442.33	-652.62	-4,094.95	456.24	-1,170.94	-802.94	-1,973.87
2016	326.03	-4,135.99	-596.15	-4,732.15	455.84	-1,034.94	-717.40	-1,752.34
2017	334.03	-3,914.43	-671.48	-4,585.91	455.44	-484.77	-782.13	-1,266.91
2018	342.03	-4,074.56	-583.02	-4,657.58	455.04	306.28	-942.16	-635.88
2019	350.03	-3,880.14	-707.30	-4,587.44	454.64	501.32	-949.20	-447.88
2020	358.03	-3,827.68	-1,358.51	-5,186.19	454.24	131.26	-1,010.32	-879.05
2021	366.03	-4,544.23	-825.68	-5,369.91	453.84	-469.56	-801.87	-1,271.43
2022	374.03	-4,636.20	-787.56	-5,423.77	453.44	509.77	-934.01	-424.23
2023	382.03	-4,576.53	-927.65	-5,504.18	453.04	826.71	-886.48	-59.77
2024	390.03	-4,482.88	-812.11	-5,294.99	452.64	1,074.19	-813.51	260.67
2025	398.03	-4,370.22	-1,110.23	-5,480.45	452.24	1,786.32	-835.89	950.43
2026	406.03	-4,863.80	-736.54	-5,600.34	451.84	1,993.51	-778.56	1,214.94
2027	414.03	-3,595.82	-1,477.85	-5,073.67	451.44	1,818.24	-769.94	1,048.29
2028	422.03	-3,957.66	-980.59	-4,938.25	451.04	2,236.07	-717.58	1,518.49
2029	430.03	-3,809.34	-1,469.42	-5,278.76	450.64	2,290.63	-580.08	1,710.55
2030	438.03	-2,902.22	-2,186.66	-5,088.87	450.24	3,320.44	-863.41	2,457.03
Average 2013-2020		-3,845.35	-650.90	-4,496.24		-567.26	-837.96	-1,405.22
Average 2021-2030		-4,173.89	-1,131.43	-5,305.32		1,538.63	-798.13	740.50

**Table 3: Estimated emissions (+ve values) and removals (-ve values) for CO<sub>2</sub> eq. from forests (i.e. total excl. HWP (harvested wood products)) and including harvested wood products (HWP) for afforestation, reforestation and deforestation (ARD) since 1990 and areas under forest management (pre-1990 forests, FM).**

More recent work for the Interdepartmental Technical Committee on climate change indicates that an additional 4,000 ha of afforestation per annum would provide for a total sink of over 6 million tonnes of carbon dioxide over the 2021-2030 period, and increasing beyond 2030.

Furthermore, the continued use of peat and turf as energy sources erodes an important carbon sink. In many cases, individual farms are too small to consider investing in projects such as anaerobic digestion for renewable energy production and farmers that get involved in biomass production tend to do so on a small scale. Biomass production at farm level is therefore at risk of lacking the necessary scale to be competitive or big enough to assure customers that continuity of supply is safe. The forestry for fibre scheme along with the Department's Bio energy Scheme should help address this structural deficiency in the biomass supply chain. Also, there may be opportunities to encourage farmers who cut turf to switch to the forestry for fibre scheme as a means of addressing their fuel needs. This needs further consideration but is consistent with the National Peatland Strategy which seeks to reduce the dependency on peat as a source of fuel.

## 4.4 Climate change mitigation and agriculture and forests in the period up to 2050

The climate change mitigation impacts of afforestation are long term – and in the period up to 2050 as agriculture is predicted to gradually comprise the bulk of greenhouse gas emissions, the role of forests in balancing land based emissions is predicted to increase<sup>8</sup>. There is however a limit to the extent that sequestration can be provided by forests. In the longer term the mitigation benefits of forests will come from fossil fuel and materials substitution. Already one third of the forests harvested, or 1 million cubic metres of roundwood annually, is combusted for the generation of process heat, for home and premises heating and for electricity generation<sup>9</sup>. This is a direct saving in fossil fuel emissions and is accounted for in the forest sector, (it is excluded from the data in Table 1) The benefits of using wood products in construction and other uses are that it delays emissions from harvest, replaces energy intensive materials and acts a long term carbon store outside of the forest. A continuing afforestation programme is needed to maintain these mitigation benefits and the role of forests in mitigating land-based emissions.

## 4.5 Policy coherence in relation to Food Harvest 2020, climate change and afforestation

### 4.5.1 Food Harvest 2020 and climate change mitigation

There is significant capacity to increase forest cover in Ireland from the current 10.7% to the 18% level referred to in *Forests, products and people*<sup>10</sup> – the DAFM forest policy review. The review identifies climate change mitigation, along with sustainable increases in wood production as some of the main drivers of afforestation.

Afforestation in the Irish context involves a change in land use from agriculture to forestry. There is clear policy link between moving land from agriculture into forestry, and associated climate mitigation impacts: livestock emissions are replaced by a forest sink, with attendant benefits from the use of the wood to replace fossil fuel and through the use of solid wood products as a carbon store and a substitute for materials with high embodied emissions. At the national level the effect is that new forests help to mitigate emissions from agriculture.

In 2012, the EPA estimated that achieving the Scenario A Food Harvest 2020 targets will increase projected agricultural greenhouse gas emissions from 18.8 Mt CO<sub>2</sub>eq in 2010 to 20.6 Mt CO<sub>2</sub>eq per annum by 2020, a relative increase of 1.8 Mt CO<sub>2</sub>eq, or 9.6% approximately. This increase is mainly the result of the higher number of ruminants projected under a Food Harvest 2020 Scenario A with associated increased methane emissions, as well as a concurrent projected increase in nitrogen fertiliser use, leading to increased N<sub>2</sub>O emissions. Compared to the baseline of 2007-2009 used in this assessment, an increase in greenhouse gas of 8.5% is predicted to occur. However, there are a range of mitigation

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<sup>8</sup> Teagasc. 2014. Carbon Neutrality as a horizon point for Irish Agriculture: a qualitative appraisal of potential pathways to 2050.

<sup>9</sup> Woodflow 2012 COFORD Connects Note. COFORD, Dublin

<sup>10</sup> See <http://www.agriculture.gov.ie/media/migration/forestry/forestpolicyreviewforestsproductsandpeople/00487%20Forestry%20Review%20-%20web%2022.7.14.pdf>

measures available under the new Rural Development Programme such as soil and manure management, as well as national programmes in animal genetics, and other measures that are likely to reduce the impact of the Food Harvest 2020 targets as envisaged in Scenario A, and these coupled the new forestry programme, with an annual planting target of 10,000 ha, will play an important role in mitigating this increase.

#### 4.5.2 Food Harvest 2020, Ammonia and afforestation

The question has also been raised during the initial consultation stages of this new programme as to the increased levels of ammonia that will be generated by Food harvest 2020 targets and the effect this will have on forestry.

Ammonia is an air pollutant largely emitted from agriculture. The gas is released mainly during naturally occurring processes, i.e. the breakdown of the urea excreted by farm livestock and other mammals or of the uric acid excreted by birds. Ammonia is very soluble in water and readily reacts with other substances in the atmosphere to form ammonium (NH<sub>4</sub><sup>+</sup>) compounds such as ammonium sulphate and ammonium nitrate. The concentration of N in foliage increases with increasing levels of N deposited from the atmosphere onto soils and vegetation. This may increase plant sensitivity to stress (for example from frost, drought and insect damage).

The agricultural sector accounts for 98% of ammonia emissions in Ireland. Ireland's national emission ceiling for NH<sub>3</sub> under the NEC Directive is 116 kilotonnes (kt), to be achieved by 2010. This is equivalent to an 8.8% permitted increase in emissions from the 106.6 kt 1990 baseline figure. According to the EPA in 2013, NH<sub>3</sub> emissions from agricultural sources remain relatively unchanged between 1990 and 2011. Data for 2011 show Ireland to be 7.3 ktonnes below the 2010 limit. It states, however, given the strong performance of the agriculture sector in line with the ambitious targets of Food Harvest 2020, limiting NH<sub>3</sub> emissions to below the 2010 ceiling in the future could become an issue. Continued research on low emission land spreading techniques and other manure management strategies is required.

#### 4.5.3 General Coherence Relating to Agriculture and Forestry

Policy coherence between agriculture and forestry will also be enabled by continuing to facilitate land transfer from agriculture to forestry by way of grant and premium payments under the new programme, by the promotion of afforestation as a land use option by DAFM and Teagasc, and by DAFM seeking to mobilise other public and private sector investment in afforestation. Of the 79,103 farms represented by the Teagasc national Farm Survey, almost 9% or 6,966 farms nationally have forestry. The table below shows the distribution of farms with forests across the NFS farm systems. Cattle rearing and cattle other systems account for over 50% of the farms with forests.

Farm system	% of farms with forests by farm system
Dairy	16
Cattle rearing	30
Cattle other	26
Sheep	11
Tillage	13
Mixed livestock	4

*Source: Teagasc NFS*

#### **Table 4 Percentage of farms with forests by farm system in 2012**

This table helps demonstrate the success of land use change from agriculture to forestry under previous planting programmes.

In terms of supporting forestry there are other examples of policy coherence between the new forestry programme, direct payments and the RDP. These can be summarised as follows;

##### *Direct payments*

- Land planted under the new programme will continue to be eligible for payment of the Single Farm Payment;
- New forests planted under the programme can be included as ecological focus area;
- New forests planted under the programme are not reckonable in calculating any changes from the 95% permanent grassland rule;

##### *Rural Development Programme*

- The establishment of woodlands whose area is less than the minimum allowable under the afforestation and creation of woodlands measure is listed as a Tier 3 action under the new agri-environment scheme known as GLAS;
- The Department's Bioenergy Scheme provides grant aid for the planting of energy crops willow and miscanthus. These species are not eligible under the afforestation and creation of woodlands measure.

## 5 Forestry Programme Cost Benefit Analysis

### 5.1 Introduction

“Cost benefit analysis (CBA) is an analytical tool used in the appraisal of major capital proposals. It provides decision makers with important information about proposed investments and assists in the decision making process through quantifying and monetising the costs and benefits associated with the main investment options”<sup>11</sup>. However, it is not all-embracing as not all costs or benefits can be quantified or monetised. It is used as one of a number of elements that decision makers will consider before deciding whether and at what level to invest in a capital project (such as an afforestation proposal).

Other factors which may not be able to be quantified or monetised need to be considered as part of the decision making process and these are in general outlined in a narrative. Factors may include competitiveness, distributional equity, sustainability of the project, impacts upstream or downstream to the wider economy, sustainability of roundwood supply, contribution to meeting other policy goals e.g. climate change and renewable energy. As Ní Dhubháin et al. (2006) has noted, *CBA does not allow the backward and forward linkages that connect the forestry sector to other sectors of the economy to be assessed*. The wider economic issues are outlined in the following four sections.

The overall strategic objective of the national forest policy is ***to develop an internationally competitive and sustainable forest sector that provides a full range of economic, environmental and social benefits to society and which accords with the Forest Europe<sup>12</sup> definition of sustainable forest management<sup>13</sup>***. This implies a series of strategic actions across the forestry sector including the continued expansion of the forest estate. In this regard the key objective of future afforestation is *to increase the forest area, in accordance with sustainable forest management (SFM) principles, in order to support a long term sustainable roundwood supply of 7 to 8 million cubic metres per annum*. The increase in forest area is required to underpin the security of future raw material supply to the processing and wood energy sectors (sawmilling, wood based panels and woody biomass using energy plants) and to facilitate competitiveness through economies of scale in line with increasing volume supply. The proposed Forestry Schemes, which are the subject of this CBA represent the response to the new forest policy and although they fall short of the required level of afforestation, represent an important first step in addressing the relatively low levels of afforestation since 2007.

A "do nothing" scenario is typically included in a CBA as a baseline against which to judge the impact of the proposed capital investment. This analysis does not undertake a CBA of current land-use i.e. agriculture, as the resources required are beyond those available. However *Forests, products and people* analysed the impact of varying levels of afforestation on future roundwood supply and clearly showed the unsustainable nature of future roundwood supplies and the impact on growers and industry in the absence of an afforestation programme of any reasonable scale.

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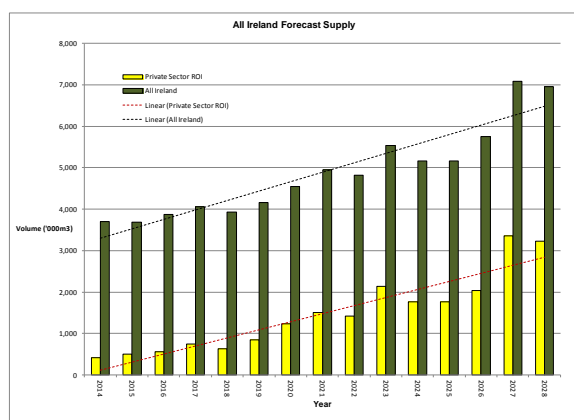
<sup>11</sup> Extract from the Report of the Interdepartmental Working Group: Reflecting the Cost of Carbon Emissions in Cost Benefit Analyses, October 2008 (Unpublished)

<sup>12</sup> FOREST EUROPE is the pan-European policy process for the sustainable management of the continent's forests founded in 1990. It develops common strategies for its 46 participating countries and the European Union on how to protect and sustainably manage forests.

<sup>13</sup> Department of Agriculture, Food and Marine. 2014. *Forests, products and people. Ireland's forest policy - a renewed vision*. Department of Agriculture, Food and Marine, Dublin.

### 5.1.1 Background: Downstream Industry<sup>1415</sup>

In 2012 a total of 2.84 million cubic metres of roundwood was harvested in the Republic of Ireland of which 2.35 million cubic metres was supplied by Coillte, with the balance (0.49 million cubic metres) being provided by the private forest sector. Supply is forecast to almost double by 2028<sup>16</sup> with the increase being dependant on volumes from the private sector.



**Figure 1 All Ireland Roundwood Forecast**

and there are further opportunities for import substitution.

Wood processing industries dependant on the forest resource are primary processing (sawmilling), wood based panels (WBP), and wood energy e.g. Edenderry and CHP plants. The furniture and joinery industry is more reliant on imported hardwoods but is also a user of Irish wood based panels.

In 2012, imports of forest products equalled €513 million, comprising mainly pulp and paper products (66%), with sawn timber and wood based panels making up the remainder. Exports of forest products totalled €303 million comprising WBP (€179 million) and sawnwood (€73 million). Irish sawmills had a 68% share of the domestic sawnwood market in 2012

The primary products produced by Irish sawmills include construction / structural timber, pallet / packaging timber and fencing products. In the past, Irish produced structural timber was largely sold on the home market with pallet and fencing products making up the bulk of sawn timber exports. In 2010, Ireland became, in value terms, a net exporter of sawn timber. This followed on the trend began in 2007, largely due to the collapse of the domestic construction market, of increased levels of exports especially to the UK. In 2012, sawmills processed 1.75 million cubic metres of roundwood, generating 0.78 million cubic metres of sawn timber and 0.12 million cubic metres of round stake wood. While the domestic sawn timber market declined by 45% over the period 2008-2012, sawn timber exports grew by 40%.

In 2012 some 704,000 cubic metres of wood based panels (WBP) were manufactured in Ireland of which 89% were exported representing a value of €179 million. Key markets were the UK and the Benelux countries. In 2009, Irish WBPs comprised the second largest source of supply of particleboard and OSB in the UK. Over the same period Ireland was the largest supplier of MDF in the UK marketplace.

Net trade in timber remains negative but, the deficit has more than halved since 2008 due to the fall in domestic house construction. The strengths of the downstream sector lie in its modern production facilities and its track-record in added value and innovative products. There are clear opportunities for development, but a key component of its long-term viability is a sustainable and increasing supply of easily procurable timber. The policy review report<sup>17</sup> highlighted this issue and recommended an

<sup>14</sup> Based on UNECE Timber Committee Market Report for Ireland 2010. Compiled on behalf of COFORD by Eoin O Driscoll, Drima Marketing.

<sup>15</sup> Knaggs G. and O'Driscoll E. (2013) Woodflow and forest-based biomass energy use on the island of Ireland (2012). COFORD Connects Processing / Products No. 29. COFORD

<sup>16</sup> Phillips, H. 2011. All Ireland Roundwood Production Forecast 2011-2028. COFORD, Department of Agriculture, Fisheries and Food, Dublin.

<sup>17</sup> Bacon, P & Associates Economic Consultants (In Association with Deloitte), (2004) *A Review and Appraisal of Ireland's Forestry Development Strategy*, Stationery Office, Dublin,



afforestation level of 20,000 ha per annum, in order to smooth output projections and stimulate ongoing investment in processing capacity.

### 5.1.2 *Contribution to the National and Local Economy*

The analysis of direct costs and benefits set out in the CBA is based on a “farm-gate” approach. In other words, the timber values used refer to the standing prices and do not take account of the wider impact for the local and national economy, or of the value added by processing.

The forest industry, comprising growing, harvesting and processing of forest products makes a significant and increasing contribution to the Irish economy. In 2010, direct output in the forestry (i.e. growing sector; excludes the processing sector) sector was €378 million and when the indirect and induced effects are taken into account this increases to €673.0 million. The total value to the economy of the overall processing sector was €2.29 billion<sup>18</sup>.

Bacon (2004) estimated that the total workforce directly engaged in the growing and using of forest products or was engaged in related sectors as 16,175. In 2006, research which was undertaken by COFORD indicated that direct employment in the Irish forestry and forest products sector totalled 10,680<sup>19,20</sup>.

In 2010, direct employment in forestry was 3,125. Accounting for the induced and indirect effects, the total employment supported by the forestry sector was estimated to be 5,531. Direct employment in the wood products sectors was 3,907. Accounting for the induced and indirect effects, the total employment supported by the wood products sector was estimated to be 6,408 (FORECON 2011).

Moreover, a recent study which was carried out by University College Dublin (UCD) has estimated that an annual afforestation programme of 15,000 ha would on average, create 490 direct jobs. Most of these would be based in rural communities in forest establishment, forest management, timber harvesting, road haulage and in timber processing.

The greater proportion of these jobs is rurally-based and they contribute to the stabilisation of local communities. This is especially so when the impact of forest premiums, mainly paid to farmers are added.

The ECONTRIB<sup>21</sup> report attempted to quantify the contribution of forestry to local and rural economies, examining the impacts (direct, indirect and induced) in three separate regions. In the West (Galway, Mayo and Roscommon), the contribution of forestry was valued at €75.5m, with over 1,000 people employed (FTEs). In the South-West (Cork and Kerry) the figures were €47.6m and 680 people employed, while in the Mid-East (Meath, Kildare and Wicklow), the annual contribution was valued at €69.3m with just under 1,000 in fulltime equivalent jobs. At a local level, therefore, forestry can be a significant employer with real economic impact.

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<sup>18</sup> FORECON (2011) An economic evaluation of the market and non-market functions of forestry

<sup>19</sup> <http://www.COFORD.ie/open24/pub/ccn-se04.pdf>

<sup>20</sup> COFORD Study; the Socio-Economic Contribution of Forestry in Ireland (ECONTRIB);

<http://www.COFORD.ie/open24/pub/econtrib20060808.pdf>

<sup>21</sup> Ní Dhubháin, Á., Fléchar, M.-C., Moloney, R., O'Connor, D. and Crowley, T. 2006. The socio-economic contribution of forestry in Ireland. COFORD, Dublin



### 5.1.3 Contributing to Renewable Energy Policy Goals

The key objectives of the Government's energy policy are (a) security of supply, (b) environmental sustainability and (c) economic competitiveness. From a forestry perspective, the sustainable energy sub-programme<sup>22</sup> outlines how the renewable energy sector is to be developed and key elements include (a) a target of 33% of electricity consumption from renewable sources by 2020, (b) to achieve 30% co-firing with biomass in the three peat fired power stations by 2015 (c) biomass power generation projects will be supported through the Renewable Energy Feed-in Tariff (REFIT) scheme (d) biomass in power generation will be supported by means of technology transfer, by investment in specific research and development programmes and by tackling supply issues and (e) the need to develop combined heat and power (CHP) and district heating schemes has been identified as an area where energy efficiency could be improved.

There are currently three commercial wood-fuelled biomass CHP plants in Ireland (Grainger Sawmills Ltd, Munster Joinery Ltd and Aurivo Co-Op) and these rely heavily on processing residues as a fuel source. Edenderry Power, a peat-burning power station operated by Bord Na Móna, is currently working to increase the volume of wood biomass which is used as a feedstock for its electricity generating process. In 2009, the plant used 62,000 tonnes of woodchip and sawdust and a further 6,000 tonnes of wood pellets. The planned intake for the same mix of material in 2010 was 100,000 tonnes increasing to a requirement for 160,000 tonnes by 2016<sup>23</sup>.

In 2012, 36% of the roundwood harvested in the Republic of Ireland was used for energy generation, mainly within the forest products sector. The use of wood biomass increased from 0.916 million cubic metres in 2010 to 1.017 million cubic metres in 2012<sup>24</sup>.

End use	2010	2011	2012
	000 m <sup>3</sup> OB RWE		
Forest-based biomass use by Edenderry Power	79	85	152
Forest-based biomass used for energy production and process drying in sawmills and wood-based panel mills	475	487	459
Roundwood chipped for primary energy use	39	41	30
Domestic firewood use	199	214	225
Short rotation coppice	1	5	5
Wood pellets and briquettes	121	129	144
Charcoal	2	5	2
<b>TOTAL</b>	<b>916</b>	<b>966</b>	<b>1,017</b>
Roundwood harvest			
Roundwood available for processing	2,708	2,740	2,613
Firewood harvest	199	214	225
<b>TOTAL</b>	<b>2,907</b>	<b>2,954</b>	<b>2,838</b>
Forest-based biomass as a % of total roundwood harvest	31.5	32.6	35.8

**Table 5: Use of Forest-based Biomass**

Forestry is contributing to the achievement of renewable energy targets and will continue to do so. After wind energy, wood fuel is the largest contributor to renewable energy generation in Ireland. However, the long term sustainable level of its contribution is dependent on the

<sup>22</sup> COFORD 2010. UNECE Timber Committee - Market Report for Ireland 2010. Compiled by Eoin O Driscoll, Drima Marketing

<sup>23</sup> Reilly, John. (2010). *The Co-firing market for wood biomass*. Presentation National Forestry Conference, Generating revenue from your woodlands. 26<sup>th</sup> March, 2010.

<sup>24</sup> Knaggs G. and O'Driscoll E. (2013) Woodflow and forest-based biomass energy use on the island of Ireland (2012). COFORD Connects Processing / Products No. 29. COFORD

scale and accessibility of the forest resource. With forecast increases in timber supply coming solely from the private sector, it will be important to leverage these supplies to ensure renewable targets are met and to underpin the competitiveness of the sawmill and wood panels sector. A continuation of afforestation along the lines of the proposed programme 2015-2020 to help maintain a sustainable level of supply of small roundwood would provide the confidence for the investment in CHP and other wood energy mechanisms.

#### *5.1.4 Sustainable supply and Demand projections to 2020*

Due to the pattern of past planting, future timber yields will peak around 2035. In the absence of any future afforestation, there will be a fall off in future roundwood supplies from 2035 onwards which will could act as a disincentive for industry to invest and may result in an oversupply of roundwood in the decade pre-ceding this with reduced prices and returns to growers.

A sustainable level of supply is key to underpin the development of the sector, and to contribute to the Government's targets for renewable energy, notwithstanding the contribution that future afforestation will make to overall wood supply and climate change mitigation.

On the demand side the current strong demand for roundwood is expected to continue through 2014. There is scope to grow exports and to increase the level of harvest from the private sector to go towards meeting increasing requirements for forest-based biomass for heat and power generation. Overall demand for roundwood on the island of Ireland is forecast to increase from 4.51 million cubic metres in 2014 to 6.34 million cubic metres by 2020 (Table 6), an annualised rate of increase of 6%.

Boardmill demand (including the use of sawmill residues) is forecast to increase from 1.40 million cubic metres in 2014 to 1.60 million cubic metres by 2020, an increase of some 14% overall or about 3.0% year on year. Sawmilling demand is forecast to rise at a substantially faster rate, from 2.67 million cubic metres in 2014 to 3.28 million cubic metres by 2020, an increase of 0.61 million cubic metres, some 23% or 3.5% year on year (Table 6). The rates of growth in demand for raw material are directly linked to the expected growth in product demand. The higher rate of projected demand for the sawmilling sector accords with the "Recovery" scenario prediction of GDP growth of 4% over the period 2014-2020 in the ESRI medium term economic outlook<sup>25</sup>.

Forest-based biomass is projected to see the largest rise in demand, in both the Republic and Northern Ireland, mainly as a result of current policies such as REFIT and the carbon tax in the Republic, and the renewable heat incentive in Northern Ireland. Most of the increase in forest-based biomass demand to 2020 in the Republic comprised of the aggregate demand for Combined Heat & Power (CHP), heat only, and for co-firing with peat. To meet the stated government targets for renewable energy by 2020, the gross demand for forest-based biomass for energy use on the island increases from 1.912 million m<sup>3</sup> in 2014 to 3.259 million m<sup>3</sup> in 2020, an increase of 170%, or a compound annual rate of increase of just over 10% year-on-year.

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<sup>25</sup> Fitzgerald, J. and Kearney, I (Eds). 2013. Medium-Term Review, 2013-2020. Number 12. ESRI, Dublin.

Supply/demand type	2014	2020
<b>Roundwood supply forecast</b>	<b>4005</b>	<b>4787</b>
<b>Demand forecast</b>		
<i>Sawmill roundwood demand</i>	2669	3283
<i>Boardmill roundwood demand<sup>47</sup></i>	730	880
<i>Boardmill residue demand<sup>47</sup></i>	670	720
<i>Forest-based energy demand ,</i>	1912	3259
<b>Residues arising from primary processing</b>		
<i>Sawmill residues</i>	-1383	-1701
<i>Boardmill residues</i>	-89	-103
<b>Net demand</b>	<b>4509</b>	<b>6338</b>
<b>Supply surplus/deficit</b>	<b>-504</b>	<b>-1551</b>

**Table 6: Estimated roundwood demand on the island of Ireland in 2020<sup>26</sup>.**

#### 5.1.5 Potential for growth in Ireland's Forest Sector

Historically, the construction sector has been the primary demand driver for forest products. Economic conditions remain difficult in the UNECE region and associated uncertainty has affected markets for forest products. The US housing market is in the early stages of recovery. However, the European housing construction market remains stagnant due to the ongoing sovereign debt crisis (although there are signs of improvement on this front also, June 2014). Improvement in new housing is not expected until later this year (2014) at the earliest.

In 2012, the consumption of sawn softwood in Europe decreased by 2.8% over 2011. In value terms, Ireland became a net exporter of sawn timber in 2010. This marked the continuation of a trend which was apparent since 2008 (and more so in the case of export volumes) with the gap between the value of exports and imports closing due to the collapse of the domestic construction market and increased levels of exports, mainly to the UK. The UK remains the most important export market for Irish forest products.

In 2012, UK housing starts were 9.5% lower than in 2011. Over the same period, the volume of repair, maintenance and improvement work in the UK housing sector (housing RMI) declined by over 3%. However, early data for 2013 shows that (with the exception of RMI activity in the public sector), all UK construction sectors are showing improvements over 2012. For the first six months of 2013, public and private house starts in the UK showed a 21.9% and 25.6% respective increase over the corresponding period in 2012.

Despite difficult market conditions, Ireland's market share of the UK sawn softwood market grew from 3.37% to 6.52%. This is an increase of 94% over a 5-year period. Moreover, in 2012, the Republic of Ireland was the fourth largest exporter of sawn softwood timber to the UK. There are further opportunities for the Irish sawmilling sector to grow market share in the UK. Irish sawmillers have also developed new markets for Irish sawn timber in Europe.

In 2012, the level of housing starts in North America improved. This provided a substantial boost to the wood-based panels sector in the region. However, in Europe, the ongoing debt crisis continued to be a drag on the economy with the panels sector following this downward

<sup>26</sup> COFORD Wood supply demand balance analysis 2014.

trend. In 2012, the consumption of wood-based panels in Europe fell by 0.8% over 2011. Over this period, the demand for MDF in Europe grew by 4.8%, while over the same period, the demand for OSB and particleboard declined by 3.5% and 3.1% respectively.

In 2012, Ireland was the largest exporter of fibreboard, including medium density fibreboard (MDF), to the UK. Over the same period, Ireland was the third largest exporter of particleboard, including oriented strand board (OSB), to the UK. The reduction in particleboard exports from Ireland to the UK was, in part, caused by the closure in 2011 by Finsa Forest Products Ltd of its particleboard plant at Scariff, Co Clare.

#### 5.1.6 Wood demand at the European level

A recent European Commission study has concluded that:

- the EU annual wood harvest should grow from 436 to 454 Mm<sup>3</sup> by 2016, but further increase will be constrained by less than 75% of the forest area being legally available and owners' limitations on the rest;
- by 2016 a 63m m<sup>3</sup> wood raw material supply shortfall will exist for bio-energy. This equates to 16 % of the roundwood going to wood-processing or 9.6 % of their total wood raw material supplies. Without EU and MS remedial measures, imports of wood, e.g. pellets from N. America, Russia et al. will increase significantly.

Also in the context of wood fibre demand, the draft EU Forest Strategy states: "However, according to Member States' projections under Land Use, Land-Use Change and Forestry (LULUCF), harvest rates are expected to increase by around 30% by 2020 as compared to 2010.<sup>27</sup> Furthermore, the European Forest Sector Outlook Study II (2010-2030) from the UNECE/FAO<sup>28</sup> states in its conclusions:

*If no major policies or strategies are changed in the forest sector and trends outside it follow the lines described by the ... scenario, consumption of forest products and wood energy will grow steadily and wood supply will expand to meet this demand ... All components of supply will have to expand, especially harvest residues*

All of the outlook studies in Europe therefore point in the same direction – increased demand for wood fibre and the need for increased mobilisation rates to meet this demand, with increased levels of imports of wood for energy and other uses likely to arise. Projections in the outlook studies also indicate that competition for wood resources is likely to make imports of roundwood and energy wood more expensive, and supports the need for the implementation of the measures outlined in the new forestry programme 2014-2020.

## 5.2 Rationale for Afforestation Cost Benefit Analysis

### 5.2.1 General

The economic analysis of forestry presents particular challenges. This is due to the very long term nature of the investment – at a minimum it can be 30-35 years before the full benefits accrue but this can extend to over 100 years for some broadleaved species. It is difficult to formulate assumptions underlying the analysis over such a prolonged period. The

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<sup>27</sup> Based on the EU's projected forest management reference levels submitted to UNFCCC CMP.6.

<sup>28</sup> European Forest Sector Outlook Study II (2010-2030). UNECE/FAO, Geneva (2010).  
<http://www.unece.org/fileadmin/DAM/timber/publications/sp-28.pdf>

Department of Finance (1999) CBA code notes that *the appraisal timeframe should be over the estimated economically useful life of the project. Productive sector projects should generally be appraised over a 10 year period. Infrastructure projects should generally be appraised over a 20 year period. Residual values and/or decommissioning costs at the end of the project's useful life should be included in the analysis.* The economically useful life of forestry is longer than conventional capital projects and especially so given Ireland's commitment to the principles of sustainable forest management which safeguards the future of forestry for future generations.

### 5.2.2 Non timber Benefits

A further difficulty with valuing afforestation is presented by the considerable range of non-timber benefits that can arise from forestry. Afforestation and forest management create a number of benefits which are either not priced by markets or are difficult to monetise. There are a range of non-market benefits or public goods, such as climate change mitigation, soil protection, landscape, flood mitigation, leisure and recreation opportunities and biodiversity. In addition, there are a number of benefits which are priced on the market. The public good nature of these positive externalities is often provided as an additional rationale for publicly funded Government support for forestry. Indeed results from previous studies suggest that the externalities are significant and can sometimes be greater than the associated timber benefits. This underscores the need to include externalities in any analysis, where possible and significant future State investment in forestry. The marketable outputs from forests include timber, hunting and other non-wood forest products such as foliage and fungi.

Cost-Benefit Analysis (CBA) helps factor in the value of some costs and benefits which do not currently have market prices or where the market price is imperfect. It estimates and totals the equivalent money value of the benefits and costs to society over the useful life of the project. This may help decision makers make a call on whether a proposal is worthwhile. Double-counting of costs or benefits should not occur.

### 5.2.3 Planting Assumptions

Presented here is a CBA of the afforestation element of two potential forestry scheme programmes for the period 2015-2020. Scheme C foresees the planting of 46,045 ha or up to 9,000 ha per annum and Scheme D some 57,480 ha or up to 10,000 ha per annum. This compares with average annual afforestation levels of 6,800 ha since 2007. Both Schemes contain a Forestry for Fibre, Native Woodland and Agro-forestry planting element but the main component remains the traditional afforestation of marginal agricultural land. The Forestry for Fibre is a new element and is targeted at the establishment of fast growing species over short rotations which would provide fibre for use either as wood energy or as raw material for the wood based panels sector. Such plantations would require more fertile sites than typical afforestation. Native woodlands are usually described as woodlands in which native tree, shrub, and herb species dominate. The Native Woodland element is aimed at protecting, enhancing and expanding Ireland's native woodland resource and associated biodiversity, through appropriate planting and management.

The approach and methodology adopted is based on previous CBAs undertaken for state afforestation<sup>29</sup>. However it takes on board the recommendations of the assessment of the Cost Benefit Analysis conducted for the Forestry Development Programme by RSM McClure Watters (Consulting) and the guidance provided by the Central Expenditure Evaluation Unit

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<sup>29</sup> Department of Agriculture, Food and Marine. 2014. Forests, products and people. Ireland's forest policy - a renewed vision. Department of Agriculture, Food and Marine, Dublin and Barwise, N. (2009). Cost Benefit Analysis of Afforestation Support in Ireland. MSc Thesis.

(CEEU) of the Department of Public Expenditure and Reform (DPER) in their review of the Forestry Programme submission earlier this year.

The analysis where possible quantifies the costs and benefits associated with the two proposed Afforestation Schemes and uses discounted cash flow (DCF) to calculate their Net Present Value (NPV). Sensitivity analysis, more extensive than previous CBAs, encompasses the discount rate, timber prices, species proportions, carbon price, recreation usage, the levels of grant and premium payments and the project time horizon.

Due to a combination of limited or non-existent data and the resources available to the CBA it was not possible to quantify the costs or benefits relating to biodiversity or water quality. Equally significant is the lack of reliable data relating to the downstream impacts in terms employment, fossil fuel substitution and the stabilisation of rural communities.

<b>Scheme C</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>TOTAL</b>
Afforestation, ha	6,310	7,020	7,500	7,740	8,475	9,000	46,045
<i>of which afforestation</i>	5,700	6,300	6,475	6,700	6,925	7,450	39,550
<i>of which NWS establishment</i>	500	500	500	500	500	500	3,000
<i>of which Agro-forestry</i>	10	20	25	40	50	50	195
<i>of which Biomass</i>	100	200	500	500	1,000	1,000	3,300
Forest Roads (m)	150,000	150,000	150,000	150,000	180,000	180,000	960,000
<i>Special construction works (no. applications)</i>	100	100	100	100	100	100	600
Thinning and tending	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Reconstitution, ha	200	200	200	200	200	200	1,200
Native Woodland (Conservation), ha	30	30	30	30	30	30	180
Neighbourwood Scheme, no. of projects	10	10	10	10	10	10	60
Investment in Forestry Technology	30	30	30	30	30	30	180
Forest Genetic Reproductive Material, ha	350	350	350	350	350	350	2,100
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000

<b>Scheme D</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>TOTAL</b>
Afforestation, ha	8,370	9,520	9,625	9,965	10,000	10,000	57,480
<i>of which afforestation</i>	7,800	8,900	8,900	8,900	8,900	8,900	52,300
<i>of which NWS establishment</i>	500	500	500	525	525	525	3,000
<i>of which Agro-forestry</i>	20	20	25	40	50	50	205
<i>of which forestry for Fibre</i>	100	200	500	500	1,000	1,000	3,300
Forest Roads (m)	180,000	180,000	180,000	180,000	180,000	180,000	1,080,000
First Thinning, ha	0	0	0	0	0	0	-
<i>Special construction works (no. applications)</i>	100	100	100	100	100	100	600
Thinning and tending	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Reconstitution, ha	200	200	200	200	200	200	600
Native Woodland (Conservation), ha	60	60	60	60	60	60	360
Neighbourwood Scheme, no. of projects	10	10	10	10	10	10	60
Investment in Innovative Forestry Technolo	30	30	30	30	30	30	180
Forest Genetic Reproductive Material, ha	350	350	350	350	350	350	2,100
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000

**Table 7: Forestry Programme Schemes**

### 5.3 Cost Benefit Analysis Assumptions

Cost Benefit Analysis is by its nature greatly dependent on the assumptions used. The following are the key general assumptions on which the analysis is based:

- The costs to the State are grants and premiums adjusted by a factor of 1.30 in line with guidance provided to the CBA by the Department of Agriculture, Food and the Marine and the Department of Finance.



- Premiums are treated as revenues.
- Average conifer timber prices for the past ten years, updated to 2013 values using the consumer price index (CPI).
- Estimated broadleaf prices based on a combination of limited Irish price data, UK price data and expert opinion (Phillips, H. (2008)).
- Estimates for the future market price are used per tonne of carbon dioxide sequestered using rates in the Department of Finance guidance note<sup>30</sup> which reflects the recommendations from an inter-departmental committee: *Reflecting the Cost of carbon emissions in Cost Benefit Analyses*. To estimate the impact of changes in carbon accounting rules, carbon stored in harvested wood products is included in the analysis as agreed in the LULUCF decision at Durban to allow Parties to estimate emissions from the harvested wood products pool based on delayed emissions
- Leisure and recreation benefits begin after 16 years and end at age of clearfell. A lower willingness to pay (WTP) is taken for conifers (€2.50 per visit) and a higher WTP is taken for broadleaves (€4.00 per visit) and 100 visits per ha representing total availability of planting for recreation was taken as the main parameter in the calculations<sup>31</sup>.
- Crops which are clearfelled are replanted (in line with current legislative requirements and Ireland's commitment to SFM) with the same species in the following year and continue to generate the range of benefits under consideration in this CBA. (This assumption would have to be revisited if large scale non-replanting after harvest was permitted.)
- 70% of plantations (excluding the Forestry for Fibre areas) will be thinned
- Local authorities will maintain the county road network.
- There will be no significant changes to the regulatory framework for forestry which would result in harvesting levels being reduced or barriers to normal forest management.
- The forest plantations established will be adequately maintained and managed over the CBA timeframe.
- Costs and revenues will inflate / deflate at the same rate over the CBA timeframe.

The investment in the forestry programme is only acceptable if the internal rate of return (IRR) is greater than the minimum acceptable rate of return (MARR)<sup>32</sup>. The MARR is taken as being equal to the discount rate.

## 5.4 Cost Benefit Time-Period

This CBA considers two levels of annual afforestation for the six year period 2015-2020.

Typically CBA analyses the costs and benefits of a project over its economic life. This can be relatively straightforward when projects are relatively non-complex, as for example the construction of a new stretch of motorway or a water treatment works. The consideration of economic life in a forestry context is more complex. One view is that the economic life is equivalent to the economic rotation. However, once a crop is replanted, as is the legal requirement, it will continue to generate wood and other products, and environmental benefits

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<sup>30</sup> Draft update of the 2008 Report of the Interdepartmental Working Group: Reflecting the cost of carbon emissions in cost-benefit analyses, March 2014

<sup>31</sup> Barwise, N. (2009). Cost Benefit Analysis of Afforestation Support in Ireland. MSc Thesis

<sup>32</sup> RSM McClure Watters DAFM Forestry Programme 2014-2020 - Assessment of CBA

over the length of the second and indeed subsequent rotations, as long as the land use remains as forestry. The full extent of the carbon benefits will not be realised until such time as a carbon equilibrium is reached which is estimated as being of the order of at least two full rotations. In the context of slower growing broadleaf species such as oak, this would extend the period to consider carbon benefits to circa 2245. Such long time periods, which assume certainty around timber yields and constancy of preferences across many generations, are difficult to rationalise.

In this analysis, a project time horizon of 60 years which is equivalent to almost one and a half rotations of the principal conifer species and three quarters of a rotation for hard broadleaf species is used. By year 60 the soft broadleaves as for example alder and diverse conifer species will also be approaching maturity. Sensitivity analysis is undertaken using a project time period of 40 years and 80 years.

## **5.5 Costs**

### **5.5.1 General**

The costs to the State calculated in NPV terms are those associated with the payment of afforestation grants and premiums. No roading grant is included in the analysis for the areas afforested. Previous CBAs did include roading grants but as the advice from CEEU in DPER was to conduct a separate CBA for roads, roading grants were excluded. This complicates the analysis somewhat as it requires an estimate of the proportion of afforested areas that will be roaded and thinned in the absence of road grants. There is no historic data to provide guidance.

The afforestation grant will on average cover all costs of establishment apart from the Forestry for Fibre element where the owner will be required to make up the shortfall estimated as being €1,138/ha. The costs for the forest owners include maintenance, insurance, on-going management, road construction and repair costs and reforestation following clearfell. These costs include both labour and materials (where relevant e.g. road repairs). As the timber prices used are stumpage prices and are net of costs of harvesting, no harvesting costs are included as this would constitute double counting. In line with the guidance note<sup>33</sup> on CBA and advice from DAFM grants and premium values were increased by 30% to take account of the shadow price of public funds.

### **5.5.2 Deadweight**

In the absence of grants and premium, there would still be a small area afforested annually. To estimate this, private planting from 1926 up to the introduction of the Western Package Scheme (WPS) in 1982 were analysed. The average annual rate of afforestation was 219 ha while the figure was 227 ha per annum in the ten years prior to the introduction of the WPS. There were varying levels of State grants from circa 1931 onwards but none of which would cover anything approaching the costs of afforestation and maintenance up to year five. A deadweight estimate of 200 ha per annum is used in the analysis.

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<sup>33</sup>.Review of the Forestry Programme Submission, CEEU, Department of Public Expenditure and Reform, 2014.



### 5.5.3 Tax Treatment of Forestry

The review of certain tax schemes<sup>34</sup> examined the tax reliefs around the operation of commercial woodlands and evaluated the impact of a range of possible interventions from the scrapping of tax reliefs to the maintenance of the status quo. The review concluded that *Any action which makes investment in forestry less attractive (such as the removal of the existing tax concessions) could make the attainment of this target even more difficult if not impossible and could undermine current Government forestry policy. For these reasons the study concludes the relief in its present form should be maintained.* However, this recommendation was not followed through in the 2007 Finance Act which introduced exemption limits and the maximum amount of specified tax reliefs that were allowed was €250,000 or 50% of the total amounts of relief claimed, whichever was the higher. This was significantly reduced in 2010 to €80,000 or 20% of the total amounts of relief claimed, whichever is the higher.

The estimation of the tax revenue forgone assuming the continuation of the current tax relief was not possible due to the limited resources available.

### 5.5.4 Agricultural Supports

Land which is afforested is typically marginal agricultural land although in recent years there has been an increase in the quality of land being planted. These lands are subject to a range of agricultural supports including Rural Environmental Protection Scheme (REPS) soon to be replaced by GLAS (green, low carbon agri-environment scheme) and disadvantaged area payments. The change of land use to forestry will result in a saving to the State in terms of agricultural payments while at the same time represent a cost in terms of premium payments. The difference between these two types of support will be the net cost to the State. Assuming a farmer with 40 ha who afforests an area of 10 ha and the land being included in REPS/GLAS, then typically the net additional annual payment would be of the order of €212 per ha which is less than half of the current rate of premium. The situation however is not altogether clear cut where the farmer is entitled to "stacking" i.e. continuation of some agricultural supports on afforested land for the period of premium payments.

The estimation of the future levels of support for agriculture and the net cost for change of land use to forestry is a complex area. Thus while the DAFM recognises the importance of including the benefit represented by the saving in agricultural support payments, it is not possible to provide a robust figure for this given the limited resources available.

### 5.5.5 Displacement

Displacement and substitution impacts are closely related. They measure the extent to which the benefits of a project are offset by reductions of output or employment elsewhere. In the context of this analysis it is recognised that the increase in forest recreation and leisure activities could impact on other recreation areas. However, the estimation of the level of displacement caused by forest recreation is extremely difficult to calculate in the absence of survey data<sup>35</sup>. Furthermore displacement values are context specific and as such cannot be taken from analyses outside of Ireland.

The precise estimation of the displacement costs associated with increased forest recreation and leisure was not possible due to the limited resources available.

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<sup>34</sup> Department of Finance (2006) Budget 2006: Review of Tax Schemes Volume III: Internal Review of Certain Tax Schemes, Department of Finance, February 2006

<sup>35</sup> Bryden, D.M., Westbrook, S.R., Burns, B., Taylor, W.A., and Anderson, S. 2010. Assessing the economic impacts of nature based tourism in Scotland. Scottish Natural Heritage Commissioned Report No. 398

### 5.5.6 Operational Costs

Operational costs include (a) the cost of maintenance until the year of clearfell differentiated by species with a higher value being used for broadleaved species, (b) road construction costs, based on the current average cost<sup>36</sup>, (c) management cost where plantations are managed by either a consultant forester or forest management company on behalf of the owner, (d) reforestation costs which are assumed to occur in the year following clearfell with the costs being species specific and higher for broadleaved species, (e) road repair costs following harvesting operations (thinning and clearfell) and (f) insurance against fire damage. These costs include labour and materials (where relevant e.g. road repairs). As net timber stumpage prices are used in the analysis, the costs of harvesting and transport are not included as to do so would be double counting.

### 5.5.7 Grants and Premiums

GPC	Premium		Duration	Grant			
	<8ha	>=8ha		1st	2nd	Fencing	Total
1 - Unenclosed	€160	€170	15	€1,500	€500	€500	€2,500
2 - Sitka spruce/lodgepole pine	€380	€400	15	€2,200	€700	€500	€3,400
3 - 10% Diverse	€440	€470	15	€2,250	€750	€500	€3,500
4 - Diverse	€470	€490	15	€2,500	€800	€500	€3,800
5 - Broadleaf	€500	€520	15	€3,600	€1,100	€500	€5,200
6 - Oak / Beech	€540	€560	15	€3,800	€1,200	€500	€5,500
7 - Beech	€540	€560	15	€3,800	€1,200	€500	€5,500
8 - Alder	€500	€520	15	€2,400	€800	€500	€3,700
9 - Agro-forestry	€250	€250	5	€2,820	€940	€500	€4,260
10 - Forestry for Fibre	€150	€150	10	€1,460	€490	€500	€2,450

**Table 8: Grants and Premium Rates (€/ha)**

The afforestation scheme has two grants - the first (establishment grant) payable after the crop has been planted and the second (maintenance grant) payable after five years subject to the crop growing satisfactorily. There are ten Grant and Premium Categories (GPC) with varying species requirements and support levels (Table 8). The proposed rates differ from those of previous schemes in that there is no difference in premium payments between farmer and non-farmer ownership category. An average conifer to broadleaf ratio of 64:36 was used and within this, species were assigned to eight<sup>37</sup> of the ten standard Grant and Premium Categories (GPC). The ratio was based on the average percentage conifers and broadleaves planted during the previous five year period 2009-2013 inclusive. The discounted value of the grants represents circa 40.9% and premiums 59.1% of the total discounted value. Table 9 shows the discounted cost of State-led investment in afforestation varied from €321.6 million for Scheme C (up to 9,000 ha per annum) to €403.6 million for Scheme D (up to 10,000 ha per annum).

	Afforestation	
	Scheme C	Scheme D
<b>Grants</b>	131.6	165.2
<b>Premiums</b>	189.9	238.4
<b>Total</b>	<b>321.6</b>	<b>403.6</b>

<sup>36</sup> €35 per lineal metre excluding VAT and roading density of 20m per ha.

<sup>37</sup> The same species mix was used to estimate the carbon sequestered and as Beech was not used as a typical species for carbon calculations, GPC 7 was excluded. Agro-forestry represented only 0.4% of planting and was also excluded.

**Table 9: Discounted Value of Grants and Premiums at 5% Discount Rate (€ million)**

The premium payments while a cost to government also represent a revenue benefit to those receiving payments. During the preparation of the CBA for the *Forests, policy and people*, the advice from the Forest Policy Review Group (FPRG) was to include premiums both as a cost and as a revenue. A similar approach has been followed here.

## **5.6 Benefits**

The categories of benefits considered are:

- Timber (including volume from thinnings);
- Carbon sequestration;
- Biodiversity;
- Water quality;
- Leisure and recreation;
- Landscape; and
- Cultural Heritage.

There will also be benefits associated with additional employment (given that we are now not in a full employment situation). Based on findings from the ECONOTRIB<sup>38</sup> project each 15,000ha afforestation will result in the creation of an estimated further 490 jobs in planting, managing, harvesting and processing. By the end of the afforestation programme outlined here, the level of rural employment provided by forestry will have increased by between 1,500 to 1,900. These levels are based on traditional forest products - sawlogs, stake and pulpwood - whereas the growing wood energy market (wood chip and wood pellets) is more labour intensive and so if anything the figures indicated probably err on the safe side. Due to the limited resources available, it was not possible to quantify the employment benefits associated with the proposed afforestation programme.

Residual benefits refer to those benefits which will accrue beyond the project timeframe. Forests are a renewable resource, so in theory, all of the plantations established under the proposed afforestation will continue to deliver benefits not just for future generations but for future centuries. In practice some benefits will plateau after a number of rotations as for example carbon sequestration when an overall carbon equilibrium value is reached<sup>39</sup>. Other benefits, as for example recreation, will fluctuate depending on the stage of development of the forest. In an attempt to capture the residual benefits, the approach taken was to grow the forest plantations until the discounted benefit approached a relatively low value that would not impact on the analysis. This equated to 120 years for timber revenues and costs and 130 years for leisure and recreation. The carbon sequestration model was limited to 87 years and so it was not possible to calculate the year when carbon revenues had little or no impact on the NPV. A residual value of 12.5% of the estimated carbon value at year 80 was used.

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<sup>38</sup> Ní Dhubháin, Á., Fléchar, M-C., Moloney, R., O'Connor, D. and Crowley, T. 2006. The socio-economic contribution of forestry in Ireland. COFORD, Dublin

<sup>39</sup> Dewar, R.C. and M.G.R. Cannell. 1992. Carbon sequestration in the trees, products and soils of forest plantations: an analysis using UK examples. *Tree Physiology* 11: 49-71

### 5.6.1 Timber

A yield model based on (a) Forestry Commission yield tables, (b) a ratio of thin to no-thin regimes for conifer<sup>40</sup> species similar to the private sector forecast<sup>41</sup>, (c) the same species ratio as used in the calculation of the costs (d) yield classes 20, 16, 10, 8 and 6 for Sitka spruce, Norway spruce, Japanese larch<sup>42</sup>, alder and other soft broadleaves and oak respectively and (e) a rotation similar to that adopted to estimate carbon sequestration was developed. Volumes were adjusted to allow for open space and unproductive areas. Volumes were also adjusted to take account of losses during harvesting in keeping with the approach used in the private sector and all-Ireland roundwood production forecasts<sup>43</sup>.

### 5.6.2 Carbon Sequestration

The carbon sequestration models for the same species, yield classes and management regimes used to estimate the roundwood volumes were provided by Dr Kevin Black (leader of the COFORD-funded CARBWARE project). These detailed the net rate of carbon sequestered for each year of the rotation over two rotations apart from oak. The carbon sequestration models also provided prudent estimates of the carbon stored in harvested wood products (HWP), as these are to be included in carbon accounting from 2012 onwards.

The Department of Finance-led inter-departmental working group, *Reflecting the Cost of Carbon Emissions in Cost Benefit Analyses* recommended that the market price be used for monetising emissions. In order to ensure consistent use of the market price across projects in different sectors, the Department of Finance has calculated and set prices. These were used in the analysis and varied from €6.58 /tCO<sub>2</sub> in 2015 to €100 /tCO<sub>2</sub> from 2050 onwards.

The carbon sequestration by Forestry for Fibre element of afforestation representing 3,300 ha under each Scheme depends on what market the wood fibre is sold into. If it goes for wood energy, then the net sequestration will be very small averaging only 0.38 tCO<sub>2</sub> per ha per year over the first three rotations<sup>44</sup>. If however 30% of the fibre goes to wood based panels (MDF or OSB) then the rate of sequestration increases to 3.41 tCO<sub>2</sub> per ha per year. Being a relatively low value product, wood fibre is extremely sensitive to transport costs and is unlikely to be transported any significant distance to either of the two panel mills. Consequently the CBA ignores any net sequestration from the Forestry for Fibre afforestation element

### 5.6.3 Biodiversity

The 2004 policy review estimated that the current forest estate yields an annual biodiversity benefit of €5.6 million<sup>45</sup>. A review of the economics of Irish forestry<sup>46</sup> considers that afforestation *has the potential to destroy valuable habitats if planting takes place in 'sensitive' areas. However if planting is kept out of NHAs and sensitive areas to be*

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<sup>40</sup> Yield models for no thin regime of broadleaf species were unavailable to calculate carbon sequestered and in consequence all broadleaves were assumed to be thinned.

<sup>41</sup> Phillips, H., Redmond, J., Mac Siurtain, M. and Nemesova, A. (2009). Roundwood production from private sector forests 2009-2028. A geospatial forecast. COFORD, Dublin

<sup>42</sup> Japanese larch, due to concerns regarding *Phytophthora ramorum*, was removed from the list of acceptable tree species for grant aid by the Forest Service in October 2010. It is used here as a surrogate for a suitable replacement species.

<sup>43</sup> Phillips, H. (2011). All Ireland Roundwood Production Forecast 2011-2028. COFORD, Dublin

<sup>44</sup> This is based on carbon sequestration model for *E. nitens* (shining gum) with an equivalent yield class of 30 growing on mineral soils and harvested on a 13 year rotation.

<sup>45</sup> Bacon, P & Associates Economic Consultants (In Association with Deloitte), (2004) *A Review and Appraisal of Ireland's Forestry Development Strategy*, Stationery Office, Dublin,

<sup>46</sup> Clinch, P. J. (1999) *Economics of Irish Forestry: Evaluating the returns to economy and Society*, COFORD, Dublin

*designated by Local Authorities, the threat to biodiversity is low such that one rather limited diversity will be replaced by another limited diversity.*

A report on the economic and social aspects of biodiversity<sup>47</sup> estimated the value of ecosystem services from forestry (excluding carbon sequestration) as being €55 million but that this has the potential to rise to €80 million per year if more environmentally sensitive forestry is practiced, or more should the area of broad-leaf trees be expanded.

The implementation of environmental guidelines for biodiversity, water quality, archaeology, harvesting, aerial fertilisation and the procedures for environmental screening of all afforestation applications should limit potential negative impacts and could potentially enhance biodiversity on a range of sites. However it is not possible to quantify these impacts for the planned afforestation Schemes and consequently the net benefit is set at zero in this CBA.

#### 5.6.4 Water Quality

The costs and benefits of forestry on water supply, water quality and river/stream flow have not been measured in Ireland, although the economic review<sup>48</sup> of forestry suggested that the costs of the effects on water from afforestation under the current *Forestry Strategy* would amount to circa IR£10 million. This figure assumes an acidification cost of zero. However, this was based on the early years of the *Forest Strategy* and implementation has changed in the meantime with the introduction of environmental guidelines for water quality, harvesting and aerial fertilisation. The review of forest policy and strategy<sup>49</sup> indicates that there is some minor negative impact on water quality but these will be offset in the future as regulations are adhered to. The introduction of the Water Framework Directive (WFD) has significant implications for forestry in Ireland and its drive towards ‘good’ ecological status for all surface and ground waters means that any adverse impacts on water by forestry will be punishable by law.

This analysis, while recognising that afforestation if undertaken in an inappropriate manner will have a negative impact on water quality, assumes a nil value in relation to water quality on the basis that future afforestation complies with environmental guidelines and forestry measures under the WFD.

#### 5.6.5 Leisure and Recreation

The fact that the leisure and recreation benefits of forestry can be substantial is shown by the EU estimate that the annual return from forest recreation is in the region of €2.6 billion<sup>50</sup>. There have been a number of Irish studies that have considered the key factors in terms of valuing the leisure and recreation benefits of afforestation. Factors considered include:

1. Willingness to pay (WTP) by visitors;
2. Number of visitors;
3. Area afforested; and
4. The type of forestry.

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<sup>47</sup> DoEHLG (2008). The Economic and Social Aspects of Biodiversity. Benefits and Costs of Biodiversity in Ireland. Department of Environment, Heritage and Local Government. Government Stationery Office, Dublin

<sup>48</sup> Clinch, P. J. (1999) *Economics of Irish Forestry: Evaluating the returns to economy and Society*, COFORD, Dublin

<sup>49</sup> Bacon, P & Associates Economic Consultants (In Association with Deloitte), (2004) *A Review and Appraisal of Ireland's Forestry Development Strategy*, Stationery Office, Dublin

<sup>50</sup> Cregan, M. and Murphy, W. 2006. A review of forest recreation research needs in Ireland. COFORD, Dublin.

For the purposes of this CBA and to try and achieve an appropriate valuation in the absence of primary research, leisure and recreation benefits were taken to start only after 16 years and end at clearfell and to restart once again when the reforested crop reached 16 years of age and end again when the second crop was clear felled. A lower WTP is taken for conifers (€2.50 per visit) and a higher WTP is taken for broadleaves (€4 per visit).

Not all of the planned private sector afforestation is likely to be available or used for recreation due to a combination of (a) access, (b) small size and (c) owner's concerns and (d) lack of facilities. Based on an accessibility analysis of the private sector grant-aided estate undertaken for the COFORD funded FORECAST<sup>51</sup> project and on an analysis of the size distribution of private planting, some 30% of the future afforestation is considered to have the potential to provide recreational benefits.

The Forestry for Fibre element of afforestation (3,000 ha) will have no leisure / recreation value as its silviculture is more similar to an industrial crop rather than a forest. This is even though the eligible species are mainly broadleaved e.g. aspen.

#### 5.6.6 *Landscape*

The 2004 review of Forest Policy reported that valuations investigating public preferences and willingness to pay for forested landscapes, seen either from home or during regular journeys to and from home have been undertaken in the UK<sup>52</sup>. Of the preferences investigated, the strongest were for plantings that mixed trees and open space and where spacing of trees was random rather than regular. If these preferences were translated to forest structures, it might be expected that respondents would prefer the forest to look more natural and that there would be a preference for small scale rather than large plantations and a high species variety. If preferences for these attributes are separable and additive, then those configurations that offer all of the favoured factors should attract the highest values.

The species mix assumed in this CBA (36% broadleaf and 64% conifer) together with the scale of private planting could be expected to enhance the landscape and have a positive impact. Equally with forest certification schemes now requiring owners to have landscape design plans, second rotation landscape impacts can be expected to be more positive.

This analysis, while recognising that afforestation if undertaken in an inappropriate manner will have a negative impact on landscape and that landscape design plans requirements will have a positive impact, assumes a nil value in relation to landscape benefits.

#### 5.6.7 *Cultural Heritage*

The upgrading and maintenance of a wide network of trails and recreation sites by Coillte, coupled with the incorporation of many of the archaeological sites, monuments, structures, and cultural heritage features into sign-posted walking routes by both Coillte and other local tourism groups, has greatly enhanced the awareness and accessibility of the sites as well as the economic value of the recreational/tourism product available in a number of locations. Similar opportunities, subject to careful planning and management, may be available to some owners within the private forest estate.

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<sup>51</sup> Phillips, H. 2011. All Ireland Roundwood Production Forecast 2011-2028. COFORD, Dublin.

<sup>52</sup> Willis et al. (2003). *The Social and Environmental Benefits of Forests in Great Britain*. Report to the Forestry Commission.



Whilst the protection of and access to archaeological sites and monuments, protected structures, and other cultural heritage features are not strictly public goods arising directly from forestry, the provision of these services through the public ownership and open forest policy on the Coillte forest estate and in the future through private sector initiatives could be considered as indirectly provided public goods.

This analysis, while recognising that afforestation if undertaken in an inappropriate manner will have a negative impact on cultural heritage, assumes a nil value in relation to cultural heritage on the basis that future afforestation complies with environmental and archaeological guidelines and codes of best forest practice.

## 5.7 Overall Results

### 5.7.1 General

The results from this CBA are not directly comparable with that undertaken as part of the policy formulation process for *Forests, products and people* due to a number of changes in the underlying assumptions including (a) increase in the discount rate to 5%, (b) changes in the price for carbon, (c) updating of timber prices, (d) exclusion of roading grants and (e) decrease in the shadow cost of Government grants and premiums. While the discount rate will decrease NPVs, the impact of the other changes, apart from the exclusion of roading grants, will increase revenues. The net impact is positive.

The overall results are shown in Table 10. Carbon is the greatest contributor to overall benefits representing 34% followed by Premiums at 30%.

Afforestation	Costs		Benefits				Residual	BC Ratio
	Grants + Premium	Operational	Premium	Timber	Carbon	Leisure + Recreation		
<b>Scheme C</b>	418.03	51.39	189.9	153.4	213.7	27.7	42.8	<b>1.34</b>
<b>Scheme D</b>	524.62	61.51	238.4	171.6	268.2	35.5	56.6	<b>1.31</b>

**Table 10: Discounted Value (€ million) of Costs and Benefits at 5%**

Timber accounts for 24.4% of discounted benefits. The inclusion of harvest losses incurred during thinning and clearfell operations reduces overall volumes and revenues by approximately circa 9% while the use of oak as one of the two broadleaf species further reduces the discounted value due to its long rotation length the impact of which is to value each €1,000 of clearfell revenue at only €20.18 in today's values.

Leisure and recreation contribute a modest 4% to overall discounted benefits. The relatively low value for leisure in comparison with some previous CBAs<sup>53</sup> reflects a more realistic assumption that only a proportion of future private afforestation will be available for this purpose. No recreation benefit was attributed to the 3,000 ha under the Forestry for Fibre element of both Schemes.

The overall benefit-cost ratio is 1.34 and 1.31 showing that both Schemes generate more benefits than the associated cost for their implementation. The IRR for Scheme C is 7.34% and for Scheme D 7.18%. Both exceed the MARR of 5%.

<sup>53</sup> Barwise, N. (2009). Cost Benefit Analysis of Afforestation Support in Ireland. MSc Thesis



## 5.8 Sensitivity Analysis

The function of sensitivity analysis is essentially to see how the project or programme would change with elements of uncertainty and risk. As stated by the Department of Finance<sup>54</sup> - *Sensitivity analysis should always form a part of the appraisal of major projects. This involves evaluating proposals over a range of assumptions about key factors (e.g. prices, costs, interest rates on any borrowed funds, growth rates, and demographic changes).*

This analysis presents the detailed results of all the sensitivity tests undertaken. This allows for a more informed view of the robustness of the benefit ratios under a wide range of varying scenarios and assumptions. It was not possible to estimate the impact of varying the time period for residual values to accrue. Carbon represents 80% of the residual value but the carbon sequestration model is limited to 87 years and in consequence no sensitivity analysis was possible.

### 5.8.1 Discount Rate

The Department of Finance test discount rate, currently 5%, is used in the analysis as it is that recommended by the Department of Finance for cost benefit and cost effectiveness analysis of public capital investment projects.

The discount rate in the economic analysis of investment projects should reflect the social view on how future benefits and costs are to be valued against present ones. The main theoretical approaches are:

- That marginal public investment should have the same return as the private one, as public projects can displace private projects;
- To derive the social discount rate from the predicted long-term growth in the economy; and
- A third, more recent approach, and one that is especially relevant in the appraisal of very long-term projects like forestry, is based on the application of variable rates over time. This approach involves decreasing marginal discount rates over time and is designed to give more weight to project impacts on future generations. These decreasing rates help mitigate the so-called 'exponential effect' from the structure of discount factors, which almost cancels more distant economic flows when discounted in a standard way (European Commission, 2008).

The UK Treasury Green Book<sup>55</sup> states that *where the appraisal of a proposal depends materially upon the discounting of effects in the very long term, the received view is that a lower discount rate for the longer term (beyond 30 years) should be used.* The main rationale for declining long-term discount rates results from uncertainty about the future. This uncertainty can be shown to cause declining discount rates over time<sup>56 57</sup>. It recommends that for costs and benefits accruing between 31-75 years into the future, the discount rate should be reduced by 0.5% and for costs and benefits in years 76-125 years a further 0.5% reduction should apply.

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<sup>54</sup> Department of Finance, (1994) Guidelines for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector, Department of Finance.

<sup>55</sup> HM Treasury. The Green Book. Appraisal and Evaluation in Central Government. Treasury Guidance: TSO. Downloadable at [http://www.hm-treasury.gov.uk/d/green\\_book\\_complete.pdf](http://www.hm-treasury.gov.uk/d/green_book_complete.pdf)

<sup>56</sup> Weitzman M (March 2001), *Gamma Discounting*, American Economic Review, Vol 91, No 1

<sup>57</sup> Gollier, C. (2002), *Time Horizon and the Discount Rate*, IDEI, University of Toulouse, mimeo

Opinion however is divided on this approach and the Evaluation Unit of Directorate General (DG) Regional Policy in its CBA guide takes an alternative view. While recognising that Member States sometimes use multiple discount rates for different sectors and assign a lower discount rate to forestry or other long term projects it regards this practice as a shortcut and not easy to justify. It recommends the best practice is to try to identify all the benefits of the project and include them in cost-benefit analysis, without allowing them the implicit premium implied by a lower discount rate.

The discount rate used has a significant impact on the overall results. Reducing the rate improves the benefit-cost ratio as costs in afforestation programmes are mostly front-loaded while the benefits take time to accrue in line with the biological growth pattern of forest crops. At a 3% discount rate, the benefit-cost ratio increases to 1.83. In contrast when the discount rate is increased to 7%, benefits still outweigh with the ratio decreasing to 1.04 (Table 11).

Scheme C					
Discount Rate (%)	Costs	Premiums	Reidual	Timber + Non Timber Benefits	BC Ratio
3.0	577.97	229.4	137.5	688.9	1.83
4.0	517.89	208.4	73.7	519.4	1.55
5.0	469.42	189.9	42.8	394.8	1.34
6.0	429.37	173.5	27.0	302.6	1.17
7.0	395.59	159.0	18.3	233.8	1.04

Scheme D					
Discount Rate (%)	Costs	Premiums	Reidual	Timber + Non Timber Benefits	BC Ratio
3.0	719.11	287.3	179.4	827.3	1.80
4.0	645.55	261.3	97.0	624.5	1.52
5.0	586.13	238.4	56.6	475.2	1.31
6.0	536.94	218.0	35.6	364.5	1.15
7.0	495.38	199.9	24.0	281.8	1.02

**Table 11: Discounted Value (€ million) of Costs and Benefits at Varying Discount Rates**

## 5.8.2 Price of Carbon

Scheme C					
Carbon Price (€/tCO <sub>2</sub> )	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
+15%	469.41	189.9	46.7	426.9	1.41
+7.5%	469.41	189.9	44.8	410.8	1.38
0	469.42	189.9	42.8	394.8	1.34
-7.5%	469.41	189.9	40.9	378.8	1.30
-15%	469.41	189.9	38.9	362.8	1.26

Scheme D					
Carbon Price (€/tCO <sub>2</sub> )	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
+15%	586.13	238.4	62.2	515.4	1.39
+7.5%	586.13	238.4	59.4	495.3	1.35
0	586.13	238.4	56.6	475.2	1.31
-7.5%	586.13	238.4	53.7	455.1	1.27
-15%	586.13	238.4	50.9	435.0	1.24

**Table 12: Discounted Value (€ million) of Costs and Benefits at Varying Prices for Carbon Dioxide**

The Department of Finance-led inter-departmental working group, *Reflecting the Cost of Carbon Emissions in Cost Benefit Analyses* recommended that the market price be used for monetising emissions. In order to ensure consistent use of the market price across projects in different sectors, the Department of Finance has calculated and set prices. These were used in the analysis and varied from €6.58 /tCO<sub>2</sub> in 2015 to €100 /tCO<sub>2</sub> from 2050 onwards.

Increasing the price of carbon by 15% has a significant impact on benefit cost ration which increase to 1.41 and 1.39 for Schemes C and D respectively. Decreasing the carbon price by 15% has the opposite effect with benefit coat ratios decreasing to 1.26 and 1.24 for Schemes C and D respectively

### 5.8.3 Proportion of Afforestation Providing Recreation Benefits

At 30% of afforestation (excluding 3,300 ha Forestry for Fibre), the area of future planting that will provide leisure and recreation benefits is significantly lower than for previous CBAs. The lower figure is considered more realistic in the light of the scale and location of future planting together with forest owners' willingness to adopt an open forest policy similar to that for State forests.

Over time, however depending on the experience of forest owners, the area available for leisure and recreation may either increase or decrease. The impact of up to +/- 20% on the basic assumption of 30% is indicated in Table 13. A 10% increase in the area available for recreation increases the overall benefits by €9.9 million with a resulting increase of the benefit-cost ratio to 1.36 and 1.34 (Table 13). A reduction in the area available has a broadly similar negative impact on benefits and the benefit-cost ratio. Overall, the ratio is moderately sensitive to changes in the area available for recreation within the range of percentages considered.

Scheme C					
% Use Afforested Area	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
10	469.41	189.9	41.5	376.4	1.29
20	469.41	189.9	42.2	385.6	1.32
30	469.42	189.9	42.8	394.8	1.34
40	469.41	189.9	43.5	404.0	1.36
50	469.41	189.9	44.2	413.3	1.38

Scheme D					
% Use Afforested Area	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
10	586.13	238.4	54.9	451.5	1.27
20	586.13	238.4	55.7	463.4	1.29
30	586.13	238.4	56.6	475.2	1.31
40	586.13	238.4	57.4	487.0	1.34
50	586.13	238.4	58.2	498.8	1.36

**Table 13: Discounted Value (€ million) of Costs and Benefits at Varying Recreation Use Levels**

### 5.8.4 Project Time Horizon

As mentioned previously, forestry with the relatively long period between planting and receipt of the main revenues (at the end of the rotation and/or regeneration felling), does not readily suit the typically much shorter and more discrete timescale for the economic life of

other capital investments. Time horizon of 40 and 80 years were used to test the sensitivity of the costs and benefits.

Scheme C					
Project Horizon	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
40 Years	450.03	189.9	-	370.7	1.25
60 Years	469.42	189.9	-	394.8	1.25
80 Years	471.69	189.9	-	438.1	1.33

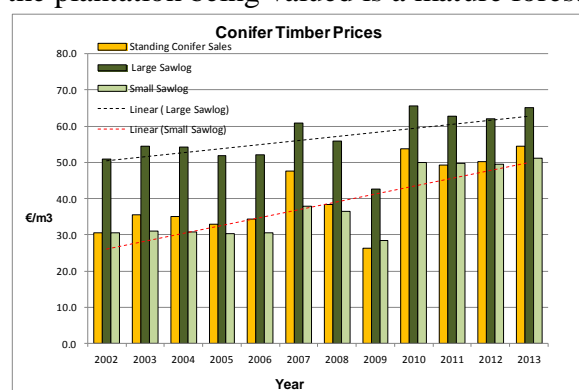
Scheme D					
Project Horizon	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
40 Years	562.50	238.4		448.7	1.22
60 Years	586.13	238.4	-	475.2	1.22
80 Years	588.84	238.4	-	527.9	1.30

**Table 14: Discounted Value (€ million) of Costs and Benefits for Varying Time Horizons**

The residual value has been excluded from the comparison. The majority of costs accrue within the first 25 years apart from reforestation cost of second rotation crops. Thus there is relatively little difference in costs between the three time horizons. The shorter project period is however not sufficiently long to capture all the benefits arising from carbon, timber and recreation. The longer time period of 80 years shows an increase in timber and timber benefits of circa €44 million with only a marginal €2.5 million increase in costs resulting in an improved benefit cost ratio.

### 5.8.5 Timber Price

Timber is a commodity and as with other commodities prices can fluctuate considerably even in the short term with factors such as economic conditions, exchange rates as well as market demand (Figure 2). Using current stumpage timber prices for forestry valuation can result in significant variation in valuation year on year<sup>58,59</sup>. If current prices represent the bottom of a timber price cycle, their use will undervalue the forest asset. Similarly the converse is true. Using current timber prices can be inappropriate and can give a very misleading result unless the plantation being valued is a mature forest crop in which instance, their use is appropriate.



**Figure 2 Irish Timber Prices 2002-2013**

<sup>58</sup> Ferguson, I. (1997) Valuation of forest assets: Report commissioned by Auditor –General, Australia. <http://www.audit.sa.gov.au/95-96/forest>

<sup>59</sup> Uotila, E. (2000) Problems Measuring the Profitability of Forestry. In Finnish Forest Sector Economic Outlook 2000-2001, Helsinki Research Centre

<sup>60</sup> EC (2000) Valuation of European Forests – Results of IEEAF test applications. Eurostat, Luxembourg

average price is calculated. In Ireland, the norm has been to use a 10 or 15 year moving average. However Coillte now uses a modified 3 year average while Advance Investment Managers (AIM) use a 7 year average to value their forest portfolio and Irish Forestry Unit Trust (IForUT) uses a 10 year average. Due to the cyclical nature of timber prices, most analysts argue that the time period chosen should embrace at least one complete price cycle. Under Irish conditions this has approximated to seven years but this is variable depending on market influences.

To test the sensitivity to the price series used, a three and seven year average price series was constructed for conifers based on Coillte and ITGA published price data. No comparable information is available for broadleaves and their price was assumed to follow conifer price movements for the periods in question.

Scheme C					
Timber Prices	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
3 Year	469.44	189.9	45.0	408.7	1.37
10 Year	469.41	189.9	42.8	394.8	1.34
7 Year	469.42	189.9	43.8	401.2	1.35

Scheme D					
Timber Prices	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
3 Year	586.15	238.4	59.2	492.6	1.35
10 Year	586.13	238.4	56.6	475.2	1.31
7 Year	586.13	238.4	57.7	483.1	1.33

**Table 15: Discounted Value (€ million) of Costs and Benefits for Varying Timber Price Series**

Use of either 3 year or 7 year average price series results in an increase in timber revenues with increases in the benefit cost ratio. However, the benefit cost ratios are only moderately sensitive to the price series used. This is due to the relative proportion (24.4%) that timber revenues contributes to overall benefits.

#### 5.8.6 Grant and Premium Rates

Grants and premiums represent almost 90% of the discounted costs as they occur within the first 15 years of the forest rotation. Increasing the rates by 15% has a significant impact on benefit cost ratio which increase to 1.47 and 1.45 for Schemes C and D respectively. Decreasing the rates by 15% has the opposite effect with benefit cost ratios decreasing to 1.23 and 1.21 for Schemes C and D respectively. Thus the benefit cost ratio is sensitive to changes in the grant and premium rates.

Scheme C					
Grant + Premium	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
+15%	532.13	218.4	42.8	394.8	1.23
+7.5%	500.78	204.2	42.8	394.8	1.28
0	469.42	189.9	42.8	394.8	1.34
-7.5%	438.07	175.7	42.8	394.8	1.40
-15%	406.72	161.4	42.8	394.8	1.47

Scheme D					
Grant + Premium	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
+15%	664.82	274.1	56.6	475.2	1.21
+7.5%	625.47	256.2	56.6	475.2	1.26
0	586.13	238.4	56.6	475.2	1.31
-7.5%	546.78	220.5	56.6	475.2	1.38
-15%	507.44	202.6	56.6	475.2	1.45

**Table 16: Discounted Value (€ million) of Costs and Benefits for Varying Grant & Premium Rates**

### 5.8.7 Species Proportions

Scheme C					
Conifer Broadleaf Ratio	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
75:25	458.51	186.3	43.9	406.4	1.39
66:34	469.42	189.9	42.8	394.8	1.34
56:44	480.32	193.8	40.9	380.6	1.28

Scheme D					
Conifer Broadleaf Ratio	Costs	Premiums	Residual	Timber + Non Timber Benefits	BC Ratio
75:25	572.42	233.8	58.1	489.7	1.37
66:34	586.13	238.4	56.6	475.2	1.31
56:44	599.77	243.3	53.6	457.4	1.26

**Table 17: Discounted Value (€ million) of Costs and Benefits for Varying Species Proportions**

Changing the species proportions has a number of impacts. The first is on timber volumes and timber revenues and their timing which vary with broadleaves and conifers. Broadleaf species have on average a longer rotation length and lower volume outturns than conifers. This means a longer wait before any timber revenues are accrued. Broadleaf species have higher maintenance and reforestation costs than conifers. They do have higher recreation values and over two rotations, the net carbon sequestered is not significantly different than conifers and can be higher. Premium rates are higher for broadleaves than for conifers (Table 8)

Increasing the proportion of conifers from 66% to 75% results in reduced costs and increased timber revenues with the benefit cost ratio increasing to 1.39 and 1.37 for Schemes C and D respectively. Decreasing the proportion of conifers to 56% has the opposite effect with costs increasing and timber revenues decreasing leading to a reduction in the benefit cost ratio to 1.28 and 1.26 for Schemes C and D respectively. Thus the CBA is moderately sensitive to the species proportions.

## 5.9 Overall Conclusion

The benefits associated with additional employment in afforestation, harvesting, transport, road construction and downstream processing (given that we are now not in a full employment situation) and benefits associated with the increased supply of thinnings to the wood energy, wood based panels and saw milling sectors have not been included in the analysis, due to the limited data and resources available.

Both of the proposed afforestation Schemes show a benefit cost ratios in excess of 1.0 indicating that they are worthwhile undertakings given the range of assumptions and the values included in the analysis. The IRR exceeds 7% and is significantly above the recommended discount rate.

The benefit cost ratios for both Schemes are sensitive to changes in the discount rate, grant and premium rates and moderately sensitive to species proportion and the price of carbon. The benefit cost ratios are relatively unaffected by changes in timber prices and the level of recreation usage.

The overall conclusion is that over a range of possible scenarios, the benefit cost ratio will exceed 1.0 and could approach 1.5.

## ***5.10 Rationale for Forestry Roding Cost Benefit Analysis***

### ***5.10.1 Non timber Benefits***

A difficulty with valuing forest operations such as roding is presented by the considerable range of non-timber benefits that can arise. However the construction of forest roads will only give rise to recreation benefits through providing access to plantations. Other non timber benefits accrue to the initial afforestation of the area being roded.

Cost-Benefit Analysis (CBA) helps factor in the value of some costs and benefits which do not currently have market prices or where the market price is imperfect. It estimates and totals the equivalent money value of the benefits and costs to society over the useful life of the project. This may help decision makers make a call on whether a proposal is worthwhile. Double-counting of costs or benefits should not occur.

### ***5.10.2 Forest Roding Assumptions***

Presented here is a CBA of the roding element of two potential forestry scheme programmes for the period 2015-2020. Scheme C foresees the planting of 46,045 ha or 7,764 ha per annum and Scheme D some 57,480 ha or 9,580 ha per annum. The roding element comprises grant aid for new road construction of 96 kms and 108 kms for Scheme C and D respectively and the provision of €500,000 per annum for special construction works (SCW<sup>61</sup>).

Grant aid for new road construction is for 100% of costs to a maximum of €35/m and up to 20m of new road per hectare. Thus an annual roding programme of 150,00 m will service 7,500 ha. The support for SCWs is apportioned over the entire new road network i.e. €500,000 / 7,500 or €66.67 per ha serviced. This is a once off cost. The grant aid is for private forests only.

As forest roads should be constructed one to two years ahead of harvesting (best practice requires a settling period of one year prior to use of the road to transport timber), the plantations being roded under the proposed schemes will have been planted from between 1995 to 2005. The average yield class for Sitka spruce in the private forest estate is estimated as being 21<sup>62</sup>. An average yield class of 20 was used in this analysis and this is similar to that for the afforestation CBA.

Over the period 1995 to 2005, broadleaves accounted for 18.5% of afforestation. Each hectare serviced is assumed to contain 15% broadleaves having made allowance for some

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<sup>61</sup> SCWs refer to the construction of bridges, crossings and main culverts

<sup>62</sup> Farrelly, Dr N 2014 Adding value in the forest. Presentation at eh National Forestry Conference, Enfield 6th June 2014.



pure broadleaf areas which due to scale, quality and or productivity will not be suitable for thinning.

The approach and methodology adopted is based on previous CBAs undertaken for state afforestation<sup>63</sup>. However it takes cognisance where possible of the recommendations of the assessment of the Cost Benefit Analysis conducted for the Forestry Development Programme by RSM McClure Watters (Consulting) and the guidance provided by the Central Expenditure Evaluation Unit (CEEU) of the Department of Public Expenditure and Reform (DPER) in their review of the Forestry Programme submission earlier this year.

The analysis where possible quantifies the costs and benefits associated with the roading element of the two proposed Schemes and uses discounted cash flow (DCF) to calculate their Net Present Value (NPV). Sensitivity analysis encompasses the discount rate, timber prices and the levels of grant payments.

Due to a combination of limited or non-existent data and the resources available to the CBA it was not possible to quantify the costs or benefits relating to biodiversity or water quality. Equally significant is the lack of reliable data relating to the downstream impacts in terms employment, fossil fuel substitution and the stabilisation of rural communities.

### ***5.11 Cost Benefit Analysis Assumptions***

Cost Benefit Analysis is by its nature greatly dependent on the assumptions used. The following are the key general assumptions on which the analysis is based:

- The costs to the State are grants adjusted by a factor of 1.30 in line with guidance provided to the CBA by the Department of Agriculture, Food and the Marine and the Department of Finance.
- Average conifer timber prices for the past three years<sup>64</sup>, updated to 2013 values using the consumer price index (CPI).
- Estimated broadleaf prices based on a combination of limited Irish price data, UK price data and expert opinion (Phillips, H. (2008)).
- Leisure and recreation benefits begin after 16 years and end at age of clearfell. A lower willingness to pay (WTP) is taken for conifers (€2.50 per visit) and a higher WTP is taken for broadleaves (€4.00 per visit) and 100 visits per ha representing total availability of planting for recreation was taken as the main parameter in the calculations<sup>65</sup>.
- All plantations which are roaded will be thinned on a regular basis in line with best practice. On average each roaded plantation will be thinned three times.
- Local authorities will maintain the county road network.
- There will be no significant changes to the regulatory framework for forestry which would result in harvesting levels being reduced or barriers to normal forest management.
- The forest plantations roaded will be adequately maintained and managed over the CBA timeframe.

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<sup>63</sup> Department of Agriculture, Food and Marine. 2014. Forests, products and people. Ireland's forest policy - a renewed vision. Department of Agriculture, Food and Marine, Dublin and Barwise, N. (2009). Cost Benefit Analysis of Afforestation Support in Ireland. MSc Thesis.

<sup>64</sup> Thinning takes places on the basis of current prices rather than long term prices.

<sup>65</sup> Barwise, N. (2009). Cost Benefit Analysis of Afforestation Support in Ireland. MSc Thesis

- Owners will act in a rational and economic manner to leverage profit from their forest plantations.
- Costs and revenues will inflate / deflate at the same rate over the CBA timeframe.

The investment in the roading element of the forestry programme is only acceptable if the internal rate of return (IRR) is greater than the minimum acceptable rate of return (MARR)<sup>66</sup>. The MARR is taken as being equal to the discount rate.

## 5.12 Cost Benefit Time-Period

Typically CBA analyses the costs and benefits of a project over its economic life. This can be relatively straightforward when projects are relatively non-complex, as for example the construction of a new stretch of motorway or a water treatment works. The consideration of economic life in a forestry context can be more complex. However the roading element is relatively straightforward and a time horizon from 2015 to when all of the clearfell revenues have been realised is used.

## 5.13 Road Costs

### 5.13.1 General

The costs to the State calculated in NPV terms are those associated with the payment of the roading grant and the support for SCWs.

The costs for the forest owners include the balance of the road construction cost and the cost of road repairs following each harvesting event. As the timber prices used are stumpage prices and are net of costs of harvesting, no harvesting costs are included as this would constitute double counting. In line with the guidance note<sup>67</sup> on CBA and advice from DAFM grants were increased by 30% to take account of the shadow price of public funds.

### 5.13.2 Deadweight

In the absence of grants, there would still be a small element of new road construction. This is difficult to estimate as the private sector roading is relatively new due to the ownership pattern of previous afforestation from the late 1980s onwards with farmer led afforestation dominating from 1996 to today. The decision to road is an economic one and is based to a large extent on a combination of current timber prices and the productivity (yield class) of the plantation. Farmers have shown that they are reluctant to spend on new roads as was evidenced during the period of the suspension of the previous roading scheme. A deadweight of 2,000 m of new road construction per year is assumed.

### 5.13.3 Tax Treatment of Forestry

The review of certain tax schemes<sup>68</sup> examined the tax reliefs around the operation of commercial woodlands and evaluated the impact of a range of possible interventions from the scrapping of tax reliefs to the maintenance of the status quo. The review concluded that *Any action which makes investment in forestry less attractive (such as the removal of the existing*

<sup>66</sup> RSM McClure Watters DAFM Forestry Programme 2014-2020 - Assessment of CBA

<sup>67</sup> Review of the Forestry Programme Submission, CEEU, Department of Public Expenditure and Reform, 2014.

<sup>68</sup> Department of Finance (2006) Budget 2006: Review of Tax Schemes Volume III: Internal Review of Certain Tax Schemes, Department of Finance, February 2006

*tax concessions) could make the attainment of this target even more difficult if not impossible and could undermine current Government forestry policy. For these reasons the study concludes the relief in its present form should be maintained.* However, this recommendation was not followed through in the 2007 Finance Act which introduced exemption limits and the maximum amount of specified tax reliefs that were allowed was €250,000 or 50% of the total amounts of relief claimed, whichever was the higher. This was significantly reduced in 2010 to €80,000 or 20% of the total amounts of relief claimed, whichever is the higher.

The estimation of the tax revenue forgone assuming the continuation of the current tax relief was not possible due to the limited resources available. However thinning which helps spread revenues over a number of years is from an owners perspective more tax efficient than no thinning where all revenues occurs in the year of clearfell.

#### 5.13.4 Displacement

Displacement and substitution impacts are closely related. They measure the extent to which the benefits of a project are offset by reductions of output or employment elsewhere. In the context of this analysis it is recognised that the increase in forest recreation and leisure activities could impact on other recreation areas. However, the estimation of the level of displacement caused by forest recreation is extremely difficult to calculate in the absence of survey data<sup>69</sup>. Furthermore displacement values are context specific and as such cannot be taken from analyses outside of Ireland.

The precise estimation of the displacement costs associated with increased forest recreation and leisure was not possible due to a lack of suitable data and the limited resources available.

#### 5.13.5 Operational Costs

In addition to the road construction costs mentioned, operational costs include (a) the cost of maintenance until the year of clearfell differentiated by species with a higher value being used for broadleaved species, (b), management cost where plantations are managed by either a consultant forester or forest management company on behalf of the owner and (c) road repair costs following harvesting operations (thinning and clearfell). These costs include labour and materials (where relevant e.g. road repairs). Insurance is more usual with younger plantations and is not included. As net timber stumpage prices are used in the analysis, the costs of harvesting and transport are not included as to do so would be double counting.

#### 5.13.6 Grants

The roading scheme has two elements. The first is a road construction grant of 100% of cost of up to a maximum of €35/m of road and a maximum of 20m of new road per hectare. The second is a provision of €500,000 per year for SCWs. The grants apply to the private sector only.

### 5.14 Benefits

Forest roads enable the harvesting and transport of timber to downstream industry. In their absence, the long extraction distance to a suitable storage location, involving in many instances some form of double handling, would make harvesting uneconomic.

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<sup>69</sup> Bryden, D.M., Westbrook, S.R., Burns, B., Taylor, W.A., and Anderson, S. 2010. Assessing the economic impacts of nature based tourism in Scotland. Scottish Natural Heritage Commissioned Report No. 398

The categories of benefits considered are:

- Timber (volume from thinnings);
- Carbon
- Biodiversity;
- Water quality;
- Leisure and recreation;
- Landscape; and
- Cultural Heritage.

There will also be benefits associated with additional employment in harvesting, road construction and downstream processing (given that we are now not in a full employment situation) and benefits associated with the increased supply of thinnings to the wood energy, wood based panels and saw milling sectors. Due to the limited data and resources available, it was not possible to quantify the employment benefits or the benefits of avoiding importation of timber and woody biomass associated with the proposed roading programme.

Residual benefits refer to those benefits which will accrue beyond the project timeframe. The project timeframe is to the end of the first rotation. To consider benefits beyond this which would accrue to the initial road construction is not feasible. The benefits which accrue during the second rotation are associated with the cost of reforestation and not with the road which already exists. Forest roads at the end of a rotation do have a value which typically is estimated as being approximately 60% of the current cost of construction.

#### *5.14.1 Timber*

Timber volumes were based on Forestry Commission yield tables. Volumes were adjusted to allow for open space and unproductive areas. Volumes were also adjusted to take account of losses during harvesting in keeping with the approach used in the private sector and all-Ireland roundwood production forecasts<sup>70</sup>.

#### *5.14.2 Carbon Sequestration*

Net Carbon sequestration varies throughout the life of a forest crop with soil type, tree species, management regime, the use to which harvested timber is put to and site productivity (yield class). Ideally net carbon sequestration should be viewed over two or more forest rotations as by this stage it has reached an equilibrium balanced state. To view net carbon sequestration over relatively short time periods e.g. the timeframe for this roading CBA, will lead to misleading results.

Over 60 years an unthinned crop of Sitka spruce, yield class 20, will sequester 453 tCO<sub>2</sub> including that stored in harvested wood products compared with 478 tCO<sub>2</sub> for a thinned crop. If we compare the difference between age of first thinning and clearfell (the timeframe for this CBA) then the unthinned crop will have sequestered 184 tCO<sub>2</sub> more than the thinned crop. Clearly the period chosen for comparison strongly influences the result.

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<sup>70</sup> Phillips, H. (2011). All Ireland Roundwood Production Forecast 2011-2028. COFORD, Dublin

This analysis, while recognising that carbon sequestration is a significant non timber benefit, does not include it in the CBA, as carbon sequestration for different forest management scenarios i.e. thin versus no thin, should be evaluated over a much longer time period.

#### 5.14.3 Biodiversity

The 2004 policy review estimated that the current forest estate yields an annual biodiversity benefit of €5.6 million<sup>71</sup>. A review of the economics of Irish forestry<sup>72</sup> considers that afforestation *has the potential to destroy valuable habitats if planting takes place in 'sensitive' areas. However if planting is kept out of NHAs and sensitive areas to be designated by Local Authorities, the threat to biodiversity is low such that one rather limited diversity will be replaced by another limited diversity.*

Road construction has the potential to enhance biodiversity as roads can act as wildlife corridors helping to connect wildlife populations. Equally road construction can have a negative effect if habitat is destroyed or migration routes blocked.

The implementation of environmental guidelines for biodiversity, water quality, archaeology, harvesting, aerial fertilisation and the procedures for environmental screening of roading applications should limit potential negative impacts. However it is not possible to quantify these impacts for the roading element of the proposed forestry Schemes and consequently the net benefit / cost is set at zero in this CBA.

#### 5.14.4 Water Quality

The costs and benefits of forestry on water supply, water quality and river/stream flow have not been measured in Ireland, although the economic review<sup>73</sup> of forestry suggested that the costs of the effects on water from afforestation under the *Forestry Strategy* would amount to circa IR£10 million. This figure assumes an acidification cost of zero. However, this was based on the early years of the *Forest Strategy* and implementation has changed in the interim with the introduction of environmental guidelines for water quality, harvesting and aerial fertilisation. The 2004 review of Forest Policy and strategy<sup>74</sup> indicated that there was some minor negative impact on water quality but these could be offset in the future as regulations are adhered to.

This analysis, while recognising that roading if undertaken in an inappropriate manner will have a negative impact on water quality, assumes a nil value in relation to water quality on the basis that future roading complies with environmental guidelines and forestry measures under the WFD.

#### 5.14.5 Leisure and Recreation

There have been a number of Irish studies that have considered the key factors in terms of valuing the leisure and recreation benefits of afforestation. Factors considered include:

- i) Willingness to pay (WTP) by visitors;
- ii) Number of visitors;

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<sup>71</sup> Bacon, P & Associates Economic Consultants (In Association with Deloitte), (2004) *A Review and Appraisal of Ireland's Forestry Development Strategy*, Stationery Office, Dublin,

<sup>72</sup> Clinch, P. J. (1999) *Economics of Irish Forestry: Evaluating the returns to economy and Society*, COFORD, Dublin

<sup>73</sup> Clinch, P. J. (1999) *Economics of Irish Forestry: Evaluating the returns to economy and Society*, COFORD, Dublin

<sup>74</sup> Bacon, P & Associates Economic Consultants (In Association with Deloitte), (2004) *A Review and Appraisal of Ireland's Forestry Development Strategy*, Stationery Office, Dublin

- iii) Area afforested; and
- iv) The type of forestry.

For the purposes of this CBA and to try and achieve an appropriate valuation in the absence of primary research, leisure and recreation benefits were taken to start only after 16 years and end at clearfell. A lower WTP is taken for conifers (€2.50 per visit) and a higher WTP is taken for broadleaves (€4 per visit).

Not all of the private sector is likely to be available or used for recreation due to a combination of (a) access, (b) small size and (c) owner's concerns and (d) lack of facilities. Part of the conditions of road grant is that roads must be made available to public access. Based on an accessibility analysis of the private sector grant-aided estate undertaken for the COFORD funded FORECAST<sup>75</sup> project and on an analysis of the size distribution of private planting, some 30% of the area to be roaded is considered to have the potential to provide recreational benefits. Areas which are not roaded will have no recreation value as it is not possible to access them.

#### *5.14.6 Landscape*

Forest roads do not enhance landscape values. However, the impact of forest roads on the landscape is generally temporary and decreases over time as the forest matures and the canopy fills in and the visibility of the road becomes less and less. This coupled with their scale of forest roads (carraigeway width of 3.5m) means that any potential impact on the landscape will be quite low.

This analysis, while recognising that roading if undertaken in an inappropriate manner will have a negative impact on landscape, assumes a nil value in relation to landscape benefits.

#### *5.14.7 Cultural Heritage*

Whilst the protection of and access to archaeological sites and monuments, protected structures, and other cultural heritage features are not strictly public goods arising directly from forestry, the provision of these services through the public ownership and open forest policy on the Coillte forest estate and in the future through private sector initiatives could be considered as indirectly provided public goods.

This analysis, while recognising that roading if undertaken in an inappropriate manner will have a negative impact on cultural heritage, assumes a nil value in relation to cultural heritage on the basis that future roading complies with environmental and archaeological guidelines and codes of best forest practice.

### **5.15 Overall Results**

#### **5.16 Baseline**

The baseline scenario assumes that only 20,000m of road would be constructed in the absence of roading grants and that all new forest roads will be constructed in the year prior to the normal age of clearfell. At this stage the net revenues from clearfell of circa €23,500 per ha would more than compensate for construction costs of approximately €900 per ha and

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<sup>75</sup> Phillips, H. 2011. All Ireland Roundwood Production Forecast 2011-2028. COFORD, Dublin.



owners are assumed to act in a rational economic manner to leverage profits from their plantations.

Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	Scheme
-	8,736,744	10,388,291	348,109,668	147,508	19,125,035	348,257,176	18.21	C
-	9,423,420	12,465,949	415,711,801	147,508	21,889,369	415,859,309	19.00	D
-	9,080,082	11,427,120	381,910,735	147,508	20,507,202	382,058,243	18.63	Mean

**Table 18: Discounted Costs and Benefits for Baseline Scenario (€)**

Schemes C and D support different levels of roading and in consequence each has its own baseline with 45,000 ha and 54,000 ha of privately owned forest respectively. The greatest proportion of the discounted roading cost occurs in the years prior to clearfell as only 7,000 ha under each Scheme are thinned. Recreation benefits are very small due to the small area roaded early in the project.

The overall baseline gives a benefit cost ratio of 18.63. This is not surprising as essentially what is being analysed is the return on roads constructed at time of clearfell. There is relatively little cost incurred compared with the significant revenues generated by the clearfell.

### **5.17 Schemes C and D**

Both Schemes show strong benefit cost ratios, with Scheme D slightly better due to the increased proportion of the overall area being thinned (89% versus 86.7% under Scheme C). The benefit cost ratio is smaller than for the baseline scenario. However the benefit cost ratio does not include the benefits associated with the early release through thinning of timber into the wood energy, wood based panels and saw milling sectors.

Grants represent 60% of the costs and road construction and repairs 23%. The balance relates to normal forest maintenance costs.

Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	Scheme
37,066,510	14,311,015	10,388,291	343,347,784	958,802	61,765,816	344,306,586	5.57	C
44,341,246	17,173,218	12,465,949	422,581,888	1,180,064	73,980,413	423,761,952	5.73	D

**Table 19: Discounted Value (€ million) of Costs and Benefits at 5%**

The IRR for Scheme C is estimated as 23.1% and for Scheme D 23.5%. Both exceed the MARR of 5%.

### **5.18 Sensitivity Analysis**

This analysis presents the results of the sensitivity analysis for discount rate, timber prices and grant level.

#### **5.18.1 Discount Rate**

The Department of Finance test discount rate, currently 5%, is used in the analysis as it is that recommended by the Department of Finance for cost benefit and cost effectiveness analysis



of public capital investment projects. Due to the timeframe for this CBA, the question of whether to use declining discount rates for long time horizons does not arise.

The discount rate used has a significant impact on the overall results. Reducing the rate improves the benefit-cost ratio as grants and roading costs are front-loaded while the timber benefits mainly accrue at time of clearfell towards the end of the project life. At a 3% discount rate, the benefit-cost ratio increases to 7.14 and 7.34 for Schemes C and D respectively. In contrast when the discount rate is increased to 7%, benefits still outweigh with the ratio decreasing to 4.37 and 4.49 for Schemes C and D respectively (Table 20).

Scheme C								
Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	DR
38,806,863	17,056,940	12,341,002	486,074,337	1,131,046	68,204,805	487,205,383	7.14	3%
37,917,424	15,568,854	11,302,847	407,642,978	1,039,666	64,789,125	408,682,644	6.31	4%
37,066,510	14,311,015	10,388,291	343,347,784	958,802	61,765,816	344,306,586	5.57	5%
36,251,990	13,240,798	9,579,422	290,480,654	886,975	59,072,210	291,367,628	4.93	6%
35,471,873	12,324,174	8,861,296	246,877,307	822,943	56,657,343	247,700,249	4.37	7%
Scheme D								
Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	DR
46,423,164	20,468,328	14,809,202	598,245,338	1,392,057	81,700,694	599,637,394	7.34	3%
45,359,162	18,682,625	13,563,416	501,714,434	1,279,589	77,605,203	502,994,024	6.48	4%
44,341,246	17,173,218	12,465,949	422,581,888	1,180,064	73,980,413	423,761,952	5.73	5%
43,366,867	15,888,957	11,495,306	357,514,651	1,091,661	70,751,130	358,606,312	5.07	6%
42,433,643	14,789,008	10,633,555	303,848,993	1,012,853	67,856,206	304,861,845	4.49	7%

**Table 20: Discounted Value (€ million) of Costs and Benefits at Varying Discount Rates**

### 5.18.2 Timber Price

To test the sensitivity timber prices were increased / decreased by 7.5% and 15%. The benefit cost ratios are moderately sensitive to the changes in timber prices tested. Increasing or decreasing prices by 15% increases the benefit cost ratio by an equivalent amount.

Scheme C								
Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	Price
37,066,510	14,311,015	10,388,291	291,845,616	958,802	61,765,816	292,804,418	4.74	-15%
37,066,510	14,311,015	10,388,291	317,596,700	958,802	61,765,816	318,555,502	5.16	-7.5%
37,066,510	14,311,015	10,388,291	343,347,784	958,802	61,765,816	344,306,586	5.57	0
37,066,510	14,311,015	10,388,291	369,098,867	958,802	61,765,816	370,057,670	5.99	+7.5%
37,066,510	14,311,015	10,388,291	394,849,951	958,802	61,765,816	395,808,753	6.41	+15%
Scheme D								
Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	Price
44,341,246	17,173,218	12,465,949	359,194,604	1,180,064	73,980,413	360,374,669	4.87	-15%
44,341,246	17,173,218	12,465,949	390,888,246	1,180,064	73,980,413	392,068,310	5.30	-7.5%
44,341,246	17,173,218	12,465,949	422,581,888	1,180,064	73,980,413	423,761,952	5.73	0
44,341,246	17,173,218	12,465,949	454,275,529	1,180,064	73,980,413	455,455,593	6.16	+7.5%
44,341,246	17,173,218	12,465,949	485,969,171	1,180,064	73,980,413	487,149,235	6.58	+15%

**Table 21: Discounted Value (€ million) of Costs and Benefits for Varying Timber Price Series**

### 5.18.3 Grant Rates

Increasing the rate to 100% of costs, while increasing the cost of grants, reduces the roading cost for the owner with the net result being a small reduction in the benefit cost ratios to 5.43 and 5.58 for Schemes C and D respectively. Decreasing the rate to 50% has the opposite

effect with benefit cost ratios increasing to 5.89 and 6.06 for Schemes C and D respectively. The benefit cost ratio is relatively insensitive to changes in the grant rates.

Scheme C								
Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	Grant
22,517,039	25,502,916	10,388,291	343,347,784	958,802	58,408,246	344,306,586	5.89	50%
37,066,510	14,311,015	10,388,291	343,347,784	958,802	61,765,816	344,306,586	5.57	80%
44,341,246	8,715,065	10,388,291	343,347,784	958,802	63,444,602	344,306,586	5.43	100%
Scheme D								
Grants	Road Cost	Maint Cost	Timber	Recreation	Total Cost	Total Benefit	BC Ratio	Grant
26,881,880	30,603,499	12,465,949	422,581,888	1,180,064	69,951,329	423,761,952	6.06	50%
44,341,246	17,173,218	12,465,949	422,581,888	1,180,064	73,980,413	423,761,952	5.73	80%
53,070,929	10,458,078	12,465,949	422,581,888	1,180,064	75,994,955	423,761,952	5.58	100%

**Table 22: Discounted Value (€ million) of Costs and Benefits for Varying Grant Rates**

### 5.19 Overall Conclusion

The benefits associated with additional employment in harvesting, transport, road construction and downstream processing (given that we are now not in a full employment situation) and benefits associated with the increased supply of thinnings to the wood energy, wood based panels and saw milling sectors have not been included in the analysis, due to the limited data and resources available.

The baseline scenario assumes that owners will act in a rational and economic manner and construct forest roads in advance of the age of clearfell to leverage profits from their plantations.

Both roading elements of the proposed forestry Schemes show benefit cost ratios in excess of 5.0 indicating that they are worthwhile undertakings given the range of assumptions and the values included in the analysis. The IRR exceeds 23% and is significantly above the recommended MRR.

The benefit cost ratios for both Schemes are sensitive to changes in the discount rate, are moderately sensitive to timber prices and are relatively insensitive to changes in the grant rate. However the ratios do not include the downstream employment benefits from road construction, harvesting and transport nor do they include the benefits from additional supply of material to the wood energy, wood panels and saw milling sectors.

## 6 Swot and Identification of Needs

Consultation with stakeholders has been a key element in the process of designing the new Forestry programme particularly in relation to drafting the SWOT and identifying needs. The first phase of the public and stakeholder consultation began in December 2012 as part of the Department's work on developing the Rural Development Programme 2014-2020 with an invitation for submissions from interested stakeholders and the public. At the time the scope of the RDP had not been fully decided and forestry was part of the mix at that time. The focus of this exercise was on collecting stakeholder input on the Rural Development Priorities as set out in the draft Rural Development Regulation and on how these priorities might relate to the design of a new RDP for Ireland. Submissions were received from around 90 interested parties. The results of these submissions were carefully considered and combined with other work such as the preparation of Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and a needs assessment.

A second phase of stakeholder consultation was held in mid July 2013 where a full day stakeholder workshop was held. Around 80 invited participants attended this workshop at which the preliminary findings of the SWOT analysis and needs assessment were presented. Detailed discussions took place in breakout groups at the level of each rural development priority in order to seek stakeholders' views on how they might be improved. 3 On the basis of these discussions the draft SWOT analysis and needs assessment were further amended and developed to reflect the views of stakeholders.

Once it had been decided that a separate forestry programme was required work on a new document began. A call for submissions on a draft outline of the programme was issued in March 2014 followed by a stakeholder event, this time focusing on specific forestry measures. A total of 50 stakeholders attending this meeting and 25 written submissions were received. Further bi lateral meetings were held during the month of May. The outcome of this work was used to further develop the SWOT and needs analysis.

### 6.1 *SWOT Analysis*

#### 6.1.1 *Overall Description*

The overall aim of Ireland's national forestry programme is to develop the sector to a scale and in a manner that maximises its contribution to national economic and social well being on a sustainable basis, and which is compatible with the protection of the environment. A current target is to increase the area under forest from 11% per cent of land area to 18% by mid century,

Ireland's forest cover has increased from c.1.20% (89,000 hectares) in 1928 to c.10.7% (738,000 hectares) in 2013. However, Ireland is still one of the least forested countries in the EU. This low level of forest cover impacts on the economic, environmental and social well being of the country. In economic terms, it increases Ireland's dependence on imported wood products and fuels, reduces export opportunities for the development of indigenous industries and renewable energy technologies. In environmental terms, it affects the extent of forest ecosystems and reduces the benefits that forests and the production of forest products can provide in terms of, for example, nature conservation, flood alleviation, water quality, and climate change mitigation. Improving the economic and environmental functions of forests, improves the social functions of forests through job creation and development in rural areas,

as well as contributing to public health and wellbeing by providing opportunities for education, recreation and amenity.

The two main barriers to increasing Ireland's forest cover are (i) market failure - the cost of afforestation exceeds the potential timber revenue and (ii) the availability of suitable land. There is no doubt, therefore, that in the absence of State support, afforestation is commercially uneconomic for landowners. Indeed, even with the availability of grants and premiums, the reluctance of many farmers to plant forestry indicates a perception that the returns are inadequate. Forestry must also compete with other agricultural activities for the limited land resource and with the regular income generated by traditional farming. The long term nature of forestry is a disincentive for many landowners.

The most recent social progress indicator (2014) shows that Ireland ranks 111<sup>th</sup> out of 132 countries for the sub component – Ecosystem Sustainability<sup>76</sup>. The three areas measured in respect of this sub component are greenhouse gas emissions, biodiversity and habitat protection. The creation of new forests and the new forestry programme as a whole can have a positive impact on all three of these areas. For example, the creation of new forests will contribute to mitigating Ireland's greenhouse gas emissions through carbon sequestration. New forests can also contribute to the enhancement of biodiversity through the expansion of woodland habitats, while also serving to enhance water quality and protect aquatic habitats; new forests will increase the supply of forest-based biomass and wood products will replace fossil fuels and energy intensive materials.

The EPA recently reported<sup>77</sup> that there is a significant risk that Ireland will not meet its 2020 EU targets. The projections show a cumulative distance to target of 1–17 Mt CO<sub>2</sub>eq for the period 2013–2020, with Ireland breaching its annual limits in 2016–2017. An assessment of the status of EU protected habitats and species in Ireland in 2008 reported that many Irish species of fauna and flora have a moderately satisfactory status, while assessments of the status of habitats found that the majority of Ireland's most important habitats have a poor or bad overall status.

The continuing need to encourage and support afforestation was expressed by stakeholders during the stakeholders consultation event held in April 2014 and in 25 written submissions received subsequently, as well as in the stakeholder process of the forest policy review.

The new EU Forest Strategy calls on Member States to optimise the forest sector's contribution to the green economy; improving the resilience, environmental value and mitigation potential of forest ecosystems achieving nature and biodiversity objectives; adapting to climate change; conserving genetic resources; forest protection; and creating new woodland. Forest biomass is a priority area within the Strategy, where the Commission commits to working with Member States to explore and promote the use of wood as a substitute for fossil fuels.

The All Ireland Roundwood Demand Forecast<sup>78</sup> estimates that annual demand for roundwood will increase to c.6.338 million cubic metres by 2020, including an estimated demand of

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<sup>76</sup>

<http://cait2.wri.org/wri/Country%20GHG%20Emissions?indicator=Total%20GHG%20Emissions%20Excluding%20LUCF%20Per%20GDP&indicator=Total%20GHG%20Emissions%20Including%20LUCF%20Per%20GDP&year=2010&sortDir=asc&chartType=geo>

<sup>77</sup> Environmental Protection Agency, *Ireland's Greenhouse Gas Emission Projections 2013–2030* (28<sup>th</sup> May 2014)

<sup>78</sup> COFORD Roundwood Demand Group.

3.259 million cubic metres of wood biomass for renewable energy, while the all Ireland roundwood forecast<sup>79</sup> estimates that annual net realisable roundwood volume production will increase to 4.787 million cubic metres by 2020. The result is a significant shortfall between projected timber supply and wood fibre demand, especially for energy wood (Table 6).

Demand for forest-based biomass is framed in the context of achieving Ireland's legally-binding 16% renewables contribution to final energy demand by 2020, set as a target under the Renewables Directive. The shortfall can be expected to increase significantly post 2020, as more demanding renewable energy targets arise and due to security of energy supply considerations. Imports of wood fuels such as woodchip and pellets will address this shortfall but there is also potential to mobilise additional indigenous supplies of biomass from short rotation forestry and residue harvesting. Closing the forest-based biomass production gap by the end of the current decade will not be possible, as the typical lead-in time from afforestation to the first thinning is 15-20 years. Short rotation forestry, where the production cycle can be as low as 10-12 years from establishment to final harvest, is capable of bringing increased supplies of forest-based biomass to market over the shorter term. The forestry for fibre measure is aimed at closing this short term supply gap.

The Forest Policy Review report entitled "Forests, products and people Ireland's forest policy – a renewed vision", recently concluded that the long term sustainable level of forestry's contribution to renewable energy targets is dependent on the scale and accessibility of the forest resource. It recommended that a continuation of afforestation is required in order to maintain a sustainable level of supply of small roundwood and provide the confidence for the investment in CHP and other wood energy mechanisms.

Access is vital if forests are to be sustainably managed. Currently the private forest estate, due to its age structure, is largely unroaded. The initial investment of costs of forest road construction (c.€1,000/ha) is prohibitive for many private forest owners. Ireland's existing forest resource is relatively young, especially in the private sector where output is projected to increase significantly over the next 15-20 years in order to address the projected shortfall in supply during that period, as Coillte's production forecast for the next two decades is relatively flat. In 2012 the National Forest Inventory showed that 23% of the national estate had reached thinning stage but had not been thinned. Mobilising wood output from first and subsequent thinning is a key strategy in meeting both wood biomass and round wood demand. As the private forest estate matures and output increases to meet projected demand, and recognising that the initial cost involved could restrict private sector investment in roading, support for development of forest infrastructure is necessary to improve access to forests to facilitate harvesting and timber extraction. This infrastructure will also provide vital access to forest areas for emergency vehicles and for recreational and amenity purposes.

A Value for Money Review<sup>80</sup> of the Forest Road Scheme was undertaken in 2010 and concluded, *inter alia*, that the Scheme's outcomes reflect the growing awareness of the importance of forest roads in the overall afforestation programme. Food Harvest 2020 states that the Department should continue to support the provision of the forest road network, while also evaluating new infrastructure systems. Continuing need for support in relation to forest roads was expressed by all stakeholders during the consultation process.

Native woodlands are among our most important natural and semi-natural habitats, form a significant part of local heritage and sense of place, and are often used for outdoor recreation

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<sup>79</sup> Phillips, H. 2011. *All Ireland Roundwood Production Forecast 2011-2028*. COFORD, Department of Agriculture, Fisheries and Food, Dublin. Updated May 2014.

<sup>80</sup> Department of Agriculture, Fisheries and Food, *Value for Money Review – The Forest Road Scheme* (2010)

and as the basis for environmental education by local schools. They contain rich species, habitat and genetic biodiversity, protect and enhance water quality, protect soils, sequester carbon dioxide, create interconnection between other habitats, and enhance landscape cohesion. With appropriate management using 'close-to-nature' silviculture, native woodlands also represent a sustainable source of high quality timber, thereby generating an income without compromising their ecological value. Today, as a consequence of centuries of over-exploitation, Ireland's native woodland resource extends to about 100,000 hectares, or approximately 1.2% of land area. Restoring the extent of Ireland's native woodlands is an important objective of Ireland's Forestry Programme. The Native Woodland Establishment Scheme has been used to date to create significant areas of new native woodland, thereby promoting the expansion of the resource and demonstrating its use on sensitive sites (such as SACs and acid sensitive areas) and as a useful tool in contributing to the protection of Freshwater Pearl Mussel and the achievement of objectives under the Water Framework Directive. Through cooperation with the various bodies involved, including NPWS, the Heritage Council, Inland Fisheries Ireland and Woodlands of Ireland, this scheme has opened up new opportunities for the landowners in environmentally sensitive areas to appropriately develop and restore native woodland that contributes positivity regarding the sensitivities involved (e.g. SAC conservation objectives, waterbody status, highly sensitive landscape) and provides the opportunity for woodland management and wood production. The conversion of land to native woodland requires significant investment, with generally little opportunity for short to medium term return for the landowner. Consequently, in view of the significant long term, and often permanent, social, environmental and economic benefits generated by native woodlands, support is required and justified in order to encourage the long term conversion of land to native woodland.

Support for the creation of native woodlands was expressed by Birdwatch Ireland, Inland Fisheries Ireland and Woodlands of Ireland. The establishment element of the NWS is also consistent with the new EU Forest Strategy which says that *“Protection efforts should aim to maintain, enhance and restore forest ecosystems' resilience and multi-functionality as a core part of the EU's green infrastructure, providing key environmental services as well as raw materials.”*

Agro-forestry affords land holders with opportunities to utilise land for multiple purposes and benefits and can provide farmers with opportunities to enhance farm production and income, while contributing to the protection of the environment. Support for the introduction of an agro-forestry measure has been expressed by a number of NGOs involved in organic farming, namely the Irish Organic Farmers and Growers Association<sup>81</sup> and Centre for Environmental Living & Training<sup>82</sup>. Numerous other groups expressed support for this measure during the formal consultation process. The proposed measure may also be of interest to farmers who wish to reduce agricultural output but maintain some level of agricultural activity, or land holders who wish to diversify, for example, growing wood fuel in combination with other agricultural output. Agro-forestry can be particularly beneficial in riparian zones and adjacent to environmentally sensitive habitats and *Natura 2000* areas by, for example, reducing soil erosion and surface water runoff thereby contributing to WFD objectives.

Support measures are required to enable forest holders to deal with disease outbreaks, especially where such diseases pose a threat to other forest areas (e.g. removal and disposal of infected material). Urgent interventions are usually required in order to prevent the spread

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<sup>81</sup> Letter to Shane McEntee TD, Minister of State, March 2012

<sup>82</sup> E-mail to Minister for Agriculture, Food and the Marine, 3 April 2012

of plant pathogens, as recently experienced in Ireland with *Phytophthora ramorum* and *Charala fraxinea*. The costs associated with controlling disease and pest outbreaks and restoring forests can be prohibitive. In the absence of support, many forest owners would not have the resources to adequately deal with such eventualities. This can have a significant impact on the wellbeing on the national forest estate as a whole. It is appropriate, therefore, to provide support measures towards the restoration of grant-aided forests which have been damaged by natural causes or catastrophic events, if the forest has been adequately maintained and managed prior to the event. Continuing need for support in relation to forest reconstitution was expressed during stakeholder consultation.

The low level of forest cover in Ireland, and the remoteness of much of the forest estate, means that recreational access to forests is severely limited for many citizens. Public investment in amenity forests contributes to the social, environmental, health and educational benefits of local communities and of society in general and are an important educational and tourist resource, helping to generate job creation in the areas they serve.

The new EU Forest Strategy<sup>83</sup> encourages Member States to make use of rural development funds to improve competitiveness, promote the diversification of economic activity and quality-of-life, and deliver specific environmental public goods to contribute to promoting the social functions of sustainable forest management.

Encouraging and facilitating knowledge transfer in the forest sector is a primary policy objective. Private forest holders find it difficult to single-handedly thin their plantations as the cost of harvesting and transportation can outweigh the financial returns on an individual basis. Furthermore, due to the age profile of the forest estate, there is little forest management culture among private forest owners in Ireland. Consequently, many owners are not familiar with the steps involved in first thinning operations nor of the importance of thinning to ensure the long term economic viability of forests. The National Forest Inventory 2009-2012<sup>84</sup> found that 23% of the national estate is theoretically at a maturity stage where it could be thinned but has not been thinned.

In recent years, facilitated by Teagasc and the Forest Service, 26 forest producer groups have been established. By coming together the combined forest area can create a critical mass for managing and marketing forest crops.

While more than 1,900 forest owners have already become involved in group structures to date, Forest Service statistics indicate that a further 8,000 forest owners have plantations of 12- 22 years old which are approaching or have already reached thinning stage. The majority of these forest owners have no ongoing forest management or planning regimes in place and critical management decisions and in many cases, time critical harvesting interventions are now required. A survey of forest owners, (Ni Dhubhain, A Maguire K, Farrelly N., 2010) found that forest owners who have attended extension activities are 2.5 times more likely to thin their forests. There is a clear need, therefore, to build significantly on the existing skills and knowledge base and develop a culture of sustainable forest management among forest owners. The transfer of awareness, knowledge and skills to forest owners through forestry Knowledge Transfer Groups (KTG) can play a pivotal role in achieving the above objectives.

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<sup>83</sup> European Commission: *A new EU Forest Strategy: for forests and the forest-based sector* (Brussels, 20.9.2013, COM(2013) 659 final)

<sup>84</sup> Department of Agriculture, Food and the Marine (2013), *The Second National Forest Inventory - Republic of Ireland – Main Findings*



The Food Harvest 2020 Report, specifically recommends that the forest industry should promote forest producer groups in order to reduce management costs and increase the marketability of timber from private forests. It also recommends mechanisms for relevant and up to date training to meet new developments.

There is a need for Continuous Professional Development (CPD) for registered foresters in the area of environment and forest management activities. Up skilling is required so that registered forests are in a better position to assist existing forest holders and advise individuals who are contemplating planting. This is particularly relevant in relation to environmental compliance, best practice in forest management, in relation to support schemes operated by the Department.

There is increasing demand, particularly among emerging forest holder groups, for education and training programmes on forest management including timber measurement, formative shaping, pruning, chainsaw safety, preparing for first thinning and the marketing of forest products. There is also a growing concern in the forest industry about the absence of training for harvesting machine and chainsaw operators. The lack of trained and certified operators is now being raised as an issue with representative bodies and this will have negative effects on the industry if not addressed. Coillte specify harvesting machine operator competency certification as a requirement in order to operate in Coillte forests and thus maintain its FSC standard.

As the forest industry expands in line with the expected increase in roundwood production, there is a need to provide additional advisory support in areas such as forest management, bio-energy, agro-forestry, harvesting on sensitive sites, environmental issues, plant health, marketing of forest products and adoption of new technology. In relation to the latter, new technology related to timber measurement could reduce the costs for private forest holders, thereby improving farm viability. Agro-forestry is a new form of land use in Ireland and will require advisory services, promotion and support if it is to become a viable alternative land use option for farmers. Advisory services and supports will also be required for forest holders setting up new producers groups. In 2012, a series of 10 demonstrations, seminars and other forestry information events organised by Teagasc attracted more than 1,200 forest holders and managers. There is a growing need to build on the success of these events.

The use of new forest technologies can contribute to reducing the environmental footprint of forest activities as well as reducing forest management costs. However, there is reluctance on the part of forest holders and forestry companies to invest in new technology for reasons of cost, risk and lack of knowledge about such technologies. Support for investment new technologies is therefore necessary, whereby early adopters could purchase the equipment, use and test the equipment in the field and, if suitable to Irish conditions, demonstrate it to others. If this technology was supported under an early adopters scheme and proven to work effectively, it would increase the viability of private forests.

The quality and productivity of forest plantations are dependent upon the genetic quality of the seed and reproductive material used during establishment. The establishment of new forests needs to ensure that the genetic quality of planting stock is well adapted and fit for purpose. Ireland imports significant quantities of seed for example 95% of sitka seed is imported; support for seed stands and establishment of new seed orchards could reduce dependency on imports while providing an opportunity to improve the genetic quality of planting stock.

The conservation of genetic resources is referred to in the EU strategy as having a role in the sustainable management of forests. Furthermore, the strategy highlights that in order for forests to react to future threats and trends, genetic diversity must be enhanced and endangered genetic resources protected. The strategy calls for forest genetic conservation (tree species diversity) and diversity within species and within populations to be strengthened by Member States.

The Forest Policy Review calls for the use of genetically improved planting material which will deliver improved timber quality and timber wood volumes will be supported. *Sustaining and Developing Ireland's Forest Genetic Resources*<sup>85</sup> sets out a strategy for forest genetic resource conservation and development and makes recommendations as to how this can be achieved, including the establishment of a National Forest Genetic Resource Advisory Group. Provision for funding to conserve and protect genetic resources at selected sites can form part of this strategy.

Forest management plans (FMPs) contribute to accurate forecasting of roundwood and biomass production; planning for harvesting, forest infrastructure requirements; disease and fire risk assessment and management; environmental protection (e.g. identification of potential hot spots) and forest certification. A centralised repository of management information could be used for coordinated activities such as forest road building, harvesting, environmental assessment etc. The forest policy review sees forest management plans as a priority area for the Forest Service. Optimisation of forest information is also included in the EU Forest Strategy where FMP's are said to be key instruments in delivering multiple goods and services in a balanced way. FMPs are important features of both the EU 2020 Biodiversity Strategy and EU Rural Development funding. Developing a forest management plan is a complex process, often requiring expert knowledge and input. It is important to create a forest management culture in Ireland. The forest management plan measure aims to support the development of this culture by providing funding to private forest owners towards the initial cost of developing forest management plans for their forest properties.

### 6.1.2 Priority One SWOT

Priority 1	Objectives
<b>Fostering knowledge transfer and innovation in agriculture, forestry and rural areas with a focus on the following areas:</b> <b>a) Fostering innovation and the knowledge base in rural areas;</b> <b>b) Strengthening the links between agriculture, food production and forestry and research and innovation; and</b> <b>c) Fostering lifelong learning and vocational training in the agricultural and forestry sectors.</b>	<ol style="list-style-type: none"> <li>1. To increase the number of effective mechanisms/structures in place to assist in transferring knowledge to end users and other stakeholders through actions such as establishing knowledge transfer groups and providing advisory contact;</li> <li>2. To increase the level of on-going training and education provided to forest holders and professional foresters through the development of an integrated training system;</li> <li>3. To increase levels of proactive forest management and appropriate tending, thinning and harvesting interventions; and</li> <li>4. To reduce the gap between the provision of research results and the application of said results in practice.</li> </ol>

<sup>85</sup> Cahalane, G., Doody, P., Douglas, G., Fennessy, J., O'Reilly, C. and Pfeifer, A. 2007. *Sustaining and Developing Ireland's Forest Genetic Resources. An outline strategy*. COFORD, Dublin.

## Strengths

- Food Harvest 2020 provides a strategic policy framework for the provision of support for innovation and R & D
- Teagasc has a strength in combining research and extension to deliver solutions/advice at farm level
- Strategic research agendas for agriculture and food production prepared
- Training needs analysis for forestry completed in 2011
- Variety of bodies capable of providing appropriate education/advisory services forestry including Teagasc, ITGA, Society of Irish Foresters, Irish Farmers Association, Forest Owner Groups and professional foresters
- Discussion group programmes (renamed knowledge transfer groups) have been successful for dairy, beef and sheep (DPD, BTAP, STAP)
- Recent development of education programmes developed by Teagasc/Universities/ITs
- Participation in KTG can provide assistance to farmers to comply with environmental, plant health and cross compliance standards and may encourage initiation of a forest certification process
- The Forestry Development Unit of Teagasc (Agriculture and Food Development Authority), has an excellent track record in providing knowledge transfer activities to farm forest holders and managers

## Weaknesses

- Over-emphasis in some areas of research on academic outputs rather than technology transfer, commercialisation and innovation
- Foresters may require up-skilling in areas as forestry moves from establishment to thinning
- Focus on initial (base level) education rather than lifelong learning
- Limited high speed (download and upload) broadband and ICT Technologies available in rural areas at an affordable cost
- There is a current lack of awareness among some forest holders of the need for time-critical management interventions such as tending and thinning of forest crops;
- Many forests have multiple species requiring varying management strategies;
- High cost of some specialised training;
- Lack of machines and machine time for operator training;
- The absence of a clearly defined career path for people interested in getting involved in forestry makes it difficult to recognise forestry as a lifelong career choice;
- How to encourage forest holders/farmers/foresters to avail of advisory services and/or professional development services.

## Opportunities

- Potential to exploit innovative opportunities in the area of biomass

- Opportunity to better forest holders and forestry professionals in the delivery of environmental and public goods
- Potential in agro-forestry and the supporting advisory services
- Ongoing forestry research offers potential for new practices/technology
- Forecasted increase in timber coming on stream will increase demand for skilled operatives in the forestry industry;
- New education & training needs are also forecast within the timber processing sector, especially in the wood energy sub-sector;
- Increasing output from private farm forests means that demand from private forest holders and managers for information and training on forest management will increase.
- It is also anticipated that programme participation can provide a mechanism to raise awareness, monitor and maintain plant health.
- Potential to ensure best returns from forestry and good forestry management practices through advisory services
- Opportunity to delineate career path in forestry / possible apprenticeship model.
- Participation and co-operation of forest holders in group structures provide an efficient means of managing and harvesting small plantations through pooling of resources and knowledge

## Threats

- Cutbacks in training and advisory service allocations due to budgetary constraints
- Young people emigrating from rural areas – loss of innovation potential
- Possible lack of knowledgeable foresters and skilled operatives
- Lack of funding and training facilities could result in less than efficient harvesting, with knock-on impacts on costs and overall industry competitiveness;
- With the expansion of the forest sector there is a risk that accident rates may increase because of lack of training and competence across the sector as a whole;
- Without the appropriate level of awareness, knowledge and skills among forest holders the required level of thinning may not take place or delayed thinning could threaten crop stability; this will result in forests not reaching their productive potential and potential loss of economic and environmental value and a deterioration in forest health as well as shortage of vital supply to the timber processing sector;
- Knowledge gap in relation to environmental obligations, health & safety, etc.
- Difficulty for forest holders in making contacts in the industry and in marketing and selling timber.
- A group structure can lead to sharing and savings in the development of forest infrastructure e.g. co-operative forest roads

### 6.1.3 Priority Two SWOT

#### Priority 2

#### Objectives

<p><b>Enhancing competitiveness of all types of agriculture and enhancing farm viability, with a focus on the following areas:</b></p> <p><b>a) Facilitating restructuring of farms (facing major structural problems), notably farms with a low degree of market participation, market oriented farms in particular sectors and farms in need of agricultural diversification; and</b></p> <p><b>b) Facilitating entering into the farming sector, and in particular generational renewal in the agricultural sector.</b></p>	<ol style="list-style-type: none"> <li>1. Planting of agro-forestry systems across the country and clear outcomes.</li> <li>2. Farmers not interested in conventional forestry due to long rotations beginning to see forest for fibre as a real opportunity for diversifying their income.</li> </ol>
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## Strengths

- Significant grant aided investment in forestry under current programme
- Engagement in knowledge transfer groups leads to improved efficiency and profitability
- Farmers who have diversified have widened their income earning potential

## Weakness

- No traditional of agro-forestry in Ireland amongst farming community.
- Ash was the most suitable species for this type of forestry but is not available due to Chalara

## Opportunities

- Agro-forestry presents opportunities for farm output diversification; it represents a more sustainable landuse in some areas and would also deliver wider animal welfare, ecosystem, wildlife, landscape and biodiversity benefits.
- Agro-forestry and forest for fibre offer shorter rotations for farmers who might not necessarily have planted under conventional forestry due to long rotations.

## Threats

- Success of agro-forestry may be undermined by pressures to intensify agricultural production.
- Agro-forestry systems are relatively new in Ireland and the level of farmer/landowner interest is as yet unknown.

#### 6.1.4 Priority Three SWOT

Priority 3	Objectives
<p><b>Promoting food and non-food chain organisation and risk management in agriculture, with a focus on the following areas:</b></p> <p>a) <b>Better integrating primary producers into the food chain through quality schemes, promotion in local markets and short supply circuits, producer groups and inter-branch organisations and promoting animal welfare; and</b></p> <p>b) <b>Supporting farm risk management.</b></p>	<ol style="list-style-type: none"> <li>1. Maintenance of existing and establishment of new producer groups.</li> <li>2. Linking producer groups with knowledge transfer groups where possible;</li> </ol>

### Strengths

- Robust pest and disease monitoring systems

### Weaknesses

- Distance from market can be a problem for small producers.
- Small scale growers have little bargaining power with processors and contractors. Small forest size can limit opportunities to maximise efficiency in production and marketing.
- Development of collaboration between growers is at an early stage
- Joint selling and marketing initiatives may require new skills
- Overall number of producer groups is small at 26

### Opportunities

- Diversification of farm income could be part of a risk management strategy both for farmers and the rural economy
- Partnerships and collaborative mechanisms can be a risk management tool
- Producer groups and other collaborative mechanisms can improve the uptake of forest based research, the adoption of technology and the application of best practice at plantation level can be supported by.

## Threats

- Global market volatility and price variations – For example Ireland is a net exporter of sawnwood and panel boards in fact 89% of all panelboards are exported; so Ireland is very susceptible to fluctuations and trends in international markets.
- Threats associated with extreme weather, 7,000ha of forests damaged by windblow in 2014
- Consumers continually seeking value which places demands on producer from the retailer
- Pest and disease threats particularly Chalara and Phytophthora

### 6.1.5 Priority Four SWOT

Priority 4:	Objectives Priority 4
<p><b>Restoring, preserving and enhancing ecosystems related to agriculture and forestry, with a focus on the following areas:</b></p> <p>a) <b>Restoring, preserving and enhancing biodiversity, including in Natura 2000 areas and high nature value farming, and the state of European landscapes;</b></p> <p>b) <b>Improving water and land management and contributing to meeting the WFD objectives; and</b></p> <p>c) <b>Improving soil, erosion, fertiliser and pesticide management.</b></p>	<ol style="list-style-type: none"> <li>1. To increase the levels of forest cover within the programme region through the incorporation of practices that restore, preserve and enhance biodiversity in all areas including Natura 2000 sites;</li> <li>2. To increase the number of forestry schemes which contribute positively to the environment by contributing towards the protection of soil and water quality as well as habitats of endangered species such as the hen harrier and freshwater pearl mussel.</li> <li>3. To increase the level of sustainable round-wood and timber production within the programme region through afforestation and managing existing forests.</li> <li>4. To increase the number of new forest plantations grown from new and existing seed stands located in Ireland; and</li> <li>5. To increase levels of biodiversity in forests through the provision of new and existing seed stands located in Ireland.</li> </ol>

## Strengths

- Ireland has maintained an afforestation grant aid scheme since the early 1980s
- Nearly half of forest holders have two or more grant applications
- Wide range of non-market public goods provided by forests (e.g. recreation, biodiversity, water quality, landscape enhancement, carbon sequestration etc.)
- Extensive network of hedgerows and other landscape features which are central to ecosystem enhancement - Approximately 450,000 hectares or 6.4% of the country is covered by hedgerows, individual trees and small woodland patches and scrub
- Peat soils cover 20.6% of Ireland's land area, with the greater part of this in the form of blanket bog in upland areas. This high level of peatland is a good carbon store in its undisturbed state. (In Ireland, near intact



peatlands may actively sequester, on average, 57,402 tonnes of carbon per year.)

- Extensive network of Natura 2000 sites/areas already identified
- According to the Environmental Protection Agency (EPA) 80% out of around 1,500 water bodies have either high/good/moderate status, only 20% therefore are seen as either poor or bad.
- Ireland has a better than average water quality relative to other MS. According to Eurostat for 2008 Ireland's gross nutrient balance (kg per ha) is 50 compared to EU 27 which is 49.
- According to the EPA 2012 report (p.47) (based on EEA data) Ireland typically ranks within the top third of 30+ countries assessed in terms of water quality for 2007-2009 period. (Phosphate, ammonia, nitrate and biochemical oxygen demand)
- River basin management plans (under WFD) are in place and could be built on
- Forest management plans for Fresh water Pearl Mussel Catchments nearing completion. No new planting in hen harrier areas pending completion of the threat response plan.
- Good track record in establishing open area and retained habitat zones within new forests.
- An estimated 18 million recreational users visit Ireland's forests each year<sup>86</sup> and these visits are facilitated in some areas by the existing forest road network
- Track record in running schemes designed to enhance biodiversity and amenity value of woodland
- The level of broadleaf planting as a percentage of overall afforestation has increased from 23% in 2003 to 31% in 2012, although initial indications are that broadleaf planting was less than 24% in 2013
- Ireland's geography, i.e. island northwest of the continent of Europe in the north Atlantic Ocean,, the relative newness of the forest estate and the enforcement of plant health regulations have enabled Ireland to remain relatively free of many of the major European forest diseases and pests
- Border inspection posts are in place where import inspections are carried out to ensure compliance with the EU Plant Health Directive
- The *Forest Protection Guidelines* (Forest Service, 2002) provide guidance to forest holders on how to identify and manage potential threats to forests
- The *Prescribed Burning Code of Practice* (DAFM, 2012) provides basic information on planning, preparing and implementing safe, effective controlled fires for land management purposes
- Forest Recreation in Ireland – A Guide for Forest Owners and Managers was published by the Forest Service in 2006
- Support amongst environmental NGO's for measures which support native woodland conservation
- Positive contribution to Ireland's climate change targets - Irish forests established since 1990 sequestered an estimated 17 million tonnes of carbon dioxide over the 5-year commitment period of the Kyoto Protocol (2008-2012)
- Contributes to the diversification of farm incomes
- The forestry and forest product sectors support an estimated 12,000 jobs in the Irish economy<sup>87</sup>; primarily in rural areas
- The value of the forestry and forest products sectors to the Irish economy is estimated be in the region of 2.9 billion per annum<sup>88</sup>
- Existing support measure for the development of forest road infrastructure has been in place since the 1980s and has become an established framework for funding the construction of forest roads.

<sup>86</sup> Fitzpatrick Associates, *Economic Value of Trails and Forest Recreation in the Republic of Ireland* (2005)

<sup>87</sup> Áine Ní Dhubháin, Craig Bullock, Richard Moloney and Vincent Upton: *An Economic Evaluation of the Market and Non-Market Functions of Forestry*

<sup>88</sup> Áine Ní Dhubháin, Craig Bullock, Richard Moloney and Vincent Upton: *An Economic Evaluation of the Market and Non-Market Functions of Forestry*

## Weaknesses

- Low level of forest cover; In Ireland this is just under 11% of land area compared to an EU27 average of 38%;
- There is a limit to the amount of land available for forestry;
- Most native woodlands are generally small and isolated, with poor connectivity;
- Most farm forests are small and this affects viability. From 1997 to 2002, forests greater than 20 hectares or more accounted for up to 40% of total planting annually, whereas in recent years this has fallen to 16% of total planting; The average size of forests planted in recent years has reduced to 6.5ha;
- The up-front cost of investing in forestry is significant;
- Long-term investment – many years before a return on forest investments;
- Without financial support, little or no new forest planting would occur;
- There is a growing recognition that existing controls are insufficient to respond to the ecological, economic and cultural threats posed by invasive alien species;
- Some broadleaves sites planted post-1980 require fertilising but aerial fertilisation is not an option;
- Access to credit is difficult for all investments at this time;
- Recent analysis undertaken by the National Forest Inventory indicates that 60% of forests which are at a development stage where they could be thinned but have not been thinned;
- Ireland's native woodland resource is small, comprising c.100,000 hectares, or 1.2% of the national land area;
- Most native woodlands are isolated and widely dispersed, with poor connectivity;

## Opportunities

- Restructure the forest species mix to improve its resilience to fire, pests, disease and climate change, and diversify the range of wood products;
- Protect water quality through riparian planting and contribute to achievement of water quality targets, river basin catchment management, flood risk reduction and soil stabilisation;
- A growing market for large and small roundwood to both the processing sector and the renewable energy sector;
- Forestry is now an attractive option for investors seeking relatively risk free long term investments (e.g. pension funds);
- Increase woodland cover and improve connectivity between existing woodlands;
- Increase carbon sequestration and climate change mitigation and adaptation;
- Increased cooperation with the Northern Ireland Executive and its Government Departments in formulating all-island strategies for control of pest and disease outbreaks
- Native woodlands can contribute to protecting water quality; river basin catchment management, soil stabilisation and protection; They can alleviate flooding through appropriate riparian planting and protect and enhance biodiversity

## Threats

- Threats to endangered species and habitats, e.g. freshwater pearl mussel (*Margaritifera margaritifera*), hen harrier (*Circus cyaneus*); active blanket bog and fens;
- Fires destroyed 1,500ha of forest in 2011;
- *Chalara fraxinea* and *Phytophthora ramorum* have emerged as serious threats to Irish forests;
- Rhododendron, a highly invasive species and a sporulating host of P, *ramorum*, is difficult and costly to control

- Serious damage is being done to broadleaf trees, notably beech, sycamore and oak, by grey squirrels through bark stripping. Browsing and other tree damage caused by deer is also a significant problem;
- Without investment in thinning and tending, the productive and biodiversity potential of these forests will not be achieved;
- A delay in undertaking first thinning operations will affect the long-term economic viability of forests;
- Failure to thin reduces the volume of material to the processing sector, thereby affecting the economic viability of processing facilities.

#### 6.1.6 Priority Five SWOT

Priority 5	Objectives
<p><b>Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors, with a focus on the following areas</b></p> <p>a) <b>Increasing efficiency in water use by agriculture;</b></p> <p>b) <b>Increasing efficiency in energy use in agriculture and food processing;</b></p> <p>c) <b>Facilitating the supply and use of renewable sources of energy, of by products, wastes, residues and other non-food raw material for purposes of the bio-economy;</b></p> <ul style="list-style-type: none"> <li>• <b>Reducing greenhouse gas and ammonia emissions from agriculture and improving air quality; and</b></li> <li>• <b>Fostering carbon sequestration in agriculture and forestry.</b></li> </ul>	<ol style="list-style-type: none"> <li>1. To increase the amount of renewable sources of energy grown by the forestry sector, farmers and non-farming landowners and increase the levels of management of forests required to maximise biomass production;</li> <li>2. To increase the carbon sink potential of forestry through increasing the levels of forest cover grown from seed stands/orchards located in Ireland.</li> <li>3. To increase access to forest biomass through building forest roads.</li> </ol>

### Strengths

- Temperate Irish climate and its rain fed agriculture and forestry. Between 2000 and 2010 Ireland's average rainfall was 1,936 mm per year;
- Irish forests established since 1990 will sequester 17 million tonnes of carbon dioxide over the 5-year commitment period of the Kyoto Protocol (2008-2012). In today's terms this equates to a value to the Irish Exchequer of €340 million;
- Research and advisory system in place for energy crop sector development;
- Small scale bio-energy schemes are already underway in Ireland;
- Private forestry is fast becoming a considerable wood and energy resource. Most of the private forest estate has been established over the past two decades, with many areas now entering into production;

- Ireland has maintained an afforestation scheme since the early 1980's and the land area under forest cover has increased to 10.7%.

## Weaknesses

- Lack of market development for energy sector. High investment costs required for energy sector development and lack of finance for same
- Continued use of peat and turf as energy sources eroding an important carbon sink - according to the SEAI 2% of energy consumption in 2011 was from all peat products. Peat for fuel is not used in many other Member States.
- Farmers that get involved in biomass production are small scale.
- Low levels of production of renewable energy from agriculture and forestry
- Ireland has a very low level of forest cover by percentage of land area in the EU at (just under 11%) compared to an EU average of 38%.
- Behavioural and cultural changes required at farm level to adopt to new practices

## Opportunities

- Potential of SRF/energy crops/agro-forestry to further foster carbon sequestration in agriculture and forestry
- Reduced use of fossil fuels
- Support development of biomass supply groups (CoOps) and web based map of supply
- Opportunities to develop knowledge transfer groups to encourage the planting of biomass crops and carry out on schedule thinning
- The market for firewood in Ireland increased by 35% during the period 2006 – 2010. This growing market is proving a steady source of demand for forest thinning.

## Threats

- International (and national) pressures to further reduce GHG emissions from the agriculture sector
- Irish agriculture will contribute little to reducing absolute carbon emissions in line with the Effort Sharing Decision (ESD) - the ESD has established binding emission reduction targets for MS in the period 2013 – 2020 for non ETS sectors including agriculture. This requires a 20% reduction in GHG emissions in Ireland by 2020 compared to its 2005 levels.
- Ireland would fail to meet its targets under Gothenburg Protocol which sets emission ceilings for four pollutants: sulphur, NOx, VOCs and ammonia
- Failure to meet targets set under the Renewable Energy Directive 2009/28/EC that the EU will reach a 20% share of energy from renewable sources by 2020 (Ireland's target is 16% but for 2011 is only at 6.5%)
- Rising energy costs are a risk to farm viability - CSO shows that, as an agricultural input, energy costs (excluding VAT) have increased by more than 50% between 2005 and 2012 and there was

an almost 9% increase between 2011 and 2012. (see also priority 3)

- Biomass production at farm level is at risk of lacking scale to be competitive or big enough to assure customers that continuity of supply is safe
- Forest fires (for example they destroyed 1,500ha in 2011)
- Failure to adequately incentivise forest owners could lead to risk of forest damage, threatened risk on investment and failure to deliver Forest Environmental Services

Priority 6	Objectives
<p><b>Promoting social inclusion, poverty reduction and economic development in rural areas, with a focus on the following areas:</b></p> <p>a) <b>Facilitating diversification, creation and development of new small enterprises and job creation;</b></p> <p>b) <b>Fostering local development in rural areas; &amp;</b></p> <p>c) <b>Enhancing accessibility to, use and quality of information and communication technologies (ICT) in rural areas.</b></p>	<p>1. To increase the levels of recreational forest use amongst local communities.</p>

## Strengths

- A community Led local development (CLLD) approach has been integrated into delivery of local development programmes in rural areas over a long period of time
- Communication, roads and water Infrastructure in rural areas is generally of a good quality which facilitates access to goods and services for the rural population
- Rural Ireland has a strong and recognisable rural identity and a high-quality and evocative landscape which has the capacity to act as a tourism resource for the economic development of rural areas. Forestry enhances this resource
- There are well-established networks in rural areas which facilitate the establishment of community-based services and strong and self-reliant rural communities which can be used to promote development in rural areas
- Forest Recreation in Ireland – A Guide for Forest Owners and Managers was published by the Forest Service in 2006;
- A NeighbourWood scheme has been run successfully since 2001;
- A positive image is associated with providing support for community based amenity forests with public access;
- There is good demand for the scheme - applications for support under the scheme in 2012 exceeded the available budget; and
- With significant local support a NeighbourWood project can impact positively amongst an entire local community, and create a very positive view of forestry as a land use.

## Weaknesses

- Accessibility/Availability of key services is a challenge. While the Irish settlement pattern means that the potential availability is high, the reduction in the spread of available services and the very limited nature of rural public transport means that significant parts of the rural community can remain isolated from such services; and this lack of access is often associated with the poorest members of society
- Lower education and life-long learning opportunities in rural areas with access to such services being more difficult
- A difficult environment for innovation and entrepreneurship with low levels of entrepreneurs and entrepreneurship in rural areas
- While broadband availability has improved the quality and cost of broadband services is still of a lower quality than is required
- Incomes in rural areas are relatively low with average farm incomes being significantly less than the average industrial wage and the median income being even lower
- Distance from markets and the need to transport goods to market adds cost to rural enterprises
- There is an inherent risk in supporting urban or peri-urban planting schemes as the trees can be removed at any stage without regulation, thereby putting funds at risk.

## Opportunities

- Government proposals to align the work of Local Development and Local Government should streamline and improve delivery with increased cooperation between local government and local development facilitating more efficient and effective delivery of development interventions at local level
- The use of established social capital to facilitate more sustainable development, including enterprise development, in rural areas
- The use of community-based enterprise development to increase jobs in rural areas
- The development of eco-tourism and integrated activity-based tourism as an economic driver in rural areas eg. glamping in forest settings.
- The provision of forest amenities for public use has a significant public health benefits;
- Forests with high public usage provide significant educational value.
- The forest estate in Ireland is well distributed across the country and as such can provide recreational opportunities to an increasingly urbanised population;
- There may be financial benefits to be generated by opening up forests to the public, entrances fees for nature walks, picnic areas, fishing, camping, horse riding, biking and other outdoor pursuits;
- The demand for public access to private forests is expected to increase as forests mature.
- Improve public knowledge about the multifunctional benefits of sustainably managed forests and woodlands;
- Increased public use of forests may encourage the conversion of poorly performing commercial forests to high-nature value forests for public use; and
- Recreational forestry could compliment public tree planting programmes undertaken by local authorities and non-governmental organisations.



## Threats

- Continued high unemployment in rural areas and particularly long-term unemployment
- Continued reduction in service provision in rural areas leading to a pressure to leave those areas
- Declining population in rural areas giving rise to a negative cycle of service loss and population loss – rural population decreased from 39% of total population in 2006 to 38% in 2011 (CSO Census 2011 – part 1 , page 13)
- Aging of rural population with a consequent increase in poverty and exclusion and loss of enterprise development potential – dependency ratios are lowest in urban areas
- Rural population failing to participate in the life-long learning and up-skilling required by the modern economy
- Increasing fossil fuel costs limiting the mobility of the rural population
- Young people emigrating from rural areas (see also priority 1)
- Private forest holders are often reluctant to open up forests to public for fear of litigation;
- The high cost of developing forest areas for public amenity is prohibitive;
- Amenity forests incur considerable costs but rarely generate income.

### 6.1.7 Common Context Indicator Table

Context indicators reflect relevant aspects of the general contextual trends that are likely to have an influence on the implementation, achievements and performance of the new forestry programme.

#### 6.1.7.1 Socio-economic and rural

Population	Value	unit	year
total	4582769	Inhabitants	2012 p
rural	72.44966962	% of total	2012 p
intermediate	-	-	-
urban	27.55033038	% of total	2012 p
<b>Age Structure</b>			
total < 15 years	21.60831148	% of total population	2012 p
total 15 - 64 years	66.50088625	% of total population	2012 p
total > 64 years	11.89080226	% of total population	2012 p
rural <15 years	22.30380028	% of total population	2012 p
rural 15 - 64 years	65.56024771	% of total population	2012 p
rural > 64 years	12.13595201	% of total population	2012 p
<b>Territory</b>			
total	69798	Km2	2012
rural	98.68047795	% of total area	2012
intermediate	-	-	-
urban	1.319522049	% of total area	2012
<b>Population Density</b>			
total	66.9	Inhab / km2	2011
rural	49.12119506	Inhab / km2	2011
<b>*Employment Rate</b>			



total (15-64 years)	58.8	%	2012
male (15-64 years)	62.7	%	2012
female (15-64 years)	55.1	%	2012
* rural (thinly populated) (15-64 years)	57.63143673	%	2012
total (20-64 years)	63.7	%	2012
male (20-64 years)	68.1	%	2012
female (20-64 years)	59.4	%	2012
<b>Self-employment rate</b>			
total (15-64 years)	14.49081057	%	2012
<b>Unemployment rate</b>			
total (15-74 years)	14.7	%	2012
youth (15-24 years)	30.4	%	2012
rural (thinly populated) (15-74 years)	15.63525038	%	2012
youth (15-24 years)	33.86004515	%	2012
<b>*GDP per capita</b>			
total	129	Index PPS (EU-27 = 100)	2012
* rural	102.9784274	Index PPS (EU-27 = 100)	2010
<b>*Poverty rate</b>			
total	29.4	% of total population	2010
* rural (thinly populated)	28.8	% of total population	2010
<b>Structure of the whole economy (GVA)</b>			
total	148529	EUR million	2012 e
primary	2.218421992	% of total	2012 e
secondary	27.40878886	% of total	2012 e
tertiary	70.37278915	% of total	2012 e
rural	57.82314655	% of total	2010
intermediate	-	-	-
urban	42.17685345	% of total	2010
<b>Structure of Employment</b>			
total	1838.5	1000 persons	2012
primary	4.672287191	% of total	2012
secondary	18.38999184	% of total	2012
tertiary	76.93772097	% of total	2012
rural	66.33658009	% of total	2010
intermediate	-	-	-
urban	33.65800866	% of total	2010
<b>Labour productivity by economic sector</b>			
total	80788.14251	EUR/person	2012 e
primary	38358.55646	EUR/person	2012 e
secondary	120408.1633	EUR/person	2012 e
tertiary	73894.66242	EUR/person	2012 e
rural	66766.70201	EUR/person	2010

intermediate	-	-	-
urban	95983.60129	EUR/person	2010
<b>Forest Economy</b>			
Value to the Irish economy of the forestry and forest products sector	2290	EUR million	2012
Forestry as a % of GDP	1.3%	% of total GDP	2012
Share of UK sawn softwood timber market	6.52%	% of total UK market	2012

#### 6.1.7.2 Sectorial analysis(Agriculture and Forestry)

	Value	unit	year
<b>Employment by economic activity</b>	<b>Value</b>	<b>Unit</b>	<b>Year</b>
total	1837.8	1000 persons	2012
agriculture	81.2	1000 persons	2012
agriculture	4.41832626	% of total	2012
forestry	12	1000 persons	2012
forestry	0.65	% of total	2012
food industry	45.2	1000 persons	2012
food industry	2.459462401	% of total	2012
tourism	119.7	1000 persons	2012
tourism	6.513222331	% of total	2012
<b>Labour productivity in agriculture</b>			
total	9799.899356	EUR/AWU	avg. 2010-2012
<b>Labour productivity in the food industry</b>			
total	153620.6744	EUR/person	2010
<b>Agricultural holdings (farms)</b>			
total	139890	No	2010
farm size <2 Ha	2340	No	2010
farm size 2-4.9 Ha	7380	No	2010
farm size 5-9.9 Ha	15750	No	2010
farm size 10-19.9 Ha	33580	No	2010
farm size 20-29.9 Ha	24690	No	2010
farm size 30-49.9 Ha	30670	No	2010
farm size 50-99.9 Ha	20760	No	2010
farm size >100 Ha	4720	No	2010
average physical size	35.68053471	ha UAA/holding	2010
<b>Agricultural Area</b>			
total UAA	4991350	ha	2010
arable	20.26906548	% of total UAA	2010
permanent grassland and meadows	79.7084957	% of total UAA	2010
permanent crops	0.01943362	% of total UAA	2010
<b>Age structure of farm managers</b>			
total number of farm managers	139890	No	2010

share of < 35 y	6.755307742	% of total managers	2010
ratio <35 / >= 55 y	13.42901805	No of young managers by 100 elderly managers	2010

<b>Agricultural training of farm managers</b>			
share of total managers with basic and full agricultural training	31.01007935	% of total	2010
share of manager < 35 y with basic and full agricultural training	51.53439153	% of total	2010
<b>*Agricultural factor income</b>			
total	16910.22222	EUR/AWU	2012e
total (index)	83.9	Index 2005 = 100	2012e
<b>*Agricultural Entrepreneurial Income</b>			
Standard of living of farmers	11717.36037	EUR/AWU	2012e
Standard of living of farmers as a share of the standard of living of persons employed in other sectors	26.70092211	%	2012
<b>*Total factor productivity in agriculture</b>			
total (index)	93.24060818	Index 2005 = 100	avg. 2009-2011
<b>Forest Cover</b>			
total	737.8	1000 ha	2013
share of total land area	10.5	% of total land area	2013
Of which state owned	54%	% of total forest area	2013
Of which privately owned	46%	% of total forest area	2013
<b>Tourism infrastructure</b>			
bed-places in collective establishments	197065	No of bed-places	2011
rural	75.23520039	% of total	2011
intermediate	-	-	-
urban	24.76479961	% of total	2011
recreational visits made to Irish forests	18	Million visits	2012
Economic activity generated by visits	268	€million	2012
<b>Timber prices</b>			
0.375 - 0.424 (m <sup>3</sup> )	48.64	€/m <sup>3</sup>	2013
0.425 - 0.474(m <sup>3</sup> )	51.99	€/m <sup>3</sup>	2013
0.475 - 0.499(m <sup>3</sup> )	54.54	€/m <sup>3</sup>	2013
0.500 - 0.599(m <sup>3</sup> )	51.59	€/m <sup>3</sup>	2013
0.600 - 0.699(m <sup>3</sup> )	55.39	€/m <sup>3</sup>	2013
0.700 - 0.799(m <sup>3</sup> )	55.6	€/m <sup>3</sup>	2013
0.800 - 0.899(m <sup>3</sup> )	57.41	€/m <sup>3</sup>	2013
0.900 - 0.999(m <sup>3</sup> )	60.68	€/m <sup>3</sup>	2013
1.000(m <sup>3</sup> ) and over	54.00	€/m <sup>3</sup>	2013

Average	53.56	€/m <sup>3</sup>	2013
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	Value	unit	year
<b>Land Cover</b>			
share of agricultural land	67.1	% of total area	2006
share of natural grassland	1.3	% of total area	2006
share of forestry land	4.1	% of total area	2006
share of transitional woodland shrub	6.0	% of total area	2006
share of natural land	17.2	% of total area	2006
share of artificial land	2.3	% of total area	2006
share of other area	2.1	% of total area	2006
<b>Areas with Natural Constraints</b>			
total	77.5	% of total UAA	2005
mountain	0.0	% of total UAA	2005
other	77.1	% of total UAA	2005
specific	0.4	% of total UAA	2005
<b>Farming intensity</b>			
low intensity	47.1	% of total UAA	2007
medium intensity	32.0	% of total UAA	2007
high intensity	20.9	% of total UAA	2007
grazing	44.7	% of total UAA	2010
<b>Natura 2000 areas</b>			
share of the territory	13.2	% of territory	2011
share of UAA (incl. natural grassland)	4.1	% of UAA	2011
share of total forestry area	18.3	% of forest area	2011
<b>*Farmland Birds index (FBI)</b>			
total (index)	92.4	Index 2000 = 100	2008

<b>Conservation status of agricultural habitats (grassland)</b>			
favourable	0.0	% of assessments of habitats	2001-2006
unfavourable - inadequate	33.0	% of assessments of habitats	2001-2006
unfavourable - bad	66.0	% of assessments of habitats	2001-2006
unknown	0.0	% of assessments of habitats	2001-2006
<b>*HNV Farming</b>			
total	n.a.	% of total UAA	0
<b>Protected Forest</b>			
class 1.1	n.a.	% of FOWL area	2011
class 1.2	n.a.	% of FOWL area	2011
class 1.3	0.9	% of FOWL area	2011
class 2	n.a.	% of FOWL area	2011
<b>*Water Abstraction in Agriculture</b>			
total	0.0	1000 m3	2010
<b>*Water Quality</b>			
Potential surplus of nitrogen on agricultural land	52.8	kg N/ha/year	avg. 2006-2009
Potential surplus of phosphorus on agricultural land	4.0	kg P/ha/year	avg. 2006-2009
Nitrates in freshwater - Surface water:			
High quality	74.9	% of monitoring sites	2010
Moderate quality	24.0	% of monitoring sites	2010
Poor quality	1.1	% of monitoring sites	2010
Nitrates in freshwater - Groundwater:			
High quality	85.2	% of monitoring sites	2010
Moderate quality	14.8	% of monitoring sites	2010
Poor quality	0.0	% of monitoring sites	2010

<b>*Soil organic matter in arable land</b>			
Total estimates of organic carbon content	11.5	mega tons	2009
Mean organic carbon content	21.2	g kg-1	2009
<b>*Soil Erosion by water</b>			
rate of soil loss by water erosion	0.3	tonnes/ha/year	2006
agricultural area affected	115.8	1000 ha	avg. 2006-2007
agricultural area affected	2.4	% of agricultural area	avg. 2006-2007
<b>Production of renewable Energy from agriculture and forestry</b>			
from agriculture	34.4	kToe	2010
from forestry	197.0	kToe	2010
<b>Energy use in agriculture, forestry and food industry</b>			
agriculture and forestry	251.0	kToe	2011
use per ha (agriculture and forestry)	47.0	kg of oil equivalent per ha of UAA	2011
food industry	474.0	kToe	2011
<b>*Emissions from agriculture</b>			
total agriculture (CH4 and N2O and soil emissions/removals)	18,370.6	1000 t of CO2 equivalent	2010
share of total GHG Emissions	30.5	% of total net emissions	2010
total Ammonia emissions from agriculture	107.2	1000 t of NH3	2011



	Value	unit	year
<b>Species Composition</b>			
Sitka spruce	52.5	% of total estate	2012
Norway spruce	4.1	% of total estate	2012
Scots pine	1.2	% of total estate	2012
other pine spp	10.2	% of total estate	2012
Douglas-fir	1.6	% of total estate	2012
larch spp.	3.7	% of total estate	2012
other conifers	0.7	% of total estate	2012
sessile & pedunculate oak	2.3	% of total estate	2012
beech	1.4	% of total estate	2012
ash	3.1	% of total estate	2012
sycamore	1.3	% of total estate	2012
birch spp.	4.7	% of total estate	2012
alder spp.	1.8	% of total estate	2012
other short living broadleaves	8.1	% of total estate	2012
other long living broadleaves	1.5	% of total estate	2012
<b>Age Composition (years old)</b>			
0-10			
11-20	20.8	% of total estate	2012
21-30	18.7	% of total estate	2012
31-40	12.7	% of total estate	2012
41-50	6.1	% of total estate	2012
51+	6.8	% of total estate	2012
Mean forest size (private)	9.1	ha	2012
Private forests	26,733	No.	2012

<b>Private afforestation forest size class (1980-2012)</b>			
0-2.5	8,28	ha	2012
2.5-5	22,434	ha	2012
5-7.5	26,227	ha	2012
7.5-10	27,136	ha	2012
10-15	43,414	ha	2012
15-20	29,162	ha	2012
20-30	32,079	ha	2012
30-50	27,188	ha	2012
50-100	14,112	ha	2012
100+	11,786	ha	2012
<b>Species planted</b>			
Broadleaves	24	% of total planting	2013
<b>Afforestation applications</b>			
Unique owners	798	No. Of grant applications recieved	2012
Mean size of application	7	ha	2012
Mean size planted	6.5	ha	2012
<b>Measures</b>			
<b>Afforestation (all planting schemes)</b>			
Technical approvals granted	16,230	ha	2013
Financial approvals Issued	10,009	ha	2013
Form 2's paid	6,252	ha's	2013
<b>Roads</b>			
Form 1's recieved	237,744	metres	2013
Approved	203,502	metres	2013
Form 2's paid	87,903	metres	2013
<b>Other Schemes</b>			
Reconstitution-Chalara	412	ha	2013
Woodland Improvement	1,153	ha	2013
Native Woodland (Conservation),	68	ha	2013
Native Woodland (establishment),	72	ha	2013
Neighbourwood Scheme	3	no. of projects	2013
Forest management plans	354	No. Of plans	2013

<b>Forestry Activity (Private)</b>			
Thinning	13,037	ha	2012
Clearfell	467	ha	2012

## 6.2 Identification of Needs

Title or Reference of Need	Priority 1			Priority 2		Priority 3		Priority 4			Priority 5					Priority 6			Cross-Cutting		
	1A	1B	1C	2A	2B	3A	3B	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C	Environment	Climate	Innovation
Increase the Level of Forest Cover which is well below the EU average								X	X	X					X				X	X	
Increase supply of forestry biomass to bridge expected supply gap by 2020													X						X	X	
To support private forest holders in actively managing their forests	X	X	X																		X
Enhance the environmental and social benefits of new and existing forests								X	X	X						X	X		X	X	

**Table 23: Identification of needs and RD priorities.**

Table 2 describes in full the focus areas and priorities referred to in the table above.

## 7 Description of the strategy

### 7.1 Programme design considerations

There are two principal constraints that have the potential to limit the development of the forest sector in Ireland, these are as follows;

- i) Failure of the marketplace to properly incentivise farmers and other land holders to invest in afforestation in the first instance or to manage their forest properly for maximum benefit;
- ii) Availability of land for afforestation is limited due to competing land uses.

The measures proposed for the new programme have addressed these constraints by doing the following;

- a) Restructuring premium payments to improve the incentives for land holders to afforest while at the same time reducing the cost and liability to the exchequer;
- b) Introducing schemes which can yield a return in a shorter period of time and which can co exist alongside existing agricultural activities; and
- c) Including schemes which are aimed at mobilising timber thereby increasing the supply of material to sawmills, boardmills and to the renewable energy sector.

#### 7.1.1 Market Failure

Market failure is the rationale for State support for afforestation in Ireland. Despite the many benefits that forestry brings, most accrue towards the end of the forest cycle (typically 30-40 years from planting when the forest reaches the optimum financial rotation. This time lag between investment in afforestation and benefits arising creates a difficulty in securing investment. The need for State intervention is also supported by an examination of private planting from 1926 up to the introduction of the Western Package Scheme (WPS) in the 1980s. The average annual rate of afforestation was 219 ha while the figure was 227 ha per annum in the ten years prior to the introduction of the WPS. There were varying levels of State afforestation grants from 1931 onwards but none of which would cover anything approaching the costs of afforestation. Therefore without State aid afforestation would fail to reach 1,000 ha per annum.

There is also market failure when it comes to building forest roads and first thinning - in order to extract the timber a forest road is required. There are significant construction costs in terms of building the road and for the thinning operation. The revenue generated from first thinning does not cover the cost of the operation (road building and thinning). Recent figures show that timber at first thinning stage will fetch €400/ha standing, however the road will cost in the region of €1,000/ha.

In relation to the mobilization of timber, a report produced in 2007 showed that the full potential of farm forestry was not being realised and that some 900,000 m<sup>3</sup> had reached or passed the first thinning stage but had not been felled. More recently, in 2012 the National Forest Inventory showed that 23% of the national estate had reached thinning stage but had not been thinned, this represents 164,000 ha. Despite the costs associated with first thinning, when it is carried out it will yield higher returns in the long run as, the NPV of a forest plantation is higher where thinning is carried out compared to those that have not been thinned. This is down to the fact that thinnings accelerate growth on the remaining trees and bring forward harvest.

### *7.1.2 Land Availability*

The COFORD Council Land Availability Working Group produced a draft report which stated that availability of land for forestry may be more limited than previously thought. While 4.65 million ha are considered as having good production potential for forestry, the availability of land for forestry is constrained by land already in agricultural production or land with environmental constraints for afforestation. Nevertheless there remain significant areas of land where agriculture is physically or otherwise constrained and are suitable for afforestation.

### *7.1.3 State Aid Rules and the new Afforestation Scheme*

Particular attention must be paid to the design of the new afforestation scheme where the level of investment represents 95% of the total 2014 forestry budget. The new CAP regulations and in particular Regulation (EU) No 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) means that the structure of the afforestation scheme must be amended to reflect the new rules. The main changes required are as follows;

- Reduction in the number of annual premium payments down from 20 to 12;
- Introduction of a single rate which does away with the non farmer/farmer distinction.

The new RD regulation also provides for the introduction of new measures. These are as follows;

- Agro – forestry
- Forestry for fibre
- Forest genetic reproductive material scheme
- Forest Technology
- Knowledge Transfer Groups.

In relation to the number of premium payments that can be made the option of increasing the number of premiums is still available to the Department under the General de minimis regulation. In this regard, the Forest Service has decided to avail of this option and increase the number of premiums payable from 12 to 15 under de minimis.

## ***7.2 Justification for the needs selected***

### *7.2.1 Need Number 1: Increase the level of forest cover*

The recently completed European Forest Sector Outlook Study II (EFSOS II), carried out jointly by the UN Economic Commission for Europe and the Food and Agriculture Organisation of the UN (UNECE/FAO 2011a), examined a range of policy options and challenges facing the forest sector up to 2030. This study included an examination of wood supply and the provision of other goods and services by the forest sector if current supply trends continued. This scenario predicts that consumption of forest products and wood energy will grow steadily and wood supply will expand to meet this demand. Forest area is expected to expand, increasing by 6%, or 12 million ha by 2030, an area slightly larger than Bulgaria. In 2030 demand for wood will be 20% higher than in 2010 with slower growth from the forest products industry and faster growth for energy. To meet this demand, all components of supply will have to expand, especially harvest residues. In all scenarios examined in the EFSOS II report Europe will remain a net exporter of wood and forest products. Projections

also show a steady rise in prices of forest products and wood over the whole period, driven by expanding global demand and increasing scarcity in other regions. Within Ireland itself demand for roundwood is forecast to increase from 4.29m<sup>3</sup> in 2011 to 6.338m<sup>3</sup> by 2020 (Table 6).

Within this context of growing future demand for forest products, Ireland's forest cover of just 11% compared with the European average of 38% demonstrates a clear opportunity for expansion. In order to do so Ireland must increase its forest cover over the coming decades. One of the principal aims of the new forestry programme is to contribute towards the increase in forest cover to 18% by mid century. This level of cover will create the critical mass required to support an indigenous industry that can achieve a good rate of return on the investment in terms of processing capacity and employment. The estimated domestic timber production required to achieve this critical mass is a sustainable supply of between 7 and 8 million m<sup>3</sup> per annum. This would require approximately 1.2 million ha of forest with an even distribution of age classes. The challenge for Ireland is to ensure that measures introduced within this plan contribute towards this target in a manner which addresses in equal measure the social, environmental and economic benefits that forestry can deliver.

#### *7.2.2 Need Number 2: Increase supply of forest-based biomass to bridge expected supply gap by 2020 and beyond*

To meet the stated targets for renewable energy by 2020, the gross demand for wood biomass will increase 2-fold, from 1.589 m<sup>3</sup> in 2011 to 3.259 m<sup>3</sup> in 2020 (Table 6). Such a steep increase in wood biomass demand will require a high level of investment in the sectoral supply chain, and will significantly increase the competition for wood fibre. This demand is likely to increase beyond 2020 as the cost of fossil fuels continues to rise and higher renewable energy targets are set by the EU in response to climate change and fuel security considerations. At a national level demand for forest-based biomass is set to grow as indicated previously.

#### *7.2.3 Need Number 3: To support private forest holders in actively managing their forests*

In order to address this need the programme focuses on both the forest holder and the professional forester. Enabling the forest holder to make the most appropriate decisions can be achieved through targeted training, advisory services and producer and knowledge transfer groups; while professional foresters are encouraged to adopt a lifelong learning approach through continuous professional development.

Figures show that approximately 8,000 forest owners have plantations of 12- 22 years old which are approaching or have already reached thinning stage. The majority of these forest owners have no ongoing forest management or planning regimes in place. With many of these plantations approaching first thinning, critical management decisions and in many cases, time critical harvesting interventions are required. In a recent survey of forest owners, it was also found that if owners have attended extension activities they were 2.5 times more likely to thin. Timely and appropriate management can increase forest resilience, forest productivity and enterprise profitability. There is a need to build significantly on the existing skills and knowledge base and develop a culture of forest management among forest owners.

### 7.2.4 Need 4: Enhance the environmental and social benefits of new and existing forests

There is a need to take advantage of the opportunities that exist for developing Ireland's national estate so that environmental and social benefits offered by existing or new forests can be optimised. This is particularly the case in relation to broadleaved forests established since the 1980s. The cost to forest owners for carrying out the type of operations envisaged to meet this need whether it is managing existing woodlands or planting close-to-nature native woodlands is prohibitive. In most situations the commercial benefits (if any) of these activities are not apparent in the short to medium term. If these objectives are to be achieved as part of meeting this need, it is necessary for support to be provided to act as an incentive to forest holders to carry out these activities. In this context the response to meeting this need includes two schemes which enhance existing broadleaf forests and create new broadleaf plantations; both of which provide a range of environmental services, and the production of hardwood.

Maintenance and establishment of existing and new seed stands will also be supported to foster the increased use of selected and indigenous reproductive material in order to provide for well adapted and productive forests. A technology scheme is being introduced which is aimed at improving efficiency and reducing environmental impacts that forestry activities might have at site level. The scheme will also facilitate investment in new technology which has yet to be proven under Irish conditions.

## 7.3 A description of the choice and combination of measures

### 7.3.1 Need Number 1: Increase forest cover

Priority 4: Restoring, preserving and enhancing ecosystems related to agriculture and forestry				
Focus Area	Quantified Target			Measure
(a) Restoring, preserving and enhancing biodiversity, (including in Natura 2000 areas, in areas facing natural or other specific constraints), high nature value farming, and the state of European landscapes	10,000 annum forests	ha of	per new	Investment in forest area development and viability of forests
(b) Improving water management, including fertilisers and pesticides management				
(c) Preventing soil erosion and improving soil management				
Priority 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors				
(e) Fostering carbon conservation and sequestration in agriculture and forestry	10,000 annum forests	ha of	per new	Investment in forest area development and viability of forests
Area 6: Promoting social inclusion, poverty reduction and economic development in rural areas				
(a) Facilitating diversification, creation and development of small enterprises, as well as job creation	10,000 annum forests	ha of	per new	Investment in forest area development and viability of forests

In order to increase forest cover the Afforestation and Creation of Woodlands measure includes four different schemes each of which has a different emphasis. These are described briefly as follows;



- i) The afforestation scheme is mostly aimed at commercial wood production but which retains a 15% open area\retained habitat obligation for plantations over 10 ha. These forests must also contribute to the target of achieving 30% broadleaf planting on an annual and national basis (higher premiums will be offered to help achieve this aim). This approach to the creation of new woodlands balances commercial and environmental/ecological potential of forests.
- ii) The native woodlands scheme (establishment) has a mainly environmental focus and is aimed at extending native woodland cover and associated biodiversity in Natura 2000, acid sensitive sites and riparian areas. Support under this scheme is provided for the planting of native broadleaves and the retention of species rich habitats such as fens and species rich grasslands. Close to nature forest management is encouraged under this scheme.
- iii) Forestry for fibre provides an opportunity for land owners to plant trees for fuel or for supply to other end uses such as panel board manufacture. A different species palette is introduced here.
- iv) Finally, agro-forestry is aimed at farmers who wish to plant forest but who also wish to use their land for grazing or silage. This is an opportunity for them to get involved in forestry on a small scale to grow quality wood for their own heating needs while maintaining their existing agricultural income stream. In general terms these schemes aim to grow wood for commercial use. The aim is to help ensure a sustainable source of roundwood for wood product manufacture and by doing so provide jobs in rural areas and help farmers diversify their income.

In keeping with the principles of sustainable forest management the suite of afforestation schemes presented here will deliver a range of forest services such as water quality protection, soil protection, habitat provision, as well as amenity and recreational services. The new Sustainable Use Directive, will also be an important feature of these schemes ensuring proper pesticide management. Furthermore, these forests will contribute to the mitigation of climate change in the following manner;

- Sequestration – by removing greenhouse gases from the atmosphere and by increasing soil carbon and other pools;
- Abatement – by converting agricultural land, mostly used for livestock rearing, from a source to a sink of greenhouse gases;
- Substitution – by replacing imported fossil fuels with indigenous wood fuels in the production of heat and power and by replacing more energy intensive materials..

The Reconstitution scheme is also included under this measure. This scheme deals with forest holders whose plantations have suffered damage of more than 20% of the relevant forest potential. This scheme offers reassurance that subject to certain conditions that the State will support re-establishment of a grant aided plantation to its original condition which will encourage landowners to participate in the programme; this scheme also underpins state and private investment in afforestation. This scheme also reduces the risk of disease spread. Where forest holders know that there is a scheme to re establish forests damaged by natural causes they are more inclined to notify the Forest Service of any concerns they might have regarding the health of their forests. Furthermore, this scheme can also provide aid for the removal and destruction of infected material thereby reducing the risk disease spread.

## Result Indicator for Need No. 1:

- Increase Ireland's Forest Resource

### 7.3.2 Need Number 2: Increase supply of forest-based biomass to bridge expected supply gap by 2020

Priority 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors		
Focus Area	Quantified Target	Combination of Measures
(c)Facilitating the supply and use of renewable sources of energy, of by-products, wastes and residues and of other non-food raw material, for the purposes of the bio-economy	1,000 ha per annum of new forests for fibre and 50 ha per annum of agro-forestry	Investment in forest area development and viability of forests
	180,000km\annum of new forest roads	Investments in Physical Assets

The programme uses a two pronged approach to addressing this need. Firstly, support for private forest holders to build roads is crucial to encouraging first thinning thereby increasing supply of forest-based biomass. Without financial support to build forest roads it is simply uneconomical to thin and without roads there is no access to the forest. Secondly on the production side, the introduction of an agro-forestry and forest for fibre measures will provide opportunities for private growers to plant trees for energy purposes. Farmers who otherwise might not be attracted to more traditional forms of forestry either because of the long rotations before commercial harvesting or the permanent loss of agricultural land might be more amenable to taking part in these schemes.

Finally, proper management over the rotation is essential for the health and vigour of a forest plantation and enables owners to maximise financial return. Forest management plans set out *inter alia* a thinning schedule and location of forest roads. The forest road scheme will also give preference to group applications where funding is limited.

## Result indicator for Need no. 2:

- Increase in the amount of energy available from forestry<sup>89</sup>
- Increase in newly accessible woodland (Ha) for biomass as a result of the Forest Roads Scheme

<sup>89</sup> This could be measured by noting the hectares or tonnes of new wood grown through the Forestry for Fibre Scheme.

### 7.3.3 Need Number 3: To support private forest holders in actively managing their forests

Priority 1: Fostering knowledge transfer and innovation in agriculture, forestry, and rural development		
Focus Area	Quantified Target	Combination of Measures
(a) Fostering innovation, cooperation and the development of the knowledge base in rural areas	Maintain existing 26 producer groups; 13 new producer groups established with the same number of KTG also established  1,000 forest management plans completed per annum	Knowledge transfer and Innovation actions
(b) Strengthening the links between agriculture, food production and forestry and research and innovation, including for the purpose of improved environmental management and performance	600 individual visits, 3,500 phone consultations, 20 field days and other information events	Advisory services, farm management and farm relief services
(c) Fostering lifelong learning and vocational training in the agricultural and forestry sectors	CPD established as a requirement for all foresters registered on the list of approved foresters	

Producer groups provide a useful platform for forest holders living within a geographic catchment to combine their expertise as well as their resources for mutual benefit. Learning from your contemporaries can engender a stronger ethos for accumulating knowledge which can lead to developing a certain level of expertise in an area. Economies of scale as well as knowledge can provide the right circumstances for growers to thin where they might not have done so if a producer group hadn't existed. The knowledge transfer groups on the other hand are seen as an extension of the producer group but can also be a standalone endeavour. The focus here is more on education and transfer of innovation to end users than say, meeting the logistical challenges faced by forest holders operating on their own. It is possible that knowledge transfer groups could follow on from producer groups in so far as the same members can attend both. Also there are possibilities for combining measures so that for example beneficiaries of the technology measure are obliged to give talks at the knowledge transfer groups; or maybe individuals who have planted agro-forestry or forestry for fibre give a talk on their experiences.

Advisory services in relation to new and existing schemes provide a key support mechanism for the programme where resources are aimed at promotion and encouraging farmers to plant. Advisory services providing one-to-one clinics promote informed decision making. This measure is particularly important in the context of the new programme as a number of schemes are being introduced for the first time. Also some of the key conditions for the main afforestation scheme such as the number of premiums and the introduction of a single rate are changing.

Targeted training can be aimed at both forest holders and forestry professionals and can include seminars, field events or more formal training courses aimed at specific needs such as harvesting on sensitive sites. Continuous professional development would require that

professional foresters must take part in a set number of events per year in order to remain on the list of registered foresters.

#### Result indicator for Need No. 3:

- Increase timber production from private sector thinnings
- Increase timber production from private sector clearfell

#### 7.3.4 Need Number 4: Enhance the environmental and social benefits of new and existing forests

Priority 4: Restoring, preserving and enhancing ecosystems related to agriculture and forestry		
Focus Area	Quantified Target	Measure
(a) Restoring, preserving and enhancing biodiversity, (including in Natura 2000 areas, in areas facing natural or other specific constraints), high nature value farming, and the state of European landscapes	1,500 ha per annum of broadleave forests thinned and tended	Investment in forest area development and viability of forests
(b) Improving water management, including fertilisers and pesticides management	60ha of native woodlands conserved per annum 30 technology projects supported	
	350 ha of seed stands supported per annum 100ha of seed orchards planted per annum	Forest Environment/climate service /forest conservation
(c) Preventing soil erosion and improving soil management		
Area 6: Promoting social inclusion, poverty reduction and economic development in rural areas		
(b) Fostering local development in rural areas	10 neighbourwood projects completed Per annum	Investment in forest area development and viability of forests

The state has invested significantly in the broadleaf planting programme over the years and it is important that the benefits of these forests are maximised for society. Over one quarter of the forest estate contains broadleaf tree species. During the 1930s and 1940s the planting of conifers to broadleaves were averaging 90% to 10%. Thereafter, up to the early 1990s, broadleaves comprised 4% of afforestation. The proportion of broadleaves planted significantly increased from 1993 up to the present, with broadleaves comprising 23% of afforestation.

Schemes included in the programme to meet this need address the social and environmental aspects of forests more directly than the other schemes mentioned above; they tend to be less focussed on wood production.

The native woodland scheme (conservation) aims to enhance existing native woodlands and establish new native forests. Its function is to provide for the protection of endangered species such as the Freshwater Pearl Mussel. Support under this scheme for example could

include converting conifer forests growing along riparian zones to native woodlands using close-to- nature forestry. Ground vegetation would be encouraged to grow acting as a filter reducing sedimentation from within the catchment. This would also have the effect of stabilising vulnerable river banks and protecting the soil from erosion.

The Thinning and Tending scheme is aimed specifically at broadleaf forests where support is provided to improve the health and vitality of these forests by removing malformed, wolf or diseased trees, by thinning to encourage growth of potential crop trees and by managing natural regeneration. These activities will improve the visual amenity of the forest thereby enhancing the landscape. Forests which have been thinned can also play an important role in soil and water protection where healthier trees are better placed to perform these functions. Broadleaf forests can slow down surface water runoff in water catchments reducing sedimentation\eutrophication of nearby watercourses. These services are enhanced by ground vegetation that is encouraged to grow once the canopy is opened up leading to more light reaching the forest floor.

The two measures referred to in the previous paragraphs are focused more so on enhancing the environmental and ecosystem services that can be provided by native woodlands. The NeighbourWood Scheme is aimed at realising the recreational and wider social benefits woodlands and forests can provide. The NeighbourWood Scheme is all about bringing communities and woodlands together, by helping local authorities and others to create ‘close-to-home’ woodland amenities in partnership with communities, for local people to use and enjoy. These “NeighbourWoods” become part of the local identity and ‘sense of place’, and the benefits they create are enjoyed by local people. These benefits can be numerous and far-reaching. NeighbourWoods provide accessible opportunities for recreation and regular exercise, and offer people contact with the natural world and the changing seasons. They promote health and well-being, and provide a place for family and friends to come together and relax. They provide a venue for a wide range of community and sporting events which contribute to social inclusion, and represent an ideal ‘outdoor classroom’ for local school children to learn about nature and the environment. Neighbourwoods also deliver a wide range of environmental benefits, providing vital habitats for wildlife, removing atmospheric carbon, promoting air quality and improving the visual landscape.

The Innovative Forestry Technology scheme will provide financial support to assist individuals in procuring new technologies which can have a positive impact on the economic as well as environmental aspects of their business once it relates directly to the forest plantation. For example damage to forest and minor county roads can be reduced through the use of variable tyre pressure systems for the haulage of logs, chip or forest-based biomass. Innovative forest technologies which have a cost associated with them and which have not yet established a proven track record under Irish conditions could also be supported under this scheme. Inventory measurement equipment is another example of technologies that could be supported.

The Forest Genetic Reproductive Material scheme will help increase self sufficiency in the production of seed that can be used for afforestation. The following table shows the extent to which imported seed is used in Ireland;

Species	Seed (kg)	Plants (000s)	Home collected (%)	Imported (%)
Sitka spruce	200.0	27,550	5	95
Norway spruce	92.0	3,950	5	95
Lodgepole pine (South coastal)	17.5	1,410	100	

Lodgepole pine (North coastal)	13.5	5,25	75	25
Scots pine	29.5	1,105	75	25
Douglas fir	17.6	770	0	100
Hybrid larch	5.5	350		100
European larch	5.5	250		100
Western red cedar	0.35	185		100
Common alder	84.5	2,740	100	
Pedunculate oak	29,250	2,450	20	80
Sessile oak	5,400	430	100	
Birch	36.5	2,450	100	
Beech	415	293	50	50
Sycamore	175	316	100	

**Table 24: Seed imports**

Clearly there is a need to be less reliant on imported sources of seed and plants particularly in relation to oak and Sitka spruce. It has been confirmed that the source of *Chalara fraxinea* (ash die back) was an infected batch of imported plant material.

There are seed stands registered in Ireland but seed is not being collected from all of them. For example there are 1,395ha of sessile oak registered but 100% of all seed and plants are imported in some years. Most oak is sourced in Holland where mast years appear to occur almost annually. In Ireland the Atlantic maritime climate militates against successful seed maturity and mast years occur infrequently (2-4 years for pedunculate oak and 3-6 years for sessile oak). The problem with achieving self sufficiency in seed production is therefore infrequency of seeding, wildlife predation, vegetation management and limited numbers of collectors, in a labour intensive harvesting process. To address these issues an incentive is proposed to establish new seed stands or to provide a contribution towards the management of existing seed stands where predation and or vegetation makes seed collection difficult. This in turn would reduce the risk of disease outbreak. A Forest Genetic Reproductive Material Scheme would be promoted to both public and private forest owners calling for new stands to be identified for the register and for measures to increase seed harvest from stands already registered. Support for the establishment of seed orchards would also contribute towards this aim.

#### Result indicators for Need No. 4:

- Increase self sufficiency in seed production
- Increase in the area covered by locally based seed stands and production areas
- Increased use of improved sitka spruce
- Increase the area of native woodlands
- Increase in the number of new facilities created to encourage greater public use of forests;
- Increase in the number and size of new and existing public amenity forests

## 7.4 Description of cross cutting measures

### 7.4.1 Environment

The new Forestry Programme for Ireland proposes a suite of schemes which will provide a range of ecosystem services aimed at protecting water quality, improving soil stability,

retaining and enhancing diverse habitats, protecting endangered species, mitigating climate change, and enhancing the visual amenity of surrounding landscapes.

First of all, schemes being introduced to create new woodlands must contain at least 15% open space and retained habitat (collectively referred to as ‘Areas of Biodiversity Enhancement’ or ABEs) where the size of the new forest exceeds 10 ha. The function of ABEs is to conserve and encourage the development of diverse habitats, native flora and fauna, and biodiversity on site within the future forest. In sites less than 10 ha, the open space element of ABEs should be designed in conjunction with neighbouring land use and may be reduced. Furthermore, these schemes must also contribute to the national broadleaf target of 30%, thereby contributing to a greater range of habitat types and a more diverse species mix nationally. The new programme will ensure that this target is reached by: (i) the availability of higher grant and premiums for broadleaf planting under the afforestation schemes; (ii) the requirement to include 10% broadleaves (where site quality allows) within all new individual afforestation projects; and (iii) the availability of funding under the Native Woodland Establishment Scheme, focused specifically on creating new native woodlands comprising a site-appropriate mix of predominantly broadleaved native species.

The target of the Forestry Programme is to create 10,000 ha of new forests each year over the programme period, which will lead to greater supplies of forest biomass and sawlog dimension material for renewable energy uses and for wood product manufacture.

Both elements of the Native Woodland Scheme can make a particular contribution towards the protection and enhancement of water quality. For example, within key FPM catchments, the conservation element of the scheme can be used to convert conifer forest into native woodland at key locations along watercourses. This approach creates a semi-natural habitat that will buffer receiving waters against the runoff of sediment and nutrients from upslope (e.g. adjoining commercial forestry). The future management of these areas using ‘close-to-nature’ silvicultural techniques associated with the Native Woodland Scheme will minimise future disturbance onsite and ensure a long-term protective role..

The construction of appropriately-sited forest roads also has an important and positive impact on the environment. Forest roads allow for first thinning to be undertaken, which leads to the opening up of the canopy. Light filtering through the forest canopy will stimulate ground vegetation to grow, leading to greater biodiversity and the enrichment of the forest floor in terms of animal, plant and insect life.

The Forest Road Scheme and the NeighbourWood Scheme allow for greater access to forests for visitors and provide recreational outlets for surrounding communities. As well as contributing to the overall well-being of these communities, accessible and attractive outdoor recreational opportunities such as those provided by forests support the important aim of creating an inclusive society, in that all can share in the enjoyment of spending time in a forest setting.

#### *7.4.2 Climate*

The afforestation programme plays an important role in mitigating climate change, as a land based sink for carbon dioxide, and as a source of renewable raw materials for fuel and wood products. The total carbon stock in forest biomass (excluding soil carbon) is estimated to be



circa 210.3 Mt of CO<sub>2</sub> in 2012<sup>90</sup>. Forest soils represent a very significant carbon pool; current estimates are that the total carbon stock in forest soils is in the region of 1,188.1 million tonnes of CO<sub>2</sub>.

Given the levels of afforestation that have occurred since 1990, it is estimated that between 2008 and 2012 the average rate of sequestration in qualifying forests (under Article 3.3) over the first commitment period of the Kyoto Protocol will be 3.23 Mt CO<sub>2</sub> per annum. While afforestation levels proposed under the new programme will have little effect on the levels of carbon sequestered in the short term, because forests grow relatively slowly as they establish themselves over the first five years or so, these forests will make a substantial contribution to climate change mitigation in the longer term. A planting programme of 10,000 ha will also support a sustainable harvest of 7-8million m<sup>3</sup> roundwood per annum into the future and consequently a sustainable and meaningful contribution to climate mitigation over the long term.

#### 7.4.3 *Innovation*

Knowledge Transfer Groups (KTGs) are important contributor to bridging the gap between organisations and individuals who are focussed on research and process improvement on the one hand and forest holders on the other whose enterprise can benefit from these developments. The aim will be to improve market uptake of new forest technologies, processes and concepts. There are 26 producer groups already in existence and the potential exists to use these groups as a platform for growing a network of KTGs. There could also be a tie in with the forest technology intervention which is aimed at encouraging forest holders and professional foresters to invest in new technology which might not necessarily be used in Ireland, perhaps because it is untested and/or too costly.

The following example might explain better how these interventions can combine to meet this cross cutting objective. A producer group have decided that they need to carry out an inventory of their combined resource before going to market for first and second thinnings. Instead of paying a company to do this work they decide to look at the options for carrying out this task themselves. Under the technology measure funding was provided to a professional forester to buy newly developed inventory equipment from outside of Ireland. As a condition of this funding the forester must give talks and demonstrations to others interested in using such equipment. A knowledge transfer group is established from the producer group to look specifically at timber measurement and options available for owners. This KTG would then liaise with advisory services to organise training and events on the subject as well as demonstrations of equipment available such as that supported under the forest technology scheme.

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<sup>90</sup>National Forest Inventory 2013. The Second National Forest Inventory. Republic of Ireland. Main Findings. Forest Service, Department of Agriculture, Food and the Marine, Wexford.

## 7.5 Summary table

Need	Focus area	Measures	Indicative allocation	Schemes	Scheme Targets (2015-2020)
Increase the level of forest cover	4 (a),(b),(c), 5(e) and 6(a)	2.1.1	€660m	Afforestation	51,350
			€22m	NWS (Est)	3,075ha
		2.1.2	€1.4m	Agro Forestry	400ha
		2.1.3	€4.6m	Reconstitution	approvals = demand
Increase supply of forestry biomass to bridge expected supply gap by 2020	5(c)	2.1.1	€7.4m	Forestry for Fibre	2,850ha
		2.1.6	€40.8m	Forest Roads	1,080km, 100 special works
To support private forest holders in actively managing their forests	1(a), (b), (c)	2.4	€0.6m	Knowledge Transfer Groups and targetted training activities	500 participants in KTG's, specific courses funded on request from 3rd level bodies.
		2.5	€4.2m	Advisory and promotion services	600 individual visits, 3500 phone consultations, 20 field days and other events
		2.7		Establishing Producer Groups	maintain existing groups and create 13 new groups
		2.1	€3m	Forest management plans	6,000 plans over the programme
		2.1.5	€1.4m	Investment in Forest Technology	120 projects funded
		2.1.4	€6.75m	Woodland Improvement (Thinning and Tending of Broadleaves)	9,000ha thinned and tended
Enhance the environmental and social benefits of new and existing forests	4 (a),(b),(c), 5(e) and 6(b)		€2.5m	NWS (Conservation)	360 ha
			€3m	Neighbourwood scheme	60 projects
		2.3	€0.42m	Forest reproductive material	350ha supported

**Table 25: Intervention Logic**

## 8 Common Assessment Principals

### 8.1 Contribution to a common objective

#### 8.1.1 Contribution to national and regional strategies

Figure 3 below shows a scale between inconsistency/incoherence and consistency/coherence. It also shows that redundancy and efficiency are both necessary, but must be kept in balance. Excessive redundancy leads to duplication and excessive efficiency leads to gaps.

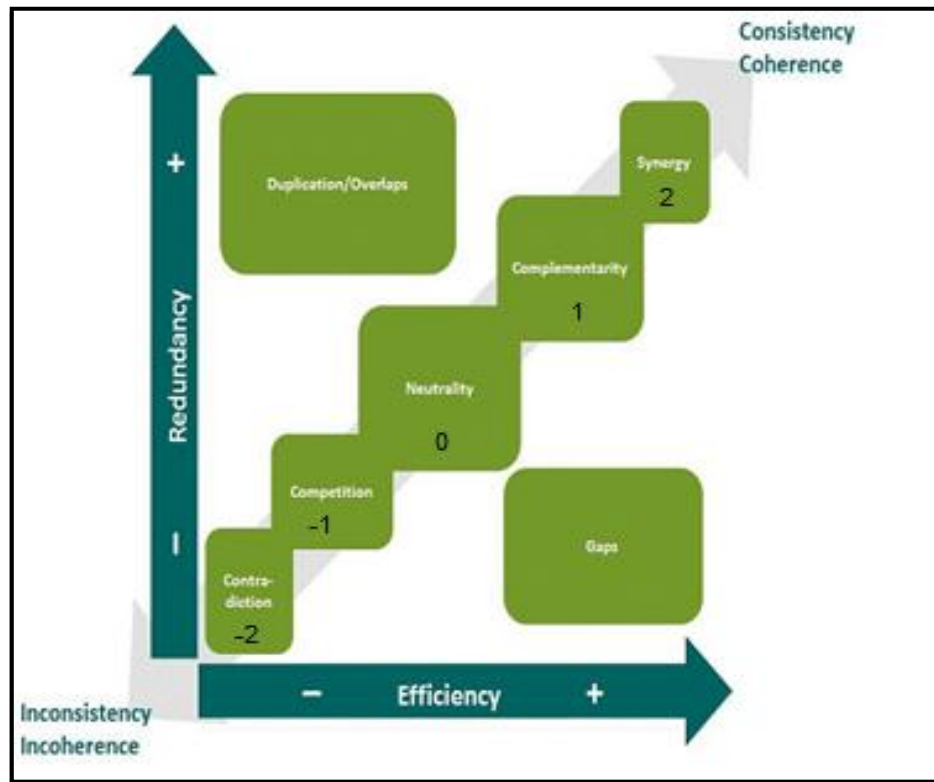


Figure 3: Diagram of possible interactions between policies and programmes

Strategy / Policy	Contribution of new Forestry Programme 2014-2020			
	Need 1 – Increase the Level of Forest Cover	Need 2 – Increase supply of forestry biomass to bridge expected supply gap by 2020	Need 3 – To support private forest holders in actively managing their forests	Need 4 – Enhance the environmental and social benefits of new and existing forests
<b>National Reform Programme and Council Recommendations</b>				
National Reform Programme for Ireland under the Europe 2020 Strategy (The Irish Government, 2011)	2	1	1	1
Council Recommendation of on the Irish National Reform Programme 2012 (Council of the European Union, July 2012)	n/a	n/a	n/a	n/a
Economic Adjustment Programme (EAP) (European Commission, 2010)	0	0	0	0
<b>Overarching Strategies</b>				
Programme for Government, (Department of An Taoiseach, March 2011)	1	1	1	1
Action Plan for Jobs, (Department of Jobs, Enterprise and Innovation, 2012)	2	1	1	0
Infrastructure & Capital Investment 2012-16: Medium Term Exchequer Framework, (Department of Public Expenditure, November 2011)	0	0	0	1
Strategy for Science, Technology and Innovation (DETE 2006-2013)	0	0	1	0
Strategy for Renewable Energy 2012-20, (Department of Communications, Energy and Natural Resources, May 2012)	1	2	1	0
National Renewable Energy Action Plan – IRELAND, 2010	1	2	1	0
National Energy Efficiency Action Plan 2, March 2013.	1	2	1	0
National Climate Change Strategy 2007-12 (update forthcoming), (Department of the Environment, Heritage and Local Government, 2012)	1	2	1	0
Delivering our Green Potential, (Department of Agriculture, Food and the Marine, 2012)	2	2	2	1
<b>Sectoral Strategies</b>				
Forests Products and People – Ireland’s Forest Policy – A Renewed Vision (Public Consultation Document) – (DAFM June 2013)	2	2	2	2
Food Harvest 2020 – (DAFF 2010)	-1	-1	0	0

**Table 26: New Forestry Programme contribution to national and regional strategies**

### 8.1.2 Influence of CSF Programmes on New Forestry Programmes

The table below presents a summary assessment of the potential influence of other CSF programmes on the draft Forestry Development Programme. The following CSF Programmes have been selected based on their geographical remit of operation overlapping with that of the FDP OP. These being;

- **Republic of Ireland:**  
BMW Regional Operational Programme 2014-2020  
S&E Regional Operational Programme 2014-2020;  
Ireland ESF Programme 2014-2020;  
Ireland Rural Development Programme 2014-2020; and  
Ireland Seafood Development Programme 2014-2020.
- **Cross Border Programmes - INTERREG VA Programmes:**  
INTERREG V Programme 2014-2020;  
Peace IV Programme – 2014-2020; and  
Ireland Wales Cooperation Programme 2014-2020.
- **Transnational Programmes - INTERREG VB Programmes:**  
Northern Periphery Programme 2014-2020;  
North West Europe (NWE) Programme 2014-2020; and  
Atlantic Area Transnational Programme 2014-2020.
- **Interregional Programmes - INTERREG VC Programmes – INTERREG EUROPE:**  
INTERREG VC – Ireland 2014-2020.

Figure 4 below shows a scale between strong complementarity and strong duplication. The scale shows the magnitude of the influence of other CSF programmes on the Forestry Development Programme.

#### Key

<u>Influence</u>	Strong Complementarity	Complementarity	Neutral	Duplication	Strong Duplication
<u>Rank</u>	5	4	3	2	1

**Figure 4: Diagram of possible interactions between policies and programmes**

**Table 27: Influence of other Policies and Programmes on the new Forestry Programme**

CSF Programme	Forestry Development Programme 2014-2020			
	Need 1: Increase in the level of forest cover	Need 2: Increase supply of forestry biomass o bridge expected supply gap by 2020	Need 3: To support private forest holders in actively managing their forests	Need 4: Enhance the environmental and social benefits of new and existing forests.
<b>Republic of Ireland</b>				
BMW Regional Operational Programme 2014-2020	4	4	3	4
S&E Regional Operational Programme 2014-2020	4	4	3	4
Ireland ESF Programme 2014-2020	3	3	3	4
Ireland Rural Development Programme 2014-2020	5	5	5	5
Ireland Seafood Development Programme 2014-2020	3	3	3	3
<b>Cross Border</b>				
INTERREG VA Programme 2014-2020 (Northern Ireland – Border Region of Ireland-Western Scotland)	4	4	3	4
Peace IV Programme – 2014-2020 (Northern Ireland - Border Region of Ireland)	3	3	3	3
Ireland Wales Cooperation Programme 2014-2020	4	4	3	4
<b>Transnational Programmes - INTERREG VB Programmes</b>				
Northern Periphery Programme 2014-2020	4	4	3	4
North West Europe (NWE) Programme 2014-2020	4	4	3	4
Atlantic Area Transnational Programme 2014-2020	TBC	TBC	TBC	TBC
<b>Interregional Programmes - INTERREG VC Programmes – INTERREG EUROPE</b>				
INTERREG VC – Ireland 2014-2020	4	4	3	4

### *8.1.3 Rural Development Objectives*

Table 27 clearly demonstrates consistency with the priorities of the Rural Development Regulations.

### *8.1.4 Environmental Objectives*

Compliance with EU legislation on the protection of the environment is demonstrated throughout this document principally under section 3.1 but more specifically under each of the measures as they are addressed in the following sections.

## *8.2 Need for state intervention*

This point is covered under section 7.1.1.

## *8.3 Appropriateness of aid*

The new programme is a continuation of previous programmes which have been in operation since the 1980s, aiming to build the national forest resource and its services. This type of aid operated successfully under previous rural development programmes and under state aid approval for the period 2007-2013. The Department of Agriculture Food and the Marine decided to fund forestry under state aid rules as opposed to rural development as it was felt that an already ambitious RDP would not have sufficient financial capacity for another large scheme such as forestry (€739m proposed over the period 2015-2020). With forestry included in the RDP it was felt that the other schemes would lack sufficient scale and individual supports would not be adequate to meet targets.

## *8.4 Incentive effect and need for aid*

Prior to State intervention in the 1980s planting levels stood at just over 200 ha per annum. With aid planting levels reached just over 6,500 annually over the period 2011-2013, this clearly demonstrates a very low (and acceptable) dead weight of 3%.

Aid shall only be given once an application has been made before the activity has started.

In relation to the incentive effect, SMEs must indicate on the application form for aid under the measures proposed that “The work described herein, would not have been undertaken if it wasn’t for the financial support provided under state aid rules. Without this aid there would be no change to current activities.” For large companies documentary evidence must be submitted in relation to the counterfactual (what would happen without the aid) for each of the measures proposed. This involves a credibility check of the counterfactual to establish that the company would not plant for example if aid wasn’t available. A counterfactual is credible if it is genuine and relates to the decision-making factors prevalent at the time of the decision by the beneficiary regarding the activity. Large companies must submit an internal company document (separate to the application form) showing that the company has analysed the viability of the project – with and without aid – and showing the “incentive effect”. The document must clearly state what would have happened without the support available under this scheme. That means that the documentation (internal report) produced by the company must establish that the aid will cause at least one of the following:



- A material increase in the size of the project, or
- A material increase in the scope of the project, or
- A material increase in the total amount spent on the project,

The Forest Service will require that the company document shows a credible analysis and demonstration of the incentive effect. The document should contain an analysis which answers the following questions:

- Would the project proceed without State Aid assistance?
- Would the level of project expenditure be less without State Aid support? If so, indicate by how much?

This information should indicate changes in the project size, scope and total spend. This incentive effect document should be submitted with the Form 1. The application will only be deemed to have been accepted as valid once the company has been advised by the Forest Service that the incentive document meets the requirements set out above and is fully compliant with the European Union Guidelines for state aid in the agriculture and forestry sector and in rural areas 2014 – 2020.

### ***8.5 Proportionality of the aid***

Support under each of the measures proposed will not exceed the aid intensities set out in the state aid rules. Eligible costs have been the subject of an internal costings exercise where stakeholders were asked to submit costs. These costs were scrutinised and were deemed excessive (except for fencing where an increase was given on the basis that the Department wished to promote NSAI standards).

Large Companies must provide documentary evidence that the aid is proportionate. This can be achieved by submitting an IRR and NPV analysis of the investment with aid and without aid with the Form 1. Only applications which are deemed proportionate will be grant aided by the Forest Service.

### ***8.6 Avoidance of undue negative effects on competition and trade***

Ireland has 11% forest cover in comparison to 38% for the EU as a whole. Given that the state has supported afforestation using grants and premiums since the 1980s there has been no evidence of distortion to the internal market. The measures proposed within this document are targeted to meet specific needs and they do not exceed eligible costs or aid intensities.

In relation to point number (123) of the State Aid Guidelines, there is less reason to be concerned in relation to negative effects on competition and trade where the markets are growing. In this regard the timber market in the EU is set to expand over the coming decades. The recently completed European Forest Sector Outlook Study II (EFSOS II), carried out jointly by the UN Economic Commission for Europe and the Food and Agriculture Organisation of the UN (UNECE/FAO 2011a), recorded the following highlights;

- In 2030 demand for wood across Europe will be 20% higher than in 2010 with slower growth from the forest products industry and faster growth for energy. To

meet this demand, all components of supply will have to expand, especially harvest residues.

- Projections also show a steady rise in prices of forest products and wood over the whole period, driven by expanding global demand and increasing scarcity in other regions.

## 8.7 Transparency

Ireland shall publish on its website at national level the following information on the State aid schemes: the full text of the notified aid scheme and its implementing provisions, the granting authority, the names of the individual beneficiaries, the form (in particular the aid instrument) and amount of aid granted to each beneficiary, the date of granting, the type of undertaking (SME/ large enterprise), the region (at NUTS level II) in which the beneficiary is located and the principal economic sector in which the beneficiary has its activities, at NACE group level. This requirement only applies to individual aid awards greater than €60,000 for beneficiaries active in primary agriculture production and €500,000 for others for the amount of aid granted at the time of financial approval discounted at the rate applicable at the time (currently 5%).

The beneficiaries table for the previous calendar year will appear on the DAFM website and will be replaced annually with the updated table. This will be done before March of that year.

All applicants will be required to sign the following statement;

*“I/We understand that in accordance with the European Union Guidelines for state aid in the agriculture and forestry sector and in rural areas 2014 – 2020, data of beneficiaries of funding under the Forestry Programme 2014 – 2020 will be published and may be processed by auditing and investigating bodies of the European Union. This information will be published on the Departments website and will include the full text of the notified aid scheme and its implementing provisions, the granting authority, the names of the individual beneficiaries, the form (in particular the aid instrument) and amount of aid granted to each beneficiary, the date of granting, the type of undertaking (SME/ large enterprise), the region (at NUTS level II) in which the beneficiary is located and the principal economic sector in which the beneficiary has its activities, at NACE group level, (Statistical classification of economic activities in the European Community). This will only apply to beneficiaries where the cumulative aid amount granted at financial approval is greater than €60,000 for beneficiaries active in primary agriculture production and €500,000 for others. Such information will be published after the granting decision has been taken and will be kept for at least 10 years and shall be available for the general public without restrictions. These records must be maintained for 10 years from the date of award of the aid and must be provided to the Commission upon request.*

*I/We also understand that all personnel data will be processed in accordance with the Data Protection Act 1988 and 2003. ”*

## 9 Description of Performance Framework

The measures set out in the following section were subject to a consultation process with stakeholders and the public. In relation to the first of these, a stakeholder's consultation event was held on the 15<sup>th</sup> April 2014. This was attended by almost 50 stakeholders representing a range of interests across the forestry sector. Prior to the workshop, stakeholders were issued with a programme outline document which briefly described the context for the programme as well as details of proposed measures. A total of 25 written submissions were received after the consultation event which was followed by four bilateral meetings.

Based on the Forest Service appropriate assessment process and a forestry operations options matrix, the following measures will incorporate the protection of the Freshwater Pearl Mussel and its habitat.

### 9.1 Measure 1: Afforestation and Creation of Woodlands

Forest is defined in the National Forest Inventory as land with a minimum area of 0.1 ha under stands of trees 5 m or higher, having a minimum width of 20 m and a canopy cover of 20% or more within the forest boundary; or trees able to reach these thresholds *in situ*. The definition relates to land use rather than land cover, so integral open space and felled areas that are waiting restocking are included as forest. All afforestation will require replanting after clearfell, subject to the relevant legislation governing felling.

One of the aims of Ireland's forest policy is to encourage planting by private landholders in order to achieve a forest cover of 18% by 2046. The principal means of encouraging private land holders to plant since the 1980s has been the provision of grants to cover the cost of afforestation, and an annual forest premium to compensate for income foregone as a result of converting farm land to forest.

The proposal for the Afforestation and Creation of Woodlands measure is to combine it with climate services, forest environment and agro-forestry. The measure will therefore consist of 3 elements as follows:

- (a) Afforestation Scheme
- (b) Native Woodland Establishment Scheme
- (c) Agro-Forestry Scheme
- (d) Forestry for Fibre Scheme

Planting targets for these schemes are as follows;

Scheme	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation, ha	8,370	9,520	9,625	9,965	10,000	10,000	57,480
of which afforestation	7,800	8,900	8,900	8,900	8,900	8,900	52,300
of which NWS establishment	500	500	500	525	525	525	3,075
of which Agro-forestry	20	20	25	40	50	50	205
of which forestry for Fibre	50	100	200	500	525	525	1,900

**Table 28: Objectives of afforestation and creation of woodlands Measure**

There are also possibilities for linking the development of Forest Managements Plans (FMP) into this measure for areas above a certain area threshold as a condition of support (currently 10 ha for conifers and 5 ha for broadleaves).

### 9.1.1 *De minimis*

State aid rules only allow for 12 annual premiums. In order to pay an additional 3 premiums for schemes other than agro-forestry and forestry for fibre, the Department must rely on general *de minimis* rules as set out under *Commission Regulation (EU) No 1407/2013 on the application of Articles 107 and 108 of the treaty on the functioning of the European Union to de minimis aid*, (Official Journal reference number L:2013:352). Participants in the scheme must be aware of their obligations in terms of declaring other *de minimis* aid and the possibility that they may not be eligible for payment of premium numbers 13, 14 and 15 (known as *de minimis* premium payments) if the sum total of *de minimis* aid received exceeds €200,000 over a rolling three fiscal year period. This aid is deemed granted on receipt and subsequent approval by the Forest Service of the completed Form 4 declaration either on line or in hard copy. Therefore the date of *de minimis* aid is not the date in which the payment is actually made nor is it the date in which the application for payment is submitted but the date on which the payment was actually approved.

Where an applicant applies for *de minimis* premium payments either on line or by hard copy and that aid exceeds the €200,000 threshold, the entire premium is blocked for payment until the following year. Applicants may try again next year. The same *de minimis* payment can only be applied for on three separate occasions. In other words when the *de minimis* premium payment is blocked three times the payment is forfeit. Where *de minimis* aid is paid and it subsequently transpires that this aid exceeded the threshold the Department will deem this payment to be an overpayment and rules regarding penalties and debt recovery will apply.

*De minimis* premium payments, must be cumulated with other forms of *de minimis* aid such as *de minimis* aid in the agriculture sector (Commission Regulation (EU) No 1408/2013). In these cases the threshold is €200,000. The exception to this rule is where *de minimis* aid is granted under Commission Regulation (EU) No 360/2012 (undertakings providing services of general economic interest) where the ceiling allowed is the threshold set out under that Regulation.

*De minimis* aid is calculated on the basis of aid given to a single undertaking. This means for example that subsidiaries of a parent company are considered a single undertaking and aid to each subsidiary is combined for the purposes of checking that the *de minimis* ceiling has been reached. Linked enterprises are defined in annex I of Commission Regulation (EC) No 800/2008.

### 9.1.2 *Regulatory Framework*

State Aid	RDR	Focus Area	Code
2.1.1, 2.1.2& 2.3	Article 22, 23 & 34	4(a) & 5(e)	8.1,8.2, 8.3 & 8.4

### 9.1.3 *Afforestation Scheme Details*

#### 9.1.3.1 Outline

The proposed Afforestation Scheme aims to increase the area under forest in Ireland from its current low base of 11% (EU average 38%); to contribute *inter alia*, towards climate change mitigation; to produce commercial timber; to provide a sustainable source of roundwood for wood product manufacture; to provide biomass for energy production; and to provide sustainable jobs in the rural economy;. This will be achieved through the provision of financial support for the establishment and maintenance of new forests and woodlands.

Projects must be undertaken in compliance with national and EU legislation and the Department's requirements in relation to minimum area, species planted, standard of work etc.; all of which is set out in the Forestry Schemes Manual, Code of Best Practice – Ireland, the suite of environmental guidelines, and relevant procedures and protocols (e.g. Forest Service Appropriate Assessment Procedure, consultation with statutory consultees, adherence to the Acid Sensitivity Protocol). Only projects which receive prior written approval from the Department, and are undertaken in compliance with sustainable forest management and any specific conditions of approval, will be eligible for support. Support will take the form of grants to cover the cost of establishment and annual premiums to cover the costs of agricultural income foregone and maintenance.

This measure will be primarily targeted at private land-holders.

#### 9.1.3.2 [Establishment Grant](#)

A fixed establishment grant of 100% of total costs, subject to the maximum laid down in the Scheme, will be available to private land-holders for projects which receive the prior written approval of the Department. Aid for the establishment of forests under these measures will be granted solely in connection with duly justified and substantiated costs, and no over-compensation will take place.

Grants will be paid in two instalments. The first instalment, representing approximately 75% of the total grant due, will be payable immediately after planting, based on a payment application and subsequent assessment by the Forest Service. The second instalment (25%) will be payable not sooner than 4 years after planting, again after Forest Service assessment. All grant payments will be conditional on the forest being adequately established and maintained and undertaken in compliance with the silvicultural and environmental conditions of the original approval. The following operations will be eligible for support to establish a plantation:

- ground preparation;
- woody growth clearance (e.g. gorse, rhododendron);
- cost of plants;
- planting;
- fertiliser;
- management of competing vegetation;
- filling-in planting (to replace mortalities)
- shaping of broadleaves;
- mapping;
- fencing and tree guards;
- The establishment of firebreaks;
- management and supervision;
- Other related operations, on application and as deemed appropriate by the Forest Service.

The proposed scheme will also encourage the use of improved and adapted planting stock from within Ireland. This may be developed further during the programme period and could include for example higher premium\grant rates for using improved planting stock and a lower level of premium\grant rate for using ordinary planting material.

Grants rates are as follows:

GPC	1 <sup>st</sup> Grant €/ha	2 <sup>nd</sup> Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha	% increase
1 – Unenclosed*	1500	500	2000	500	300	2500	4%
2 - Sitka spruce / lodgepole pine*	2200	700	2900	500	300	3400	3%
3 – 10% Diverse Conifer	2250	750	3000	500	300	3500	3%
4 – Diverse Conifer	2500	800	3300	500	300	3800	3%
5 – Broadleaf	3600	1100	4700	500	300	5200	-
6 – Oak / Beech	3800	1200	5000	500	300	5500	-
7 – Beech	3800	1200	5000	500	300	5500	-
8 – Alder	2400	800	3200	500	300	3700	-

\* All plantations regardless of size must include 10% broadleaves

**Table 29a: Afforestation Grant Rates**

Fence Type	€/m (IS436 rates)	€/m (non IS436 Rates)	IS436 (120m/ ha cap)	Non IS436 (120m/ha cap)
Stock	4.20	3.50	Max €500/ha At plantation level	Max €300/ ha At plantation level
Stock/ Sheep	5.40	4.65		
Stock/ Rabbit	6.30	5.55		
Upgrade to deer	7.00	6.50	€1950/ha	€1440/ha
Deer	16.25	12.00	All deer fencing must be approved in advance .Only sheltered, fertile sites and where at least 70% of the area enclosed by the deer fence comprises broadleaves in the categories GPC 5,6 and 7	
Deer/ Rabbit	16.25	12.00		
The maximum metres of fencing funded will be based on the total lengths of new fences erected to Forest Service specifications and based on the area of the plantation multiplied by 120, metres, irrespective of fence type erected. Maximum fencing cap of €40,000 per plantation.				

**Table 29b: Fencing Rates**

### 9.1.3.3 Annual Premium

A forest premium will be payable only for new forests which qualify for an establishment grant under the Afforestation Scheme and are paid to compensate for income forgone and maintenance. Under the Afforestation Scheme, premiums will be payable for a maximum period of 15 years. Land owned by public authorities will not be eligible for a premium.

GPC	Annual premium / ha		Duration (years)	% increase (year on year, farmer)	
	<8ha	>=8ha		<8ha	>=8ha
1 - Unenclosed	€160	€170	15	3%	10%
2 - Sitka spruce/lodgepole pine	€380	€400	15	3%	8%
3 – 10% Diverse	€440	€470	15	3%	10%
4 – Diverse	€470	€490	15	4%	8%
5 – Broadleaf	€500	€520	15	4%	8%
6 – Oak / Beech	€540	€560	15	5%	9%
7 – Beech	€540	€560	15	5%	9%
8 – Alder	€500	€520	15	4%	8%

**Table 30: Proposed Premium Rates**



The beneficiary shall be required to protect and care for the forest in accordance with best forest practice, at least during the period for which the premium for agricultural income foregone and maintenance is paid.

#### 9.1.3.4 Objectives

- Increase Ireland's forest cover to 18%.
- Establish 10,000 ha of new forests and woodlands per annum (subject to the availability of funds).
- To provide at least 30% of the area afforested with broadleaved species which will include Areas of Biodiversity Enhancement (ABEs) during the programme period.
- Plant larger average forest areas with greater access to the public road network.
- Increase average yield class by 1 yield class, based on the use of superior growing stock planted on better quality land (Improved Washington Provenance).
- Encourage forest management practices that restore, preserve and enhance forest biodiversity.
- Develop a forest-based biomass resource and generally encourage its use in domestic and commercial markets.
- Foster carbon sequestration and climate change mitigation.
- Provide a resource which will contribute to long-term sustainable development in the rural economy.

The broadleaved target of 30% is set at national level. Species composition will be limited to soil suitability, environmental considerations and owner's objectives. In some areas forest owners will plan to plant higher than the national target and in other areas less. The key measureable is to monitor the percentage of broadleaved planting nationally but establish minimum thresholds at plantation level. Currently this is set at 10% and will continue in the new programme at this rate.

#### 9.1.4 *Native Woodland Establishment Scheme (NWS Est.) Details*

##### 9.1.4.1 Outline

The aim of the Native Woodland Establishment Scheme is to enhance biodiversity, including in *Natura 2000* areas; to support high nature value farming; to enhance the quality and diversity of Ireland's landscapes; to aid the development and promotion of forestry through the incorporation of practices that enhance biodiversity; to improve water and land management and contribute to meeting the Water Framework Directive objectives; to sustain Ireland's native woodlands on a long term basis; to protect and expand Ireland's native woodland resource; to improve connectivity between existing native woodlands and between other natural and semi-natural habitats; to conserve native genetic biodiversity; to improve soil stability and water quality including high status waters through the creation of native woodland adjoining watercourses; to increase Ireland's woodland cover to contribute positively towards climate change mitigation; to promote the application of close-to-nature forestry and traditional woodland management systems; and to encourage wood and non-wood production, where compatible with native woodland biodiversity.

The NWS Est. provides financial support for farmers and other landholders. The scheme supports the establishment of new native woodlands on 'green field' sites. NWS Est. provides opportunities to protect and expand Ireland's native woodland resource and associated biodiversity and is a key biodiversity measure within Ireland's national forest policy. It also supports a wide range of other benefits and functions arising from native woodlands, relating to reversing wider habitat fragmentation, the protection and



enhancement of water quality, landscape, cultural heritage, wood and non-wood products and services, the practice of traditional woodland management techniques, environmental education, and carbon sequestration. The production of commercial timber is not excluded as an objective of this scheme, where it is realised through appropriate 'close-to-nature' silviculture without compromising the basic native woodland biodiversity objectives of the scheme. Due to the nature of the scheme, in particular, its focus on minimal site disturbance, native species, and long-term 'close-to-nature' management, NWS Est. presents opportunities for landowners in various environmentally sensitive areas, to create woodlands which are compatible with, and which contribute towards, the various environmental sensitivities involved (e.g. NATURA sites, acid sensitive areas, high status waterbodies, Freshwater Pearl Mussel catchments).

NWS Est. operates alongside NWS Conservation (see later) as parallel components of the overall Native Woodland Scheme package, developed and implemented by the Forest Service in close cooperation and partnership with Woodlands of Ireland, National Parks & Wildlife Service, the Heritage Council, Inland Fisheries Ireland, and others. Since its launch in 2001, the overall Native Woodland Scheme has undergone various refinements and has been supported in its implementation by a range of measures undertaken in partnership, including a multi-annual NWS training package and a range of supporting literature for practitioners, produced by Woodlands of Ireland.

#### 9.1.4.2 Eligibility and Grant and Premium Rates

Eligibility criteria for NWS Est. are the same as those set out for the Afforestation Scheme. The same regulatory controls also apply. Eligible operations are as per the Afforestation Scheme, with the addition of 'Natural regeneration'. Furthermore, applications under NWS Est. must be developed by a NWS Participating Forester (i.e. a Registered Forester who has also completed required NWS training provided by the Forest Service and Woodlands of Ireland). The grant and premium rates are also as set out for the Afforestation Scheme, although only GPC6 and GPC8 are likely to apply.

#### 9.1.4.3 Objectives

The objectives of NWS Est. include the following:

- Increase the area of native woodland within Ireland;
- Encourage a diverse range of native woodland types and increase woodland biodiversity, in keeping with site type and ecology.
- Introduce a forestry land use option for farmers in environmentally sensitive areas, including NATURA sites, acid sensitive areas (as agreed with the EPA and detailed in Forest Service Circular 04/13 of 2013), high status waterbodies, Freshwater Pearl Mussel catchments and highly sensitive landscapes.
- Promote the use of native woodland creation to deliver wider eco-system services such as water quality, soil stabilisation, habitat connectivity at a landscape level, etc.
- Provide the opportunity for compatible wood production for woodland owners, where appropriate and using 'close-to-nature' silviculture..

Table 28 shows the specific targets for the NWS Est. for each year under the Forestry Programme, culminating in the achievement of 3,000 ha of newly created native woodland by the year 2020.

### 9.1.5 Agro-Forestry Scheme details

#### 9.1.5.1 Outline

This measure has not previously featured in Ireland's forestry support mechanisms and there is little experience of agro-forestry in Ireland. Initially, therefore, the measure will be targeted at silvopastoral agro-forestry systems which combine forestry and pasture, including grazing and the growing of fodder. A stocking rate of 400 - 1000 trees per hectare (equal spacing) is proposed and the minimum eligible plot size and width will be 0.5 ha and 20 m respectively (agro-forestry must comply with the definition of a forest). Acceptable broadleaf species will include oak, sycamore and cherry. Other species, including conifers will be considered on a site-by-site basis, on application. Large planting stock (90 cm – 120 cm) should be used.

Ideally, sites under the Agro-forestry Scheme should contain free-draining mineral soils and should have no requirement for additional drainage. In general, sites suitable for agro-forestry should not require additional fertiliser for tree growth, apart from the possibility of manual application at the base of individual trees at establishment. However, additional nitrogen (< 100 kg / ha) may be required to promote grass growth for spring/summer grazing. This can be assessed on a site-by-site basis.

Prior to planting, vegetation management, typically using herbicide application, will be required to reduce competition during the initial growing season. The use of vegetation-suppressing mats and mulches may also be considered. In general, post-planting vegetation management is achieved by grazing animals. Initial planting should be carried out using pit-planting where possible.

Individual trees must be protected by tree shelters for the first 6-8 years. Tree shelters will be replaced with plastic mesh after 6-8 years (depending on tree growth), to prevent bark and stem damage from grazing stock. Where an agro-forestry plot forms part of a larger afforestation project, the agro-forestry plot must be fully fenced to prevent animal trespass into the adjacent forest plots.

The following agricultural activities will be permitted, so long as such activity is compatible with protecting the trees;

- Pasture: Grazing by sheep or young domestic stock is permitted during the spring and summer months for the first 6-8 years, depending on tree growth, but trees must be protected and tree shelters checked regularly. Thereafter, when tree shelters are replaced with plastic mesh, larger animals may be introduced.
- Fodder: Silage and hay production is permitted. It is important that appropriate machinery is used when cutting silage and/or hay so as to ensure that the trees (including stem, roots and crown) are not inadvertently damaged.

Agro-forestry must remain under forestry and therefore is subject to a re-planting obligation.

#### 9.1.5.2 Eligibility and Grant and Premium Rates

Under state aid rules only 80% of eligible costs can be funded under the Agro-Forestry Scheme. Land classified by the Department as '*unimproved/unenclosed*' will not be eligible for support under the scheme. Grant rates and payment structure will be similar to the Afforestation Scheme, with GPC 9 applying (see above below). Premiums (again, GPC 9) will be paid for 5 years only and will cover the cost of maintenance only. Once land is converted to agro-forestry, it will be classified as forest land and the provisions of

forest legislation will apply. Support for the establishment of demonstration plots for research purposes may also be considered under this scheme.

GPC	1 <sup>st</sup> Grant €/ha	2 <sup>nd</sup> Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha	% increase
9 - Agro-forestry	2820	940	3760	500	300	4260	N/A

GPC	Annual premium / ha		Duration (years)	% increase (year on year, farmer)	
9 – Agro-forestry	€250	€250	5	-	-

\* All plantations regardless of size must include 10% broadleaves

**Table 31 Grant and premiums rates for agro-forestry**

#### 9.1.5.3 Objectives

The main objectives of the scheme are to as follows.

- Establish agro-forestry as a realistic land use option for future programmes.
- Increase the economic output per land unit.
- Increase biodiversity.
- Produce high quality hardwood timber where appropriate.
- Protect water quality by reducing surface water runoff and protect erosion of river banks.
- Encourage continuous cover forestry and close-to-nature silvicultural techniques.
- Enhance the quality and diversity of landscapes.

Table 31 sets the specific targets for the Agro-Forestry Scheme for each year under the Forestry Programme, culminating in the achievement of 400 ha of newly-created agro-forestry by the year 2020.

#### 9.1.6 Forestry for Fibre Scheme Details

##### 9.1.6.1 Outline

Eligible species under the Forestry for Fibre Scheme are as follows:

Species/genus	Species and clones
Italian Alder	<i>Alnus glutinosa</i>
Hybrid aspen	<i>Populus tremula x tremuloides</i> (subject to plant availability)
Eucalyptus	<i>E. glaucescens</i> , <i>gunnii</i> , <i>nitens</i> , <i>rodwayi</i> and <i>subcrenulata</i> . ( <i>E nitens</i> only to be restricted to within 50 km of coast and frost-prone, low-lying areas also avoided), other species will be considered on application. <sup>91</sup>
Poplar	Clones <sup>92</sup> 18 71058/2, Fritz Pauley, Trichobel, V.471xV.24(65)/34, 72030/7, 76004/10 Raspalje 19 and Unal

Preference will be given to applications that propose to use improved genetic material, such as planting stock from the national and other documented tree improvement

<sup>91</sup> These additional species may be supported where demonstration plots are established for research purposes.

<sup>92</sup> List of clones subject to final confirmation

programmes. Regarding site requirements, sites must be below 200 m in elevation, enclosed, and with free-draining arable or pasture soils or surface water gleys without a peat layer.

Stocking shall be a minimum of 2000<sup>93</sup> plants/ha at establishment. Good vegetation control will be needed in the first 2-3 years after establishment to support and maintain vigorous growth. Normally fertilizer application will not be required. Stocking must be maintained at a minimum of 80% over the first 10 years of the period of premium payment.

#### 9.1.6.2 Eligibility, Grants and Premiums

The same eligibility criteria applies as that set out for the Afforestation Scheme. Grants and premium rates for forestry for fibre are as follows;

GPC	1 <sup>st</sup> Grant €/ha	2 <sup>nd</sup> Grant €/ha	Total €/ha	Additional Fencing Allocation €/ha IS436	Alternative Fencing Allocation €/ha Non IS436	Total Available Funding €/ha	% increase
10 – Forestry for Fibre	1460	490	1950	500	300	2450	N/A

GPC	Annual premium / ha		Duration (years)	% increase (year on year, farmer)	
10 – Forestry for Fibre	€150	€150	10	-	-

**Table 32 Grant and premiums rates for forestry for fibre**

Where Aspen is planted under GPC10 at 1,400 plants per hectare, the grant payment is reduced to 2,165/ha, where the first instalment is paid at €1,245 and the 2<sup>nd</sup> instalment is €420. Fencing and premium payments are not reduced.

Once land is planted under the Forestry for Fibre Scheme, it will be classified as forest land and the provisions of forest legislation will apply.

Support for short rotation coppicing, Christmas trees or fast growing trees is not provided for under this scheme. Fast growing trees are defined by Ireland as having 9 years between cuts. Forests planted under the Forestry for Fibre Scheme will be cut between 10 – 15 years and consequently are funded under sub chapter 2.1.1 of the State Aid Guidelines.

#### 9.1.6.3 Objectives

The objective of the Forestry for Fibre Scheme is to meet a forecasted supply-demand gap for fibre for energy and other wood product applications that will arise over the next two decades. The scheme is targeted at growing productive species on fertile sites capable of providing wood biomass yields in the region of 150-300 cubic metres per ha over a 10-15 year period. Sites capable of such levels of production are mainly free-draining arable land and surface water gleys (for a more limited range of species).

<sup>93</sup> Hybrid aspen can be at a minimum stocking of 1,400 plants/ha at establishment. Grant aid rates to be adjusted accordingly.

Table 32 sets the specific targets for the Forestry for Fibre Scheme for each year under the Forestry Programme, culminating in the achievement of 1,850 ha of newly-created fibre forests by the year 2020.

#### 9.1.7 Programme Specific Output Indicators

Output indicators specific to each of the environmental services are provided in the following sections. The following points relate to additional Programme Specific Output indicators:

- Number of planting applications funded under the afforestation scheme;
- Number of planting applications funded under the Native Woodlands establishment schemes;
- Number of planting applications funded under the agro forestry schemes;
- Number of applications funded under the forestry for fibre scheme;
- Average size of plantation against previous average;

#### 9.1.8 Ensuring Afforestation in suitable sites

All afforestation under Measure 1: Afforestation and Creation of Woodlands will require consent from the Forest Service under S.I. No. 558 of 2010 (as amended by S.I. No. 442 of 2012). A variety of safeguards are employed by the Forest Service to avoid afforestation on environmentally unsuitable sites, and to ensure that any afforestation that does take place is appropriate to various environmental sensitivities, in terms of site preparation, species selection, etc. Environmental sensitivities include, *inter alia*, habitats and species (including NATURA sites, Freshwater Pearl Mussel and Hen Harrier), water quality (including fisheries sensitive areas, waterbody status, acid sensitive areas), archaeology, landscape, and local sensitivities. The capacity of the site to support a commercial forest crop (or, in the case of NWS Est., a vibrant and sustainable native woodland canopy) is also a key consideration, and incorporates factors such as site fertility, elevation and exposure, and access.

##### 9.1.8.1 Indicative Forest Strategy

Decisions regarding the suitability of sites for afforestation will be supported by the Indicative Forest Strategy (IFS) for Ireland. The aim of the IFS is to provide high-level, national guidance in relation to the suitability of land for afforestation<sup>94</sup>. One of the key aspects of delivering a balanced programme is to ensure, as far as possible, that new forests integrate, enhance and reflect the diversity and local distinctiveness of the landscape in which they are set. It is also fundamentally important to provide the public and the forest contractors with the earliest indication of the areas where potentially sensitive issues may arise in relation to, for example, landscape, water quality, archaeology and biodiversity.

The IFS is a map-based approach which integrates many different spatial datasets which take account of a wide range of environmental factors and other opportunities and constraints. The IFS identifies areas most suitable for planting primarily on the basis of environmental considerations and soil-productivity. The map-based environmental considerations have been captured from a variety of state organisations, such as the National Parks and Wildlife Service, the Fisheries Boards, the EPA and the Local Authorities. The forest productivity map was compiled in co-operation with Teagasc and is based on soil type and elevation, displaying the potential rate of growth of forests throughout the country. Component map layers of the IFS and presented include:

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<sup>94</sup> This system will be used to guide the increase in forest cover from 10.7% to 18% by 2046.

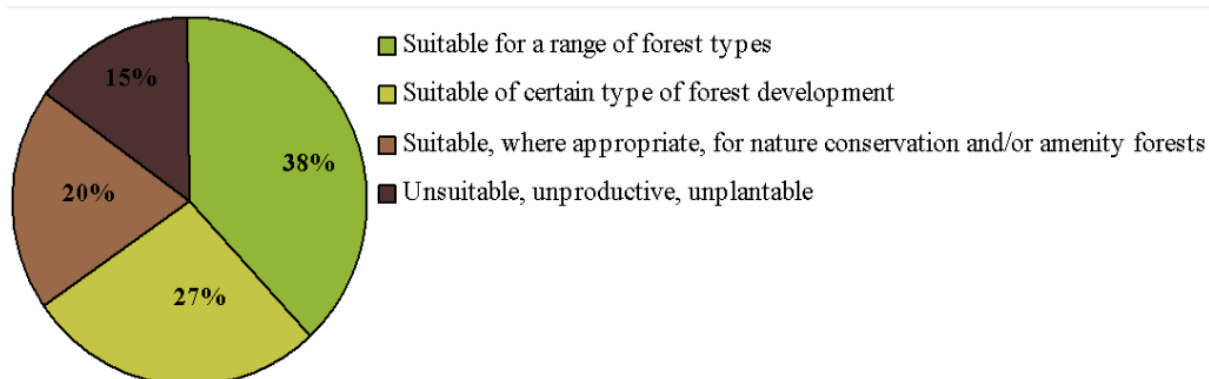
- NPWS spatial data (Special Areas of Conservation, Natural Heritage Areas, Special Protection Areas, Reserves, National Parks)
- Water bodies (streams, lakes, reservoirs)
- Urban Areas
- Fisheries sensitive areas (data compiled in consultation with the Inland Fisheries Ireland)
- Acid sensitive areas
- Forest productivity map (compiled by Forest Service/Teagasc)
- Landscape Sensitivity (compiled by the Forest Service with data supplied by the local authorities)
- Existing agricultural land use (from the Department of Agriculture, Fisheries and Food database)
- Existing forest cover

The end-product, the IFS Category map, produced by compiling, reclassifying and overlaying the map layers in a Geographic Information System (GIS), is a comprehensive overview of all the opportunities and constraints which exist for forestry in Ireland, at a national level.

Four broad IFS Categories have been drawn up to identify opportunity and constraint areas for forest development. They are described as

- **Category 1** - “Suitable for a range of forest types”,
- **Category 2** - “Suitable for certain types of forest development”,
- **Category 3** - “Suitable, where appropriate, for nature conservation and/or amenity forests”
- **Category 4** “Unsuitable, unproductive or unplantable areas”.

The following graph shows the distribution of these categories;



The IFS Map (Appendix 3) identifies the location of areas making up each of the Categories. Each Category has been identified on the basis of the presence (or absence) of specific landscape and environmental characteristics and each Category may result in consultation with one or more prescribed bodies and appropriate assessment when located inside a Natura 2000 area (Category 3). The table below describes these Categories and the resulting consultation process.

Category	Description	Environmental Designations	Applications Process
<b>Category 1</b> “Suitable for a range of forest	Areas identified as being the most suitable for future forest development, where no	Area with no environmental constraints.	<ul style="list-style-type: none"> <li>• Forest Service Inspection Procedure</li> <li>• Adherence to the Code of Best Forest Practice, Forestry Schemes</li> </ul>



types”	environmental designations exist and where soil types indicate that trees will grow satisfactorily.		<p>Manual and Forest Service Environmental Guidelines.</p> <ul style="list-style-type: none"> <li>• Consult with DoEHLG if archaeological records of monuments and places are recorded or discovered.</li> <li>• Consult with Local Authority in areas of 25 ha or more.</li> <li>• Full EIA screening procedure (EIA at discretion of Forest Service - mandatory on areas of 50 ha or more).</li> </ul>
<b>Category 2</b>  “Suitable for certain types of forest development”	Areas where at least one environmental designation (such as a fisheries sensitive areas) exist. For more details on the consultation system associated with specific environmental designations see Appendix 4.	<ul style="list-style-type: none"> <li>• Acid sensitive areas.</li> <li>• Areas sensitive for fisheries.</li> <li>• Catchment areas of local authority water schemes.</li> <li>• REPs areas.</li> <li>• Areas of moderate landscape sensitivity.</li> </ul>	Process as for “Suitable for a range of forest types” and, in addition: consultation with relevant authority (such as Inland Fisheries Ireland, National Parks and Wildlife Service, Local Authority).
<b>Category 3</b> “Suitable, where appropriate, for nature conservation and/or amenity forests”	Areas where environmental designations (such as Special Areas of Conservation) exist. For more details on the consultation system associated with specific environmental designations see Appendix 4.	<ul style="list-style-type: none"> <li>• pNHAs, SACs, SPAs and National Parks.</li> <li>• Archaeological sites or monuments with intensive public use.</li> <li>• Areas of high landscape sensitivity identified in county development plans or listed in the Inventory of Outstanding Landscapes.</li> </ul>	Process as for “Suitable for a range of forest types” and, in addition: consultation with the relevant authority (such as Inland Fisheries Ireland, National Parks and Wildlife Service, Local Authority); and formal public consultation by way of newspaper advertisement
<b>Category 4</b>  “Unsuitable, unproductive or unplatable”	Areas where it is considered that trees are unlikely to grow satisfactorily including soil fertility, exposure etc. These areas also include unplatable areas i.e. waterbodies, urban areas and areas of existing forest. Applications for new forest development may be submitted to the Forest Service for consideration where an approved Forester certifies that the site is suitable for growing trees.	N/A	N/A

**Table 33: IFS Categories and resulting consultation process**

#### 9.1.8.2 EIA System

The EIA Directive (Directive 2011/92/EU) requires that certain types of projects must be assessed to determine the likely environmental effect of the project before consent can be granted. Where a potential significant effect is considered likely, the proposed project must undergo an Environmental Impact Assessment (EIA). An EIA is the process of examining the potential environmental effects of the proposed project before deciding whether to grant consent for the proposed project.

The Forest Consent System operated by the Forest Service provides for an environmental impact assessment to be carried out in certain cases, in accordance with the EIA Directive. The transposing legal instrument is the European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No. 558 of 2010), as amended.

Under Irish legislation, EIA is mandatory for the following forestry schemes:



- Initial afforestation which would involve an area of 50 hectares or more (S.I. No. 349 of 1989, as amended)
- Private roads which would exceed 2,000 meters in length (S.I. No. 600 of 2001, as amended)

Under S.I. 558 of 2010 all afforestation and forest road construction projects require the prior consent of the Minister for Agriculture, Food and the Marine. Applications for consent to carry out afforestation and forest road construction projects above the mandatory thresholds listed above must be accompanied by an EIS to enable the Minister to undertake an EIA of the project. An EIS is a statement of the effects, if any, which the proposed development, if carried out, would have on the environment. In addition, the Regulations provide that all afforestation and forest road construction projects below the mandatory thresholds must be screened for EIA and, where a proposed sub-threshold development is considered likely to have a significant environmental effect, the Minister will request the developer to submit an EIS to enable an EIA to be undertaken.

#### 9.1.8.3 Appropriate Assessment under the Habitats Directive

The suitability of sites planted under any of the four schemes set out under Measure 1: Afforestation and Creation of Woodlands, in relation to NATURA 2000 sites (i.e. SACs and SPAs) will be evaluated using the Forest Service Appropriate Assessment Procedure (AAP)

The obligation to undertake appropriate assessment is set out under Articles 6(3) and 6(4) of the Habitats Directive, to ensure that any plan or project does not have a negative effect on NATURA sites before a decision is taken whether or not to allow that plan or project to proceed. Appropriate assessment is required where any forestry project is not directly connected with, or necessary for, the management of a NATURA site and is likely to have a significant effect on the conservation of that NATURA site, be it directly (*in-situ*), indirectly (*ex-situ*) and / or in combination with other plans or projects.

In Ireland, the application of appropriate assessment is governed by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Under these Regulations and in relation to forestry activities requiring its consent or licensing, the Forest Service must undertake a 'screening' for appropriate assessment, to evaluate whether or not there is a possibility of the project – alone or in combination with other plans or projects – having a significant effect on the conservation objectives and associated qualifying interests of a NATURA 2000 site. If the answer is 'yes' or 'uncertain', an appropriate assessment is required and the applicant must submit a Natura Impact Statement (NIS). Based on the NIS (and other information), the Forest Service undertakes the appropriate assessment to evaluate:

- whether or not (where previously uncertain) the possibility of a significant effect on a NATURA site exists;
- the nature of the possible significant effect (including in-combination) on the NATURA site; and
- the effectiveness of any proposed mitigation measure(s) designed to avoid the risk of the significant effect.

The project can only receive consent if the Forest Service has determined (either at screening stage or at appropriate assessment stage) that it will not significantly affect the NATURA 2000 site.

The Forest Service Appropriate Assessment Procedure<sup>95</sup> is applied to all applications for Forest Service grant schemes, licences and approvals before a decision is taken on whether or not to approve the project. This includes the afforestation and creation of woodlands measure. The Forest Service AAP integrates with separate Forest Service procedure and guidelines regarding freshwater pearl mussel, Hen Harrier, the Kerry slug, and otter.

#### 9.1.8.4 Afforestation on unenclosed / unimproved land

Forest Service Circular 10/2010 'Changes to Afforestation Grant & Premium Schemes 2011' introduced restrictions on the afforestation of unenclosed / unimproved land, typically comprising upland sites and peat sites. Under the circular, the amount of unenclosed land in any application for financial approval cannot exceed 20% of the total area. Furthermore, Circular 18/2011 'Land Types' describes land types eligible for grant and premium categories under the afforestation schemes. This circular lists specific land types not eligible for grant aid on silvicultural or environmental grounds. These include:

- infertile blanket and midland raised bogs;
- unmodified raised bogs;
- designated blanket and raised bogs, and
- plots with rock outcrop and associated shallow soils in excess of 25% of the plot area.

In addition, under Circular 18/2011, very poor sites where a standard application of phosphorus fertiliser (e.g. 350 kg/ha GRP) at the time of establishment is unlikely to provide sufficient phosphorus input to bring the forest to full rotation, are also deemed ineligible.

Circulars 10/2010 and 18/2011 combined preclude afforestation from considerable areas of land, typically upland and peat sites with a high sensitivity regarding water quality, habitats and species, and landscape. This thereby eliminates the potential for forestry-related disturbance, both initially and throughout the forest cycle. These measures follow a historical trend for afforestation identified by the National Forest Inventory 2004-06, away from peatland and higher elevations and towards wet mineral soils and lower elevations. This trend is reflected in annual private afforestation figures. Planting on unenclosed land represented 20% of the 15,696 ha planted in 2000. This fell to 10% in 2005, and 4% in 2011.

The draft report on land availability prepared by the COFORD Land Availability Working Group carries a number of recommendations aimed at increasing the level of afforestation, including afforestation on certain types of unenclosed land. The Department is currently considering the report.

#### 9.1.8.5 Acid Sensitivity Protocol and Afforestation

The Forest Service continues to implement the surface water acid sensitivity protocol for afforestation, jointly developed with the Environmental Protection Agency (EPA) and the then-Council for Forest Research & Development (COFORD) in 2002. Under the protocol, afforestation applications within designated acid sensitive areas, as demarcated by specific OS Map numbers, must be accompanied by water sampling to determine the acid sensitivity of surface water. Four separate water samples must be collected by the Registered Forester during the months of February, March, April and May, following a

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<sup>95</sup> Forest Service Appropriate Assessment Procedure Information Note, March 2012

(<http://www.agriculture.gov.ie/media/migration/forestry/publications/ForestServiceAAPInformationNoteMarch12CO NSOLIDATED060312.pdf>)

prescribed methodology. Following analysis for  $\text{CaCO}_3$  in an accredited laboratory, the results are then submitted to the Forest Service with the application. Based on the lowest result among the four samples, various thresholds are then applied:

- If  $< 8 \text{ mg CaCO}_3 / \text{l} \rightarrow$  the afforestation proposal not permitted(\*)
- If  $8\text{--}15 \text{ mg CaCO}_3 / \text{l} \rightarrow$  EPA consulted
- If  $> 15 \text{ mg CaCO}_3 / \text{l} \rightarrow$  the afforestation proposal may be permitted, from the perspective of the protocol.

\* There are strong indications of self-selection, whereby applications are not submitted to the Forest Service where the water sampling yields a result less than  $8 \text{ mg/l CaCO}_3$ .

Approximately 600,000 ha (representing 9% of the total land area) are formally designated as acid-sensitive areas for the purposes of afforestation. These areas are predominantly located in Counties Wicklow, Kerry, Galway and Donegal. This above protocol is fully integrated into iFORIS (the Forest Service GIS/database system), and the results (and EPA recommendations) are assessed by the District Inspector as s/he undertakes the inspection.

Following a proposal developed by the Forest Service in consultation with Woodlands of Ireland, Inland Fisheries Ireland, NPWS and others, the EPA agreed to a change in the protocol whereby applications under the NWS Est. in acid sensitive areas could be submitted and considered by the Forest Service for approval, without water sampling. This was in recognition of the marginal impact regarding native woodland and acidification, and also the wide range of eco-system services native woodlands could deliver in these landscapes, including the protection and enhancement of water quality. The change to the Acid Sensitivity Protocol was introduced in Forest Service Circular 04 / 2013, entitled "Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and *Chalara fraxinea* ash dieback disease".

#### 9.1.8.6 Fisheries Sensitive Areas and the Water Framework Directive

The Forest Service continues to operate a referral protocol developed with Inland Fisheries Ireland (IFI), in relation to afforestation activities within fisheries sensitive areas, designated based on OS Sheet numbers. Applications for consent to afforest (with or without grant aid) involving sites greater than 5 ha, adjacent to or traversed by an aquatic zone, and located within a Fisheries Sensitive Area, are referred to IFI. Applications greater than 40 ha, adjacent to or traversed by an aquatic zone, and located outside of a Fisheries Sensitive Area, are also referred. The referral procedure is fully integrated into iFORIS, and recommendations arising from IFI are assessed by the District Inspector as s/he undertakes the inspection and are generally incorporated into the conditions attached to any consent to afforest issued.

The Forest Service, as part of the Department of Agriculture, Food and the Marine, is a public authority under the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), the principal transposing legislation in relation to the European Water Framework Directive (WFD). As set out under S.I.722, the Minister must “*exercise functions in a manner which is consistent with the provisions of the [Water Framework] Directive and which achieves or promotes compliance with the requirements of the Directive*”.

The WFD sets out four core objectives regarding (*inter alia*) streams, rivers and lakes, to be achieved by 2015:

- prevent deterioration in status (particularly High Status waterbodies);
- restore Good Status within specific timeframes, mainly by 2015;
- reduce chemical pollution; and

- achieve protected areas objectives in relation to, for example, aquatic-based SACs.

The Forest Service must ensure compliance with the above responsibilities under S.I.722 when considering applications for afforestation and other forestry activities. As part of the workflow involved in assessing an afforestation applications, the Forest Service queries current information regarding waterbodies integrated into iFORIS, to identify the boundaries, status and objectives of any relevant waterbodies, and this information is factored into the decision to approve (or otherwise), and the formulation of any conditions that might apply.

#### 9.1.8.7 Archaeological heritage

Where afforestation development, forest road development, or felling licence applications falls within 200 m of a designated archaeological site or monument, eg. a Recorded Monument, applications are identified for referral to the National Monuments Service. In each and every referred initial afforestation and forest road development application case, a desk-based assessment is undertaken the result of which is the imposition of one or more archaeological conditions. These are taken from a tiered hierarchy of archaeological mitigation responses, with the lowest condition being adherence to the relevant elements of the Forestry and Archaeology Guidelines of the Forest Service. This is followed by the option of increasing the size of archaeological exclusion zone(s), the exclusion of a larger area or areas of archaeological potential, archaeological monitoring of specified areas, the refusal of either part or all of the development without prior archaeological assessment by independent archaeological consultants, or a recommendation for refusal of the entire development.

In recognition of the obligations placed on Competent Authorities under Annex III of the EIA Directive, special consideration is also given to the wider landscape setting of known archaeological sites and monuments, and in particular their relationship with other roughly contemporary or determinably linked sites – that is, identifiable archaeological complexes and landscapes. The recorded or evident inter-visibility of sites and landscape relationships are taken into account for archaeological complexes and areas, with outright refusals or requirements for the maintenance of linkages or whole areas to be left open and unplanted. Areas classified by the NMS as archaeological areas, zones of archaeological potential, or zones of archaeological amenity, as well as listed and tentative World Heritage Sites are also given special consideration.

The application of this archaeological assessment regime, the imposition of a hierarchy of relevant archaeological conditions with approvals, the emphasis on preservation *in situ* of any archaeological remains identified, and the special consideration given to the wider landscape setting of known archaeological sites and monuments, fully accords with the principles and approach as set out in Part III of the Department of Arts, Heritage and the Gealtacht's *Framework and Principles for the Protection of the Archaeological Heritage*.

In conjunction with a phased programme to update the suite of environmental guidelines, including the Forest and Archaeology Guidelines, it is intended that the minimum exclusion distances for archaeological sites and monuments in all new schemes will be increased to 20m to reflect the advice for managing ancient monuments in woodland contained in the Department of Environment, Heritage and Local Government publication *Good Farming Practice and Archaeology*.

#### 9.1.8.8 Pesticides, Herbicides and Fertiliser

##### Pesticides and Herbicides

Pesticides (either as insecticides or herbicides) are not routinely used in forest practice. For example, according to the state forestry company Coillte, their usage accounts for less than 1% of pesticides applied nationally. Insecticides are generally used to protect establishing trees against pine weevil either by pre-treating – or ‘dipping’ – young plants in the nursery, and/or by spot application to trees on susceptible reforestation sites, where warranted. Herbicides are generally spot-applied to control competing vegetation during the first few years after planting on both afforestation and reforestation sites, as needed. Other forestry-related uses of herbicide include stump treatment to tackle unwanted woody vegetation, e.g. to prevent regrowth from the cut stumps of rhododendron or sycamore, within native woodland restoration sites.

Mandatory Forest Service guidelines relating to water quality and forest protection set out various environmental safeguards governing when, where and how pesticides are to be used in forests. A key measure is the exclusion of all types of pesticide application from the 10-25 metre wide aquatic buffer zone, unless undertaken with the explicit agreement of relevant bodies to achieve specific environmental aims, e.g. stem injection to tackle a bankside infestation of rhododendron.

##### Fertiliser

Phosphorus (P) is the main nutrient applied to new forests, with nitrogen (N) and potassium (K) occasionally applied as remedial fertilisation. The Forest Service guidelines on forest protection set out the practices that should be followed to minimise the risk of fertiliser run-off and transport to aquatic zones. These include the following;

- Proposed fertiliser types and application rates should be included in the afforestation application;
- Fertiliser should not be applied within the buffer zone or within 20 m of an aquatic zone, whichever is greatest;
- Fertilisers should be prepared and securely stored under shelter on a dry, elevated site at least 50 m from the nearest aquatic zone;
- Granular fertiliser formulations should be used, with the exception of muriate of potash which is not available in granular form.

Aerial fertilisation has been subject to a licensing system since 2006, with the European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I.125/2012) revoking and consolidation previous regulations. S.I.125/2012 gives effect to Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment, which itself replaced previous Council Directive 76/464/EEC (the Dangerous Substances Directive).

Under S.I.25/2012, the aerial fertilisation of forests in Ireland requires a licence from the Forest Service. These regulations set out the statutory licensing system involved, and detail various operational and technical stipulations that apply. These include application limits for P, N and K, restrictions on timing (unless exceptional circumstances apply, aerial fertilisation can only take place between 1 April and 31 August) and required exclusion zone widths (e.g. 100 m from drinking water abstraction points, 50m from an aquatic zone). The Regulations also prescribe the information to be submitted with any application, and detail the consultation process the Forest Service applies.

Applications for aerial fertilisation are assessed by District Inspectors based on iFORIS and an assessment of the silvicultural requirements of the crop and the environmental sensitivities of the site. Screening is applied in relation to SACs and SPAs, following the



Forest Service Appropriate Assessment Procedure. If issued, licences may exclude sensitive areas of the site or sections of the crop deemed not to require fertiliser application. The Forest Service published Aerial Fertiliser Requirements as a working document in January 2014 (see Forest Service Circular 01 / 2014, entitled "Aerial Fertilisation Requirements"), replacing previous Forest Service guidelines on the practice.

#### 9.1.8.9 Hedgerows, Scrub and Landmark Trees

Hedgerows must be considered carefully when considering forestry activities and the impacts these activities may have on these important landscape features. Hedgerows, ditches and open drains are designated as Landscape Features under the Good Agricultural and Environmental Condition (GAEC) of Cross Compliance with effect from 2009. Hedgerows are an important visual feature in the landscape and form part of the historical and archaeological heritage of the country. They also serve a number of very important functions at farm level such as:

- Stock proof boundaries particularly important for animal disease control;
- Shelter and shade for farm animals and shelter for crops from possible wind damage;
- Physical barrier to restrict soil and water movement thus reducing soil erosion and protecting water quality.
- Providing habitats for wild life in circumstances where the proportion of natural woodland in the country is low;
- Nature corridors to allow the free movement of wildlife.

These landscape features are now protected under the requirements of Good Agricultural and Environmental Conditions (GAEC). This means that in general they cannot be removed. Hedgerows must also be maintained and not allowed to become invasive thereby reducing the utilisable area of the field and consequently impacting on the area eligible for the single payment. Where, in exceptional circumstances, a hedgerow must be removed, a replacement hedge of similar length must be planted at a suitable location on the holding in advance of the removal of the existing hedgerow.

Landowners considering planting trees are encouraged to retain scrub. These areas are considered as Areas for Biodiversity enhancement (ABE's) for the purpose of grants and premiums. These areas are discussed in more detail in Section 10.1.11.

In relation to landmark trees, the Tree Register of Ireland (TROI) is a database of Irish trees containing over 10,000 entries. It contains various details on select trees including their height, girth and location. The felling of these trees is protected by legislation where felling licences must first be applied for before felling can take place.

#### *9.1.9 Species Selection*

Due to its location in the path of the Gulf Stream, Ireland experiences a mild and moist oceanic climate that is unique for countries at similar latitudes. Extremes of temperature and precipitation are rarely experienced and favourable climatic conditions occur throughout the growing season. This equitable climate allows a wide range of native and exotic species to be grown, as can be seen from the great diversity of both herbaceous and woody species that grow successfully side-by-side in Ireland's gardens and arboreta. The ability to grow many species of trees presents foresters with opportunities to use different species, not only to maximise site productivity for the production of specific wood products, but also to enhance the amenity, landscape and biodiversity values of the forests.

Under the Afforestation and Creation of Woodlands measure the selection of species, varieties, ecotypes and provenances of trees shall take account of the need for resilience to climate change and to natural disasters and the pedologic and hydrologic condition of the area concerned. Species selection to ensure that the most suitable species are planted is guided by '*A Guide to Forest Tree Species Selection and Silviculture in Ireland*' (Horgan, Keane, McCarthy, Lally and Thompson), COFORD 2004. The tables to follow are taken from this work and are included in the Department's forestry scheme manuals.

Due to its nature, planting under the NWS Est. is restricted to tree species native to the island of Ireland and acceptable under the scheme (as listed in scheme literature). Furthermore, following a prescribed scenario framework, planting on individual sites must reflect the most suitable native woodland type identified for that site, based on soil, elevation, surrounding vegetation etc. Full details are contained in the current NWS Est. manual, as updated by Forest Service Circular 04 / 2013 "Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and *Chalara fraxinea* ash dieback disease".

		Soil Type																
Species		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Alder	Common																	
	Grey*																	
	Italian*																	
Beech	European																	
	Southern																	
Birch	Downey*																	
	Silver*																	
Cherry	Wild																	
Chestnut	Spanish																	
Hornbeam	Common*																	
Lime	Common																	
Maple	Norway																	
Oak	Pedunculate																	
	Red																	
	Sessile																	
Rowan*																		
Sycamore																		
Cedar	Western red																	
Cypress	Lawson																	
	Monterey																	
Fir	Douglas																	
	Grand																	
Hemlock	Western																	
Pine	Austrian																	
	Corsican																	
	Lodgepole (NC)																	
	Lodgepole (SC)																	
	Macedonian																	
	Monterey																	
	Scots																	
Redwood	Coast																	
Spruce	Norway																	
	Serbian																	
	Sitka																	
Mixture	SS/DF																	
	SS/HL																	
	SS/LP (NC)																	



[illegible]

**Table 34. Species choice by soil type**

A	Alkaline brown earths and free draining, deep grey brown podzolics	J	Gleys/peaty gleys (mottled profile) and gleyed grey brown podzolics (fertility class A or B)
B	Acid brown earths and brown podzolics	K	Gleys/peaty gleys (blue/grey or yellow profile) (fertility class B)
C	Rendzinas/shallow brown earths/shallow grey brown podzolics	L	Gleys/peaty gleys (fertility class C)
D	Podzols/peaty podzols +/- weakly developed iron pan	M	Flushed and/or reclaimed blanket peat
E	Indurated ironpan podzols (organic layer or furze present)	N	Unflushed blanket peats and intact raised bogs
F	Indurated ironpan podzols (scrawed, with heather)	O	Cutaway blanket bogs (milled peat)
G	Peaty podzolised gleys (fertility class C) - organic layer present	P	Cutaway raised bogs (milled peat) post 1980 and fen peats
H	Peaty podzolised gleys (fertility class C) - scrawed	Q	Cutaway raised bogs (hand or machine, sod) pre 1980
I	Lithosols		

The following table is intended to aid in maximising site potential by indicating the most suitable trees to be planted in a range of site types.

	Japanese larch	2	3	3	2	4	3	5	2	1
Pines:	Austrian pine	3	2	3	2	2	3	3	3	
	Corsican pine	3	2	3	5	2	4	5	2	1
	Lodgepole pine	3	1	2	1	1 --- 4	1 --- 3	5	1	1
	Macedonian pine	4	1	1	3	3	3	4	1	1
	Monterey pine	4	2	4	1	2	3	5	1	1
	Scots pine	2	1	4	3	2	3	5	1	1
Redwood:	Coast Redwood	2	5	5	2	3	5	3	3	
Spruces:	Norway spruce	4	3	5	5	4	4	3	4	
	Serbian spruce	3	2	2	3	2 --- 4	2 --- 4	3	3	
	Sitka spruce	1	4	2	2	2 --- 4	3 --- 5	5	3	

**Table 36: Species Silvicultural Characteristics**

Characteristics rated on a scale of 1 to 5					
<b>A</b>	Establishment	1	Easy	→	5 Very difficult
<b>B</b>	Spring frost	1	Tolerant	→	5 Very intolerant
<b>C</b>	Exposure	1	Tolerant	→	5 Very intolerant
<b>D</b>	Salt spray	1	Tolerant	→	5 Very intolerant
<b>E</b>	Soil moisture	1	Low	→	5 Very high
<b>F</b>	Soil nutrient	1	Low	→	5 Very high
<b>G</b>	Shade/Light	1	Shade bearer	→	5 Light demander
<b>H</b>	Rooting depth	1	Deep	→	5 Very shallow
<b>I</b>	Soil improver	1	Yes	→	5

**Table 37: Site Characteristics**

Broadleaves suit mineral slightly acid to moderate alkaline soils with a pH of 4.5 to 8. In general, broadleaves should not be planted over 185 metres elevation in the east and 120 metres in the west of Ireland. Other parameters influencing species suitability on particular sites can be summarised as follows;

- **Topography/elevation:** Although Ireland is not really considered mountainous; its tree line is situated at quite a low elevation compared to other countries. The absence of tree cover at higher elevations is related to exposure levels and temperature, as tree growth generally becomes scrubby at elevations at which the average temperature of the four warmest months is <10°C (Pears 1967).

Other climatic variables also change rapidly with increasing elevation. With every increase of 100 m, average temperatures drop by 1°C and windspeed increases by 30 percent. For plantations established under afforestation and creation of woodlands measure, current guidelines suggest that land over 300 m (in the west) and 400 m (in the east) is ‘unplantable’.

**Aspect:** Although perhaps not as immediately obvious as exposure, aspect can have an important effect on growth of various species. South-facing slopes are warmer than others, but south to southwest aspects are also generally exposed to the prevailing winds in this country. Crops growing near the foot of south-eastern slopes, or those exposed to early morning sunshine, are often at risk through damage to recently-flushed growth by early morning sunshine after clear, frosty nights. North or north-eastern slopes, although sheltered from most prevailing winds, are often cold and may be less productive. For example, at 55°N on the summer solstice, a south-facing slope of 10° would receive 50% of possible solar energy, while a north facing slope would only receive 20% (Reifsnyder

and Lull 1965). Species from warmer climates, such as European beech, Spanish chestnut and coast redwood, do best in these warmer microclimates.

#### 9.1.10 Environmental Services

##### 9.1.10.1 Landscape

New forests planted under Measure 1: Afforestation and Woodland Creation must be established and maintained in a way that enhances the landscape. Therefore it will be essential for forest holders to consider, at the planning stages, the effect the proposed forest will have on the surrounding area, taking into account the position of the site within the landscape and local landscape sensitivities set out in, for example, the County Development Plan, and considerations such as species selection, the layout of internal and external edges, and integration with landscape features, such as hedgerows. In particular, the species composition of a forest can greatly influence the character of a landscape. Slight differences between crown shape and colour are obvious to foresters and the trained eye, but often not to the general public, for whom the contrast of deciduous species may be necessary to give an impression of diversity. Introducing contrasting species alone will not improve landscape diversity unless the principles of good design are applied.

According to Hogan et al., in *A Guide to Forest Tree Species Selection and Silviculture in Ireland*, "In establishing a forest there are a number of basic design principles that relate to the choice of species:

- i) One species should appear to dominate the landscape composition by about two thirds;
- ii) Margins between species should be irregular;
- iii) Species related to ground vegetation should follow its shape at an approximate scale and in harmony with the landform;
- iv) Mixing adjoining species at the boundary is no substitute for a well-designed shape, but can enhance its appearance.

Regarding neighbouring dwellings, appropriate setbacks and edge treatments within the forest plan are essential to avoid undue visual intrusion and conflict, and to capitalise on the opportunities for enhancing views from local houses. A standard setback of 60 m (or 30 m with permission from the relevant resident) applies.

With the careful design of individual applications, the Afforestation and Creation of Woodlands measure can contribute significantly to the visual amenity of an area, in line with any particular landscape sensitivities that might apply. In order to ensure that these benefits are delivered, applicants must comply with the Department's Guidelines on Forestry and the Landscape (Anon. 2000b). This document provides useful information on the key criteria that are used to assess the impact of new plantations on the landscape.

At a national level, the *Draft National Landscape Strategy for Ireland 2014 – 2024*, published by the Department of Arts, Heritage and the Gaeltacht, 27<sup>th</sup> June 2014, will inform and assist in the resolution of challenges arising from competing priorities in the Irish landscape. As set out, the objectives of the draft Strategy are to:

- Implement the European Landscape Convention by integrating landscape into our approach to sustainable development;
- Establish and embed a process of gathering, sharing and interpreting scientific, technical and cultural information in order to carry out evidence-based

identification and description of the character, resources and processes of the landscape;

- Provide a policy framework, which will put in place measures at national, sectoral - including agriculture, tourism, energy and marine - and local level, together with civil society, to manage, protect and properly plan through high quality design for the sustainable stewardship of our landscape;
- Ensure that we take advantage of opportunities to implement policies relating to landscape use that are complementary and mutually reinforcing and that conflicting policy objectives are avoided in as far as possible.

A National Landscape Strategy will be implemented and co-ordinated by the Department of Arts, Heritage and the Gaeltacht in partnership with all key stakeholders, including the forestry sector.

The contribution of Measure 1: Afforestation and Woodland Creation to delivering on enhancing the landscape will be measured against:

- total planting achieved versus planting targets set; and
- total broadleaf planting measured against the 30% broadleaf target.

#### *9.1.11 Biodiversity and Nature Conservation*

Biodiversity is concerned with the total variability of all living organisms and the habitats in which they live. It encompasses diversity at the ecosystem, species and gene level. The establishment of new forests in the countryside has the potential to provide habitats for flora and fauna that might not otherwise exist. The retention of existing hedgerow trees, pockets of native scrub, and old individual trees, can help in providing age diversity, although this is more easily established in existing forests. The retention of over-mature trees and deadwood on the site can also promote biodiversity, especially for insects and birds. Variability can be enhanced by taking into account at the planning stage any local biodiversity factors, such as hedgerows, areas of scrub, pockets of native broadleaves, old individual trees, aquatic zones, wetlands, woodland glades, unimproved grassland and wildflower meadows, and plant and animal species.

Biodiversity under Measure 1: Afforestation and Woodland Creation will be enhanced by planting a range of species, and incorporating diverse habitats within the forest by maintaining open spaces and retaining specific habitat types, such as hedgerows, wetlands and diverse grasslands. Specifically, under the NWS Est., Measure 1 will also encourage the planting of native woodland specifically for woodland biodiversity and other ecosystem services, such as the promotion of habitat connectivity between existing natural and semi-natural habitats (including those protected as designated sites) within the landscape. Local or native seed sources should be used when and where possible (support for seed stands and orchards should promote this aim).

Furthermore, in relation to the Afforestation Scheme, NWS Est. and the Forestry for Fibre Scheme, biodiversity will be achieved through the creation of Areas of Biodiversity Enhancement (ABEs), whose aim is to maintain open spaces within new forests and to retain existing habitats within them. ABEs would comprise approximately 15% of individual grant aided afforestation projects which are greater than 10 hectares. In sites less than 10 hectares in area, the open space element of ABEs should be designed in conjunction with neighbouring land use and may be reduced.

The following table outlines areas left unplanted in forest plantations and indicates which are eligible as ABEs in individual projects and their eligibility for grants and premiums.

Areas	ABE	Grant	Premium
Open space for landscape and biodiversity	Yes	*	**
Hedgerows	Yes	*	**
Scrub	Yes	*	**
Buffer zones along aquatic zones	Yes	*	**
Archaeological sites and their exclusion zones	Yes	*	**
Created lakes/reservoirs	Yes	*	**
Former REPS habitats	Yes	*	**
Public road setback areas	Yes	*	**
Railway setback strip	Yes	*	**
Ridelines and drains	Yes	*	**
Internal roads and turning bay setback areas	Yes	*	**
Unplantable areas	***	No	No
Shallow, rocky soils	***	*	**
Rock and scree	***	No	No
Aquatic zones (area occupied by lake/ river)	***	No	No
Forest. (Conifer High Forest and Broadleaf High Forest - this includes newly planted areas with conventional stocking densities.)	No	No	No
Dwelling house/associated building setback area	Yes	*	**
Rights of way held by third party	No	No	No
Areas with turbary or grazing rights held by a third party	No	No	No
Major water mains	***	No	No
Power line corridors	***	No	No
Gas line	***	No	No
Public road	No	No	No

- \* An ABE of plot size is eligible for grant aid if it has been subject to work and legitimate costs in the afforestation of the project.
- \*\* An ABE is subject to premium if it adheres to the definition of utilised agricultural area (Commission Regulation (EC) No.1750/1999) prior to the commencement of the associated afforestation.
- \*\*\* These areas can be included as ABEs if in the view of the Forest Service it has sufficient biodiversity value but is not subject to grant aid or premium.

**Table 38: Eligible areas for ABE**

The Forest Service Guidelines on forest biodiversity will guide applicants and foresters in maximising the potential for biodiversity in new planting. The contribution of Measure 1: Afforestation and Woodland Creation to biodiversity will be achievement of measuring the following:

- The total number of hectares of ABE established under this measure;
- The total number of hectares planted under NWS Est. versus the planting targets set;
- The total number of hectares planted under the Agro-Forestry Scheme versus the planting targets set.

#### 9.1.11.1 Water Quality

Considerable scope exists for the use of woodlands and forests to proactively contribute to protecting and enhancing water quality. The benefits are potentially greatest where appropriately designed and management woodland are strategically located along watercourses, as such woodlands can buffer against sedimentation and run-off from surrounding landuses, can regulate water temperatures and flow, and can act as a source of suitable instream food. The contribution to tackling diffuse pollution includes both a barrier and interception function, whereby the presence of trees and forest ground vegetation reduces the risk of direct contamination by agricultural and forest activities on the adjacent land, and helps to trap and retain nutrients and sediment in polluted run-off.

The Forest Service promotes the delivery of this ecosystem service, primarily through the Native Woodland Establishment Scheme,. The Native Woodland Scheme (NWS), developed in partnership with the National Parks & Wildlife Service, the Heritage

Council, Woodlands of Ireland and others, is aimed at protecting and enhancing Ireland's native woodland resource. The scheme itself is based on key ecological principles, including the use of Irish native stock only, minimal site disturbance during associated operations during establishment, the development of native woodland representative of the soil type, natural drainage, elevation, etc. of the site, and the commitment to long-term 'close-to-nature' silviculture'. The Native Woodland Scheme includes two separate elements: NWS Establishment (under Measure 1: Afforestation and Woodland Creation) and NWS Conservation (see later)

The NWS has considerable application in promoting water quality. Specifically, new native woodland established under the scheme on sites adjoining watercourses and elsewhere within catchments, creates natural habitats that act as permanent and stable buffers *vis-à-vis* water quality. These native woodlands intercept potential sediment and nutrient flows and pulses arising from 'upslope' landuses (including agriculture and commercial forestry), contribute to erosion prevention on slopes, and help reinstate natural hydrological patterns. Furthermore, immediate 'bankside' benefits arising from native woodland (including native riparian woodland) development on sites adjoining watercourses include: the filtering-out of sediment and nutrients from overland flow; bank stability; the restoration of natural dynamics between the terrestrial / riparian / aquatic systems; the provision of dappled shade; the regulation of water temperatures; and the provision of appropriate inputs that enhance instream diversity.

The strong ecological approach to species selection, establishment and management underpinning the NWS, the benign impact of native trees on soil development and nutrient recycling, and the range of potential and very positive ecosystem services that would be delivered by the scheme's uptake makes it a suitable option for water-sensitive areas such as FPM catchments, acid sensitive areas, and fisheries sensitive areas, and high status waterbodies.

Other water-related benefits are delivered by other schemes under Measure 1, including the Afforestation Scheme, through the development of 10 – 20 m aquatic buffer zones (ABZs) alongside any watercourses adjoining or intersecting afforestation sites. As per the Forestry and Water Quality Guidelines, this area must remain unplanted, apart from small groups of appropriate riparian trees hand-planted. Furthermore, no machine trafficking, or herbicide and fertiliser application can take place within the ABZ. Individual ABZs must be allowed to develop into a natural habitat, which typically comprises a mosaic of natural ground vegetation and woodland scrub, and form a permanent protective feature along the watercourses.

The contribution of the Afforestation and Creation of Woodlands measure towards water quality will be measured over the programme period by the number of hectares of new native woodlands actually established against the target set.

#### 9.1.11.2 Climate change mitigation

Increased levels of greenhouse gases, such as CO<sub>2</sub>, increase the amount of energy trapped in the atmosphere which leads to global impacts such as increased temperatures, melting of snow and ice and rising global average sea-level. Increases in approved forest sinks count towards compliance with emission reduction targets under the second commitment period of the Kyoto Protocol,

The Afforestation and Creation of Woodlands measure plays an important role in mitigating climate change, as a land based sink for carbon dioxide, and as a source of renewable raw materials for fuel and wood products. Given the levels of afforestation that have occurred since 1990, it is estimated that between 2008 and 2012 the average rate of



sequestration in qualifying forests over the first commitment period of the Kyoto Protocol was 3.23Mt CO<sub>2</sub> per annum. The total carbon stock in forest biomass (excluding soil carbon) is estimated to be circa 210 Mt of CO<sub>2</sub> in 2012<sup>96</sup>. Forest soils represent a very significant carbon pool; current estimates are that the total carbon stock in forest soils is in the region of 1,188 million tonnes of CO<sub>2</sub>.

Afforestation under the new programme will have little effect on levels of sequestration during the second commitment period 2013-2020, because forests grow relatively slowly as they establish themselves over the first five years or so. However, in the post 2020 period, these forests will make a substantial contribution to climate change mitigation. Sitka spruce which is the predominant species planted in Irelands will sequester 200 tonnes of carbon per hectare over its rotation.

The afforestation scheme will also make a significant contribution towards climate mitigation through displacement of fossil fuels. In 2012, 225,000 m<sup>3</sup> of firewood was used in Irish households showing that it is providing a steady and a growing market for first thinnings.

Given the age profile of forests planted under the new scheme it is difficult to measure the impacts on climate change mitigation during the programme period. The contribution that forests planted under this programme will make towards climate mitigation will materialise later on in their rotation as mentioned earlier.

#### 9.1.11.3 Amenity and recreation

The use of woodlands and forests for outdoor amenity and recreation and as an environmental education resource is an important aspect of sustainable forest management. Factors such as the growing demand for opportunities for outdoor recreation and the increased focus on the associated health benefits to society and opportunities for local enterprises within rural communities, will continue to highlight the importance of this utilisation of Ireland's forests. The EU Forest Strategy acknowledges the multifunctional role of forests including for human health, recreation and tourism. While walking is the most popular activity, forest recreation embraces other specialised activities including orienteering, mountain biking, horse riding, fishing and more recently, 'glamping'. Irish forests are well served with roads, tracks, rides, and increasingly with purpose built trail and cycle tracks in selected locations. Forest Service guidelines in this area, entitled *Forest Recreation in Ireland – A Guide for Forest Owners and Managers*, provide direction on assessing and realising the recreational potential of individual forests, dealing with issues such as consultation with recreational users, access for all, recreational facilities, safety, environmental education, and integration with local trails and tourist enterprises and heritage attractions. . The Dobris Assessment states that tourism is likely to become the largest single economic activity in the EU and currently accounts for 5.5% of the EU's GNP. Land use for tourism has been correspondingly growing, with the more specialized forms of tourist activities, noted above, gaining in popularity.

Approximately 18 million people visited Irish forests in 2012, representing 4.5 visits per person. In the future, it seems likely that demand will increase for a higher quality of forest recreation experience (e.g. more organised and specialised recreation activities and a higher expectation in relation to visitor facilities). The Irish figure of visits per capita is less than the European average of 6.5, and it is likely that the expansion of public use of forests for recreation will continue for the next number of years.

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<sup>96</sup>National Forest Inventory 2013. The Second National Forest Inventory. Republic of Ireland. Main Findings. Forest Service, Department of Agriculture, Food and the Marine, Wexford.



It is difficult to measure the benefits of new afforestation in terms of amenity and recreation, as these benefits will accrue in the most part later on in their rotation. Perhaps the best way to measure this benefit is to compare the total number of visits to Irish forests in 2012 (18 million) against the figure after the Forestry Programme has been completed in 2020.

## **9.2 Measure 2: Investments improving the Resilience and Environmental value of Forestry: - NeighbourWood Scheme**

### **9.2.1 Regulatory Framework**

<b>State Aid</b>	<b>RDR</b>	<b>Focus Area</b>	<b>Code</b>
Sub chapter 2.1.4	Article 22& 25	4(a) & 5(e)	8.6

### **9.2.2 NeighbourWood Scheme Details**

The proposed Forest Service NeighbourWood Scheme will provide support for the development of new and existing “close-to-home” woodland or “NeighbourWoods” for public access, education, recreation and enjoyment on land in or near villages, towns and cities. The Neighbourwood scheme is aimed primarily at local authorities and private landholders, working in partnership with local communities. Other landholders may be considered on a case-by-case basis.

The NeighbourWood Scheme is subject to specific standards and criteria, and requires an explicit management plan. There must be clear potential for the development of attractive amenity woodlands that will be strategically located, easily accessible and well-used by local people. The project must be developed in partnership with the local community and (where relevant) with specific recreational user groups. This partnership must be clearly demonstrated. Support will be available to cover the cost of investments that are made for non-profit purposes only. The woodland must be open to the general public throughout the year and access must be free-of-charge, and strong emphasis is placed on providing reasonable access for all potential users.

Applications will be assessed by reference to, *inter alia*, value for money, proximity to urban centres, level of support/commitment from local communities, capacity of applicants to complete the project within a set timescale, and how each application intends to maximise the potential for recreational use. The resulting neighbourwood amenity must be maintained and access provided for a period of at least 10 years from receipt of the first grant payment.

The proposed scheme will provide financial support under three separate elements:

- Element 1 will support the silvicultural enhancement of existing amenity forests (or 'neighbourwoods') .
- Element 2 will support the establishment of new neighbourwoods.
- Element 3 will support the installation and upgrade of appropriate recreational facilities within existing or new amenity woodlands.

Certain applicants under Element 2 may be eligible for an annual premium under the proposed Measure 1: Afforestation and Woodland Creation.

#### **9.2.2.1 Eligibility**

The NeighbourWood Scheme is aimed primarily at local authorities and private landholders, working in partnership with local community groups. Other landholders may

be considered on a case-by-case basis. In all cases, the landholder submits the application directly to the Forest Service. Agricultural land and non-agricultural land will be eligible for support.

Applications under the NeighbourWood Scheme will undergo project evaluation by the Forest Service (*via* desk and field inspections and use of the GIS-based iFORIS system), referral to statutory consultees, AA Screening and Appropriate Assessment (where required) under the Habitats Directive, to ensure compatibility with the environment. For further details, see under Measure 1: Afforestation and Woodland Creation. The afforestation of land (under Element 2 of the NeighbourWood Scheme) which, in the opinion of the Department, is likely to have a significant adverse effect on the environment will not be eligible for support.

#### 9.2.2.2 [Financial support](#)

Levels of financial support currently being considered are as follows:

<b>Grant Premium Category</b>	<b>1<sup>st</sup> Grant</b>	<b>2<sup>nd</sup> Grant</b>	<b>Total Grant* (€/ha)*</b>
Element 1: Neighbourwood Enhancement	3375	1125	4500
Element 2: Neighbourwood Establishment	3800	1200	5000 **
Element 3: Recreational facilities (first 10 ha)	2500	1500	4000
Element 3: Recreational facilities (Each additional hectare, up to 40 ha)	1750	750	2500

*\*Cost-based scheme, up to 100%. \*\* Fencing allowance under Element 2 as per Afforestation Scheme*

The following operations will be eligible for support under Elements 1 and 2:

- Preparation of the NeighbourWood Plan;
- Purchase of suitable forest transplant stock;
- Ground preparation;
- Fertiliser application (Element 2 only);
- Fencing and other protective measures;
- Clearance of invasive species such as laurel and rhododendron;
- Tree felling, where appropriate (Element 1 only);
- Planting on new site (Element 2)
- U understory and coupe planting (Element 1);
- Maintenance (including vegetation management);
- Woodland edge management (Element 1 only);
- Maintenance of open spaces;
- Respacing (Element 1 only); and
- Other appropriate operations, where agreed in advance with the Forest Service (e.g. ecological survey, natural regeneration works).

Facilities supported under Element 3 can be either: (i) general in nature, including footpaths, signage, way markers, car-parking, seating, picnic tables, etc.; or (ii) more specialised in nature, including include fitness or playground equipment, bird watching hides and mountain bike tracks.

### 9.2.3 Objectives

The objectives of the proposed NeighbourWood Scheme are:

- Provide increased recreational space and associated health benefits to the general public;
- Support the creation of new public amenity forests and forest ecosystems;
- Support investment in the provision of facilities to encourage greater public use of forests;
- Increase the educational function of forests;
- Support actions aimed at protecting and enhancing forests and forest ecosystems located close to population centres;
- Enhance protection of waterbodies and watercourses adjacent to the proposed woods; and
- Encourage increased public participation in outdoor activities.

It is proposed to support approximately 10 quality projects under the NeighbourWood Scheme each year of the Forestry Programme's lifetime.

### 9.2.4 Environmental services

So-called 'neighbourwoods' deliver a different experience than other forests in terms of the delivery of recreational and amenity benefits. It is less about 'gortex and hiking boot' forest recreation and more about runners, umbrellas, prams, baby carseats, dog leads, walking sticks, etc. Neighbourwoods can be used by people of all ages and abilities on a regular, often daily basis, for strolling, family visits and picnics, walking-the-dog, 'power-walking', jogging, and a host of other outdoor activities. Also, local schools often use them as an outdoor classroom for young people to learn about nature and the environment.

Typical facilities include entrances, car parking, a variety of looped footpaths, information signage and waymarkers, nature trails, and seats and picnic tables. A neighbourwood can be a stand-alone amenity, or can be linked into other amenities and attractions in the area, such as parkland, historic buildings, visitor attractions and wider walking routes.

Neighbourwoods vary greatly in location, size and ownership. They can be located within or near villages, towns or cities, or may be more rural in nature. They can range in size, from pocket woodlands within built-up areas to large forests in the countryside. They may be owned by a local council or some other public body, or might even be privately owned, where the owner is prepared to allow local people to access and enjoy the woodland.

On a wider scale, neighbourwoods can be used as a 'broad brush' tool for sustainable planning and development, particularly in urban and urban fringe areas. Woodlands can be used strategically to reinforce existing greenbelts, greenways and sustainable transport corridors, to provide buffers between residential and industrial areas, to protect urban watercourses, and to reclaim former landfill sites and industrial 'brownfield' sites.

Woodland can also be created in the years leading up to development, providing a ready-made green landscape for the future. In all cases, what makes a woodland a 'neighbourwood' is how it is perceived by local people. Neighbourwoods are an invaluable community resource and part of the local fabric of life and 'sense of place'. They provide individuals, families and friends time-out and contact with the natural world, promote public health, well-being and a better quality of life, and create a resource for people young and old to learn about nature and the environment.

## 9.3 Measure 3: Investments in Infrastructure: Forest Road Scheme

The Teagasc Forestry Development unit report (2007) clearly shows the importance of thinnings to forestry revenues. It shows that the NPV of timber revenues is higher for those forestry areas that have had thinnings carried out compared to those that have not. In addition to providing revenue, from the sale of the materials obtained from thinning, thinnings also enable the timber to grow better and more productively so that at harvest time the revenues themselves received are greater. In 2012 the National Forest Inventory showed that 23% of the national estate had reached thinning stage but had not been thinned.

### 9.3.1 Regulatory Framework

	<b>State Aid</b>	<b>RDR</b>	<b>Focus area</b>	<b>Code</b>
<b>Roads</b>	Sub chapter 2.1.6	Article 17	2 (a) & 2(b)	4.3

### 9.3.2 Scheme Detail

Grant aided road density will generally be 20m/ha of the area served, not necessarily the area subject to the forest management operation. In the calculation of area served by any proposed harvesting road where 50% or greater of the area is due for harvesting in the next 3 years the entire area can be deemed eligible; otherwise only the area harvested within that timeframe is eligible. For co operative road building (joint applications) this can extend to 5 years. Broadleaves can be considered in the area calculation where they are suitable for tending and/or thinning and where the average height is at least 8 metres at the time of application. Where a proposed forest road connects to a existing forest road network in a public forest there will be no requirement attached to the harvesting of the public forest.

Roading density will be limited for grant aid, only the minimum amount of roadway required will be funded which may not necessarily be the current maximum of 20m per hectare. Grant aid of road density will not exceed 20m/ha in the forest served which includes existing road networks. There will be no discretion above 20m/ha.

The following operations will be eligible for support under this measure up to the grant rates agreed:

- Tree clearance (minimum 15m);
- Inceptor drains –Formation work – strip soil minimum width 7m, excavate and camber, grade and compact;
- Base course and surfacing (load bearing capacity of 44 tonnes);
- Bell mouths and turntables;
- Internal T-junctions;
- Culverts; and
- Bridges

A maximum of 100% of total costs of building forest roads will be funded subject to the maximum payment of €35/ m and 20m/ha. The Minister reserves the right to alter these rates from time to time and to withdraw the support altogether at short notice.

A road map must be submitted showing clearly which plots are within 3/5 years of first thinning. Plot inventory details and proposed road specifications must also accompany each road application.

Where existing tracks/roads within a plantation require upgrading or extending to 20m/ha at the time of the forest management operation, application for grant aid towards the cost of upgrading or extending may be made. Upgrading does not include repairs to roads that have previously been used for harvesting purposes.

Where appropriate, all or part of the forest road may be external to the plantation. For grant aid purposes, there is no difference between access roads and internal roads.

The cost of bellmouths, lay-bys, drying areas and non grant aided special construction works etc. is covered out of the overall road grant allocation for the site (i.e. at harvesting stage 20m/ha x Forest area). There is no additional payment for these features. Where a bellmouth is constructed 30 m (15 m for each “wing”) may be included as part of the road length for grant purposes. Where a lay-by is constructed the length of the lay-by may be included as part of the road length for grant purposes. The construction of a “Standard back in type loading bay” or a “Standard loading bay with internal turning area” may be grant aided where the area allows. Pull-in lay byes (longitudinal loading bays) along public roads may be considered on a case by case basis at an equivalent roading of 60m where the area allows. Apart from a loading bay, only the minimum amount of roadway required will be grant aided to ensure forwarding distances do not exceed a maximum of 500 metres. In cases where the proposed forest road bell mouth is at least 2 m below the surface of the existing public road an additional 30 metres will be allowed per forest entrance to contribute towards the cost of additional stone required. This means that bell mouths in this situation can include an additional 70 metres of road length for grant purposes

All road construction works shall be undertaken in compliance with the Forest Road Manual (COFORD) unless the Forest Service has approved otherwise.

An Environmental Impact Statement (EIS) must be submitted in respect of any forest road construction project which exceeds 2,000 metres in length. An EIS may also be required for road projects below the 2,000 metre threshold if the Department feels that the project is likely to have a significant environmental effect.

In order to be eligible for a road grant 20% of the forest must be thinned within three years of receiving the 1<sup>st</sup> instalment. This will be a condition of receiving the 2<sup>nd</sup> grant. Forests must also be thinned on time.

#### 9.3.2.1 Additional support to protect against erosion

A Special construction works (SCW) grant is being introduced at a maximum value of €5,000 per application or 50% of the cost of the SCW whichever is the smaller. The objective of this provision is primarily aimed at facilitating the construction of forest roads in environmentally sensitive sites to limit any potential adverse impact from harvesting activities. All proposals to fund special construction works must adequately demonstrate in the application that the works are required to facilitate the harvesting and extraction of timber on routes that minimise the potential for silt run off and potential adverse environmental impact. Where it is shown that such works do not have a positive environmental benefit, aid will be refused and consent for construction work will be considered without grant aid.

SCW will be limited where they are required to the following;

- Permanent bridges

- Large culverts greater than or equal to 1 metre in diameter
- Where the forest areas served exceeds 5 ha

Multiple SCW works can be included on the one application form but cannot receive in total more than €5,000 or 50% of the cost of the SCW whichever is the smaller. SCW works must be specified, drawn up and supervised by a qualified civil engineer. Form 1 applications must specify that the application includes a SCW component and the total cost of that SCW must be given in the application. Only one grant allocation for SCW is payable per forest plantation irrespective of the number of road lengths constructed. For the purpose of eligibility, grant aided plantations includes all plots and parcels previously grant aided under the same contract number and adjoining contract numbers owned by the same applicant.

Funding for special construction works is subject to availability of funds in any financial year. All SCWs must represent value for money and satisfy one or more of the following criteria;

- Crossing required to protect watercourses e.g. fisheries considerations, freshwater pearl mussel
- Protection of Natura 2000 sites
- Required to prevent siltation and erosion
- Environmental benefit to works proposed

All SCWs whether grant aided or not must satisfy the requirements of the Forest Service Environmental Guidelines.

The Department may decide to fund additional categories of special construction works in subsequent versions of the Forest Road Scheme over the duration of the programme subject to funding availability.

#### 9.3.2.2 Connecting to an existing road network

In cases where a proposed forest road will connect to an existing forest road network in a public, state owned or private forest, grant aid will be considered on a case by case basis. However the maximum length of road required connecting the private forest road to an existing forest road network must be along the best and the shortest route possible.

Grant aid for “connecting roads” through a neighbouring forest will be limited to a length not greater than that constructed on the private forest(s) accessing the existing road network on lands owned by public authorities or state owned companies. For example, if 300 metres of a proposed road within a private forest needs an additional 1000 metres of road to reach an existing road network on an adjoining property, grant aid will be limited to 600 metres in total (300m in the private forest and 300m in the adjoining forest). Where both adjoining forests and lands are owned privately the connecting road will be based on the area served and existing road network for the block served. Grant aid in any circumstance cannot exceed 20 metres per hectare based on the existing and proposed road network.

#### 9.3.2.3 General Terms and Conditions

All private holders of forests are eligible to apply. Lands owned by Public authorities and state owned companies will not be eligible to receive grant aid under this scheme unless construction is part of an agreed cooperative venture (see section above).



For plantations above a certain area (currently 10 ha for conifers and 5ha for broadleaves) funding is conditional on presentation of a Forest Management Plan. This should include the expected volume of timber to be extracted as part of the forest management operation.

All expenditure must represent value for money and claims submitted for grant aid must represent the actual costs incurred. Breakdown of costs must be provided in advance at the pre-approval and payment stages.

Where feasible, co-operative ventures involving joint or shared forest operations between adjoining forests is encouraged and where funds are limited preference will be given to these applications (including applications which incorporate special construction works). Evidence of this must be provided at application stage by a signed statement by those involved and witnessed and verified by a commissioner for oaths. This should cover both the construction and use of roads along with the forest thinning operations.

It is a basic requirement of this scheme that any infrastructure funded should be open to the public for recreational use without charge. However, such access may be restricted for a specified period where it is necessary to protect sensitive areas, or where vandalism or dumping is an issue, or to ensure the proper and safe use of the infrastructure. Where measures have been taken to protect any infrastructure from animal trespass, pedestrian access must be provided by a gate or stile or other means. Public access does not confer any permanent rights to individual members of the public and does not extend to access off the forest road

If it proves necessary to restrict access to any forest infrastructure works undertaken under this Scheme, the beneficiary must notify the Department in writing of the reason for the restriction and must specify the requested duration of the restriction.

#### 9.3.2.4 [Grant](#)

The fixed grant rate is available for roads will be as follows;

Category	Maximum Rate € / Linear metre  (Excl VAT)	Maximum Density (metre/ ha)
Harvesting Road	€35	20
Harvesting Upgrade or Extension as defined.	€35	20*
Special Construction Works	Up to €5,000	

\* 13m applies where the applicant previously received a management road grant for 7m per ha or 10m applies where the applicant previously received a management road grant for 10 m per ha under a previous road scheme



Payments shall be made in respect of applicants who make a valid application, prepared by a Registered Forester and have carried out the work in accordance with the stipulations of their pre-approval and in compliance with:

- a) All relevant national legislation for the time being in force;
- b) The Department's specifications for Registered Foresters;
- c) The terms and conditions as set out in this document and the application forms;
- d) The requirements set down in the Forestry Schemes Manual, where applicable;
- e) Forestry Schemes Mapping Standards;
- f) The principles of Sustainable Forest Management;
- g) The Forest Service Code of Best Forest Practice – Ireland;
- h) The Forest Service Environmental Guidelines;
- i) Conditions of Felling Licence where applicable and relevant.

Furthermore, the Forest Service, in assessing an application for forest road construction under S.I. No. 558 of 2010, will undertake project evaluation (*via* desk and field inspections and use of the GIS-based iFORIS system), referral to statutory consultees, AA Screening and Appropriate Assessment (where required) under the Habitats Directive, and EIA Screening, to ensure compatibility with the environment. For further details, see under Measure 1: Afforestation and Woodland Creation.

Payments will be scheduled as follows;

- Application for approval to undertake works under this Scheme will be made using the "Forest Roads Form 1".
- Payment of 1<sup>st</sup> Instalment of Road Grant will be made on receipt of Form 2.
- Payment of 2<sup>nd</sup> Instalment will be made on receipt of a single Form 3 and where 20% of the area has been thinned.

The first instalment will be 90% of the total payment while the remaining amount is paid as a second instalment. The forest road must also continue to facilitate the objectives of the Road Scheme and facilitate access for timber haulage, management and emergency vehicles in order for the thinning grant to be paid.

### 9.3.3 Objectives

The objectives of the scheme are as follows;

- Stimulate the mobilisation of roundwood from forests and thereby contribute to employment and economic activity;
- Provide funding for the construction of forest roads and associated infrastructure such as bell-mouths, turn-tables, drains, culverts and bridges;
- Improve the economic value and competitiveness of the forest resource;
- Provide access for emergency vehicles;
- Provide access for equipment and transport vehicles to facilitate harvesting operations;
- To increase the forest road infrastructure by 150 - 180 km per year thereby servicing 30,000 to 40,000 ha of forest area for clearfelling and thinning operations;
- Thin and clearfell in line with the "All Ireland Roundwood Production Forecast 2011-2028";

- Achieve net realisable volume production of 4.6million m<sup>3</sup> per annum by 2020 and 7-8 million m<sup>3</sup> by 2028;
- Increase the biodiversity value of commercial forests;

#### 9.3.4 *Environmental considerations*

Good forest roads are crucial for effective forest management, regardless of its main objectives. Forest maintenance, wood harvesting, game control, recreational activities, all require the accessibility provided by a suitable road network. The construction of forest roads represents one of the more visible forestry operations and can have a number of environmental impacts including landscape, water, soil, habitat and social/community. The *Forest Road Manual* includes practices and guidelines to ensure that all phases in the construction of forest roads are carried out in a manner that is compatible with environmental values and sustainable forest management. Roads funded under the new programme must adhere to these rules which include the following;

<u>Planning:</u>	Potential environmental risks and construction difficulties are identified at road planning stage to ensure adequate design standards consistent with minimising environmental impacts.
<u>Design:</u>	New and upgraded roads designed to a standard capable of carrying anticipated timber haulage traffic for a crop rotation to meet environmental requirements and with safety.
<u>Location:</u>	Roads located so as to minimise risks to environmental values and road construction to take account of environmental values during all stages of formation and completion.
<u>Construction:</u>	Forest roads and access points to county roads constructed in planned engineering stages, to minimise disturbance to the site, and well in advance of timber harvesting and road haulage.
<u>Drainage:</u>	Roads properly formed, consolidated, completed and drained to ensure that the impact of run-off on water quality is minimised.
<u>Maintenance:</u>	Road surfaces and drainage works maintained to protect the road foundation, disperse water and minimise environmental impact.

In relation to the protection of water quality specifically, referral procedures similar to those for afforestation are also in place for forest road applications. The referral process is detailed in Chapter 11 ‘Environmental Protection and Controls – Consultation Process’ and Appendix 21 ‘Areas Potentially Sensitive to Fisheries’ of the *Forestry Schemes Manual*. Forestry and water quality guidelines set out strict operational rules for building roads so that water quality is protected. This includes the following rules for example;

- Roads should be located at least 50 m from an aquatic zone, where possible.
- Road layout should aim to direct off-road traffic away from streams. If there is no other option but to cross an aquatic zone, construct an appropriate bridge or culvert.
- Where possible, roads should follow the natural contours of the terrain.
- All ancillary drainage associated with road construction should be designed to divert water away from buffer zones and should not be allowed to discharge directly into aquatic zones. Sediment traps will be necessary. Roadside drains should not directly intercept run-off from higher ground. Cut-off drains should be constructed to a flat gradient at least 5 m back from the upper edge of the road formation, to avoid erosion.
- Carry out construction during dry weather, ideally from April to October.

#### 9.3.4.1 Environmental services

Forest roads and first thinning operations will be intrinsically linked in the scheme as a certain percentage of thinning must be completed before the second instalment of the road grant can be paid. The economic and ecological benefits of thinning operations are well established; thinning reduces competition among trees, stimulates incremental growth and increases the amount of sunlight reaching the forest floor.

First thinning involves the removal of stems which have little or no commercial value when all costs are taken into account and therefore it can be said that the main purpose of such an operation is to improve the ecological value of the forests. Without state support for forest roads most thinning operations wouldn't take place for financial reasons; this means that the environmental benefits outlined under the Woodland Improvement Scheme (Thinning and Tending) in the section to follow won't arise.

Environmental services associated directly with forest roads can be summarised as follows;

- Forest roads open up the canopy and allow light to filter into the forest;
- The edge effect created by new roads also promotes biodiversity;
- Roads provide access for amenity and recreational purposes for both tourists and local communities;
- Roads provide access for emergency vehicles in times of forest fires.

The contribution of forest roads to environmental service will be measured by

- comparing the total number of kilometres of roads built against the target and
- the increase in the number of visitors to forests after the programme is completed against the baseline figure of 18million people that visited forests in 2012.

### ***9.4 Measure 4: Prevention and Restoration of Damage to Forests: - Reconstitution Scheme***

#### *9.4.1 Regulatory Framework*

<b>State Aid</b>	<b>RDR</b>	<b>Focus Area</b>	<b>Code</b>
Sub Chapter 2.1.3	Article 24	4(a)	8.5

#### *9.4.2 Scheme Details*

The purpose of this scheme is to restore and maintain forests and forest ecosystems following significant damage by natural causes. Support under Forest Reconstitution would be available to private forest holders only. The scheme would contribute to the costs of restoring forest potential as a result of damage, or potential damage, from disease outbreaks. The scheme would also support the removal and destruction of trees infected by contagious pathogens, or trees likely to be so infected. Support may also be considered towards the restoration of forests damaged by other natural causes, catastrophic events and/or climate change related events, such as frost, deer, grey squirrel and vole, where more than 20% of the forest potential has been damaged.

It is also envisaged that the scheme will be tailored to address specific threats. A reconstitution scheme currently exists for forests affected by *Chalara fraxinea* (Ash dieback disease) where applications for support have already been received.

#### 9.4.2.1 Eligibility , Grants and Premiums

Support shall be granted only for the reconstitution of forests which were established under one of the following Department schemes:

- Afforestation Grant Schemes;
- Native Woodland Establishment Scheme (NWS Est.);
- NeighbourWood Scheme; or
- Forest Environment Protection Scheme (FEPS)

Grant assistance will be in respect of costs necessarily incurred in the reconstitution of a forest, subject to the maximum limit laid down as follows;

<b>Grant Premium Category</b>	<b>1<sup>st</sup> Grant</b>	<b>2<sup>nd</sup> Grant</b>	<b>Total Grant*</b>
<b>Conifers</b>	2250	750	3000
<b>Broadleaves</b>	3600	1100	4700

*\*There is no fencing allowance, cost based scheme up to 100%*

The grant scheme will be cost-based and evidence of costs expended and receipts for items and/or services purchased must be retained and produced on request. The following operations will be eligible for support under this measure:

- In the case of disease, the removal and destruction of trees and associated material (if required);
- Replacement plants;
- Planting;
- Ground Preparation (if applicable);
- Vegetation control (1 - 4years, if applicable);
- Shaping;
- Creation of firebreaks and reservoirs, where necessary; and
- Other operations approved in advance by the Department.

#### 9.4.3 *Objectives*

These are as follows;

- To support the restoration of forest potential arising from damage by natural events and the introduction of protective infrastructure in forests; and
- The development and promotion of forestry through the incorporation of practices that restore, preserve and enhance biodiversity;

Specific objectives are dependent on occurrences of pest and disease outbreaks and other natural occurrences.

##### 9.4.3.1 Environmental issues

These are similar to those set out under the afforestation and creation of woodland measure.

#### 9.4.4 Programme Specific Output Indicators

These include the following;

- Number of applications funded;
- Number of hectares of forest damaged by disease;
- Number of hectares of damaged forests restored including those affected by Chalara

### 9.5 Measure 5: Investments improving the Resilience and Environmental value of Forestry:- Woodland Improvement (Thinning and Tending-Broadleaves)

#### 9.5.1 Regulatory Framework

State Aid	RDR	Focus area
Sub Chapter 2.1.4	Article 25	4(a)

#### 9.5.2 Scheme Details

This scheme will provide financial support to forest holders towards the cost of woodland improvement works associated with tending and thinning of forests planted since 1980. The aim of the scheme is to stimulate investment in the improvement, protection and development of broadleaved woodlands and forests for a range of functions, including: healthy tree growth, landscape improvement, biodiversity enhancement, soil protection and water protection. These aims will be achieved through improvement felling of malformed and over mature trees; felling of additional trees to release potential crop trees (PCT); pruning to improve stem quality; thinning or re-spacing to promote growth and management and re-spacing of natural regeneration. Tending and thinning also benefits biodiversity by increasing light and contributing to shrub and ground flora abundance.

Funding may also be provided for brashing to improve access for manual application of fertiliser where aerial fertilisation is not possible. Foliar analysis may be required to establish nutrient status and determine the type and rate of fertiliser

##### 9.5.2.1 Grant

A fixed grant of €750 per hectare will be available under the Scheme for tending and thinning projects which receive prior approval of the Department, subject to a maximum of €20,000 per application.

An additional cost based grant will be available under the Scheme for brashing operations to improve access to forests for manual application of fertiliser, if required, to a maximum of €750 per hectare.

Support will be available for the following operations:

- Improvement felling of malformed and over mature trees;
- Felling of additional trees to release potential crop trees (PCT);
- Thinning or re-spacing to promote growth;
- Management and re-spacing of natural regeneration; and
- Improving access for manual fertilisation (cost based grant).

Private forest holders and other private law bodies, and their associations, will be eligible to support under the proposed scheme

### 9.5.3 Objectives

The aim of the scheme is to stimulate investment in the improvement, protection and development of young broadleaf forests for a range of functions, including:

- Timber production;
- Encourage healthy tree growth;
- Landscape enhancement;
- Soil and water protection; and
- Improve biodiversity function.

The aim will be to support the thinning and tending of 9,000 ha of broadleaf and mixed forests each year under the programme.

### 9.5.4 Environmental services

Opening up the canopy through thinning enables more light to reach the forest floor, thereby allowing plants to re-colonise the forest area, increasing biodiversity. Results from the Irish National Forest Inventory show that plantation forests when managed in this way provide significant biodiversity benefits. In addition, thinning opens up forest areas for walking and other recreational uses and improve the visual amenity of forests. Thinning, by opening up tree crowns to light, also promotes higher levels of tree seed production which favours natural regeneration systems and close-to-nature silviculture. This has been shown in research funded by COFORD. Wind damage is a significant risk factor in Irish forestry. Early thinning has been shown to improve forest stability and its overall resilience in terms of wind damage and other risk factors. Thinning also improves the vitality of forests allowing them to sequester more carbon.

The total hectares of broadleaf woodlands thinned will be used to measure these benefits.

## 9.6 Measure 6: Investments improving the Resilience and environmental value of Forests:- Native Woodland Conservation Scheme

### 9.6.1 Regulation Framework

State Aid	RDR	Focus Area	Code
Sub Chapter 2.1.4	Article 25	4(a) & 5(e)	8.6

### 9.6.2 Native Woodland Conservation Scheme (NWS Conservation) Detail

The Native Woodland Conservation Scheme (NWS Conservation) supports the protection and enhancement of existing native woodland, primarily to protect and enhance native woodland ecosystems. The scheme is primarily focused on woodlands where two-thirds or more of the existing over storey stocking is comprised of native species. However, other woodlands and forests may also be eligible for funding under the scheme, in the following situations:

- Where the site is a woodland designated as a cSAC, NHA, pNHA or SPA;
- Where the site is an Old Woodland Site, whereby original 6 inch Ordnance Survey maps show continuous woodland/forest cover since the 1830s;
- Where conversion to native woodland would impart key eco-system service delivery in the area of water quality, e.g., the conversion of conifer high forest to native woodland at strategic locations within a freshwater pearl mussel catchment, to protect and enhance water quality and the aquatic habitat; or
- Where the site is strategically located, whereby its conversion to native woodland would expand and/or amalgamate existing native woodlands within the locality, and create important linkage with other natural and semi-natural habitats.

Other sites may also be considered, on a site-by-site basis, if the Forest Service is satisfied that significant ecological benefits can be demonstrated.

NWS Conservation operates alongside NWS Establishment (see Measure 1) as parallel components of the overall Native Woodland Scheme package, developed and implemented by the Forest Service in close cooperation and partnership with Woodlands of Ireland, National Parks & Wildlife Service, the Heritage Council, Inland Fisheries Ireland, and others. Since its launch in 2001, the overall Native Woodland Scheme has undergone various refinements and has been supported in its implementation by a range of measures undertaken in partnership, including a multi-annual NWS training package and a range of supporting literature for practitioners, produced by Woodlands of Ireland.

Eligible operations include the following:

- Preparation of a site-specific Native Woodland Plan by a NWS Participating Ecologist and NWS Participating Forester;
- Purchase of suitable indigenous planting;
- Ground preparation, where appropriate (e.g. light scarification to facilitate natural regeneration);
- Forest protection (fencing, tree guards and other measures);
- Clearance of non-commercial woody growth (where ecologically appropriate) and invasive exotic species such as laurel and rhododendron;
- Costs associated with non-commercial tree felling, where appropriate;
- Woodland rejuvenation (including understorey and coupe planting, natural regeneration works and filling-in);
- Maintenance (including vegetation management);
- Woodland edge management;
- Maintenance of open spaces, rides and glades;
- Re-spacing;
- The restoration (subject to limits) of former coppice or coppice-with-standards woodland to active coppice management; and

Other appropriate operations, where agreed in advance with the Forest Service.



#### 9.6.2.1 Grant and premiums

Grant assistance could be available in respect of 100% of the total approved costs incurred, subject to the maximum limit as follows;

Grant Premium Category	1 <sup>st</sup> Grant	2 <sup>nd</sup> Grant	Total Grant*
Conservation Works	3800	1200	5000

*\*NWS Conservation is a cost based scheme up to 100%*

Under NWS Conservation, between 18% and 20% of the woodland may comprise Areas of Biodiversity Enhancement (ABEs). Other ABE requirements are set out in the Forestry Schemes Manual.

Under NWS Conservation, annual premiums are available for 7 years at a rate of €350 / ha. Private forest owners only are eligible and support is subject to ongoing implementation of a Native Woodland Plan. The premium is aimed at maintaining and improving the environmental stability of forests where the protective and ecological role of these forests is of public interest and where the cost of maintenance and improvement measures for these forests exceeds the income from these forests.

In assessing application under NWS Conservation, the Forest Service will undertake project evaluation (*via* desk and field inspections and the use of the GIS-based iFORIS system), referral to statutory consultees and AA Screening and Appropriate Assessment (where required) under the Habitats Directive, to ensure suitability and compatibility with the environment. For further details, see under Measure 1: Afforestation and Woodland Creation.

#### 9.6.3 Objectives

The objectives of NWS Conservation are:

- To restore, conserve and enhance native woodland biodiversity, including in *Natura 2000* areas;
- Enhance the quality and diversity of landscapes;
- Aid the development and promotion of forestry through the incorporation of practices that restore, preserve and enhance biodiversity;
- Improve water and land management and contribute to meeting the Water Framework Directive objectives;
- Protect and sustain Ireland's native woodland resource and associated biodiversity on a long term basis;
- Conserve native genetic biodiversity;
- Improve water quality through native riparian woodland development;
- Increase Ireland's native woodland cover to contribute positively towards climate change mitigation;
- Promote the use of close to nature forestry and traditional woodland management systems and related woodcrafts;
- Contribute to long term carbon sequestration; and
- Encourage the use of wood and non-wood products, where compatible with native woodland biodiversity.

The target is to establish 360 ha of NWS Conservation per annum, with a particular focus on the targeted application of the scheme on key areas where eco-system services relation to biodiversity and water quality can be maximised, e.g. appropriate restoration management within a SAC-designated woodland, or the conversion of conifer high forest to native woodland at strategic locations within one of the priority 8 FPM catchments.

#### 9.6.4 *Environmental services*

The key environmental services provided by NWS Conservation include:

Supporting services: Supporting services have biodiversity as their bedrock, and involve ecosystem functions like soil formation and nutrient cycling. Ancient woodlands, with their exceptional biodiversity, including remnant populations of specialist fauna and flora, contribute very significant supporting services.

Regulating services: Forests regulate water quality and the volume of water run-off. They also protect against soil erosion and stabilise riverbanks. Carbon sequestration is of increasing value given the need to mitigate emissions in climate change strategies.

Provisioning services: The provisioning services of native woodlands provide us with ecosystem goods: not only timber, wood products and wood fuel, but also wild foods such as berries, mushrooms and venison. These are valued and utilised in many other European states and have considerable potential in Ireland too. An additional provisioning service, much utilised in Ireland, is the forage and shelter forests accord to farm animals, realising a significant benefit in reduced agricultural input costs.

Cultural services: Woodlands make an important contribution to landscape quality. Their presence is valued for amenity use, providing physical and mental well-being, aesthetic and spiritual pleasure, and opportunities for the appreciation of birds and other wildlife. Ancient woodlands, in particular, also provide historical landscape value as they often contain archaeological features and evidence of past agriculture and settlement.

The total hectares supported under NWS Conservation will be used to measure the success of this scheme during the programme period.

### 9.7 *Measure 7: Knowledge Transfer and Information Actions*

There are four strands to measures under this heading as follows;

- (a) Knowledge Transfer Groups (KTG)
- (b) Continued Professional Development (CPD)
- (c) Targeted Training
- (d) Advisory Services

#### 9.7.1 *Regulation Framework*

Strand No.	State Aid	RDR	Focus Areas	Code
(a), (b) and (c)	Sub chapter 2.4	Articles 14	1(a), (b) & (c)	1.1, 1.2
(d)	Sub chapter 2.5	Article 15	1(a), (b) & (c)	2.1

### 9.7.2 *Forest Knowledge Transfer Groups (KTGs) Scheme Details*

KTGs would involve the formation of Knowledge Transfer Groups, each managed by an accredited facilitator. Group facilitators approved by DAFM, who can either be Teagasc or private professionals, would be trained to a FETAC-accredited standard in order to operate a group.

The Programme will be open to established members of forest holder groups and to forest holders wishing to join or form groups for the first time. Applicants will be required to submit an application to their discussion group facilitator to participate in the Programme and to undertake to meet the requirements in relation to attendance, training, tasks and project completion.

A maximum of 20 members per discussion group is recommended, although facilitators may exercise discretion in this regard where no diminution of the effective functioning of the group is anticipated. Groups will function most effectively if they are properly structured with a chairman and secretary in place. It is essential that the dynamic within groups allows for open and honest discussion of selected topics.

The Programme will focus primarily on 5 areas: 1) silviculture, 2) financial, management, 3) forest health, 4) environmental awareness to include water quality and biodiversity and finally 5) timber harvesting/marketing.

Forest holders will complete their KTG programme involvement over a two year period. Participating Forest holder participants will be required to attend at least 4 discussion group meetings (or 3 meetings plus 1 approved national event) per year. A required profile of topics for discussion will be available to guide the Programme. It is recommended that each discussion group meet at least 3 times during a programme year. Sample tasks that may be considered:

- Compile a folder with documentation and maps relating to previous administration and management of the forest; and
- Undergo training on:
  - Inspection path insertion
  - Stack measurement
  - Assessment of mean tree volume
  - Assessment and marking of conifer and broadleaf crop trees

Facilitators will be required to ensure that all members of KTG's participate fully in the Programme.

In the initial year, all participants will be required to complete a Going Forward Action Plan. This action plan can complement the Forest Management Plans required by the Forest Service by requiring owners to interpret, schedule and implement appropriate key actions required to optimise the forest resource from both financial and environmental perspectives. Participants will also be required to select and complete one other task from a list provided in year one of the programme. The Going Forward Action Plan will be reviewed and also a new task selected the second year of the programme.

Support could also be considered for pilot projects which increase or expand the knowledge base and can be transferred to other forest owners through KTGs.

#### 9.7.2.1 Objectives

The aim of this scheme will be to maximise the potential for knowledge and skill transfer to forest owners, thereby stimulating proactive management and appropriate tending, thinning and harvesting interventions.

The knowledge and information acquired through knowledge transfer groups should allow forest holders to enhance their competitiveness and resource efficiency and improve their environmental performance while at the same time contributing to the sustainability of the rural economy. This measure can achieve this through proper and timely management interventions undertaken within a formal knowledge transfer structure. This will ensure that these actions are in line with good practice incorporating the latest and most applicable innovations in relation to the management action concerned.

The existence of a gap between the provision of research results and the application of innovative approaches can also be addressed under the structure of knowledge transfer groups. The aim would be to bring innovators and researchers together with forest holders to look at the specific topics. Within these Knowledge Transfers Groups, researchers and innovators representing the scientific community would access practical issues whereas forest holders can benefit from the latest developments in the topic as presented to them. New approaches take too long to arrive on the ground and this approach could facilitate the adoption of new ideas within a shorter timeframe.

#### 9.7.2.2 Number of beneficiaries, cost per beneficiary and total annual cost of the scheme

Support may cover up to 100% of the eligible costs. These are the costs of travel, accommodation and per diem expenses of the participants can be covered. The aim will be to fund 1,000 new forest holders per year.

### *9.7.3 Continuous Professional Development scheme details*

In order to be a registered forester with the Department, the Forest Service could consider making mandatory membership of a professional forestry association which has a continuous professional development programme, with confirmation of membership required annually. Registered foresters must also continue to have a professional qualification.

The published register of foresters could be expanded to include confirmation of participation in a recognised CDP programme and that this approach would incentivise foresters to maintain or add to their qualifications (including seminars attended, etc.).

CPD would be aimed at all registered foresters of which there are 300.

#### 9.7.3.1 Objective

To establish a CPD structure for all registered foresters.

### *9.7.4 Targeted Training Scheme Outline*

Training for private forest holders, professional foresters and forest machine operatives. For private forest holders the main focus would be on forest management while training for machine operators would include harvesting and forwarding. Health and safety,

environmental legislation\guidelines, forestry scheme rules and conditions, silvicultural requirements, new FMP format, low impact silvicultural systems (eg.continuous cover forestry), native woodlands training, as well as forest health could all feature as part of any potential training programme for forestry.

This support could also include provisions for training courses around forestry schemes, procedures, guidelines and environmental directives.

#### 9.7.4.1 Objectives

The primary objectives of the measure include ensuring that there are sufficient numbers of adequately trained harvesting (including chainsaw) and forwarding operatives, thinning taking place on time, roundwood production targets are reached, new format of draft FMP proposed being submitted, minimal accidents in forest operations, reduced pilot cases from the EU re. breaches of habitats directive.

Programme specific output indicators includes the following;

- Number of trained harvesting and forwarding operatives
- Number of forest owners trained in management.

#### *9.7.5 Advisory Services scheme outline*

Support for advisory services will be targeted at individual forest holders and farmers. Advisory services will be delivered in the form of clinics, field days, information meetings, workshops, events such as “Talking Timber” and conferences.

##### 9.7.5.1 Objectives

To ensure that the appropriate support is available to forest holders to enable the maximum financial return to be generated from the forest resource in a sustainable manner consistent with legislation and guidelines. Achievement of objectives would be measured as follows; total number of advisory hours provided, number of demonstrations given, events held, number of specialist areas covered and finally the number of forest holders receiving advice.

Advisors will need to have the appropriate qualifications and skills to undertake this role.

#### *9.7.6 Combining Measures*

There are possibilities for combining producer groups, KT&IA and Innovative Forestry Technology measures. For example members of the producer groups could be targeted for the KTG when topics of relevance to them are being discussed. It could be that in order to be part of a KTG individuals must be part of a producer group or applying to join a producer group.

Another possibility is where beneficiaries of support for investment in new technology must present a summary of their experiences to a KTG. These inter linkages can be explored and developed further when drafting the finer points of the scheme terms and conditions.

There are also possibilities for linking Knowledge Transfer Groups and targeted training to ensure knowledge is transferred to a wider audience where possible. This is particularly relevant when creating linkages between environmental awareness, environmental legislation and forest management techniques. The possibilities for combining measures in this way will

need to be explored in more detail when it comes to designing the scheme at an operational level.

#### *9.7.7 Environmental issues*

This measure will provide opportunities for environmentally focus topics for discussion, training and advice. For example advisory service will include advice to forest holders on the relevant obligations under the Habitats Directive, the Birds Directive and the Water Framework Directive.

The impact of this measure on the environment will be measured by the number of courses, field days and clinics held where environmental knowledge transfer actions have been delivered. The number of knowledge transfer groups that have been formed which have focussed primarily on environmental issues will also be measured as well as the number of attendees.

### ***9.8 Measure 8: Setting up of Producer Groups***

#### *9.8.1 Regulation Framework*

<b>State Aid</b>	<b>RDR</b>	<b>Focus areas</b>	<b>Code</b>
Sub chapter 2.7	Article 27	3(a)	9.1

#### *9.8.2 Scheme Outline*

Financial support will be provided to towards the cost of establishing forest producer groups in a manner consistent with rules set out in the RDR.

Beneficiaries may be selected by way of a competitive process under a Call for Proposals, which would include the submission of a detailed business plan providing a description of the project, including objectives, timelines and projected expenditure.

#### *9.8.3 Objectives*

Broad objectives under this measure would include the following;

- Encourage private forest holders to management their forest jointly on a geographical basis;
- Economies of scale will reduce management and marketing costs and improve the viability of private forests;
- Increased viability will encourage holders to actively manage their forests;
- Increase knowledge transfer between forest holders and registered foresters particularly to ensure that their operations protect and enhance the environment;
- Bring more privately owned timber resource to the market;
- Increase thinning rates will maximise the quality and value of the final harvest; and
- Help ensure a constant supply of quality timber to sawmills and processors;
- Promote the use of cooperative road construction between multiple forest owners.

A specific objective of the scheme would be to increase the number of existing producer groups by 50% over the programme period. Funding is limited to start ups only. The number of individual participants will also be measured as an output indicator.

#### 9.8.4 *Environmental services*

Producer groups can help reduce the impacts of road building and harvesting on soil and neighbouring water courses by co-ordinating these activities within a producer group structure. These will minimise the impacts on the environment by ensuring that activities are planned in a co-ordinated fashion, lessening the amount of traffic and disturbance that might occur if forest owners operated independently from one another.

### **9.9 *Measure 9: Innovative Forestry Technology***

#### 9.9.1 *Regulation Framework*

<b>State Aid</b>	<b>RDR</b>	<b>Focus Area</b>
Sub chapter 2.1.5	Article 26	5(e)

#### 9.9.2 *Scheme Outline*

Grants of up to 40% of eligible expenditure could be made available. Projects eligible for support will be determined by competitive selection process under a Call for Proposals.

Applicants will be required to submit a detailed business plan providing a description of the project, including the objectives of the project, timelines and projected expenditure. A final report on the outcome of the project will also be required.

The type of technologies envisaged are not related to harvesting machines themselves but could relate to harvesting technology in general. What is envisaged is support for smaller scale technologies which are applicable to private forest holders, producer groups, forest contractors and haulage operators. For example consideration may be given to aid variable tyre pressure systems to enable access to forests on low quality roads where haulage operators have to access multiple forest properties. Forest inventory technologies could also be considered where such technologies are innovative and show potential to provide low cost options to private forest holders for assessing the value and productivity of their forest holdings.

#### 9.9.3 *Objectives*

Support for the introduction of new technologies for use in private forests has the potential to reduce management costs and improve accuracy in terms of forest management outputs. Objectives could be measured by the number of new technologies adopted by forest holders, producer groups and contracting companies. We will also measure the number of applications received.

#### 9.9.4 *Number of beneficiaries, cost per beneficiary and total annual cost of the scheme*

Approximately 20-30 projects per annum.

#### 9.9.5 *Environmental Services*

It is difficult to describe exactly what environmental services will be delivered by this scheme until applications are received for specific projects. The consultation process did however give some insight into some of the possibilities one of which was funding for Variable Tyre Pressure systems. The following is an extract from one of the submissions received.



“Forestry in Ireland is generally found in poorer soils or in remote areas and so vehicle access to many forests are along poorer quality local roads. As we are dealing with a low value commodity, often hauled over long distances, there is a need to maximise payload wherever possible and consequently, potential for some road damage in particular areas. Such damage has both financial and social implications which the industry as a whole is striving to minimise.

Most days, about 400 trucks leave the forests, heavily laden. They often use minor roads, which are not always entirely suitable for the purpose resulting in negative impacts.

One technology that can be part of the solution to road damage is Variable Tyre Pressure systems (VTP) on Timber Haulage Vehicles. These systems have been in use worldwide for some years, but the Irish forest industry has had little exposure to them, with the first prototype coming into use in 2013. VTP increases the contact area between the tyre and the road, which reduces road damage.

Variable tyre pressure systems mainly benefit the road owners, but also have some benefits to vehicle owners, forest owners and timber consignors. Local communities also win. Road owners benefit as the system reduces stress to the road surface which lessens damage; ultimately reducing maintenance and repair costs. Sealed roads benefit greatly with less surface break up and gravel roads will see considerably less rutting. The vehicle owner benefits as the system reduces vibration in the vehicle, lessening maintenance/repair costs, less tyre damage and improves driver comfort. Reduced tyre pressure on drive axles improves vehicle traction, and can save 1% on fuel costs. On the other hand there is increased daily maintenance on trucks fitted with this system, which comprises significant pipework, valves etc.

For the forest owner / timber consignor, VTP systems could allow use of roads that Local Authorities might have considered needed upgrading prior to heavy vehicle use and prevent the necessity for Local Authorities seeking contributions for damages where this might have occurred with conventional vehicles. Use of VTP may also allow them use full loads where they may otherwise have been restricted to partial loads and costly double handling. This has the added social benefit of fewer truck movements on these otherwise double handle sites. A potential saving for forest owners is that in some properties it may be feasible to use a lower standard of internal forest roads, saving on road construction cost.

Local communities also benefit where sales are extracted using VTP equipped, “road friendly” trucks. There is less likelihood of damage to their local roads which they depend on for their livelihoods and in cases where double handling can be eliminated, there will be far fewer truck movements.

The uptake in the use of VTP in Ireland has been slow. The main reason being that the greatest benefits accrue to the road owner, while the haulage contractor incurs the investment cost in the equipment, with smaller benefits and an increased vehicle maintenance cost.”

## **9.10 Measure 10: Forest Environment and Climate Services: -Forest Genetic Reproductive Material**

### **9.10.1 Regulation Framework**

<b>State Aid</b>	<b>RDR</b>	<b>Focus Area</b>	<b>Code</b>
Sub Chapter 2.3	Article 34	4(a)	15.2

### **9.10.2 Scheme Details**

The scheme will provide support funding towards the costs related to the following;

- a) Management and conservation of seed stands which are currently not in production (broadleaves only) and
- b) Establishment of new production areas such as seed orchards including (broadleaf and conifer);

In relation to a) above eligible costs will include provision for access paths, fencing, control of ground vegetation and thinning to open up crowns for greater levels of seed production. Costs may also include income forgone. A payment of €200/ha will be made on an annual basis up to 2020 or so long as the area is registered as a seed stand, whichever is the lesser. Areas may be removed from the scheme at the discretion of DAFM. Applications for the scheme will be considered on the basis of, *inter alia*, seed self sufficiency in particular species. The target group will be forest holders and nurseries.

The establishment of new seed orchards (clonal and seedling) will also be supported under this scheme for both conifer and broadleaves (proposals will be considered on application). Priority for funding will be given to improved Washington seed orchards (Sitka Spruce). The rules governing the granting of this aid will be based on Measure 1: Afforestation and Creation of Woodlands. The scheme will be cost based with funding provided up to a maximum of 50% of the cost of establishment. An annual maintenance payment will be available for 10 years at a rate of €500/annum.

### **9.10.3 Eligibility**

Public and private forest-holders will be eligible for support.

In relation to seed stands only areas registered by DAFM as a seed production area (seed stands) will be eligible. Furthermore production records or other documentary evidence must be presented which demonstrates that seed production and collection has not taken place in the previous 3 years. Areas for which a forest premium is being paid will not be eligible for support under the measure but will be eligible when premium payments have expired.

Support for both seed stands and seed orchards will depend on the level of seed production, the quality of seed produced and the demand for seed of particular species. 30 ha is the maximum area eligible for individual both seed stands and orchards. The level of support will be €200/ha per annum up to 2020.

For seed stands or seed orchards above 5 ha for broadleaves or 10ha for conifers a forest management plan must be presented prior to funding under this measure.

#### 9.10.4 Objectives

The primary objectives are to increase productivity and improve the quality of new planting stock; increase self sufficiency in tree seed production; provide for in-situ and ex-situ conservation of forest genetic resources; and provide breeding populations of designated broadleaf and conifer species (eg. alder, birch, oak, sycamore, Scots pine, Sitka spruce).

Programme specific output indicators include the following;

- Number of seed stands and seed orchards supported
- Production areas supported.

#### 9.10.5 Estimate of number of beneficiaries, cost per beneficiary and total annual cost of the scheme

The total cost of the measure will be c.€70,000 per annum, which would support 350 hectares of seed production areas. The maximum payment will be €200/ ha per annum for as long as the area is registered as a seed stand or continues to exist as a seed orchard. It is envisaged that 20 hectares of seed orchards will be funded each year.

#### 9.10.6 Environmental Services

Environmental benefits delivered by this measure can be summarised as follows;

- Sourcing plants derived from locally produced seed will reduce the risk of disease occurrences caused by imported plants. The *Chalara fraxinia* outbreak was linked to imported plants;
- Plants produced from local seed sources are more suited to the local climate and are therefore more resilient to events associated with climate change;
- Seed stands and seed orchards can produce superior plants and forests, sequestering more carbon and producing more timber which in turn can be used to displace more fossil fuel;
- Establishing seed orchards can be used as a continuation of existing seed or clonal research and therefore bring to fruition research carried out on resilience, productivity and wood quality.;

### 9.11 Measure 11: Forest Management Plans

#### 9.11.1 Regulation Framework

State Aid	RDR	Focus Area	Code
Sub Chapter 2.1.5	Article 35	4(a) & 5 (4)	16.8

#### 9.11.2 Scheme Outline

The Management Plan provides details on the future management of the forest detailing information such as a stocking assessment, nutrient assessment, average height and yield class, planting year, and the projected years for first thinning(s) and clearfell for each plot. The plan will also set out relevant measures regarding the protection and enhancement of the wider environment, primarily based on any environmental conditions attached to approval, but also incorporating, where possible, readily-achievable measures which can deliver additional environmental benefits. The plan must be prepared by a forester registered with the

Department following a field assessment to record and update data relating to species, areas, plot boundaries and any associated changes, on a certified species map. They must adhere to the principles of sustainable forest management.

All beneficiaries under the Afforestation and Creation of Woodlands measure must submit a Forest Management Plan for Year 5 to Year 10 at year 4 stage for (i) plantations which are 10 hectares or greater, and (ii) for broadleaf plantations which are 5 hectares or greater. Any application for 2<sup>nd</sup> instalment afforestation grant which is not accompanied by a Forest Management Plan will be returned to the applicant.

The Department is currently revising the type of information currently required in a forest management plan as part of the COFORD Forest Management Plan Working Group. The intention is to develop these plans further to include additional information to improve production forecasting. These revised plans will be linked to the Department's IFORIS computer system and proposed felling system to enable spatial analysis of data provided. Support for drafting FMP's will be reviewed once the format of the new FMP has been decided.

#### *9.11.3 Objectives*

All privately owned forests over a certain area currently 10ha for conifers and 5ha for broadleaves) would have a forest management plan submitted in the new format by 2020 and to encourage the submission of FMPs in support of felling licence applications.

#### *9.11.4 Environmental services*

With the right management, forests can produce a range of services and products (wood and non-wood forest products) in a way that is sustainable. FMP's are an important tool in helping to achieve sustainable forest management.

## 10 Penalties

The Forest Service has responsibility for grant and premium schemes which are targeted at expanding and developing the forest estate. In order to qualify for approval and grant aid it is a requirement that applications are submitted in accordance with defined scheme rules and procedures. The Department operates a risk based inspection regime with the purpose of maintaining standards and ensuring that grants and premiums claimed are eligible for payment.

The penalty schedules outlined in this document will reduce the requirement to inspect every site and allow inspection rates to be reviewed based on the level of compliance within each penalty category listed below.

The implementation date for imposition of penalties outlined in this document will be in respect of all applications for approval, grant and premium claims made on or after 1<sup>st</sup> January 2015. The determination of whether a penalty will be applied to plantations established before the implementation date will take into consideration the terms and conditions of schemes at the time of approval, previous penalty schedules and any letter of approval issued.

### 10.1 Imposition of a Penalty

The Forest Service fully accepts the concept of partnership, co-operation, and consultation between the Forest Service, Registered Foresters, Forestry Companies and the scheme applicants to achieve good forestry practice. The Forest Service Inspectorate and administrative staff will be delegated discretionary powers to allow very minor remedial works in respect of a plantation to be remedied without a penalty being applied. Examples of minor remedial works include *inter alia*

- Insufficient stocking in less than 0.5 ha of the site
- Nutritional deficiencies present in less than 10% of the site or less than or equal to 0.5 ha
- Weed control required in less than 10% of the site or areas less than or equal to 0.5 ha
- Removal of individual planting bags and those neatly stacked and ready for collection
- Removal of less than 15 trees within a buffer zone where no damage has occurred or is likely to occur in the future

In the other more serious cases, where remedial works are required, where terms or conditions are breached or are not adhered to (in accordance with the table of penalties and explanations of the penalties below), a penalty will automatically be imposed. However, the principle of proportionality will be applied in all cases and will be based on a recommendation by the Forestry District Inspector and/or a decision by the Higher Executive Officer (HEO). The decision of the Minister will be final in all matters subject to the provisions of the appeals procedure as outlined below.

The Applicant will be regarded as the principal person or body in respect of which a grant and/or premium penalty will be imposed. The applicant is responsible for the ultimate success and management of his contract with the Department and failure by applicant, the forester or

third parties to perform work up to the required standard is a matter between the applicant and those parties to manage and resolve.

As a general rule, in any case where a penalty has been imposed, it will be necessary to have remedial action taken, where possible, in respect of that element of the plantation or road which was the subject of the penalty.

The principle of proportionality will apply. Where practical, any penalty imposed will be in direct proportion to the alleged breach of the conditions of the scheme. In the majority of cases the area affected by the breach will determine the level of the penalty amount imposed. The imposition of a penalty shall not relieve an Applicant of an obligation to comply with an instruction from the Minister to undertake remedial works in respect of a plantation. Penalties may be applied to the area of the plantation affected which can include entire plots, GPC categories or sections of roads. It should be noted that where problems on a plantation or part of a plantation cannot be remedied, or where the owner fails to remedy the problems, the Minister may deem it necessary to recoup 100% of all money paid in respect of that plantation or the affected portion and to make no further payments.

Compliance with any letter of approval based on a valid application submitted in compliance with the scheme rules, Forestry Schemes Manual, guidelines, specific conditions will not result in the imposition of any penalty. Registered Foresters and/or applicants who submit applications not in accordance with scheme requirements and who provide incorrect information may invalidate their approval and the scheduled penalty will apply, if applicable.

Where the Minister deems it necessary to impose a penalty, in order to avoid additional debts accruing, further payments under the contract may be suspended until the cause of the penalty has been remedied to the satisfaction of the Minister.

The applicant is ultimately responsible for the success of their plantation. Approvals issued by the Department on receipt of an application do not guarantee that a plantation will successfully establish. Applicants must seek independent professional advice before deciding to proceed with any project approved. Failure of a plantation to establish successfully may result in recoupment of grants and premiums paid.

### ***10.2 Payment of Penalties***

Monetary penalties shall include interest payable at the rate provided for under SI No. 13/2006. Interest shall be calculated for the period elapsing between a date specified in a notification to the applicant of the repayment obligation and either repayment or recovery by deduction. In cases where the applicant has not received the payment affected by the penalty, the amount will be deducted from that payment. Penalty amounts may also be deducted from future payments due to the Applicant under that contract. Where monetary penalties are not paid or recovered within the period requested, the Department may take whatever action is deemed necessary, including legal action, to ensure their recovery.

### ***10.3 Sanctions***

The Terms and Conditions of Registered Foresters outline the conditions applied by the Department of Agriculture, Food and Marine for the registration of individuals and companies as Registered Foresters and Companies. Recurring breaches of scheme rules by registered foresters in the preparation of applications for clients including the application of penalties against their clients may result in sanctions being imposed on the registered forester including suspension or removal from the Register. Sanctions applied or any appeal lodged

following breaches to scheme conditions will have regard to the terms and conditions of registered foresters.

#### ***10.4 Appeals Procedure***

The Forest Service Appeals Committee is currently set up on an administrative basis and provides applicants with the opportunity to have decisions reviewed internally by a person who was not involved in the initial decision.

The principle of transparency will apply to the imposition of penalties. Where the Forest Service decides on the imposition of a penalty the applicant/registered forester, while giving detailed grounds for appeal, has the right to have that decision reviewed by the Forest Service Appeals Committee. Where a penalty is imposed on the Applicant, the Registered Forester can only appeal that penalty on behalf of the Applicant with the written permission of the Applicant. The appeal to have the decision reviewed internally must be made in writing within 21 days of the date of the decision and must include any relevant documentation in support of the appeal.

If an applicant does not agree with the decision making process they have a right to contact the Office of the Ombudsman, 18 Lower Leeson Street, Dublin 2. Tel: (01) 6395600.

In addition and in accordance with *EUROPEAN COMMUNITIES (FOREST CONSENT AND ASSESSMENT)*

*REGULATIONS SI558 of 2010* any decision to grant approval, refusal or attach conditions may be subjected to judicial review by the High Court on application for the purposes of Article 10a of the EIA Directive.

A challenge to the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of Council Directive 85/337/EC (*EIA Directive*) may be made by way of judicial review under Order 84 of the Rules of the Superior Courts

#### ***10.5 Forest Service Guidelines and Standards***

The Forest Service undertakes to provide adequate dissemination of the information contained in the following documents

- Forestry Schemes Manual
- Code of Best Forest Practice
- Forestry Scheme Documents
- Forest Service Mapping Standards
- Environmental guidelines
- Industry Circulars



Compliance with the above documents is a condition of grant aid. Registered foresters should ensure that all applications are submitted in accordance with these documents to ensure that applications are eligible for approval and grant aid.

### ***10.6 Force Majeure or Exceptional Circumstances***

The following categories of *force majeure* or exceptional circumstances may, in particular, be recognised by the Department so that the partial or full reimbursement of aid received by the beneficiary may not be required:-

- Death of the beneficiary
- An extraordinary event or circumstance beyond the control of the parties, which prevents one or both parties from fulfilling their obligations under the scheme

Cases of *force majeure* or exceptional circumstances shall be notified in writing by the beneficiary or his/her registered forester to the Forest Service, Johnstown Castle, Co. Wexford within 10 working days from the date on which the beneficiary or Registered Forester is in a position to do so. If there is a dispute on when the beneficiary or Registered Forester is in a position to make this notification, the final decision rests with the Minister.

### ***10.7 Schedule of Penalties***

The following is the schedule of penalties including recoupment applicable to all schemes and will apply proportionally based on the degree of non-compliance. Penalties may be applied for non-compliance at each stage of the application process and will be based on the severity of breach and or frequency of its occurrence. A maximum penalty of €5000 will apply for each non-compliance or breach of scheme requirements in addition to recoupment of grants and premiums where required. Proportionality will apply where multiple offences have occurred and the total penalty amount will take in to consideration the cumulative nature of combined offences. These penalties are in addition to any penalties that may be imposed where an offence has been committed under any Act or Regulation.

**Schedule of Penalties**  
**(See notes at end of Schedule)**  
**Afforestation/FEPS/NWS est+cons/Woodland**  
**Improvement/Reconstitution/Neighbourhood Scheme**

Penalty Type <sup>(1)</sup>	Applicable to Grant and/or Premium <sup>(2)</sup>	Penalty %  (Penalty amount calculated will be the % calculated or €250 whichever is greater, but not exceeding €5000)
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<b>Area Over Declared :</b>  If the difference is greater than 3% but not more than 20% of the area determined by the Department a penalty will apply as described <sup>(3)</sup>	Grant and Premium <sup>(3)</sup>	Penalty is calculated on 10% of the grant rate multiplied by the difference in hectares between the claimed and determined areas <b>added</b> to 10% of the premium rate multiplied by the difference in hectares between the claimed and determined areas. <sup>(3)</sup>  Grant and premium recoupment will also apply if deemed appropriate by the Minister.
If the difference is greater than 20% of the area determined by the Department a penalty will apply as described <sup>(3)</sup>	Grant and Premium <sup>(3)</sup>	Penalty is calculated on 10% of the grant rate multiplied by the difference in hectares between the claimed and determined areas <b>added</b> to 10% of the premium rate multiplied by the difference in hectares between the claimed and determined areas. <sup>(3)</sup>  In addition, no premium will be paid in respect of the next premium due for payment at the time that the penalty is imposed.  Grant and premium recoupment will also apply if deemed appropriate by the Minister.
Greater than 50%	Grant and Premium	Applicant is excluded from the scheme in respect of the relevant contract and no grants or premiums paid. Recoupment of all grant and premiums if applicable.
<b>Fence Lengths over-declared by 3% of eligible expenditure</b>	Grant	Recoupment of the amount over-claimed multiplied by 2
<b>Failure to exclude areas which are ineligible for aid, i.e.</b> <ul style="list-style-type: none"> <li>• Unplantable areas</li> <li>• Unplanted areas</li> <li>• ESB Lines</li> <li>• Gas mains</li> <li>• ABE areas greater than</li> </ul>	Grant & all Premiums paid	Recoupment of the amount over-claimed for ineligible area plus 10% of that amount.

15% (20% FEPS)		
<b>Mapping</b>	Grant	2
<b>Provenance Declarations not completed correctly and incorrect declaration of provenances of trees planted</b>	Grant	5
<b>Provision of a false statement, false information or false claim</b>	Grant & all Premiums paid	100
<b>Failure to comply with environmental guidelines and/or specific conditions (i.e. permanent and /or significant damage)</b>	Grant & all Premiums paid	100
<b>Failure to comply with environmental guidelines and/or specific conditions (whether resulting in damage or not) in relation to</b>	Grant	5
-water/fisheries/aquatic		5
-NHAs/SACs/SPAs/pNHA/NHA		5
-sites and monuments		5
-distance from roads/dwellings		5
<b>Failure to comply with standard procedures governing the following (whether resulting in damage or not) e.g.</b>	Grant	5
-chemical application		5
-fertiliser application		5
-hazardous fencing		5
-mounding		5
-silt traps		5
<b>Incorrect species selection</b>	Grant & all Premiums paid	100 (or replacement)
<b>Remedial Works required e.g.</b>	Grant	As per below
• Stocking less than 95% at 1 <sup>st</sup> Instalment		

or 90% at 2 <sup>nd</sup> Instalment <ul style="list-style-type: none"> <li>• Inadequate vegetation control</li> <li>• Nutritional issues evident</li> <li>• Inadequate drainage and/or silt traps</li> <li>• Inadequate firebreaks</li> <li>• Inadequate fencing to exclude domestic stock</li> <li>• Removal of trees from setback areas</li> </ul>		
-at first inspection	1 <sup>st</sup> or 2 <sup>nd</sup> Grant	5
-at second inspection (i.e. after the remedial works have been reported as complete)	1 <sup>st</sup> or 2 <sup>nd</sup> Grant	10
-at third inspection (i.e. after the remedial works have again been reported as complete)	1 <sup>st</sup> or 2 <sup>nd</sup> Grant	20
-subsequent	All Grant & all Premiums paid	100
<b>Forest Established not in accordance with the Forestry Schemes Manual</b> (where deficiency cannot be remedied without replanting)	Grant & all Premiums paid	100
<b>Failure to maintain fences beyond the second instalment stage</b>	Annual Premium (deducted from next premium)	5
<b>Failure to identify GPC1 areas correctly</b>	Grant & all Premiums paid	Recoupment of the amount over-claimed plus 20% of that amount as a penalty.
<b>Domestic Stock Damage</b>	Annual Premium (deducted from next premium)	10
<b>Failure to control invasive scrub/furze beyond the second instalment stage</b>	Annual Premium (deducted from next premium)	10

<b>Dumping associated with Forest Operations</b>	Annual Premium (deducted from next premium)	10
<b>Non-adherence to Form 1a, b and procedures</b>		As stated on Form 1a,b and c
<b>Unauthorised Developments described in EUROPEAN COMMUNITIES (FOREST CONSENT AND ASSESSMENT) REGULATIONS 2010</b>	As per SI558	

- (1) Multiple penalties may apply for multiple breaches of scheme requirements
- (2) Unless otherwise specified, “grant” means the total amount of the 1<sup>st</sup> and 2<sup>nd</sup> instalments.
- (3) Penalty is based on:
  - The difference in hectares between the claimed area and the determined eligible area.
  - The grant and premium rates paid.
  - The GPC rate applicable to the over-declared area; or on the highest GPC rate if more than one GPC is involved.

### Roads Scheme

<b>Penalty Type</b>	<b>Grant <sup>(2)</sup></b>	<b>Penalty %</b> (Penalty amount calculated will be the % calculated or €250 whichever is greater but not exceeding €5000)
<b>Harvest Area over-declared</b>	Grant	Disallowance or recoupment of the amount over-claimed plus 10% of that amount as a penalty.
<b>Length over declared by 3% or more of eligible expenditure</b>	Grant	Disallowance or recoupment of the amount over-claimed plus 100% penalty.
<b>Mapping</b>	Grant	2
<b>Provision of a false statement, false information or false claim</b>	Grant	100
<b>Failure to comply with environmental guidelines (i.e. permanent and /or significant damage)</b>	Grant	100

<b>Failure to comply environmental guidelines and/or specific conditions (whether resulting in damage or not) e.g.</b>	Grant	25
-water/fisheries		25
-NHAs/SACs		25
-sites and monuments		25
-scenic areas		25
-distance from roads/dwellings		25
-Health and Safety		25
-Other		
<b>Remedial Works required e.g.</b> -Gradient -Inadequate pavement depth -Culverts and drainage -Turning areas and entrances not to specification -Carriageway and formation width -Other	Grant	As per below
-at first inspection	Grant	5
-at second inspection (i.e. after the remedial works have been reported as complete)	Grant	10
-at third inspection (i.e. after the remedial works have again been reported as complete)	Grant	20
-subsequent	Grant	100
<b>Road not constructed in accordance with the Forest Road Manual</b> (Deficiency cannot be remedied but deficiency does not affect the structural integrity or safety of the road. However road must be capable of supporting the transport of fully loaded timber trucks i.e. 44 tonnes GVW)	Grant	60
<b>Road not constructed in accordance with the Forest Road Manual</b> (Deficiency cannot be remedied and the structural integrity or construction renders it unsafe or unsuitable for use)	Grant	100
<b>Dumping and/or use of construction materials not in compliance with the Waste Management Act 1996 and EC (Waste Directive) Regulations 2011</b>	Grant	100

- (1) **Multiple penalties may apply for multiple breaches of scheme requirements**
- (2) **Unless otherwise specified, “grant” means the total amount of the 1<sup>st</sup> and 2<sup>nd</sup> instalments.**

### ***10.8 Afforestation/FEPS/NWS establishment and conservation /Woodland Improvement Scheme/Reconstitution/Neighbourhood Schemes***

Details explaining the penalties applicable to the above schemes are described below.

#### ***10.8.1 Area Over-Declared***

The plantation net area being claimed must be accurately measured in accordance with the Forest Service Mapping Standards. Recoupment of the appropriate portion of all grants and premiums paid to date under the scheme is calculated on the difference between the total payment made in respect of the over-declared area and the payment that should have been made on the area determined by the Forest Service to be the correct payable area.

Where problems on a plantation or part of a plantation cannot be remedied, or where the owner fails to remedy the problems, the Minister may deem it necessary to recoup 100% of all money paid in respect of that plantation or the affected portion and to make no further payments; in effect, writing off the plantation or relevant area.

#### ***10.8.2 Fence Lengths Over-Declared***

Fence lengths declared eligible for grant aid by registered foresters must be accurately measured by field assessment along the length of the fence. A penalty will apply in cases where the fence length is over declared by 3% or more. The penalty will be the subtraction of the amount for the over-claimed length from the eligible amount payable plus 100% of that amount. For penalty purposes the over claimed amount will be based on the maximum grant rate per linear metre per fence type irrespective of the unit cost claimed subject to the maximum fencing allowance thresholds.

The length of a newly erected fence will be determined based on the linear metres measured along the line of the fence parallel to the ground. Linear measurements may be determined digitally by computer to determine initially if a breach may have occurred but the application of a penalty will be determined by the length measured in the field.

#### ***10.8.3 Failure to Exclude Areas which are Ineligible for Aid***

Where it is found that there has been a failure to exclude areas ineligible for aid the scheduled penalty will apply. The Forest Service has identified the main areas ineligible for grant and premium in the Forestry Schemes Manual. The main areas ineligible *inter alia* are listed in the following chapters;

- Chapter 7 Unplanted Areas, Biodiversity and Setback distances
- Chapter 8 ESB Power lines
- Chapter 9 Silvicultural Standards
- Appendix 14 Land Types For Afforestation
- Appendix 15 Note on Shell Marl



- Appendix 18 Protocol for the determination of the acid sensitivity of surface water

The area ineligible for aid will be determined by the Department by mapping the ineligible area and plotting it on a map.

#### *10.8.4 Mapping*

The Forestry Schemes Mapping Standards outline the requirements for the preparation of maps submitted for grant and premium.

Mapping penalties will only apply where the registered forester has not recorded the following details correctly;

- Plot boundaries on the certified species map do not correspond to the boundaries located on the ground
- Species and biodiversity areas are not correctly recorded in the plot table when compared to the location on the ground
- FEPS options not correctly recorded
- Power lines and gas lines not correctly mapped as determined from ground inspection
- Fencing lengths claimed for grant aid not correctly recorded on fencing map

Mapping of species and plot boundaries which result in an area over claim will have the scheduled penalty applied for “area over claim” instead of the scheduled mapping penalty.

#### *10.8.5 Provenance Declarations not completed correctly*

For the purposes of the Forest Service grant schemes all planted material must be supported by a Suppliers Document in the form of a Provenance Declaration Form. Only the origins listed in table 8 of Forestry Schemes Manual are acceptable.

Provenance declaration forms not provided as required or not completed as required, or the use of provenances not approved will receive a penalty in proportion to the area of the plantation where those trees are planted.

#### *10.8.6 Provision of a False Statement, False Information or False Claim*

If an applicant and/or Registered Forester knowingly makes a false or misleading statement or withholds essential information for the purposes of obtaining payment and/or approval under this Scheme, his/her participation in the Scheme in respect of the misdeclared contract may be terminated and all or part of the aid paid shall be reimbursed.

Where an Applicant fails to abide by the terms and conditions of the Scheme or if there is any material change in the circumstances of the applicant or plantation which would be in conflict with the details of the Scheme, his/her participation in the Scheme in respect of the misdeclared contract may be terminated and all or part of the aid paid shall be reimbursed. In addition obtaining of aid under the Scheme by fraudulent means by the applicant or others acting alone or together may render such persons liable to prosecution.

#### *10.8.7 Failure to comply with environmental guidelines (permanent and/or significant damage)*

In any situation where failure to comply with environmental guidelines results in permanent or serious damage to the environment, particularly but not exclusively, in respect of archaeological sites and monuments, water or important habitats the scheduled penalty of no grant or premium payments will apply.

If environmental guidelines are breached and no permanent or serious damage has occurred, the scheduled penalty “Failure to comply with environmental guidelines and/or specific conditions” will apply. For the purposes of determining if a penalty will apply where buffer zones and setback distances have been breached, reference will be made to the setback distances listed in the Forestry Schemes Manual, guidelines, watercourses identified on the Department’s iNET system, archaeological buffer zones identified as a condition of approval and any specific setback areas stated as a specific condition of approval.

Example: A road is constructed and passes through a recorded archaeological monument causing significant damage to the structure. The required buffer zone was not observed. In this case all grant aid for the plantation will be withheld.

#### *10.8.8 Failure to comply with environmental guidelines and/or specific conditions*

The environmental guidelines and Forestry Schemes Manual outline procedures and specific conditions with the aim of ensuring good practice. In cases where minor breaches can be remedied and/or where no significant damage occurred, the scheduled penalty will apply. Penalties will be confined to the following breaches;

- failure to maintain the required buffer zone from watercourses in respect of both ground preparation and planting
- failure to adhere to specific buffer zone boundaries specified for NHA’s, SAC’s , SPAs and archaeological sites and monuments
- failure to keep planting back the requisite distances from roads and dwelling houses
- Non- adherence to the approval letter and any specific environmental conditions.

#### *10.8.9 Failure to comply with standard procedures*

##### *Chemical application*

Chemicals shall be applied according to the manufacturer’s instructions and in accordance with the Forest Service Forestry and Water Quality Guidelines.

##### *Fertiliser application*

Fertiliser application shall be in accordance with the Forest Service Forestry and Water Quality and Aerial Fertilisation Guidelines.

##### *Disposal of Waste/Rubbish*

The disposal on sites of, for example, plastic fertiliser bags, plastic plant bags and oil containers, must be in accordance with waste disposal legislation. Penalties will only apply where the waste and rubbish found is directly related to forest operations and does not include other forms of dumping e.g. unauthorised domestic dumping.

### *Hazardous Fencing*

Fencing wire should be below head height or below neck height in respect of barbed wire. All tiebacks should be placed inside the planting site.

### *Mounding*

Mounding should be in accordance with good forestry practice in terms of direction, spacing density and depth as set out in the Forestry Schemes Manual.

### *Silt Traps*

Silt traps must be laid down as specified in the Forestry Schemes Manual and should not be left in a dangerous condition or placed in an inappropriate location.

Where the Forest Service has established that a failure to comply with any of the schemes' requirements has occurred then the scheduled penalties will apply.

#### *10.8.10 Incorrect species selection*

Sites must be matched with appropriate species to ensure that a commercial crop of trees is produced. There should not be any deviation from the species as set out in the Forestry Schemes Manual, *Chapter 9- Silvicultural Standards*, unless approved in advance and in writing by the Forest Service. In any situation where an incorrect species has been selected the scheduled penalty of no grant or premium payments will apply to that area planted with such species. Any payments made in respect of that area will be recouped and/ or replacement required. Where, for any reason, a species change is made even with the written permission of the Forest Service, if the replacement species is in a lower GPC, recoupment of the overpayment for the area will be made, i.e. the difference between the payments already made at the higher GPC rate and the payment that would have been made at the lower GPC rate.

#### *10.8.11 Failure to identify lands described as GPC1 correctly*

The Forestry Schemes Manual, Appendix 14 outlines the requirements for the identification of lands eligible for GPC1. Land not classified correctly will receive the scheduled penalty.

#### *10.8.12 Remedial Works Required*

The Forestry Schemes Manual and scheme conditions specify the minimum standards that must be achieved before an application is made for payment of grants and premiums. Registered Foresters must not submit an application for payment where the plantation has not reached the required standard. A scheduled penalty will automatically apply if on a first inspection remedial works are specified. In cases where trivial remedial works of a minor nature are required no penalty will apply as stated previously. If the application is resubmitted without the required remedial works being carried out satisfactorily a second penalty will apply. Where a plantation or part of a plantation cannot be remediated, or where the owner fails to remedy the problems, the Minister may deem it necessary to recoup 100% of all money paid in respect of that plantation or the affected portion and to make no further payments. The main areas where penalties may be applied are listed below.

### *First Inspection:*

The Forest Service will apply the scheduled penalty proportional to the area affected if it is determined that the application was submitted but was not up to the required standard as specified in the Forestry Schemes Manual.

*Second Inspection:*

If a registered forester resubmits an application without completing the required remedial works as specified a further penalty will apply.

*Subsequent Inspection:*

Applications re-submitted without the specified remedial works carried out after receiving a 1<sup>st</sup> and 2<sup>nd</sup> inspection will receive the scheduled penalty for the area affected. Failure to carry out specified remedial works may result in all grants and premiums paid being recouped.

*Plant Stocking*

Plantations submitted for 1<sup>st</sup> Instalment grants must have at least 90% of the trees planted at the recommended stocking rates and trees must be growing and evenly spread across the plot to be considered successfully established. Stocking densities less than 90% will receive the scheduled penalty in proportion to the area affected and will be assessed by plot sampling. Plantations submitted for 2<sup>nd</sup> Instalment grants must have at least 90% of the original recommended stocking rates as described above and trees must be free growing and established and 1.3 metres in height.

*Vegetation control*

Trees submitted for grant aid must be free of competing vegetation. For sections of plantations where weed control is inadequate resulting in significant reduction in the rate of tree growth the scheduled penalty will apply based on the area affected. The *Forestry Schemes Manual, Chapter 9*, outlines requirements for weed control.

*Drainage*

All sites must be developed in accordance with the *Forestry Schemes Manual* as described in *Chapter 9 – Silvicultural Standards*. Sites proposed and developed must ensure that conifers have a minimum free draining rooting depth of 45-60cm throughout the year. Broadleaves will require a depth greater than conifers. Registered foresters must ensure that sites proposed for afforestation meets this requirement otherwise a scheduled penalty will apply to the area affected.

*Firebreaks and Maintenance*

Registered Foresters must specify at pre-approval stage the requirement for fire breaks if applicable. If firebreaks are not installed correctly and maintained as specified in the *Forestry Schemes Manual, Forest Protection Guidelines, Code of Best Forest Practice* and *Code for Prescribed burning* the scheduled penalty will apply.

*Nutritional Deficiencies evident*

Plantations and plots must not be submitted for grant aid and premium where nutritional deficiencies are evident and where trees are not free growing and established. A scheduled penalty will apply where 10% of the plantation or areas greater than 0.5 ha, is suffering from chlorosis. In addition plantations which have just received an application of fertiliser must not be submitted for payment where no response from the crop is evident. Registered Foresters must wait until the crop has satisfactorily responded, which may include adequate heather control, before submitting an application for grant aid.

The *Forestry Schemes Manual* specifies the standards which apply to all schemes where trees are being planted. Registered Foresters must ensure that applications submitted comply with these requirements. Applications submitted which do not comply with these requirements, thus resulting in remedial works, will receive the scheduled penalty specified.

#### *10.8.13 Cross Checking Procedures and Premium and Grant Payment*

As an accredited EU paying agency the Department of Agriculture, Food and Marine is obliged under EU Regulation to carry out checks and controls on all applications to ensure compliance with all scheme conditions and requirements.

An applicant may not claim forest grant or premium in respect of any area which is included in his/her claim under an area-linked EU scheme such REPS and area aid schemes administered by the Department of Agriculture, Food and Marine where the land was afforested before 2009. The *Forestry Schemes Manual, Chapter 13- Interaction of Afforestation Schemes with Agriculture* provides more details on scheme interactions.

In order to check that this is the case, the Forest Service is using computer mapping technology to

- Measure the area claimed, and
- Cross- check the parcels digitised against other area-based schemes

The process also includes retrospective checking of previous years' premiums. If the calculation of area using these procedures shows any discrepancies, it may be necessary to adjust the amount of the premium and to recoup any overpayment.

### *10.9 Roads Scheme*

The penalties applicable to the Road schemes are described below.

#### *10.9.1 Harvest Area Over-Declared*

Mapping of the area eligible for harvesting to determine the eligible length of road for grant aid must be accurately recorded. Over declarations of the eligible harvesting area to determine road density per ha will result in the amount over claimed being disallowed or recouped and a scheduled penalty being applied equal to 10% of that amount over-claimed.

For determining the area ready for harvesting reference will be made in the first instance to the following table as listed in the Irish Thinning Protocol and based on existing crop performance. Thinning outside of these ages must be supported by inventory information. Broadleaves will be considered ready for thinning and tending when they have obtained a top height of at least 8 metres.

**Table 4: Standard\* First Thinning Ages for Common Conifer Crops (source: Forestry Commission Field Book 2)**

Species	YC							
	24	22	20	18	16	14	12	10
Sitka spruce	18	19	20	21	22	23	25	27
Norway spruce		21	22	23	25	26	29	31
Douglas fir	16	17	18	19	20	22	24	27
Japanese/ Hybrid larch						15	16	18
European larch							18	20
Scots pine						22	24	27
Lodgepole pine						20	22	25

\*Note some crops may have a higher YC than is covered in the above table. In many situations in Ireland thinning should take place before the age outlined above.

### 10.9.2 Length over declared by 3% or more of eligible expenditure

Road lengths declared eligible for grant aid by registered foresters must be accurately measured by field assessment. Measurement of the road, including equivalent lengths will be calculated based on the length determined by measuring the length along the surface of the road. Equivalent lengths will be calculated on the basis outlined in the Forest Road Manual.

A penalty will apply in cases where the road length is over declared by 3% or more. The amount over claimed will be disallowed or recouped and a scheduled penalty will be applied equal to 100% of that amount over claimed. For penalty purposes the over claimed amount will be based on the maximum grant rate per linear metre irrespective of the unit cost claimed. Over claims less than 3% of the eligible length will be adjusted to the correct length without penalty.

For example, an application for 500 metre road is found to be 400 metres when measured on the ground. In this case the penalty applied will be based on recouping/withholding the over claimed amount plus an additional penalty of 100 metres, in summary 200 metres of road grant will be deducted from the claim.

### 10.9.3 Mapping

The Forestry Schemes Mapping Standards outline the requirements for the preparation of maps submitted for grant and premium.

Mapping penalties will apply where the registered forester has not recorded the following details correctly

- Road alignment and entrance

For penalty purposes the road alignment must be within +/- 20 metres

### 10.9.4 Provision of a false statement, false information or false claim

As previously described for other forestry schemes.

### 10.9.5 Failure to comply with environmental guidelines (i.e. serious and/or permanent damage)

As previously described for other forestry schemes.

#### *10.9.6 Failure to comply with environmental guidelines and/or specific conditions*

As previously described for other forestry schemes.

#### *10.9.7 Remedial Works required*

Forest roads and/or specified sections not constructed as per the specifications submitted and included in the approval letter or that are not in accordance with the Forest Road Manual will have the scheduled penalty applied.

##### *First Inspection:*

As previously described for other forestry schemes.

##### *Second Inspection:*

As previously described for other forestry schemes.

##### *Subsequent Inspection:*

As previously described for other forestry schemes.

##### *Gradient*

In general the maximum gradient permitted is 10% up to a maximum of 12.5% in certain circumstances specified in the application for approval. Any deviations from standard gradients must be approved in advance prior to construction; otherwise the scheduled penalty will apply.

##### *Inadequate pavement depth*

Typical pavement depths for forest roads are listed in the Forest Road Manual (2005), table 12. Any deviations from standard pavements depths must be approved in advance prior to construction, otherwise the scheduled penalty will apply.

##### *Culverts and Drainage*

Forest roads with inadequate culverts and drainage installed can lead to erosion and damage to forest and county roads. The Forest Roads Manual outlines guidelines for best practice on drainage and culvert design. The scheduled penalty will apply where inadequate drainage and culverts are installed and are not in accordance with the Forest Roads Manual.

##### *Turning areas and entrances not to specification*

The Forest Road Manual and subsequent technical standards will describe s the required turning areas and entrance design adjoining public roads and these are a condition of grant aid. Forest roads and/or specified sections not constructed as per the specifications submitted and not in accordance with the *Forest Road Manual* will have the scheduled penalty applied.

##### *Carriageway and Formation Width*

All carriageways must be at least 3.4 metres in width. Failure to construct carriageways and formations in accordance with the *Forest Road Manual* will have the scheduled penalty applied.



#### *10.9.8 Road constructed not in accordance with the Forest Road Manual (60% penalty)*

(Deficiency cannot be remedied but deficiency does not affect the structural integrity or safety of the road. However road must be capable of supporting the transport of fully loaded timber trucks i.e. 42 tonnes GVW)

If the road constructed cannot be remedied and the deficiency **does not** affect the structural integrity or safety of the road the scheduled penalty will apply to the section of road affected. However the road must be capable of carrying a fully loaded timber truck i.e. 42 – 44 tonnes GVW. If the section of road where the deficiency occurs is the part which connects to the public road the entire road will be rejected for grant aid. In a limited number of circumstances a road not built to the required standards may be capable of carrying fully laden trucks (42 tonnes GVW) for a number of harvest operations before eventually failing e.g. quality of pavement and materials, formation width not sufficient. In these circumstances the Department may decide to allow some grant aid and the scheduled penalty will apply. Although consent may be given to build roads not in accordance with the standards as described in the Forest Road Manual, eligibility for grant aid must be in accordance with these standards.

#### *10.9.9 Road constructed not in accordance with the Forest Road Manual (100% penalty)*

(Deficiency cannot be remedied)

If the road constructed cannot be remedied and the deficiency does affect the structural integrity or safety of the road the scheduled penalty will apply to the section of road affected. If the section of road where the deficiency occurs is the part which connects to the public road the entire road will be rejected for grant aid.

#### *10.9.10 Dumping and/or use of construction materials not in compliance with the Waste Management Act 1996 and EC (Waste Directive) Regulations 2011*

All materials used in the construction of a road must comply with the Waste Management Act 1996 and European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011). Applications for grant aid for roads constructed with materials not in compliance with the Act/Regulations will not be grant aided and the scheduled penalty applies. Remedial works may also be required.

# 11 Financing Plan

## 11.1 Summary

The Forest Service Proposal for a new Forestry Programme 2014 – 2020 will cost €739m of spending yet to be approved. It will consist of 11 different measures including a number of new activities such as agro-forestry and forestry for fibre. 95% of all spending during 2014 will be on the afforestation scheme which currently has a target of 7,000ha. The proposal set out in this document sets a target of 10,000ha.

The programme costs are estimated as follows;

	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation premium, 1994 - 2013	€ 62,738,762	€ 57,141,191	€ 52,363,706	€ 48,385,252	€ 41,674,551	€ 36,179,693	€ 298,483,156
FEPS Premiums, 1994 - 2013	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 36,400,972
Native Woodland Est 1994 - 2013	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 499,596	€ 3,004,783
Afforestation Grants, >2014	€ 30,342,000	€ 34,621,000	€ 34,621,000	€ 34,621,000	€ 32,773,250	€ 32,773,250	€ 199,751,500
Afforestation Premiums >2014	€ 6,408,600	€ 10,707,300	€ 15,006,000	€ 19,304,700	€ 23,373,975	€ 27,443,250	€ 102,243,825
NWS, (establishment), Grant	€ 2,750,000	€ 2,750,000	€ 2,750,000	€ 2,887,500	€ 2,887,500	€ 2,887,500	€ 16,912,500
NWS, (establishment), Premium	€ 280,000	€ 280,000	€ 280,000	€ 294,000	€ 294,000	€ 294,000	€ 1,722,000
Agro Forestry, Grant	€ 85,200	€ 85,200	€ 106,500	€ 170,400	€ 213,000	€ 213,000	€ 873,300
Agro Forestry, Premium	€ 5,000	€ 10,000	€ 16,250	€ 26,250	€ 33,750	€ 46,250	€ 137,500
Forestry for Fibre Grants	€ 122,500.00	€ 245,000.00	€ 490,000.00	€ 1,225,000.00	€ 2,450,000.00	€ 2,450,000.00	€ 6,982,500
Forestry for Fibre premiums	€ 7,500.00	€ 15,000.00	€ 30,000.00	€ 75,000.00	€ 150,000.00	€ 150,000.00	€ 427,500
Roads	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 37,800,000
Special Construction works	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Thinning and Tending	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 6,750,000
Reconstitution	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 4,668,000
NWS (Cons) Grants >2013	€ 388,200	€ 388,200	€ 388,200	€ 388,200	€ 388,200	€ 388,200	€ 2,329,200
NWS (Cons) Premium >2013	€ 33,600	€ 33,600	€ 33,600	€ 33,600	€ 33,600	€ 33,600	€ 201,600
Neighbourhood Scheme	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Investment in Innovative Forestry Technology	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 1,440,000
Protection of Genetic Resources	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 420,000
Forest Management Plans	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Training and KTG's	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 600,000
Advisory and Promotion Services (Teagasc)	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 3,600,000
Advisory and Promotion Services (Other)	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 600,000
Other (forest sector development, technical support)	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 4,200,000
Total	€ 121,242,228	€ 124,357,357	€ 124,166,122	€ 125,491,768	€ 122,352,692	€ 120,938,167	€ 738,548,335

This expenditure will deliver the following;

Scheme	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation, ha	8,370	9,520	9,625	9,965	10,000	10,000	57,480
of which afforestation	7,800	8,900	8,900	8,900	8,425	8,425	51,350
of which NWS establishment	500	500	500	525	525	525	3,075
of which Agro-forestry	20	20	25	40	50	50	205
of which forestry for Fibre	50	100	200	500	1,000	1,000	2,850
Forest Roads (m)	180,000	180,000	180,000	180,000	180,000	180,000	1,080,000
Special construction works (no. applications)	100	100	100	100	100	100	600
Thinning and tending	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Reconstitution, ha	200	200	200	200	200	200	600
Native Woodland (Conservation), ha	60	60	60	60	60	60	360
Neighbourhood Scheme, no. of projects	10	10	10	10	10	10	60
Investment in Innovative Forestry Technology	30	30	30	30	30	30	180
Forest Genetic Reproductive Material, ha	350	350	350	350	350	350	2,100
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000

The above budget allocation will be subject to a midterm review where the allocation to all measures will be reviewed. For example, the budget allocated to poorly performing schemes could be moved to more successful schemes. In this regard it is acknowledged that 95% of the proposed budget is allocated to afforestation and road measures. While this is due to the

need to increase the area under forests to help supply material to a growing timber processing industry and to meet the expected increase in demand for forestry biomass for energy, there may be opportunities later on in the programme to increase the allocation to more environmental and educational measures such as native woodlands and KTG's for example.

DAFM will complete a midterm review of the programme by the end of 2017 and will undertake a review of the programme on its completion. It will cooperate in any value for money or equivalent review exercise that may be undertaken.

### ***11.2 State Aid, the RDP and the Forestry Programme 2015 – 2020,***

The proposal is to support the new programme with 100% Exchequer funds in line with European Union Guidelines for State Aid in the agriculture and forestry sector and in rural areas 2014 to 2020. In order to be considered compatible with the internal market and therefore compliant with these State Aid rules, measures set out in the new forestry programme must meet all the conditions laid down in the Rural Development Regulation (No. 1305/2013). This means that they must contribute towards the aims and objectives of CAP and the priority areas of the Rural Development Regulation specifically. While the new forestry measures will not be included in the wider Rural Development Programme currently being prepared by the Department, they must follow the same general rules and principles.

The proposed measures included in this programme plan represent a continuation of the previous Forestry Programme 2007-2013 which has been effective in supporting the growth and development of the forestry sector and rural economies. During this period in fact a total of €785 million of state funding was provided to support the ongoing development of the forestry sector. The main outcomes during the 2007-2013 period were:

- c.48,000 hectares of new forests established under the various afforestation schemes, including FEPS and Native Woodland Scheme;
- c.945 kilometres of new forest roads constructed to facilitate forest harvesting and timber transportation.

The new Forestry Programme aims to build upon the progress made under previous Forestry Programmes.

The proposed plan has been heavily influenced by a thorough consultation process starting with the stakeholder consultation process on the Rural Development Programme (RDP) at which point forestry was included. Submissions were received from approximately 90 interested parties in January 2013 and were considered by the Department of Agriculture, Food and the Marine. A stakeholder workshop was held in mid July 2013 with approximately 80 invited participants attending. The preliminary findings of the SWOT Analysis and Needs Assessment were presented at the workshop and further discussions took place in breakout groups at the level of each rural development priority in order to seek stakeholder views on how they might be improved. An internal consultation event was held in August 2013 within the Forest Service which focussed specifically on forestry issues. In late 2013 the decision was taken not to include forestry measures in the RDP but to have a separate Forestry Programme. In April 2014 a further consultation event took place with

stakeholders to discuss an outline document listing proposed measures for the new programme. This was followed by written submissions, 25 of which were received in total. After this consultation process, four bilateral meetings took place during May 2014 which provided stakeholder groups with a further opportunity to discuss their concerns and proposals. Finally, a separate costings exercise took place in parallel with these events, where stakeholders were contacted separately.

### ***11.3 Analysis of Options***

The premium rate for afforestation for the next programme is probably the single biggest issue for the Forest Service to decide upon when it comes to drafting the new afforestation scheme. Key factors for consideration are as follows;

- a) The sensitivity of planting levels to fluctuations in the premium rate;
- b) The Rural Development Regulation (RDR) introduces two significant changes that will effect this rate, premium payments reduced to 12 years and no requirement to differentiate between farmer and non farmer;

#### ***11.3.1 The sensitivity of planting levels to fluctuations in the premium rate***

Although the financial outcome of planting may only be one of the primary factors in decision making by farmers, it does still play an important role in taking that decision. In a recent unpublished Teagasc survey of farmers who had planted, financial factors were found to be important motivators. We also know that the increase in broadleaf planting is mainly down to higher premium levels. On the other hand, despite successive increases in premium rates up until 2009, afforestation rates from the mid 1990's have been generally declining. This reduction has occurred during a period of declining agricultural margins which, in combination with increases in the premium rate, has seen the relative profitability of forestry increase<sup>97</sup>. Furthermore, the 8% decrease in premium rates introduced as part of the 2009 budget did not seem to have a significant effect on planting levels, see table 39 below.

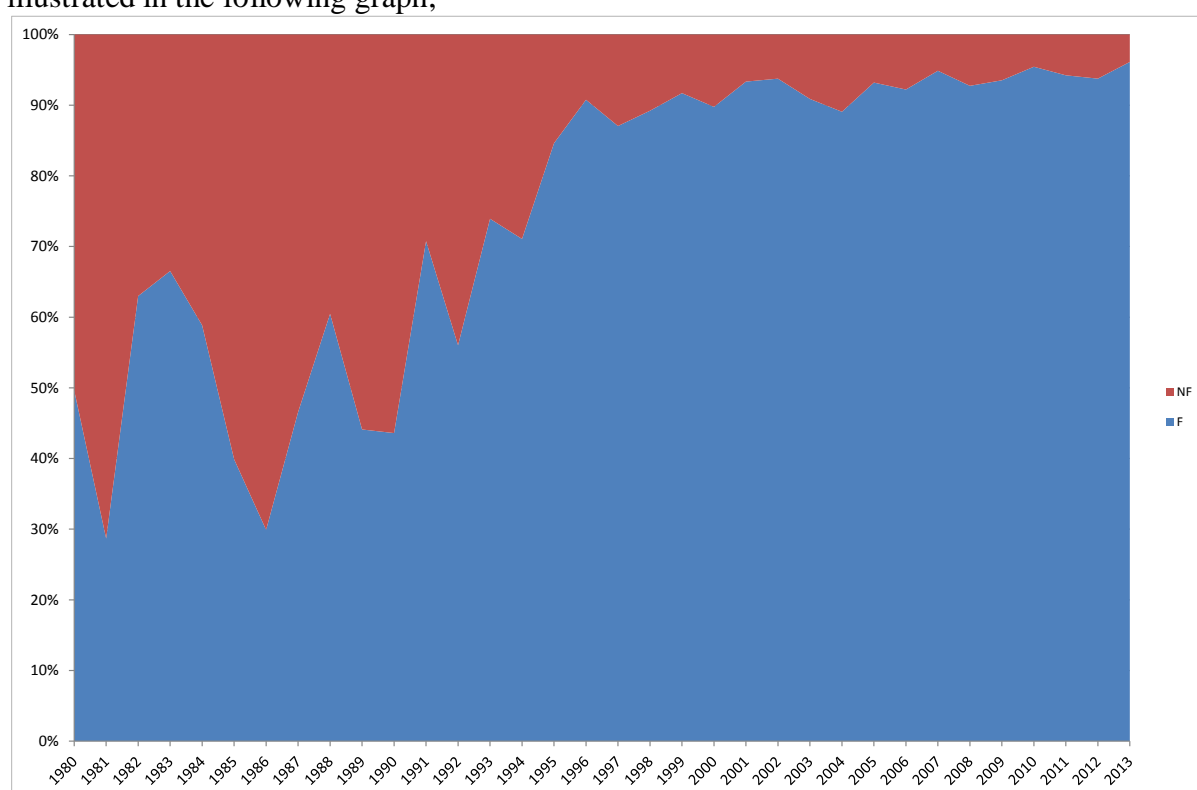
**Table 39: Afforestation levels 2005- 2013**

<b>Year</b>	<b>Planting (ha)</b>
2005	10,096
2006	8,014
2007	6,947
2008	6,249
2009	6,648
2010	8,314
2011	6,653
2012	6,652
2013	6,252

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<sup>97</sup> Taken from "An examination of studies of the financial and attitudinal factors affecting the farm afforestation decision", a report prepared for the Forest Service, Department of Agriculture, Food and the Marine by Teagasc

Nor did this reduction impact on the proportion of farmer non farmer participation as illustrated in the following graph;



**Figure 5. Proportion of total private grant-aided area afforested from 1980 to 2013 by Farmer and Non-Farmer status.**

It would seem therefore that while the premium rate is important, other factors come into play when land holders take the decision to plant. Having said this however, there is a tipping point below which planting may not be an option for farmers. Wiemers and Behan's (2004) analysis found that €236/ha was the optimal trigger point for forestry in rough grazing and remote areas whereas the figure was closer to €520/ha for more commercial agricultural (but remote) areas.

More detail on the attitudinal factors that influence a landowners decision to plant is developed further on in this chapter.

### 11.3.2 Effects of the RDR on the Premium Rate

The options in this regard are as follows;

- i) Do we adopt a 12 year premium strategy
- ii) Do we adopt a 15 year premium strategy
- iii) Do we adopt a 20 year premium strategy
- iv) Do we eliminate the farmer and non farmer rate and introduce a single rate;
- v) Do maintain the farmer/non farmer distinction

For the purpose of this analysis option iii) is not being considered as it is generally felt that the 20 year term is too long (ie. prolongs the liability to the exchequer), increases the likelihood of debts being generated and is costly to the exchequer. Option ii) would require the development of de minimis functionality in IForIS structured along a rolling three year

timeframe. Applicants would also have to make a declaration regarding other de minimis payments.

The options analysed are as follows;

- 12 years paid over 12 years, the 12/12 option
- 17 years paid over 12 years, the 17/12 option
- 17 years paid over 15 years, the 17/15 option
- 20 years paid over 12 years, the 20/12 option

Both farmer/ non farmer and single rate were analysed as part of this exercise. An increase in the premium payment is necessary in order to compensate for a reduction in the number of premium payments from 20 to 12 (or 15 as the case may be).

## 11.4 Financial Analysis of the afforestation options

### Farmer Rate

The following table presents some options based on the total cost of current premiums at the farmer rate with 12 premiums;

**Table 40: Total Farmer Premium Payments**

Table 40: Total Farmer Premium Payments								
		12 Annual Premium rates (discounted using 5%)				11.4.1.1 15 Annual Premiums		
		20\12 year		17\12 Year		17\15 Year		12\12 Year
	Current Rate	Rate/annum	% increase	Rate/annum	% increase	Rate/annum	% increase	Current Rate
GPC 1	€155	€217	40%	€196	26%	€170	10%	€155
GPC 2	€369	€515	40%	€467	27%	€400	8%	€369
GPC 3	€427	€596	40%	€540	26%	€470	10%	€427
GPC 4	€454	€634	40%	€575	27%	€490	8%	€454
GPC 5&8	€481	€672	40%	€608	26%	€520	8%	€481
GPC 6&7	€515	€719	40%	€652	27%	€560	9%	€515

It is the overwhelming view of Forest Service management that a 12/12 approach would result in a collapse in participation amongst farmers in the afforestation scheme. As only 6% of participation is currently non farmer it is deemed highly unlikely that the shortfall would be made up by non farmers.

If we were to pay 17 premiums in 12 years, the % increase in the premium rate would be 27%. This increase would rise to 40% if we were to pay 20 year premiums in 12 years, 20/12. An increase in premium rates by 40% may not give a proportional increase in planting rates while an increase of 27% might be enough to keep farmers incentivised to plant despite going from 20 premiums to 12. Participants are in effect getting 17 premiums front loaded into 12 years. However, during stakeholder consultation it became clear that 12 premiums regardless of the % increase would not be sufficient for farmers to plant. Participation of this target group is essential for the success of the forestry programme and farmers who see forestry as a long term proposition would see 12 premiums as being too short.

The 17/15 option will deliver more modest increases in the premium rate.



The two viable options are therefore 17/12 and 17/15. The total savings for the exchequer for both scenarios is €3.2m as against the existing premium structure and are based on 2012 planting statistics; the figure is the same as the same number of premiums is being paid ie. 17 albeit over different timeframes. This saving would accrue over a three year period starting at year 18 and ending on year 20. The savings are of course greater as each year will bring new planting under the 17/12 or 17/15 structure.

#### Non Farmer Rate

If a similar approach was taken to non farmer premiums as that followed in table 27, the outcome would be similar ie. 40% increase for 20/12 and 27% for 17/20 etc.. However, if the farmer rate was also adopted as the rate for non farmers and continuing with the 17/12 option, increases on the non farmer side are as follows;

**Table 41: Total Non Farmer Premium Payments (Discounted)**

	<b>Non Farmer current rate</b>	<b>17/12 Year</b>	<b>% increase</b>	<b>17/15 Year</b>	<b>% increase</b>
<b>GPC 1</b>	€126	€196	56%	€170	35%
<b>GPC 2</b>	€181	€467	158%	€400	121%
<b>GPC 3</b>	€181	€540	198%	€470	160%
<b>GPC 4</b>	€181	€575	218%	€490	171%
<b>GPC 5&amp;8</b>	€195	€608	212%	€520	167%
<b>GPC 6&amp;7</b>	€195	€652	234%	€560	187%

The total additional cost per annum for the exchequer in adopting the 17/12 for non farmers using the single rate is €1.2m (based on 2012 planting statistics and existing premium rates).

The net savings to the exchequer of the 17/12 or 17/15 approach is therefore €2m.

#### 11.4.2 NPV and IRR analysis

This section concerns the impacts of the change in premium structure on profitability. This can be summarised as follows<sup>98</sup>;

##### NPV

/ha	<b>Existing</b>	<b>17/12</b>	<b>Change</b>	<b>17/15</b>	<b>Change</b>
Farmer	€ 5,045	€ 4,483	-€ 562	€4,512	€533
Non Farmer	-€ 4,254	-€ 1,201	€ 3,053	-€1,172	-€3,082

##### IRR

/ha	<b>Existing</b>	<b>17/12</b>	<b>Change</b>	<b>17/15</b>	<b>Change</b>
Farmer	12.20%	13.08%	7%	12.09%	-0.9%
Non Farmer	2.68%	4.20%	56.7%	4.25	59%

As expected the profitability drops for the famer but increases significantly for the non farmer (2013, Henry Philips). The 17/15 options is slightly more profitable than the 17/12 option for both applicant types.

<sup>98</sup> Farmer figures are based on farmers not registered for VAT and in receipt of SFP.



### 11.4.3 Conclusions

Adopting the single rate would have the following advantages;

- i) It could generate huge interest from a sector which heretofore has not been a major player in the scheme (only 6% of all planting is non farmer);
- ii) As 94% of plantations are planted by farmers, the additional cost to the exchequer is in paying the 6% at a higher rate (ie. €1.2 m). This additional cost is more than offset by the savings on the farmer side (€3.2m).
- iii) Improved premiums rates for the non farmers could result in more applications and could unlock land previously unavailable to forestry. This could mean more selectivity in terms of choosing which plantations to support; bigger, more accessible and more productive sites for example could be favoured over smaller, stand alone or land locked plantations;
- iv) Reduces the administrative burden through simplification;
- v) Non farmers are being favoured disproportionately to farmers; farmer rates increase by just 10% for some GPC's while non farmer rates increase by 187% in one GPC;
- vi) Farmers could be pushed out of the scheme in favour of non farmers;

The single rate is opposed by farming organisations who wish to keep higher premiums for farmers. The following table compares the options;

17/12	17/15
Over the programme period the total cost of the premiums paid is €115m under this option.	As the premium payments are less under this option the total cost of premiums during the programme period is 10% less at €103m for the same period.
A reduced liability of 12 years means that commitments into the future will reduce leaving a greater proportion of the budget allocation for new planting.	The number of premiums under this option is being reduced by 5.
The rate increase of 27% for farmers is significant and may generate a proportionate increase in applications (similar to the 20/12 option).	The rate increase for farmers is far more modest and is probably more realistic given the economic situation.
If the increase is too high then this could encourage farmers to leave agricultural production . Given the aims and objectives of Food Harvest 2020 this approach could seem contradictory.	There is less conflict with the Food Harvest objectives if the increase is kept low.
There were also doubts as to whether broadleaves would be planted with only 12 premiums where the gap between first thinnings and the last premium is widened by 8 years.	There is a better chance that broadleaves will continue to be planted under this option. Broadleaf planting is an important feature of the programme for environmental reasons.
Concern was also expressed that forest holders would be less likely to thin if the last premium is received in year 12 which falls short of first thinning by 5-8 years approximately.	If the gap was shorter and premiums were paid beyond 12 years there would be a better chance that thinning would take place.

The analysis indicates that the optimum solution for financial and silvicultural reasons is that 17 premiums should be paid over 15 years and a single rate should be applied for both farmers and non farmers. This will deliver 8-10% higher premiums year on year and would save the exchequer €2m when compared against the existing structure ie. over a 20- year

period. It could also bring non farmers into the afforestation programme which could have the effect of larger more sustainable plantations.

## 11.5 Available Options for a New Programme

The four options analysed are as follows, all of which include the restructuring of the schemes to comply with the new regulations;

- Option A. 12/12 premium rates premium rates and maintain planting levels and targets in line with previous year's budgetary allocation, no new schemes;
- Option B. **Introduce 17/15 premium** rates but maintain planting levels and targets in line with previous year's budgetary allocation, no new schemes;
- Option C. **Introduce 17/15 premium rates** but maintain planting levels and targets in line with previous year's budgetary allocation, **introduce new schemes**;
- Option D. **Introduce 17/15 premium rates, increase planting levels and targets to exceed previous year's budgetary allocation, introduce new schemes**;

The relative costs of each of the above options can be summarised as follows;

	2015	2016	2017	2018	2019	2020	Total
Option A	€ 109,139,958	€ 106,189,603	€ 104,059,334	€ 102,728,096	€ 98,664,611	€ 95,815,527	€ 616,597,130
Option B	€ 110,278,343	€ 107,675,373	€ 105,892,489	€ 104,908,636	€ 101,192,536	€ 98,690,837	€ 628,638,215
Option C	€ 110,882,928	€ 110,969,857	€ 110,808,097	€ 111,014,893	€ 110,926,817	€ 111,083,617	€ 665,686,210
Option D	€ 121,242,228	€ 124,357,357	€ 124,166,122	€ 125,491,768	€ 122,352,692	€ 120,938,167	€ 738,548,335

**Table 42: Cost of Options**

Background figures are provided in Appendix 2.

## 11.6 Risk Analysis

### 11.6.1 Option A and Option B

Option A provides for no increase in the premium rate to offset the reduction in premium payments from 20 years to 15 years. This would most likely result in a collapse in planting levels as premium rates would not be sufficiently high enough to attract farmers. Schemes targeted at increasing wood fibre supply such as wood for fibre and agro-forestry would not be introduced under this Option. Without the introduction of these new schemes the objective of meeting the demand for timber for energy purposes with supply may not be bridged.

In relation to Option B the introduction of the 17/15 premium payment would maintain planting levels. However, without the new schemes the same issues would arise as for Option A. The following lists the impacts of adopting Option A or B;

Ref	Risk	Options
1	The premium level would not be sufficient to attract farmers to plant trees. Non Farmers may still be interested but not in great numbers, based on the fact that non farmers make up only 6% of current planting. It is highly likely that planting levels would collapse to unsustainable levels resulting in significant job losses particularly in private forestry companies and amongst casual workers living in rural communities;	A
2	Irrespective of the afforestation level, the projected total volume supply curve shows a steady increase up to 2035 (8-9million m <sup>3</sup> ) followed by a period of steady decline, which is then followed by a period of slowly increasing production. The extent of the decline in production and the subsequent rate of recovery is highly sensitive to planting levels. If planting doesn't materialise to sufficient levels under the 2014-2020 programme the "production"	A & B

	trough will be more severe and recovery will take longer than a scenario where planting does take place.	
3	The estimated demand for forest-based biomass for energy production on the island of Ireland is expected to increase from 1,589 m <sup>3</sup> /annum in 2011 to 3,259m <sup>3</sup> / annum in the year 2020. The aim of the new thinning, forestry for fibre and agro-forestry schemes is to help bridge the gap between current supply and this expected increase in demand. The absence of these schemes would contribute to the shortage of forest biomass supply in the short term. This could lead to import substitution where fossil fuels are imported to meet the shortage of renewable home grown fuel. This scenario could also contribute to Ireland failing to reach its renewable energy targets of 16% by 2020.	A & B
4	The co-firing target for peat stations, using 30% of biomass with peat by 2015, was originally set in the Government's White Paper on Energy, published in March 2007. Bord na Móna is committed to using of 300,000 tonnes per annum of biomass by 2015 <sup>99</sup> at Edenderry (30% co-firing), with up to 500,000 tonnes by 2020. These targets may not be met if this option is adopted.	A & B
5	The introduction of forestry for fibre and agro-forestry schemes would allow farmers to diversify their income source and to grow fuel for their own use.	A & B
6	The introduction of knowledge transfer groups (KTG) aims to bring innovation and research to forest holders so that best practice is applied at plantation level at the earliest opportunity. Participation in the new knowledge and innovation scheme could be made mandatory for other established measures. For example, if you are a member of a producer group you must be a member of a KTG or if you wish to build a road you have to be in a KTG. Without this scheme for example forest holders would not be aware of the real value of their forest holding or maybe apply the wrong thinning regime. There are new inventory techniques that could make the measurement of timber cheaper and more accurate to carry out.	A & B
7	Support for new technology could have an economic impact. For example support for variable tyre systems could reduce damage to roads by timber lorries. This damage is normally repaired by local authorities.	A & B
8	The greater use of native species and seed sources is an important factor in creating a forest estate which has greater resilience to climate change and disease outbreaks. For example the occurrence of Chalara in Ireland is attributed to using seed sourced from outside the country and native species are more resistant to pest outbreaks brought on by higher temperatures. The new scheme to protect native seed stands will contribute to limiting damage caused by pest and diseases.	A & B
9	Environmental benefits of forestry would be affected as follows; <ul style="list-style-type: none"> <li>• Reduced contribution to climate change mitigation eg riparian planting (NWS)</li> <li>• Reduce carbon sequestration effecting Kyoto targets</li> <li>• Reduced biodiversity benefits as a result of the canopy not being opened up following road building and thinning</li> </ul>	A & B
10	This option represents a vote of no confidence in forestry in Ireland for investors. Economic growth in the industry, where there is growing demand for wood, would go into decline as wood supply tightens both in the short term (first thinnings) and in the longer term (supply from new forests). Processors faced with dwindling supplies may choose to relocate (probably to the UK) or import round wood from abroad.	A & B

### 11.7 Option C & D

Option D proposes an afforestation rate of 10,000 ha by 2020 while Option C proposes 9,000ha by 2020. In financial terms Option D requires an average additional spend of €12.5million per annum when compared to Option C. Afforestation levels is the only difference between these two options.

The argument for adopting Option D over Option C is as follows;

- i) A planting programme of 10,000ha will result in timber production peaking at almost 9 million cubic metres in 2035 followed by a decline by 50% to less than 6 million over a period of ten years. A planting target more in line with Option C will reach a peak closer to 8.5million cubic metres and a decline to roughly 5 million cubic metres (16% less than Option D). In order to build an industry for the future it is vital that production levels are maintained as high as possible following peak production.

<sup>99</sup> Endenderry Powers used 200,000 tonnes in 2012.

- ii) The REFIT III scheme aims to incentivise the addition of 310MW of renewable electricity biomass capacity to the Irish grid, with a total of 200MW of this being new capacity in the Anaerobic Digestion and solid Biomass areas. The impacts on demand for forestry biomass of the REFIT III scheme can already be seen at Edenderry Power (point number 4 above) and subject to technical acceptance, forestry biomass could also start to replace peat at Lanesborough and Shannonbridge. Option D will help ensure sufficient supply of raw material to meet the increase demand for biomass envisaged by REFIT III.
- iii) There are strong signs of potential for future growth in the forest processing sector. Over the period 2011-2012, consumption of sawn timber in the Republic of Ireland grew by 17% and imports of sawn softwood grew from €464m in 2009 to €513 in 2012. Ireland's share of the UK's timber market is also increasing from 3.37% in 2007 to 6.52% in 2012. In 2011, the Irish panel products sector was the second largest exporter of particleboard and OSB to the UK marketplace. The sector increased its market share by 270% over the 3-year period to 2010. Option D puts Ireland on a sound footing to take advantage of potential growth in the forest processing sector.
- iv) The Governments strategy for renewable energy 2012 – 2020 states that "*The development of renewable energy is central to overall energy policy in Ireland.*" Of the options presented in this document Option D can contribute most to achieving the aims and objectives of this strategy.
- v) Option D has the potential to create more jobs than Option C through planting, management, harvesting and processing.
- vi) The afforestation target of 10,000ha under option D will deliver greater levels of climate change mitigation in the years to come by planting 11,000ha more forests over the programme period than Option C. In June 2009 the Minister for Finance called on all project appraisals to take account of the benefits of reduced carbon emissions. In order to monetise the amount of carbon removed from the atmosphere by forests the analysis must focus mainly on Kyoto forests, those established since 1990. These forests have sequestered 17 million tonnes of carbon dioxide over the five-year period to the end of 2012, which based on an average price of €20 per tonne of carbon dioxide has an estimated value to the exchequer of €340 million (€64m per annum).
- vii) The case for Option D can also be made when analysing the contribution of forestry towards fossil fuel replacement. In 2012, the output of the forest-based biomass energy sector grew over 30% from 2008. In 2012, 225,000 m<sup>3</sup> of firewood was used in Ireland to a value of €33 million, showing that it is providing a steady and a growing market for first thinnings. There is also potential for carbon abatement where forest biomass is used for electricity and heat generation. This is valued at €11m per annum and is in addition to the €340m figure. The percentage of electricity supplied by biomass is also growing, albeit from a small base (0.04% in 2008 to 0.61% in 2011) so this figure is expected to increase over the coming years. Higher levels of afforestation under Option D will displace greater quantities of fossil fuel.

## ***11.8 Evaluation of Proposed Forms of Support***

Having analysed the options available and the design of the scheme payments *vis a vis* the governing regulations and guidelines the broader question as to the appropriateness of using non repayable grants and premiums as the form of support for afforestation and roads should be examined.

### ***11.8.1 Appropriateness to Specific Objectives of the Programme***

#### ***11.8.1.1 Non repayable grants and premiums***

The case being made for non repayable grants and premiums is that the investment is long term and it could be up to 40 years before a significant return on that investment can be realised. This means that planting relies on upfront grants and premiums to cover planting costs and compensate for income forgone for alternative land use. Historical planting figures without grant support measured against planting levels with support shows that little or no afforestation would take place in the absence of support measures which discriminate positively in favour of afforestation. Since the 1980's State/EU funded forestry grant and annual payment / premium schemes were used successfully to promote afforestation activities amongst private landowners.

The argument for 100% state support for afforestation and roads in terms of this being the most appropriate tool for reaching the targets set needs to be put forward. To assist in this argument we need to look at the financial and attitudinal factors affecting the decision to plant and whether the offer of grants and premiums is incentivising landowners to plant. This is provided by a Teagasc report entitled “An examination of studies of the financial and attitudinal factors affecting the farm afforestation decision” from which the following paragraphs are based.

A common view amongst farmers is that forestry is only suitable for the worst quality land, that it is not financially attractive and that their primary interest is agriculture (i.e. that they want to keep farming or that they don't have enough land to give over to a fundamentally different land use).

Forestry differs from other commercial land-uses in Ireland as it involves essentially a permanent change in enterprise, a factor which increases the potential financial and psychological cost significantly. As part of the National Farm Survey (NFS) summer survey in 2006, over 1000 farmers were surveyed about whether they would plant forests in the future and what they saw as the main barriers to planting (McDonagh et al., 2010). Of the survey participants, just 107 farmers (10%), stated that they had planted forestry on their farms. In response to a question on possible plans to plant forestry, only 4.5% of farmers stated that they were considering planting some land in the near future. When asked about the barriers to planting, farmers saw the need to hold onto their land for agriculture as the main barrier and the permanent nature of the decision to afforest as the second largest barrier. Similar barriers were also identified in a survey of applicants for forest premiums conducted by Teagasc on behalf of the Forest Service in 2007 and again in 2012 to determine why they had not planted. The main barriers cited in 2007 were:

- Long-term nature of forestry
- Returns not attractive enough
- Want to farm for as long as possible

- Replanting obligation
- Planting will devalue the land

In 2012, 34% of the farmers who had deferred planting cited strong cattle prices and uncertainty about the future post CAP as the main reasons. In 2013, over 500 attended forestry clinics run by Teagasc. Of these, 81% wanted information on afforestation and 59% were keen to progress to the next stage in the application process (Teagasc, Forestry Development Department, 2013).

In a larger household survey of farmers conducted by Teagasc in 2012 respondents were asked their level of agreement with statements about not planting forestry. Factors related to land quality and agriculture were generally most important but profitability of forestry and the levels of premium payments were recognised as important factors (see table below).

<b>Reason</b>	<b>Ave. agreement out of 10</b>
My land is too productive for forestry	7.83
I need my land to qualify for agricultural payments	7.64
I have never seriously thought about it	7.54
Planting land with trees reduces the value of the land	7.53
My land use options are closed for far too long	7.25
The profits from forestry are too small	7.16
The premium payments available for forestry are too small	7.05
I don't know anything about forestry	6.19
My family/children would not like it	5.94
There is enough / too much forests in this area already	5.75
I am not confident there is a market for timber	5.43
My property is too small	5.25
My neighbours would not like it	5.24
I am waiting to see the changes in agricultural policy in a few years	5.13
I am not confident I can get good advice	4.93
I don't like forests	4.42

**Table 43 Reasons for not planting forestry**

Another important issue to consider when understanding attitudes towards forestry in Ireland is the lack of a history of commercial forest management in the country as a whole and in specific regions in particular. This also acts as a barrier to planting. Amongst the characteristics of land owners that may influence their decision to plant the size of their holding, age and the presence of a successor have been identified as important factors (Howley et al., 2012). However, of central importance to the decision to plant is the quality of land. The availability of poor quality land that has limited agricultural potential has been identified as being of primary importance to landowner decision making (Ni Dhubhain and Gardiner, 1994; Duesberg et al., 2012) and in national afforestation models (Upton et al., 2013b). Teagasc NFS data suggest that farmers involved in cattle and mixed livestock systems are more likely than those involved in dairy and tillage to enter forestry (Howley et

al., 2012). This is likely to be a reflection of the relative agricultural returns of these agricultural systems.

The above analysis clearly demonstrates that there are a number of factors that come into play when a farmer decides to plant including the financial outcome. In a recent unpublished Teagasc survey of farmers who had planted financial factors were found to be important motivators. This is shown in the following table;

<b>Issues related to decision to plant</b>	<b>Average rating out of 5</b>
Grant aid for planting (no up front investment)	4.51
Income from annual premium	4.38
Poor land not suitable for profitable agriculture	4.20
Future income from timber	2.90
Land was away from main land-holding	2.22
Reducing farm activity due to age or health	1.69
No successor on farm	1.58

**Table 44 Reasons for planting forestry**

The above analysis is the basis for the Departments opinion that grants and premiums are the appropriate means to incentivise landowners to plant, it is also the basis of the Department's assumption that more landowners will decide to plant if the rates are increased. The new programme seeks modest increases in grant and premium rates for afforestation and roads with the aim of maintaining interest in forestry following the reduction in the number of premiums payable as a first step and increasing planting rates from 6,252ha to 10,000ha as a second. In light of this it is also reasonable to assume that the level of participation of non farmers will increase to a greater extent given that the level of increase is much greater than that for farmers.

#### 11.8.1.2 Rational for increasing grants and premiums

The previous section established that financial aspects were one of the influencing factors for landowners deciding on whether or not to plant their land. The question arises as to whether the increases proposed are justified and do they support the needs and objectives identified in this document. For the sake of this analysis the increases to examine are the 10% increase in the premium rate for the most common GPC and the single rate of premium which has resulted in an increase of 160% for the same GPC for non-farmers.

In relation to farmers the increased premium is expected to increase the level of interest in forestry for farmers. This is a reasonable assumption to make on the basis that there will be more interest if the premiums increase. Given that farmers will keep their SFP the new GPC 3 premium will make forestry more competitive with other competing land uses. The following table is taken from Teagasc's 2013 National Farm Survey Estimates compares forestry against other agricultural enterprises;

<b>Average Farm Size &amp; Income per Hectare Size</b>	
<b>Income</b>	
	<b>Income</b>
	<b>€/ha</b>
Dairy	1,137



Cattle Rearing	250
Cattle Finishing	389
Sheep	220
Tillage	460
Mixed Livestock	794
<b>Forestry (GPC 3)</b>	<b>470</b>

This table shows that forestry has a higher return than most other agricultural activities except for dairy and mixed livestock and this should act as a trigger for more farmers to consider forestry as an alternative land use option (SFP is payable on new forests planted under the new programme).

The question remains what additional interest will be generated as a result of this increase. In order to help answer this question one source of information is the amount of landowners who submitted an application but didn't follow through with planting. It is a reasonable assumption to make that with an increase in premiums these farmers may reach the "tipping point" and plant their land with trees. The following table compares applications for planting with actual planting. Figures have been adjusted to take account of duplicate applications<sup>100</sup>.

	Approval applications	applications for payment post planting	Total No. Of ha's applied for but not planted
YEAR	Ha's	Ha's	Ha's
2010	16,603	8,314	8,289
2011	9,830	6,653	3,177
2012	12,606	6,652	5,954
2013	13,977	6,252	7,725

As this table shows there is a significant area for which land owners seeks planting approval but for one reason or another decide not to follow through. On the basis of 2013 figures the increase in premiums would need to attract 50% of the landowners who decided not to plant in order to reach the 10,000ha target.

This analysis ignores the potential increase in non-farmer planting levels that the single premium rate could introduce. Potential applicants include those land owners who may have inherited the land but are not farming. The breakdown of private lands afforested between 1980 and 2013 shows that 85% of the forest owners are classified as farmers, which equates to 83% of the area afforested in this time period. Farmers and Non-Farmer investors were planting, on average, equal areas of forest parcels between them throughout the 80s and up to the early 90s. A feature of this period was a higher average forest parcel size planted by non-farmer investors (15 ha), compared to an average of 5.2 ha over the same period for farmers.

An increase in the premium rate of 160% to bring it in line with the farmer rate will have the dual effect of increasing the number of applications submitted for planting and a larger average area for these applications. This projected outcome is in line with the programmes objectives to increase the average planted area as well as increasing planting levels overall.

<sup>100</sup> refusals to plant on the basis of environmental issues are not significant in the context of this exercise

It is anticipated that the percentage level of non farmer participation in the afforestation scheme will rise over 6% to 15% which the average level reached during the period 1980-2013. The overall budget will not increase beyond that already indicated (£1.2m per annum) as the only increase in expenditure is in relation to the 6% non farmer rate which is converted to a farmer rate equivalent. In other words planting with farmer rates of funding is being replaced with the same rate of funding even though the planting is being done by a farmer so there is no net increase.

#### *11.8.2 Availability of alternative sources of finance*

Based on the specific nature of the Forestry Development Programme there are very limited alternative sources of finance available to promote afforestation activities. In principle it might be possible to leverage private sector finance to invest in carbon sequestration (to offset corporate emissions or provide other service e.g. biodiversity offset, improved water quality etc.) through payment for ecosystem services. However, these concepts are not developed and there is no accreditation system which allows this to happen.

One possible model that could be used to advance alternative sources of funding is the Woodland carbon code which is operated by the Forestry Commission in the UK. This is a support framework which is put in place to encourage individuals and businesses to plant forests to help society soak up the carbon it emits but who want reassurance as to the level of carbon savings that their forest investments can claim. Forests subscribing to this code must do the following;

- register their project, stating the exact location and long-term objectives of their project;
- meet national forestry standards to ensure they are sustainably and responsibly managed;
- have a long-term management plan;
- use standard methods for estimating the carbon that will be sequestered;
- demonstrate that the project delivers additional carbon benefits than would otherwise have been the case.
- maintain verification for the duration of the project.

While this mechanism provides the reassurance needed the question is would corporate entities be interested in funding the establishment of forests themselves and why would they if grants and premiums were available for non carbon forests. Clearly this idea needs further development nevertheless this approach and others are worth progressing further.

Other forms of support are less suitable for forestry such as

- **Repayable Assistance** – these are best suited to projects which have the potential to generate income or savings and which can pay back in whole or part the resources invested; and
- **Financial Instruments** –they provide support for investments by way of loans, guarantees, equity and other risk-bearing mechanisms including policy-based guarantees for the European Social Fund (ESF), possibly combined with interest rate subsidies or guarantee fee subsidies within the same operation. Advantages include the ability to recycle funds over the long term and the ability to mobilise additional public or private

co-investments in order to address market failures (in line with Europe 2020 and cohesion policy priorities). Particular skills and expertise is required to deliver these. The instruments provide a variety of incentives to better performance, including greater financial discipline at the level of supported projects.<sup>101</sup> Therefore, financial instruments are more appropriate than grants to finance projects<sup>102</sup>

- which generate income or savings and which can pay back the whole or part of the resources invested;
- which results in availability of revolving resources for successive cycles of investment, leveraging of additional private capital

While the Department believes that non repayable grants and premiums is the appropriate form of support for the new programme there is a need to develop any opportunities that might exist for institutional investment. Therefore, in line with the vision for Irish forestry as set out in the policy review document, the Forest Service will work closely with NewERA over the course the programme to explore institutional, industry and private funding/investment opportunities for afforestation. The possibility exists therefore that during the course of the new programme some other vehicle for funding afforestation could be introduced which doesn't involve 100% funding from the state.

### *11.8.3 Ability of DAFM to deliver on the objectives set out under the forestry programme*

The Forestry Division of the Department of Agriculture Food and the Marine will be responsible for spending the budget allocated to the new forestry programme. This Division is in a position to effectively and efficiently spend its allocation as evidenced by;

- A successful track record for implementing previous successful programmes involving similar schemes and budgets;
- The staff resources available to implement the programme which includes 79 Administrative staff and 31 Forestry Inspectors;
- An IT system, IForIS that is fit for purpose and adaptable to new schemes and rules

## **Appendix 1**

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<sup>101</sup> Adapted from :

[http://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/financial\\_instruments\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/financial_instruments_en.pdf)

<sup>102</sup> Adapted from: <http://www.dgfc.sggp.meh.es/sitios/dgfc/es->

[ES/ipr/fcp1420/c/ac/oac/Documents/2\\_Pinhoiro\\_FIs\\_in\\_Cohesion\\_Policy\\_2014-2020.pdf](ES/ipr/fcp1420/c/ac/oac/Documents/2_Pinhoiro_FIs_in_Cohesion_Policy_2014-2020.pdf)

# Legal and Regulatory Framework relevant to Irish Forestry

The following lists relevant Irish and EU legislation, together with the various international protocols which have a bearing on forest practice and operation in Ireland.

## *Primary legislation*

- Forestry Act 1946
- Forestry Act 1988
- Local Government (Water Pollution) Acts 1977 to 2007Environmental Protection Agency Act 1992
- National Monuments Acts 1930 to 2004
- Wildlife Acts 1976 and 2000
- Roads Act 1993
- Occupiers Liability Act 1995
- Waste Management Act 1996
- Litter Pollution Act 1997
- Planning and Development Acts 2000 to 2011
- Environment (Miscellaneous Provisions) Act 2011

## *Secondary legislation*

- Forestry 1946 (Part IV) Regulations 1949 (S.I. No. 67 of 1949)
- European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009),
- European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No 558 of 2010), as amended
- European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No 125 of 2012)
- Safety, Health and Welfare at Work (Construction) Regulations 2006 (S.I. No. 504 of 2006)
- Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007)
- Planning and Development Regulations 2001 (S.I. No. 600 of 2001), as amended
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)
- European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004), as amended

### *EU legislation*

- Council Directive 66/404/EEC on the marketing of forest reproductive material
- Council Directive 71/161/EEC on external quality standards for forest reproductive material marketed within the Community
- Council Directive 77/93/EEC on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community
- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora
- Council Directive 1999/105/EC on the marketing of forest reproductive material
- Directive 2000/60/EC establishing a framework for Community action in the field of water policy
- Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment
- Directive 2003/4/EC on public access to environmental information
- Directive 2003/35/EC providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment
- Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community
- Directive 2009/147/EC on the conservation of wild birds
- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

<b>Basic Measure</b>	<b>Transposing Legislation in Irish Law</b>	<b>Relevant to forests and forestry activities</b>	<b>Relevant Forest Service Work Area</b>
Environmental Impact Directive (85/337/EEC)	European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No.558/2010)	Yes	1. Consent for afforestation and forest road construction 4. NATURA 2000 sites and Screening for Appropriate Assessment 7. Afforestation on unenclosed / unimproved land 5. Forestry and Freshwater Pearl Mussel 8. Acid Sensitivity Protocol and Afforestation 9. Fisheries Sensitive Areas 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences
Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (2006/11/EC)	European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No.125/2012)	Yes	3. Aerial Fertilisation 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences
	The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. No. 296/2009)	Yes	5. Forestry and Freshwater Pearl Mussel 4. NATURA 2000 sites and Screening for Appropriate Assessment 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences 10. The use of woodlands and forests to proactively promote WFD objectives

<b>Basic Measure (continued)</b>	<b>Transposing Legislation in Irish Law</b>	<b>Relevant to forests and forestry activities</b>	<b>Relevant Forest Service Work Area</b>
	Forestry Act, 1946	Yes	2. Forestry Act 1946 4. NATURA 2000 sites and Screening for Appropriate Assessment 9. Fisheries Sensitive Areas 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences 15. Coillte GFL
Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC), as codified under 2009/147/EC	European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No.477/2011)	Yes	4. NATURA 2000 sites and Screening for Appropriate Assessment 5. Forestry and Freshwater Pearl Mussel 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences 10. The use of woodlands and forests to proactively promote WFD objectives 15. Coillte GFL
The Drinking Water Directive (80/778/EEC) as amended by Directive 98/83/EC	Drinking Water Regulations (S.I. No. 278/2007)	Yes	12. iFORIS



<b>Basic Measure (continued)</b>	<b>Transposing Legislation in Irish Law</b>	<b>Relevant to forests and forestry activities</b>	<b>Relevant Forest Service Work Area</b>
The Sewage Sludge Directive (86/278/EEC)	Waste management (Use of Sewage Sludge in Agriculture) Regulations (S.I. No. 183 of 1991, S.I. No.148 of 1998 and S.I. No.267/2001)	No (*)	(* The document entitled <i>Programme of Measures and Standards for Forest and Water</i> (November 2008) states that this Basic Measure applies “Where sewage sludge may be used as a fertiliser source for forestry (e.g. coppice willow.)” The application of sewage sludge to forests is not practised. The BioEnergy Scheme, which may potentially involve the application of municipal wastewater and sludge to willow coppice, is operated by the Biofuels Policy Unit of the Department of Agriculture, Food & the Marine.
EU Regulation 1107/2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides	European Communities (Plant Protection Products) Regulations 2012 S.I. 159/2012)  European Communities (Sustainable Use of Pesticides) Regulations 2012 (S.I. 155/2012)	Yes	17. The use of pesticides in forestry 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences

<b>Other Basic Measures</b>	<b>Transposing Legislation in Irish Law</b>	<b>Relevant to forests and forestry activities</b>	<b>Relevant Forest Service Work Area</b>
Measures taken to protect drinking water sources	Groundwater and surface water bodies that are used, or may be used in the future, as a source of drinking water for 50 persons or more, or where the rate of abstraction is more than 10 m <sup>3</sup> per day	Yes	12. iFORIS
Controls on point source and diffuse source discharges with an impact on the status of water	European Communities (Aerial fertilisation) (Forestry) Regulations 2012 (S.I. No.125/2012)	Yes	3. Aerial Fertilisation 1. Consent for afforestation and forest road construction 12. iFORIS 13. Inspection regime 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences
Measures to deal with priority substances	33 priority substances and 8 other pollutants. Eliminate and phase out priority hazardous substances. Regulations are expected to be made in early 2008	Yes	17. The use of pesticides in forestry 14. Forest Service Guidelines and other conditions attached to consent, grant approvals and licences

## Appendix 2

### Analysis of Options

#### Option A

#### *Objectives*

Scheme	2014	2015	2016	2017	2018	2019	2020
Afforestation, ha	6,650	6,650	6,650	6,650	6,650	6,650	6,650
of which afforestation	6,200	6,200	6,200	6,200	6,200	6,200	6,200
of Which NWS establishment	450	450	450	450	450	450	450
of which Agro-forestry	0	0	0	0	0	0	0
of which Biomass	0	0	0	0	0	0	0
Forest Roads (m)	130,000	130,000	130,000	130,000	130,000	130,000	130,000
First Thinning, ha	0	0	0	0	0	0	0
Thinning and tending	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Reconstitution, ha	200	200	200	200	200	200	200
Native Woodland (Conservation), ha	30	30	30	30	30	30	30
Neighbourwood Scheme, no. of projects	15	15	15	15	15	15	15
Early Adoptors, no. of projects	-	-	-	-	-	-	-
Protection of Genetic Resources, ha	-	-	-	-	-	-	-
Forest management plans, number of plans	-	-	-	-	-	-	-

#### *Costs\**

	2014	2015	2016	2017	2018	2019	2020
Afforestation premium, 1994 - 2013	€ 67,474,397	€ 62,738,762	€ 57,141,191	€ 52,363,706	€ 48,385,252	€ 41,674,551	€ 36,179,693
FEPS Premiums, 1994 - 2013	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829
Native Woodland Est 1994 - 2013	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 499,596
Afforestation Grants, >2014	€ 23,634,400	€ 23,634,400	€ 23,634,400	€ 23,634,400	€ 23,634,400	€ 23,634,400	€ 23,634,400
Afforestation Premiums >2014	€ 2,641,200	€ 5,282,400	€ 7,923,600	€ 10,564,800	€ 13,206,000	€ 15,847,200	€ 18,488,400
NWS, (establishment), Grant	€ 2,475,000	€ 2,480,500	€ 2,486,000	€ 2,491,500	€ 2,497,000	€ 2,502,500	€ 2,508,000
NWS, (establishment), Premium	€ 231,750	€ 232,265	€ 232,780	€ 233,295	€ 233,810	€ 234,325	€ 234,840
Agro Forestry, Grant	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Agro Forestry, Premium	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Forestry Biomass Grants	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Forestry Biomass premiums	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Roads	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000
First Thinning	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Thinning and Tending	€ 900,000	€ 900,000	€ 900,000	€ 900,000	€ 900,000	€ 900,000	€ 900,000
Reconstitution	€ 762,200	€ 762,200	€ 762,200	€ 762,200	€ 762,200	€ 762,200	€ 762,200
NWS (Cons) Grants >2013	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100
NWS (Cons) Premium >2013	€ 15,450	€ 15,450	€ 15,450	€ 15,450	€ 15,450	€ 15,450	€ 15,450
Neighbourwood Scheme	€ 480,000	€ 480,000	€ 480,000	€ 480,000	€ 480,000	€ 480,000	€ 480,000
New Technology, early adoptors	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Protection of Genetic Resources	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Forest Management Plans	€ -	€ -	€ -	€ -	€ -	€ -	€ -
Training	€ 200,000	€ 200,000	€ 200,000	€ 200,000	€ 200,000	€ 200,000	€ 200,000
Publicity & Awareness	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000
Other	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000
<b>Total</b>	<b>€ 111,228,377</b>	<b>€ 109,139,958</b>	<b>€ 106,189,603</b>	<b>€ 104,059,334</b>	<b>€ 102,728,096</b>	<b>€ 98,664,611</b>	<b>€ 95,815,527</b>

\*Shaded rows are commitments from previous planting

## Option B

### Objectives

Scheme	2014	2015	2016	2017	2018	2019	2020
Afforestation, ha	6,650	6,650	6,650	6,650	6,650	6,650	6,650
of which afforestation	6,200	6,200	6,200	6,200	6,200	6,200	6,200
of which NWS establishment	450	450	450	450	450	450	450
of which Agro-forestry	0	0	0	0	0	0	0
of which Biomass	0	0	0	0	0	0	0
Forest Roads (m)	130,000	130,000	130,000	130,000	130,000	130,000	130,000
First Thinning, ha	0	0	0	0	0	0	0
Thinning and tending	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Reconstitution, ha	200	200	200	200	200	200	200
Native Woodland (Conservation), ha	30	30	30	30	30	30	30
Neighbourwood Scheme, no. of projects	15	15	15	15	15	15	15
Early Adoptors , no. of projects	-	-	-	-	-	-	-
Protection of Genetic Resources, ha	-	-	-	-	-	-	-
Forest management plans, number of plans	-	-	-	-	-	-	-

### Costs

	2015	2016	2017	2018	2019	2020
Afforestation premium, 1994 - 2013	€ 62,738,762	€ 57,141,191	€ 52,363,706	€ 48,385,252	€ 41,674,551	€ 36,179,693
FEPS Premiums, 1994 - 2013	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829
Native Woodland Est 1994 - 2013	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 499,596
Afforestation Grants, >2014	€ 24,118,000	€ 24,118,000	€ 24,118,000	€ 24,118,000	€ 24,118,000	€ 24,118,000
Afforestation Premiums >2014	€ 5,635,800	€ 8,630,400	€ 11,625,000	€ 14,619,600	€ 17,614,200	€ 20,608,800
NWS, (establishment), Grant	€ 2,475,000	€ 2,475,000	€ 2,475,000	€ 2,475,000	€ 2,475,000	€ 2,475,000
NWS, (establishment), Premium	€ 252,000	€ 252,000	€ 252,000	€ 252,000	€ 252,000	€ 252,000
Agro Forestry, Grant	€ -	€ -	€ -	€ -	€ -	€ -
Agro Forestry, Premium	€ -	€ -	€ -	€ -	€ -	€ -
Forestry Biomass Grants	€ -	€ -	€ -	€ -	€ -	€ -
Forestry Biomass premiums	€ -	€ -	€ -	€ -	€ -	€ -
Roads	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000	€ 4,550,000
First Thinning	€ -	€ -	€ -	€ -	€ -	€ -
Thinning and Tending	€ 900,000	€ 900,000	€ 900,000	€ 900,000	€ 900,000	€ 900,000
Reconstitution	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000
NWS (Cons) Grants >2013	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100
NWS (Cons) Premium >2013	€ 16,800	€ 16,800	€ 16,800	€ 16,800	€ 16,800	€ 16,800
Neighbourwood Scheme	€ 750,000	€ 750,000	€ 750,000	€ 750,000	€ 750,000	€ 750,000
New Technology, early adoptors	€ -	€ -	€ -	€ -	€ -	€ -
Protection of Genetic Resources	€ -	€ -	€ -	€ -	€ -	€ -
Forest Management Plans	€ -	€ -	€ -	€ -	€ -	€ -
Training	€ 200,000	€ 200,000	€ 200,000	€ 200,000	€ 200,000	€ 200,000
Publicity & Awareness	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000
Other	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000
<b>Total</b>	<b>€ 110,276,328</b>	<b>€ 107,673,357</b>	<b>€ 105,890,472</b>	<b>€ 104,906,618</b>	<b>€ 101,190,517</b>	<b>€ 98,688,817</b>

## Option C (9,000ha)

### Objectives

Scheme	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation, ha	6,310	7,020	7,500	7,740	8,475	9,000	46,045
<i>of which afforestation</i>	<i>5,700</i>	<i>6,300</i>	<i>6,475</i>	<i>6,700</i>	<i>6,325</i>	<i>7,450</i>	<i>39,550</i>
<i>of which NWS establishment</i>	<i>500</i>	<i>500</i>	<i>500</i>	<i>500</i>	<i>500</i>	<i>500</i>	<i>3,000</i>
<i>of which Agro-forestry</i>	<i>10</i>	<i>20</i>	<i>25</i>	<i>40</i>	<i>50</i>	<i>50</i>	<i>195</i>
<i>of which Biomass</i>	<i>100</i>	<i>200</i>	<i>500</i>	<i>500</i>	<i>1,000</i>	<i>1,000</i>	<i>3,300</i>
Forest Roads (m)	150,000	150,000	150,000	150,000	180,000	180,000	960,000
<i>Special construction works (no. applications)</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>600</i>
Thinning and tending	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Reconstitution, ha	200	200	200	200	200	200	1,200
Native Woodland (Conservation), ha	30	30	30	30	30	30	180
Neighbourwood Scheme, no. of projects	10	10	10	10	10	10	60
Investment in Forestry Technology	30	30	30	30	30	30	180
Forest Genetic Reproductive Material, ha	350	350	350	350	350	350	2,100
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000

### Costs

	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation premium, 1994 - 2013	€ 62,738,762	€ 57,141,191	€ 52,363,706	€ 48,385,252	€ 41,674,551	€ 36,179,693	€ 298,483,156
FEPS Premiums, 1994 - 2013	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 36,400,972
Native Woodland Est 1994 - 2013	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 499,596	€ 3,004,783
Afforestation Grants, >2014	€ 22,173,000	€ 24,507,000	€ 25,187,750	€ 26,063,000	€ 26,938,250	€ 28,980,500	€ 153,849,500
Afforestation Premiums >2014	€ 5,394,300	€ 8,437,200	€ 11,564,625	€ 14,800,725	€ 18,145,500	€ 21,743,850	€ 80,086,200
NWS, (establishment), Grant	€ 2,750,000	€ 2,750,000	€ 2,750,000	€ 2,750,000	€ 2,750,000	€ 2,750,000	€ 16,500,000
NWS, (establishment), Premium	€ 280,000	€ 280,000	€ 280,000	€ 280,000	€ 280,000	€ 280,000	€ 1,680,000
Agro Forestry, Grant	€ 42,600	€ 85,200	€ 106,500	€ 170,400	€ 213,000	€ 213,000	€ 830,700
Agro Forestry, Premium	€ 2,500	€ 7,500	€ 13,750	€ 23,750	€ 33,750	€ 46,250	€ 127,500
Forestry Biomass Grants	€ 245,000.00	€ 490,000.00	€ 1,225,000.00	€ 1,225,000.00	€ 2,450,000.00	€ 2,450,000.00	€ 8,085,000
Forestry Biomass premiums	€ 15,000.00	€ 30,000.00	€ 75,000.00	€ 75,000.00	€ 150,000.00	€ 150,000.00	€ 495,000
Roads	€ 5,250,000	€ 5,250,000	€ 5,250,000	€ 5,250,000	€ 6,300,000	€ 6,300,000	€ 33,600,000
<i>Special Construction works</i>	<i>€ 500,000</i>	<i>€ 500,000</i>	<i>€ 500,000</i>	<i>€ 500,000</i>	<i>€ 500,000</i>	<i>€ 500,000</i>	<i>€ 3,000,000</i>
Thinning and Tending	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 6,750,000
Reconstitution	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 4,668,000
NWS (Cons) Grants >2013	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 194,100	€ 1,164,600
NWS (Cons) Premium >2013	€ 16,800	€ 16,800	€ 16,800	€ 16,800	€ 16,800	€ 16,800	€ 100,800
Neighbourwood Scheme	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
New Technology, early adoptors	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 1,440,000
Protection of Genetic Resources	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 420,000
Forest Management Plans	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Training and KTG's	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 600,000
Advisory and Promotion Services (Teagasc)	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 3,600,000
Advisory and Promotion Services (Other)	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 600,000
Other (forest sector development, technical support)	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 4,200,000
Total	€ 110,882,928	€ 110,969,857	€ 110,808,097	€ 111,014,893	€ 110,926,817	€ 111,083,617	€ 665,686,210

## Option D (10,000ha)

### Objectives

Scheme	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation, ha	8,370	9,520	9,625	9,965	10,000	10,000	57,480
of which afforestation	7,800	8,900	8,900	8,900	8,425	8,425	51,350
of which NWS establishment	500	500	500	525	525	525	3,075
of which Agro-forestry	20	20	25	40	50	50	205
of which forestry for Fibre	50	100	200	500	1,000	1,000	2,850
Forest Roads (m)	180,000	180,000	180,000	180,000	180,000	180,000	1,080,000
Special construction works (no. applications)	100	100	100	100	100	100	600
Thinning and tending	1,500	1,500	1,500	1,500	1,500	1,500	9,000
Reconstitution, ha	200	200	200	200	200	200	600
Native Woodland (Conservation), ha	60	60	60	60	60	60	360
Neighbourwood Scheme, no. of projects	10	10	10	10	10	10	60
Investment in Innovative Forestry Technology	30	30	30	30	30	30	180
Forest Genetic Reproductive Material, ha	350	350	350	350	350	350	2,100
Forest management plans, number of plans	1,000	1,000	1,000	1,000	1,000	1,000	6,000

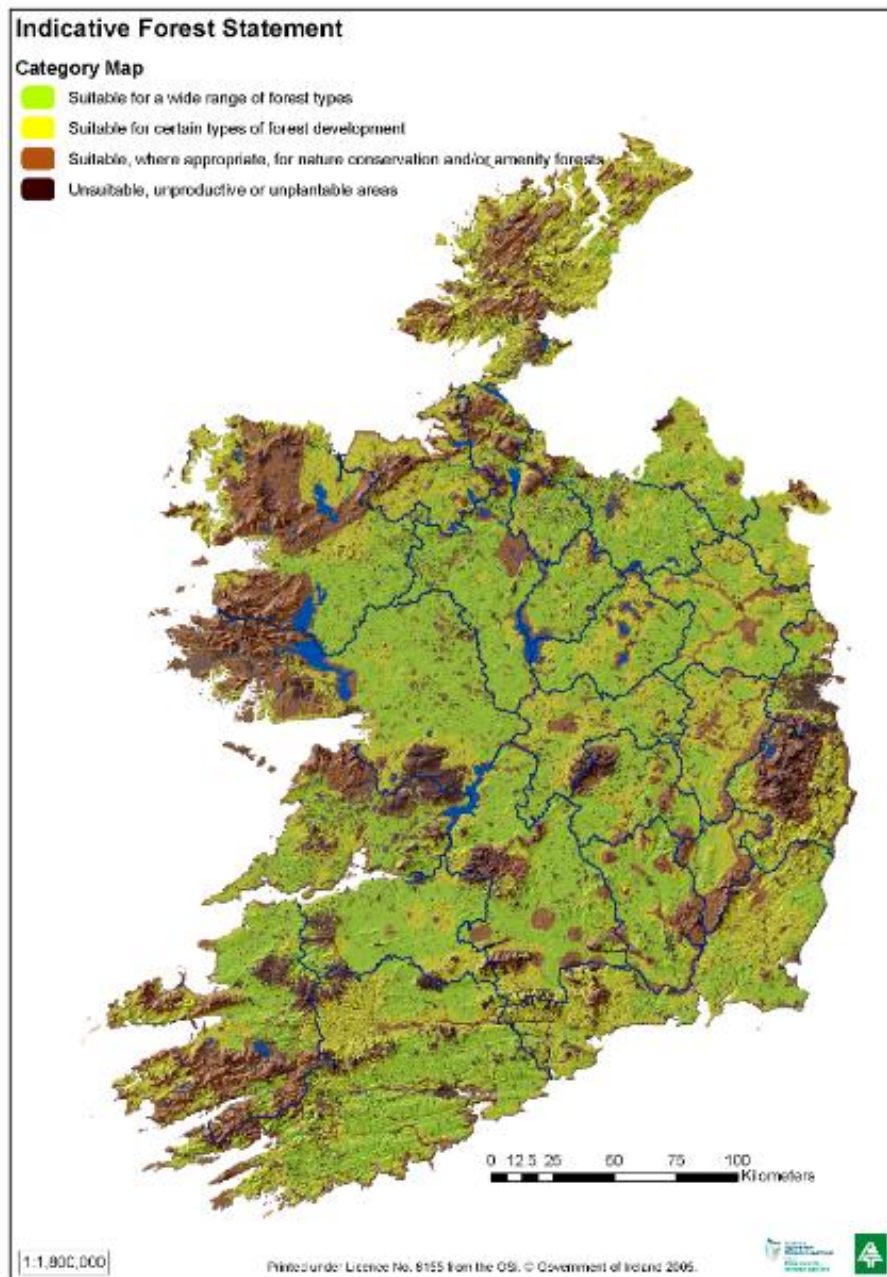
### Costs

	2015	2016	2017	2018	2019	2020	TOTAL
Afforestation premium, 1994 - 2013	€ 62,738,762	€ 57,141,191	€ 52,363,706	€ 48,385,252	€ 41,674,551	€ 36,179,693	€ 298,483,156
FEPS Premiums, 1994 - 2013	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 6,066,829	€ 36,400,972
Native Woodland Est 1994 - 2013	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 501,037	€ 499,596	€ 3,004,783
Afforestation Grants, >2014	€ 30,342,000	€ 34,621,000	€ 34,621,000	€ 34,621,000	€ 32,773,250	€ 32,773,250	€ 199,751,500
Afforestation Premiums >2014	€ 6,408,600	€ 10,707,300	€ 15,006,000	€ 19,304,700	€ 23,373,975	€ 27,443,250	€ 102,243,825
NWS, (establishment), Grant	€ 2,750,000	€ 2,750,000	€ 2,750,000	€ 2,887,500	€ 2,887,500	€ 2,887,500	€ 16,912,500
NWS, (establishment), Premiun	€ 280,000	€ 280,000	€ 280,000	€ 294,000	€ 294,000	€ 294,000	€ 1,722,000
Agro Forestry, Grant	€ 85,200	€ 85,200	€ 106,500	€ 170,400	€ 213,000	€ 213,000	€ 873,300
Agro Forestry, Premium	€ 5,000	€ 10,000	€ 16,250	€ 26,250	€ 33,750	€ 46,250	€ 137,500
Forestry for Fibre Grants	€ 122,500.00	€ 245,000.00	€ 490,000.00	€ 1,225,000.00	€ 2,450,000.00	€ 2,450,000.00	€ 6,982,500
Forestry for Fibre premiums	€ 7,500.00	€ 15,000.00	€ 30,000.00	€ 75,000.00	€ 150,000.00	€ 150,000.00	€ 427,500
Roads	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 6,300,000	€ 37,800,000
Special Construction works	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Thinning and Tending	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 1,125,000	€ 6,750,000
Reconstitution	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 778,000	€ 4,668,000
NWS (Cons) Grants >2013	€ 388,200	€ 388,200	€ 388,200	€ 388,200	€ 388,200	€ 388,200	€ 2,329,200
NWS (Cons) Premium >2013	€ 33,600	€ 33,600	€ 33,600	€ 33,600	€ 33,600	€ 33,600	€ 201,600
Neighbourwood Scheme	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Investment in Innovative Forestry Technology	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 240,000	€ 1,440,000
Protection of Genetic Resources	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 70,000	€ 420,000
Forest Management Plans	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 500,000	€ 3,000,000
Training and KTG's	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 600,000
Advisory and Promotion Services (Teagasc)	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 600,000	€ 3,600,000
Advisory and Promotion Services (Other)	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 100,000	€ 600,000
Other (forest sector development, technical support)	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 700,000	€ 4,200,000
Total	€ 121,242,228	€ 124,357,357	€ 124,166,122	€ 125,491,768	€ 122,352,692	€ 120,938,167	€ 738,548,335



### Appendix 3

#### IFS map identifying areas suitable for forestry





## Appendix 4

### ENVIRONMENTAL PROTECTION AND CONSULTATION CONTROLS PROCESS

	Environmental Consideration	Afforestation Scheme		Referral for Other Schemes	
		Referral Body	Maximum Referral Period	Roads	Woodland Improvement Scheme
1.	<b>Water Quality</b>				
1.1	Is the area designated potentially acid sensitive by the Forest Service?	Subject to protocol which specifies consultation with the EPA in specified cases.		N/A	N/A
1.2	Is the area > 5 ha and sensitive for fisheries?	Regional Fisheries Board	4 weeks	4 weeks	N/A
1.3	Is the area non-sensitive for fisheries and > 40 ha?	Regional Fisheries Board	4 weeks	N/A	N/A
1.4	Is the area >10 ha and within a catchment area of a Local Authority designated water scheme?	Local Authority	4 weeks	N/A	N/A
2.	<b>Designated Habitats</b>				
2.1	<b>Is the area within a pNHA, NHA, cSAC, SAC, pSPA, SPA or National Park?</b>	NPWS, An Taisce	2 months	2 months	N/A
2.2	Is the area within 3 km upstream of a pNHA, NHA, cSAC, SAC, pSPA, SPA or National Park?	NPWS	2 months	2 months	N/A
2.3	Does the area contain a current REPS plan habitat?	Dept. of Agriculture, Fisheries & Food	4 weeks	N/A	N/A
3.	<b>Archaeology</b>				
3.1	<b>Does the area contain an archaeological site or feature with intensive public usage?</b>	NPWS, An Taisce	2 months	2 months	N/A
3.2	Does the area contain or adjoin a listed archaeological site or monument?	NPWS	2 months	2 months	N/A
4.	<b>Landscape</b>				
4.1	<b>Is the area within a prime scenic area in the County Development Plan ?</b>	Local Authority, Fáilte Ireland, An Taisce	4 weeks	4 weeks (Local Authority)	N/A
4.2	Area there any other high Amenity Landscape considerations?	Local Authority	4 weeks	N/A	N/A
5.	<b>Size for Notification to Local Authority</b>				
5.1	Is the area greater than 25 ha?	Local Authority	4 weeks	N/A	N/A
6.	<b>Other Environmental Considerations</b>				
6.1	Specify	As necessary	4 weeks where necessary	4 weeks where necessary	N/A

**Note:** If present, all environmental considerations listed above may require the Forest Service to consult with prescribed bodies. Environmental considerations in **bold type** may require the Forest Service to undertake public consultation.