ENVIRONMENTAL REPORT ON THE FOREST POLICY REVIEW
Chapter I

Contents, main objectives of *Forests, products and people* and its relationship with other relevant plans and programmes

Background to the forest policy review: *Forests, products and people - Ireland’s forest policy – a renewed vision*

In October 2009, the government published its *Renewed Programme for Government*, which contained a number of references to forest policy, including a commitment to increase annual planting to 10,000 ha from the prevailing rate of 6-7,000 ha. It also committed to review State forestry policy to take account of its critical role in relation to climate change and its importance to construction, bio-energy, bio-diversity and its potential to deliver long-term employment in other downstream industries e.g. eco-tourism, furniture, crafts etc. In effect the review covers most of the ecosystem services\(^1\) that forests provide.

In April 2010 the Department of Agriculture, Fisheries and Food (DAFF), now the Department of Agriculture, Food and the Marine (DAFM), established a Forest Policy Review Group (FPRG) which was comprised of representatives from the forest sector: Irish Timber Growers Association (ITGA), Coillte (The Irish Forestry Board), forest companies, the National Council for Forest Research and Development (COFORD), the Irish Forestry and Forest Products Association (IFFPA), the Society of Irish Foresters (SIF), Teagasc, the Irish Farmers Association (IFA) and Crann, from the environment sector: Environmental Pillar of Social Partnership/An Taisce, and from government departments and bodies: the Department of Environment, Heritage and Local Government (DEHLG), the Department of Finance, DAFM and the Sustainable Energy Authority of Ireland (SEAI).

The Terms of Reference (ToR) of the FPRG were to review and update national forest policy goals with reference to:

1. The level of afforestation, taking into account its contribution to rural development and employment generation, the funding of the afforestation programme, and the provision of public goods and services, including climate change mitigation;

2. Species composition and structure of the forest estate, taking into account sustainability and competitiveness in wood supply, and the conservation of indigenous biodiversity and tree species;

3. Future roundwood supply and demand and
   1. Its ability to meet national bio-energy targets;
   2. Its ability to meet raw material demand for wood product manufacture (including locally based enterprises); and
   3. Investment in forest roads and other infrastructure to mobilise the supply.

4. Research and development, and innovation in the forestry sector; and

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\(^1\) As defined by the Millennium Ecosystem Assessment, ecosystem services include supporting, provisioning (including wood fibre), regulating and cultural services.
5. Standards, guidelines and monitoring.

**Key aspects of the Terms of Reference from an environmental perspective**

The key aspects of the terms of reference in relation to the environment were:

1. the level(s) of afforestation and interactions with habitats and the provision of public goods and services,
2. species composition and structure of the forest estate and especially the conservation of indigenous biodiversity and tree species,
3. ongoing management of the forest resource to ensure compliance with the principles of sustainable forest management (SFM).

Future roundwood supply and associated harvesting levels will also impact on the environment. The level of research on and awareness of environmental issues is also an important aspect of the terms of reference.

**Policy formulation process**

The policy formulation process consisted of five main elements:

1. An open call for submissions to the policy review (see Appendix 7 in *Forests, Products and People*)
2. Reports from the two interdepartmental groups examining Coillte and the funding for afforestation;
3. Workshops where the revised policy and supporting actions were formulated; and
4. Meetings where the main topics being addressed by policy were discussed and where the final policy document was developed and agreed.
5. Invited presentations by sector experts on specific topics under discussion by the FPRG

The FPRG met on 15 occasions and was supported by a series of presentations and working documents prepared by members of the review group and others. It concluded its work in April 2012.

The report from the Forest Policy Review Group is entitled *Forests, Products and People - Ireland’s forest policy – a renewed vision*, the draft of which is also provided for public comment.

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2 The report of the interdepartmental group reviewing Coillte was not made available to the FPRG. The report on funding for afforestation was made available to the FPRG on 27 March 2012 which was subsequent to the group’s final draft of the policy review.
Contents
The contents of *Forests, Products and People* are outlined below:

SUMMARY
FORESTRY FOR A NEW DECADE AND MAIN RECOMMENDATIONS
IRISH FORESTRY TODAY
    FOREST SECTOR
    FOREST POLICY
    REVIEW OF GROWING FOR THE FUTURE
EXPANSION OF THE FOREST RESOURCE AREA
MANAGEMENT OF THE RESOURCE
ENVIRONMENT AND PUBLIC GOODS
SUPPLY CHAIN
WOOD PROCESSING AND WOOD-BASED PANELS SECTOR
FOREST PROTECTION AND HEALTH
SUPPORT – EDUCATION, TRAINING AND RESEARCH
QUALITY, STANDARDS AND CERTIFICATION
POLICY IMPLEMENTATION AND REVIEW
COST APPRAISAL AND FUNDING
LEGISLATION
INSTITUTIONAL ARRANGEMENTS
The chapters above are comprised of: current features; policy considerations; policy statement and strategic actions.

COILLTE
This chapter comprises current features and strategic observations.

Appendices
1. Food harvest 2020 – forestry recommendations
   RESTORING COMPETITIVENESS
   ENVIRONMENTAL ISSUES
   RESEARCH AND DEVELOPMENT
2. Forestry cost benefit analysis
3. Policy formulation process
   BACKGROUND
   POLICY REVIEW GROUP
   POLICY FORMULATION PROCESS
4. International markets + trends
5. Impact of afforestation levels on future timber supply
   INTRODUCTION
   AFFORESTATION SCENARIOS
   RESULTS
   REDUCING THE TROUGH AND STABILISING FUTURE SUPPLY
Main objective and related environmental issues

The main objective of forest policy outlined in *Forests, Products and People* is:

To develop an internationally competitive and sustainable forest sector that provides a full range of economic, environmental and social benefits to society.

Environmental issues

Environmental issues that arise from the policy recommendations in *Forests, Products and People* include:

- biodiversity,
- human health,
- fauna,
- flora,
- soil,
- water,
- climatic factors,
- cultural heritage (archaeological heritage),
- landscape and
- the interaction of these factors.

Environmental issues in this context issues fall into two main categories: drivers of forest policy in their own right (such as climate change mitigation and adaptation, expansion of native woodland, provision of forest recreation space), and those arising from forest expansion and increased levels of harvesting, such as potential impacts on habitats, water quality and biodiversity. *Forests, Products and People* addresses both sets of issues through a series of recommendations. There are of course interrelationships between the two categories, for example expansion of native woodland can address habitat issues around afforestation in certain cases.

This report deals with the issues using the general information requirements set out in Article 5 of the Strategic Environmental Assessment Directive and the associated Annex I. As far as possible the information provided under the topic headings is stand-alone, although some overlap does occur, given the close relation of some of the information categories.
Sub-objectives are outlined below, together with corresponding environmental issues and drivers. A number of measures are already in place to address issues such as protection of habitats and flora and fauna and these are outlined further in the report. Monitoring is outlined in Chapter VIII.

<table>
<thead>
<tr>
<th>Sub-objective</th>
<th>Environmental issues and drivers</th>
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<tbody>
<tr>
<td><strong>1. Expansion of the Forest Resource</strong> - 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 m$^3$ per annum.</td>
<td>Biodiversity and habitat impacts including fauna and flora, expansion of native woodland, expansion of forest recreation space, soil and water impacts and ameliorative aspects of forest cover expansion, climate change mitigation and adaptation, protection of archaeological heritage</td>
</tr>
<tr>
<td><strong>2. Management of the Resource</strong> - 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.</td>
<td>Need for adherence to principle of sustainable forest management and to develop systems that support its implementation, such as forest management planning. Sustained provision of public goods, including biodiversity conservation and enhancement, water quality, climate change mitigation and public recreation. Support for the research into and the more widespread use of low impact silvicultural systems (LISS)</td>
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<td><strong>3. Environment and Public Goods</strong> - 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.</td>
<td>Compliance with international and national legislation, as well as guidelines and practice procedures, with the objective of sustaining and increasing the level and quality of public goods provision.</td>
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<td><strong>4. Supply Chain</strong> - To develop an efficient and environmentally responsible supply chain, compatible with forecast volumes, which will enhance the competitiveness of the processing sector and increase its wood paying capacity to forest owners.</td>
<td>Guidelines for forest harvesting and transport of roundwood for good environmental practice including guidance on forest road construction, upgrading and maintenance</td>
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<td><strong>5. Wood Processing</strong> - To support the development of an innovative, value-added and market focused sector which provides sustainable solutions to a diverse portfolio of users in the construction, lifestyle, energy, furniture and related markets.</td>
<td>Potential for increased impact through increase in capacity and or change of processes</td>
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<td><strong>6. Forest Protection and Health</strong> - To maintain a healthy forest environment through sustainable forest management, early detection and control measures for pests and diseases</td>
<td>Protection of biodiversity, control of alien and damaging species</td>
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<td>7. <strong>Education Training and Research</strong> - To ensure the availability of suitable programmes of education and training across the sector and research programmes targeted at identified needs.</td>
<td>Research on forest soils and water and biogeochemical cycling in support of sustainable forest management, research and assessment of forest genetic resources and the impacts of forests and forest operations on specific flora and fauna and on biodiversity in general, quantification of the impacts of forests on climate change mitigation and the adaptation of forests to climate change.</td>
</tr>
<tr>
<td>8. <strong>Policy Implementation and Review</strong> - Policy will be implemented through ongoing monitoring and reporting of progress in consultation with stakeholders, and the policy will be updated to meet changing needs and circumstances.</td>
<td>Review would include environment related matters as outlined in the policy.</td>
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<td>9. <strong>Funding</strong> – To support the development of the forest sector through a combination of funding and fiscal arrangements including joint EU funding, direct State funding and private investment.</td>
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<tr>
<td>10. <strong>Legislation</strong> – To ensure that forest related legislation is relevant to the needs of the sector and underpins the principles of sustainable forest management while recognising the multifunctional nature of forestry.</td>
<td>Changes in the regulatory framework to ensure co-ordinated and holistic approach to the treatment of environmental issues and compliance.</td>
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<td>11. <strong>State Forest Enterprise - Coillte</strong> – Coillte, in common with other State enterprises, is the subject of a separate Government policy examination.</td>
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<tr>
<td>12. <strong>Institutional Arrangements</strong> - To support the development of the Forest Service as an efficient delivery service organisation meeting the needs of Government, national forest policy and the forest sector.</td>
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<tr>
<td>13. <strong>Sectoral Development</strong> - To set up a Task Force to consider the establishment of a stand-alone government body or agency which could have the responsibility of addressing the developmental and promotional issues of the forest sector.</td>
<td>The stand alone agency would in effect act as the Competent Authority for forestry and environment matters.</td>
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**Implementation of recommendations and actions**
Consideration and implementation of the recommendations and actions outlined in *Forests, Products and People*, will be primarily by the Department of Agriculture, Food and the Marine as outlined in the schematic below. Specifically, in terms of the implementation of the forest expansion goals, modalities for the period from 2014 to 2020 will be set out in the Rural Development Regulation. The indicative forest strategy as well as existing and updated (as outlined in the review) procedures and guidelines will be used to assess site suitability for afforestation. The primary agent carrying out afforestation will remain farmers and other landowners. The focus will be productive forests being established on
land capable of growing forests to a predefined productivity threshold, and on sites where potential negative impacts have been considered and addressed.

**Processes and stages in the development and implementation of forest policy**

- National, EU and international legislation and measures
- Review through stakeholder consultation and policy review group
- *Forest, Products and People* (2013) and associated recommendations
- Strategic Environmental Assessment and Department of Agriculture, Food and the Marine consideration
- Policies and measures, e.g. forestry in the *Rural Development Regulation*
- Environmental policies and measures and indicative forest strategy approach

Relationship of *Forests, Products and People* to other relevant plans and programmes

**Growing for the Future**

The previous national forest policy statement, *Growing for the Future*, was published in 1996. It set out a strategy for the development of the forest sector in Ireland to 2035. Bacon (2004) noted that the new policy was formulated in the context of increasing awareness of the environmental and social values of forestry, a decreasing ownership role of the State throughout Europe and developing regional and global regulatory frameworks for forestry. Against this background and recognising Ireland’s low forest area and ongoing reforms within the agricultural sector, the main objective was defined as:

*To develop forestry to a scale and in a manner which maximises its contribution to national economic and social well being on a sustainable basis and which is compatible with the protection of the environment.*

**Food Harvest 2020**

Food Harvest 2020 presents a strategy for the medium-term development of the agri-food sector and an outline strategy for the fisheries and forestry sectors for the period to 2020. It includes key actions to ensure that the sector contributes to the maximum extent to export-led economic recovery and the full development of the smart economy.

The recommendations for forestry focus on (a) competitiveness, (b) environmental issues and (c) research and development:

- DAFF and Industry should further explore measures to bring about a significant increase in the annual afforestation level per annum to 2020.

- DAFF will continue to examine more efficient methods of increasing the planting level in view of its urgency. The Committee recommends the adoption of the target planting rates for afforestation to be agreed in the parallel Forestry Review due to report by end-2010.

- Industry should promote producer groups in order to reduce management costs and increase the marketability of timber from private forests.

- DAFF should continue to support the provision of the forest road network, while also evaluating new infrastructure systems.

- Industry and representative organisations should support operator training and education.

- Teagasc and the relevant third-level institutions should ensure relevant and up-to-date training to meet new developments.

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4 DAFF. 2010. *Food Harvest 2020. A vision for Irish agri-food and fisheries*. Department of Agriculture Fisheries and Food

5 Report is *Forests, Products and People - Ireland’s forest policy – a renewed vision.*
The relevant state agencies, growers and the timber-processing sector should collaborate to improve and develop the timber supply chain to reduce costs and increase efficiencies.

DAFF should lead an intensive marketing campaign on the benefits of farm forestry, including supplying the bioenergy market to attract new entrants.

*Forests, Products and People* elaborates and develops the forest policy issues addressed in *Food Harvest 2020*.

**Renewable energy**

The Government’s STRATEGY FOR RENEWABLE ENERGY 2012–2020\(^6\) was issued in May 2012. The key objective is to make renewable energy an increasingly significant component of Ireland’s energy supply by 2020, so that at a minimum the legally binding 2020 target is achieved in the most cost efficient manner for consumers. Of critical importance is the role which the renewable energy sector plays in job creation and economic activity as part of the Government’s action plan for jobs. Underpinning the Government’s energy and economic policy objectives are the following five Strategic Goals reflecting the key dimensions of the renewable energy challenge to 2020:

<table>
<thead>
<tr>
<th>Strategic Goal 1</th>
<th>Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.</th>
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<tr>
<td><strong>Strategic Goal 2</strong></td>
<td><strong>A sustainable bioenergy sector supporting renewable heat, transport and power generation.</strong></td>
</tr>
<tr>
<td>Strategic Goal 3</td>
<td>Green growth through research and development of renewable technologies including the preparation for market of ocean technologies.</td>
</tr>
<tr>
<td>Strategic Goal 4</td>
<td>Increase sustainable energy use in the Transport sector through biofuels and electrification.</td>
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<tr>
<td>Strategic Goal 5</td>
<td>An intelligent, robust and cost efficient energy networks system.</td>
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The forest sector has an important role in contributing to the achievement of Strategic Goal 2, as it is the largest supplier of solid biomass for energy generation. In 2011 wood fibre supply (including by-products from primary wood processing) from the forest sector used for energy purposes was close to 1 million cubic metres, or almost one third of the national wood supply.

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However, as pointed out in Appendix 5 of *Forests, Products and People*, due to the pattern of past planting, future timber supply is estimated to peak around 2035 (Figure 1). The projections show that in the absence of any future afforestation, there would be a dramatic fall off in future roundwood supplies from 2035 onwards which would have serious consequences for sustainable levels of wood supply for energy purposes. A continuation of afforestation, at levels envisaged in the review (10,000 ha per annum rising to 15,000 ha per annum to achieve a forest cover of 18% from the current 10.5% - see Figure 2) are necessary to reach and maintain a sustainable level of supply of small roundwood beyond 2020.

Felling of forests is a licensed activity under the 1946 Forestry Act. This provision, together with the accounting requirements for land use, land-use change and forestry (LULUCF) at the UN Framework Convention on Climate Change for the periods 2008-2012 and 2013-2020 underpin the renewable nature of forest-based fuels sourced from Parties (including Ireland) that come under the accounting framework.

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Figure 2: Forest cover in the Republic of Ireland as of 2012 (source Forest Service).
Climate change mitigation

Climate change mitigation policy at the national level is set out in Ireland National Climate Change Strategy 2007-2012. It recognises the role that forests play in climate change mitigation as well as the sector’s role in the provision of renewable energy. More recently the National Economic and Social Council publication *Towards a New National Climate Change Policy* outlines the role of the forest sector in climate change mitigation as encompassing three main areas:

1. **net sequestration** or uptake of atmospheric carbon, through avoidance of deforestation, extending forest cover and enhancing carbon uptake in existing forests, and through related measures,
2. **replacement of fossil fuel** by biomass from forests and other sources (provided the wood comes from sustainably managed forest and preferably from forests within the international accounting system), and
3. **materials substitution** using wood products in construction and other end uses, in replacement of more energy intensive materials such as concrete, steel, aluminium and plastics with the benefits of reduced emissions from manufacture and placing carbon in storage.

All three areas are extensively addressed in *Forests, Products and People* and form the basis of a number of recommendations. In this context, the largest element of the forest sector’s mitigation role currently relates primarily to afforestation – the creation of new forest. Forests in Ireland are a significant sink of greenhouse gases, removing (net of harvest) in excess of 4 million tonnes of carbon dioxide annually, or about 6% of total greenhouse gas emissions (National Inventory Report to UNFCCC). *Forests, Products and People* envisages a state supported afforestation programme increasing to 10,000 ha per annum and then 15,000 ha per annum by 2015, to be sustained at that level up to 2045, to reach a forest cover of 18% of the land area by that date, all subject to the availability of resources including the availability of suitable land for afforestation.

The use of wood for energy production is linked to the policy on the reduction of greenhouse gas emissions. Estimates are that the use of forest-based biomass from the national forest harvest resulted in emissions savings of 530,000 tonnes of carbon dioxide in 2011. There is potential to significantly increase the level of forest-based biomass for energy generation – up to 1.5 million cubic metres by 2020, based on the current level of forest cover and in line with overall renewable energy policy.

The rate of carbon sequestration in forests broadly follows forest growth patterns. A COFORD report shows that in order to maintain the mitigation effect that afforestation rates should preferably be in the range of 10,000-15,000 ha per year (Figure 3). The afforestation policy outlined in *Forests, Products and People*, if achieved, would therefore not only support Ireland’s efforts to reach the demanding greenhouse gas emission reduction targets

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9 [The paper is the first in a 2-part series, and examines the policy issues in climate change up to 2020](http://www.nesc.ie/en/publications/publications/nesc-secretariat-papers/nesc-secretariat-paper-03-2012-towards-a-new-national-climate-policy). A second paper in preparation will deal with the climate policy issues over the longer term.
(which are anticipated to rise to 80% of the 1990 level by 2050) but will also, as pointed out, reduce dependence on fossil fuels and support the transition to a low carbon economy.

**Figure 3:** Estimated trend in carbon sequestration rate based on afforestation rate scenarios. (The fall-off in rates from 2035 is due to harvest – excluding the effect of delayed emissions from harvested wood products, which would lessen the fall-off.)

More recently the substitution of energy intensive materials such as concrete, steel, aluminium and plastics has become formally recognised in the UNFCCC greenhouse gas accounting system following the agreement on land use, land-use change and forestry (LULUCF) at Durban at the end of 2011\(^\text{13}\) (FCCC/KP/CMP/2011/10/Add.1). Ireland’s eligible harvested wood products pool is estimated to be a net sink of carbon dioxide of 0.134 million tonnes of carbon dioxide per annum over the 8-year period 2013-2020.

**Biodiversity**

*Forests, Products and People* envisages a very substantial increase in forest cover, to up to 18% of the land area, or 1.3 million ha by 2045. It also envisages continued adherence to the existing range of guidelines on Biodiversity, Water, Archaeology, Landscape, Aerial Fertilisation and their updating in a prioritised and co-ordinated manner in light of advances in scientific knowledge and awareness (Strategic Action 3.3). Important considerations in terms of biodiversity and the proposed increase in forest are the potential impact on habitats covered under the Habitats Directive, as well as the need to include native tree species in afforestation, to expand native woodland cover and for well-defined gene conservation strategies for native tree species. Habitat considerations are dealt with in the forest policy review and as well as in the National Biodiversity Plan\(^\text{14}\). How the two policies relate is outlined in Table 1.

\(^{13}\) [http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf](http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf)

\(^{14}\) *ACTIONS FOR BIODIVERSITY 2011-2016*, the second national biodiversity plan was launched by Government in November 2011.
**Table 1. Correspondence of actions in the National Biodiversity Plan and in Forests, Products and People.**

<table>
<thead>
<tr>
<th>ACTIONS FOR BIODIVERSITY 2011-2016</th>
<th>National Biodiversity Plan and in Forests, Products and People</th>
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<tbody>
<tr>
<td>2.4 Introduce revised forest legislation which will support the conservation, protection and sustainable management of forest biological diversity.</td>
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</tbody>
</table>
**Policy Statement (page 55)**
To ensure that forest related legislation is relevant to the needs of the sector and underpins the principles of sustainable forest management while recognising the multifunctional nature of forestry. |
| 3.11 Continue the existing forest research programme on forest biodiversity, carbon accounting and the interaction of climate change and forest systems. | **Strategic Actions**
7.7 DAFM to maintain, in real terms, the current level of State-led investment in forest research over the coming decade.
7.11 The COFORD council, in collaboration with forest industry, relevant State agencies and sector stakeholders to undertake a review of the Strategic Research Agenda with a view to prioritising areas for investment in research and development across the sector. |
| 5.3 Ensure effective implementation of cross-compliance, statutory management requirements and forest service guidelines/requirements to ensure conservation of biodiversity | **Strategic Actions**
3.3 DAFM in collaboration with the main sector stakeholders to update the complete set of environmental guidelines with priority given to guidelines that address water quality, fertilisation and biodiversity. In the revision consideration should be given to structuring the guidelines so they can be used either at forest developmental stages (establishment, thinning, harvesting) or thematically to deal with water [including species such as fresh water pearl mussel], biodiversity etc. The revised guidelines should be comprehensive, provide clarity regarding requirements and permitting procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework.
3.4 DAFM to update the Code of Best Forest Practice and the National Forest Standard to reflect changes in the suite of environmental guidelines, changes in best practice, changes in the regulatory and compliance framework and as a means to support compliance with the principles of sustainable forest management. |
5.8 Consider and develop guidance on alternative forestry management options which aim to deliver additional biodiversity benefits

<table>
<thead>
<tr>
<th>Strategic Actions</th>
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<tr>
<td>2.1 The conversion of plantations to continuous cover forest (CCF) will be supported by initiatives and measures to heighten awareness of and/or promote alternative silvicultural systems.</td>
</tr>
<tr>
<td>2.2 DAFM will encourage the management of all broadleaves including native woodlands for timber production and where there is a particular conservation interest, shall, in cooperation with the National Parks and Wildlife Service, facilitate management that is compatible with conservation objectives.</td>
</tr>
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</table>

5.9 Strengthen measures to ensure conservation, and availability for use, of genetic diversity of crop varieties, livestock breeds and races, and of commercial tree species and promote in particular their in situ conservation.

<table>
<thead>
<tr>
<th>Strategic Action</th>
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<tbody>
<tr>
<td>2.12 DAFM to establish a representative National Forest Genetic Resources Advisory Group to guide all aspects of future genetic requirements and advice on the management of reproductive material and tree improvement and breeding programmes.</td>
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</table>

10.5 Maintain target of 30% broadleaf planting in afforestation.

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<thead>
<tr>
<th>Strategic Actions</th>
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<tbody>
<tr>
<td>1.3 The broadleaf target remains at an area equivalent to 30% of the annual afforestation programme. To broaden the scope and responsibility for increasing the area of broadleaves, DAFM will introduce an overall indicative national target level of 10% broadleaf species in reforestation, taking into account economic and site suitability considerations. This will be monitored and reviewed periodically.</td>
</tr>
<tr>
<td>1.4 DAFM to encourage State organisations and Local Authorities to convert part of their land bank holdings to public purpose forestry and in particular native woodlands.</td>
</tr>
<tr>
<td>1.5 DAFM in collaboration with the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht (DAHG) to establish an appropriate annual target (minimum 150 ha) for the restoration and expansion of native woodlands focussing on alluvial and sessile oak woodlands [mainly for biodiversity purposes]. The expansion of native woodlands is additional to the afforestation target above.</td>
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</tbody>
</table>
The level of land use change envisaged in *Forests, Products and People* will require the continuation of AA Screening and Appropriate Assessment in relation to Natura sites (SACs and SPAs), and the updating of Forest Service guidelines as outlined previously.

**Water quality**

National policy in relation to forests and water is set out in the *Programme of Measures and Standards for Forest and Water*, published by the Western River Basin District as part of the implementation of the Water Framework Directive (WFD) for Ireland. *The National Summary Characterisation Report*\(^{15}\), which predated the programme of measures, identified forestry as one of the key pressures which should be addressed in the Water Framework Directive River Basin Management Plans and Programme of Measures (PoM). The task of identifying impacts and possible measures was assigned to the Western River Basin District as part of a suite of National Programmes of Measures studies. A Forest and Water Working Group steered the project. It agreed that:

- Forestry may give rise to negative pressures on aquatic ecosystems and
- Forestry and forest management can provide an opportunity for delivering programmes of measures with positive benefit in achievement good ecological status over extensive land areas.

The report of the working group, including the PoM was issued in November 2008\(^ {16}\). It states: “Under the Water Framework Directive, River Basin Management Plans must include a set of management measures aimed at achieving the default objectives within the 15-year time frame from the date of entry into force of the Directive, i.e. by 2015, unless alternative objectives are established. The required PoM (Water Framework Directive Article 11) can be divided into two broad categories, Basic Measures and Supplementary Measures. Basic Measures are listed in Annex VI, Part A of the WFD ...” and are set out in the PoM.

Basic measures are obligatory and include those required to implement existing Community legislation for the protection of water, (EU Directives and statutory obligations associated with their implementation), they may also require additional legislation. Obligatory measures are enforced through National Legislation which sets specific objectives and standards or which have designated specific areas, e.g. areas designated as Special Areas of Conservation under the Habitats Directive. Basic measures may be target specific, such as the control of pesticides under the Plant Products Directive (91/414/EEC), and/or may have spatial application such as the Habitat designated areas (SACs) with water dependent habitats and species, catchment areas of designated species such as the Freshwater Pearl Mussel (*Margaritifera margaritifera*).

Supplementary measures include administrative arrangements, economic or fiscal instruments, negotiated environmental agreements, emission controls, codes of good practice, re-creation and restoration of wetlands and rehabilitation projects. Supplementary measures may also become Basic Measures through obligatory requirements. For example, the Forest Service, *Forestry and Aerial Fertilisation Guidelines* introduced in December 2001 have become obligatory with the publication of the Aerial Fertilisation Licensing Regulations, 2006, SI 592 of 2006 (as amended) which is an action to support a basic measure.

\(^{15}\) http://www.wfdireland.ie/Documents/Characterisation%20Report/Ireland_Article_5_WFD.pdf

\(^{16}\) http://www.wfdireland.ie/docs/22_ForestAndWater/Forest%20and%20water%20programme%20of%20measures.pdf
A more recent report outlines the role of the Forest Service generally and specific measures it is responsible for implementing that have a bearing on the Basic measures called up in the WFD Programme of Measures.17

*Forests, Products and People* states in Chapter 3 in relation to forests and water: “forests can play an important positive role in the maintenance and enhancement of water quality, but can also impact negatively in the absence of good management practices. The costs and benefits of forestry on water supply and quality have not been measured for Ireland. Updated environmental guidelines due to be introduced by the end of 2013 will facilitate the implementation of the Water Framework Directive (WFD).”

The policy review goes on to state “The Water Framework Directive (WFD) is a policy driver that necessitates governments, stakeholders and analysts to understand the implications of land use on catchments and water bodies, water allocation policies and develop the tools needed for applied economic analysis. The policy goal is good ecological status of surface water by 2015. The key pressures on WFD defined water bodies from forestry include phosphorus, sedimentation, acidification and dangerous substances. To identify the most appropriate forestry measures there is a need for co-operation between COFORD, Coillte, the Environmental Protection Agency (EPA), DoAHG (Department of Arts, Heritage and Gaeltacht), Department of Environment, Community and Local Government (DoECLG), the Forest Service, non-governmental organisations (NGOs) and associated researchers to help extract and gather information on effectiveness of measures and their costs. The forestry sector has shown an ability to meet new environmental challenges and will need to act responsibly and to continuously respond to environmental challenges in line with best environmental practices.”

Strategic Actions 3.3 and 3.9 in *Forests Products and People* address forests and water:

3.3 DAFM in collaboration with the main sector stakeholders to update the complete set of environmental guidelines with priority given to guidelines that address water quality, fertilisation and biodiversity. In the revision consideration should be given to structuring the guidelines so they can be used either at forest developmental stages (establishment, thinning, harvesting) or thematically to deal with water, biodiversity etc. The revised guidelines should be comprehensive, provide clarity regarding requirements and permitting procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework.

3.9 Facilitate the cost-benefit analysis process for identifying the most cost-effective measures for compliance with the Water Framework Directive.

**Inland fisheries**

Inland Fisheries Ireland is a statutory body which has the primary function of protecting, managing and conserving the inland fisheries resource. These functions extend to the following freshwater species which are listed under the Habitats Directive.

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<table>
<thead>
<tr>
<th>Species</th>
<th>Annex of Habitats Directive</th>
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<tr>
<td>Allis shad <em>(Alosa alosa)</em></td>
<td>II &amp; V</td>
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<tr>
<td>Brook lamprey <em>(Lampetra planeri)</em></td>
<td>II</td>
</tr>
<tr>
<td>Killarney shad <em>(Alosa fallax killarnensis)</em></td>
<td>II &amp; V</td>
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<tr>
<td>Pollan <em>(Coregonus autumnalis)</em></td>
<td>V</td>
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<tr>
<td>River lamprey <em>(Lampetra fluviatilis)</em></td>
<td>II &amp; V</td>
</tr>
<tr>
<td>Salmon <em>(Salmo salar)</em> (in freshwater only)</td>
<td>II &amp; V</td>
</tr>
<tr>
<td>Sea lamprey <em>(Petromyzon marinus)</em></td>
<td>II</td>
</tr>
<tr>
<td>Twaite shad <em>(Alosa fallax)</em></td>
<td>II &amp; V</td>
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Chapter II

Relevant aspects of the current state of the environment and likely significant effects with and without implementation of the recommendations in *Forests, Products and People*

Environmental aspects covered in this Chapter are:

- biodiversity,
- human health,
- fauna,
- flora,
- soil,
- water,
- climatic factors,
- cultural heritage (archaeological heritage),
- landscape and
- the interaction of these factors.

In addressing aspects of the current state of the environment for which the policy recommendations in *Forests, Products and People* are relevant, and the future evolution of the environment, the Environmental Protection Agency report *Ireland’s Environment 2012 - An Assessment*\(^{18}\) is used as a baseline reference point. It “... provides an integrated assessment of the overall quality of Ireland’s environment, the pressures being placed on it and the societal responses to current and emerging environmental issues”.

In the absence of *Forests, Products and People*, the current strategy and policy (*Growing for the Future*) would remain in place. This would see a continuation of current afforestation levels, no provision for the prioritised and co-ordinated updating of environmental guidelines, limited expansion of native woodlands, reduced levels of harvesting activity in the private sector, reduced opportunities for the extension of forest recreation and reduced opportunities for species diversity in reforestation.

**Biodiversity, flora and fauna**

Afforestation and harvesting have potential to adversely impact on habitats and on species such as the freshwater pearl mussel and the Hen Harrier. The statutes, guidelines, compliance with the *Forestry Schemes Manual* and other mitigation measures, as implemented by the statutory authorities, are designed to deal with adverse impacts. Without *Forests, Products and People* the expansion of native woodlands will be limited. Currently sessile oak woodlands are underrepresented and require conservation and expansion (see Figure 4)\(^{19}\) and measures to support this are lacking.

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Figure 4: Distribution of the four major native woodland types in Ireland: (a) native alder [AlnusFilipendula], (b) birch [BetulaMolínia], (c) ash [FraxinusHedera] and (d) oak [QuercusLuzula] vegetation types. (Based on the National Survey of Native Woodlands 2003-2008).
Ireland’s Environment 2012 - An Assessment does not deal specifically with biodiversity in the context of forest policy or practice. ACTIONS FOR BIODIVERSITY 2011-2016 – the National Biodiversity Action Plan states: “Nationally, although significant progress has been made in the past decade, biodiversity loss has not been halted in Ireland. The status of many of our habitats and some of our species is judged to be poor or bad.”

The National Parks and Wildlife Service report on THE STATUS OF EU PROTECTED HABITATS AND SPECIES IN IRELAND states: “These assessments ... indicate that many Irish species of fauna and flora have a moderately satisfactory status, but a small number are in urgent need of concerted efforts to protect them. The assessments of habitats present a much bleaker picture with the majority being rated as having poor or bad overall status.” Forestry is not identified as one of the key threats to protected habitats or Annex species, but it is listed as a pressure in relation to both habitats and Annex species.

In March 2012, the Forest Service formalised its application of AA Screening and Appropriate Assessment in accordance with the Habitats Directive, through the development of an Appropriate Assessment Procedure. The General Overview States:

“Natura sites, comprising SACs and SPAs, represent a key component of the protection of rare and endangered habitats and species, both in Ireland and at a European level. Under “European and national legislation, the Forest Service is required to apply an appropriate assessment procedure to applications for consent, grant approval and licensing for various forestry activities, to evaluate the project within the context of any potentially relevant SAC or SPA. This procedure involves an initial screening, and if required, an actual appropriate assessment.

“Initial screening is carried out to determine if there is a possibility of the project, individually or in combination with other plans or projects, having a significant effect on an SAC or SPA. Screening takes places as part of the normal evaluation of the application by the Forest Service, typically based on the submitted application form and maps. Screening will often conclude that there is no possibility of an impact arising, and approval may issue.

“In cases where the screening identifies that there is a possibility of the project having an effect on a Natura site, the applicant is required to submit a Natura Impact Statement (NIS). The NIS examines the nature of the possible impact and sets out proposed mitigation measures. On receipt of this document, the Forest Service undertakes an appropriate assessment, before arriving at a decision to regarding consent, grant approval or licensing.”

Specifically on guidelines, Forests, Products and People in Strategic Action 3.3 recommends that:

In the absence of Forests, Products and People, while it is reasonable to assume that there would be some updating of environmental guidance although no such update has happened since their introduction, the updating would lack the prioritised and co-ordinated approach and would not facilitate the streamlining of procedures and the elimination of any duplication. Furthermore the timing of an update to one or more of the guidelines is unclear and in the absence of building in the advances in scientific knowledge and increased

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22 An updated version of the procedure has been issued in Forest Service Appropriate Assessment Procedure Information Note, March 2012. It covers Natura Impact Statements as well as procedures in relation to freshwater pearl mussel and Hen Harrier.
understanding of the environment, there will be the continuing risk that some environmental impacts could have been mitigated or even avoided.

**Human health**

There is strong evidence that the “use and enjoyment of woodlands and green spaces improves people’s overall health and well-being”\(^23\). One of the main cultural services\(^24\) that forests provide is recreation space and activities.

*Fitzpatrick and Associates (2005)* in their analysis of the Coillte estate estimated that annual visits were 18 million\(^25\) and provided a non-market value of €97 million annually. However, this may be an underestimate in light of the preliminary findings of a study commissioned by Coillte and the Heritage Council which was completed in 2012 but not yet published due to sensitivities around New Era and the proposed sale of harvesting rights. The total economic activity generated by domestic forest users is estimated at €268 million.\(^26\)

In the absence of *Forests, Products and People*, there would be a continuation of the status quo. This does not foresee an expansion of the areas available for recreation in the private sector, nor does it envisage the degree of active support for forest recreation activities both public and private as set out in *Forests, Products and People*. Thus recreation would continue at more or less current levels and be limited to state owned forests and to support from other policy areas.

**Climate change**

Climate change is recognised one of main environmental issues facing the biosphere and humanity\(^26\):

The global atmospheric concentration of carbon dioxide, the most important greenhouse gas has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005. This exceeds by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores. The annual carbon dioxide concentration growth rate was larger during the last 10 years (1995–2005 average: 1.9 ppm per year), than it has been since the beginning of continuous direct atmospheric measurements.

**Mitigation**

The main sources of carbon dioxide in the atmosphere are fossil fuel emissions and land use change; forests and forest products have a recognised role in addressing these issues, through protection and maintenance of forest carbon stores or reservoirs and through mitigation of climate change through the three processes referred to in *Section a*: sequestration, materials substitution and fossil fuel replacement. Another important aspect of forests and climate change is the management of carbon stores in existing forests: Irish forests store significant amounts of carbon – the current national estimate (Black 2012) is 1.268 billion tonnes of carbon dioxide, equivalent to 22 times the total greenhouse gas emission in 2011\(^27\) (57.3

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\(^{25}\) Based on an adult population of 3 million and six visits annually as was found in the Great Britain Day Survey of 6,600 people. A value of €5.40 per visit was used based on survey data.


million tonnes of CO₂ (EPA report 2012)). By far the largest component of the forest store is in soil carbon (81%), which accords with levels found in boreal or northern forests, but is also a reflection of the proportion of forest in Ireland that is located on peat and peaty soils.

The net level of uptake or carbon sequestration in Irish forests established post 1990 and as reported under the Kyoto Protocol to the United Nations Framework Convention on Climate change is estimated as 8.5 million tonnes of CO₂ over the 3-year period 2008-2010. Projections developed by the Department of Agriculture, Food and the Marine and as reported to the EPA, predict that this level of net mitigation will increase to 4.8 million tonnes per annum by 2020.

In the absence of *Forests, Products and People*, forests would continue to sequester carbon at the levels indicated above and mitigate climate change. However the increased levels of sequestration associated with increased afforestation levels would not be realised. Nor would the mitigation impacts of increased woodflows from forests be achieved. The lack of new forest policy addressing the use of wood energy while it would see an increase in wood used for energy due to drivers such as fuel prices and policy support measures from other areas, future use would not be significantly less than that envisaged in *Forests, Products and People* leading to decreased levels of fossil fuel substitution and decreased mitigation impacts particularly in the medium term to 2020 and the longer term.

**Impacts of climate change on forests and adaptation**

The impact of global warming on Ireland’s climate has been predicted in the C4I model (Box 1). The model is based on a comprehensive series of computer simulations, and uses a regional climate model (RCM) approach to predict changes in the climate.

**Box 1: Predicted climate change impacts for Ireland in the C4I model.**

- The climate will continue to warm, particularly in the summer and autumn seasons: possible increases of 3 to 4°C towards the end of the century. The greatest warming will occur in the south and east of the country.
- Autumn and winter seasons will become wetter: increases in the range 15-25% towards the end of the century. Summers will become drier: 10-18% decrease towards the end of the century. Regional details remain elusive, due to the large uncertainty in local projections.
- Mean windspeeds are not expected to change significantly over the coming decades, but there is likely to be an overall reduction in strengths towards the end of the century, particularly in summer (4-5%).
- The frequency of very intense cyclones affecting Ireland is likely to increase.
- The seas around Ireland have been warming at the rate of 0.3-0.4°C per decade since the 1980s; over the Irish Sea a greater warming has been observed (0.6-0.7°C per decade). The trends are consistent with what has been observed globally and are predicted to continue over the coming decades.
- Sea levels are rising on average about 3.5 cm per decade around Ireland.
- Ocean modelling results indicate an increase in the frequency of storm surge events around Irish coastal areas; in the northwest the increase in surge heights between 50 and 100 cm is around 30% by mid century. Extreme wave heights are also likely to increase in most regions.

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Changes in precipitation and temperature are likely to lead to a rise in winter stream flows (increasing the risk of flooding), and a reduction in summer flows.

Changes in the climate may impede the recovery of the ozone layer; together with a warmer climate, there may be negative health consequences due to a greater exposure to UV radiation.

Demand for heating energy is likely to reduce significantly as the climate warms.

Many of the predicted changes in climate outlined have the potential to impact on forest growth and development. In the Irish context of a mainly plantation forest resource species choice for afforestation and reforestation will play a role in adaptation to climate change. Under the COFORD national forest research programme a system was developed that integrates species site and climate requirements with future climate scenarios and guides species selection. It has been developed into an online tool called CLIMADAPT.

While in the absence of Forests, Products and People, DAFM are likely to continue to support the dissemination of the CLIMADAPT species selection tool and any necessary updates, the degree of priority and the commitment to longer term development and research into species and adaption to climate change will be important missing elements. There is also the risk of lower opportunities for the adaptation of native woodland to climate change, through gene flow arising from their lack of expansion and lack of connectivity.

### Soil

Soil quality and the protection of soil resources are fundamental to the long term productivity and sustainability of forest resources. A forest productivity map of Ireland (based on Sitka spruce) has been developed, with soil fertility being one of main factors (Figure 5). Monitoring of soil quality is being undertaken as part of the Critical Biomass Removal on Irish Forest Soils project funded under the CoFoRD programme. This work involves a continuation of forest soils monitoring undertaken in the Europe-wide network of forest heath plots.

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31 [http://www.forestry.gov.uk/fr/infd-5zyhmc](http://www.forestry.gov.uk/fr/infd-5zyhmc)

32 [http://82.165.27.141/climadapt_client/index.jsp](http://82.165.27.141/climadapt_client/index.jsp)

Figure 5: Potential productivity of Sitka spruce in Ireland (dark green areas are the most productive).

Irish forests, particularly those planted over the past three decades\(^3\), have a high level of productivity which is a reflection of a high level of soil suitability for the growth of forests.

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Forest soils are also a very important reservoir of soil carbon, and monitoring of the soil carbon pool is part of the reporting requirements under the United Nations Framework Convention on Climate Change.

In the absence of *Forests, Products and People*, there would be a continuation of the current productivity threshold for afforestation and this especially when one considers the improvements in planting stock could see increasing areas of unenclosed land and or peat soils being planted. Also in the absence of improved and updated water quality guidelines, there is the risk that planting could take place on unsuitable soils or site types with long term environmental implications.

**Water quality and flood risk attenuation**

Chapter 4 of the EPA report *Ireland’s Environment 2012 - An Assessment* deals with water and states: “Water quality in Ireland compares favourably with that in other EU countries. However, similar to many other EU countries, Ireland still faces considerable challenges to meet the objectives of the WFD within the required timeframes. The three main challenges for water quality management are to eliminate serious pollution associated with point sources; to tackle diffuse pollution; and to use the full range of legislative measures in an integrated way to achieve better water quality. A key aspect is that focusing measures on rivers, where monitoring has identified particular causes of pollution, will help reduce pollutant loading to lakes and coastal waters as well as improving river quality”.

The EPA survey (2007–2009) of 2,500 aquatic monitoring sites assessed that 953 were polluted, of which 4% were suspected as being caused by forestry. The report goes on to state: “Afforestation on peat soils has the potential to cause significant nutrient and silt losses at the establishment and harvesting phases especially. Large areas of maturing conifers planted on upland peat soils are due to be harvested in the coming years. Residual phosphorus left behind can leach out into surface waters due to the low capacity of peat to bind phosphorus. Silt loss from harvesting operations can damage salmonid spawning beds or freshwater pearl mussel populations. Control of silt and nutrient losses is required to minimise the impact of forestry on water quality. The Forest Service’s iFORIS GIS-based management system for forestry grants is being used to ensure that planting, felling and road building operations in forests are approved only following detailed environmental consultation with a range of public bodies and the general public”.

In the absence of *Forests, Products and People*, new findings from national and overseas research which need to be reflected in updated guidelines will not happen to the degree or time envisaged, so that ameliorative measures are effective. In the absence of regulation and mitigation measures, afforestation, aerial fertilisation and harvesting operations have the potential to result in adverse impacts on water quality (nutrient and sediment release in particular). Given the anticipated growth in harvesting to meet the forecasted doubling of roundwood production referred to earlier, these operations need continued regulation and control, allied to up-to-date information being made available (as outlined in relation to guidelines) and good practice advice being made available to machine operators, owners and foresters. This is particularly the case in sensitive areas and on peatland. Overall, adherence to the measures outlined will ameliorate sediment and nutrient release and impacts, allied to the application of the acid-sensitive protocol for afforestation\(^{35}\), which has been recently updated to allow for the extension of the Native Woodland Establishment Scheme to suitable sites within acid sensitive areas\(^{36,37}\).


\(^{36}\) See Forest Service report: *The application of the Native Woodland Establishment Scheme in Acid Sensitive Areas: A proposed refinement of the existing acid sensitivity protocol for afforestation.*
As outlined in Box 1 the predicted impacts of climate change include: changes in precipitation and temperature are likely to lead to a rise in winter stream flows (increasing the risk of flooding), and a reduction in summer flows. There is good evidence that riparian forests and forests in flood-plains ... “reduce flow velocities, enhance out of bank flows, and increase water storage on the floodplain, resulting in an overall smaller downstream flood event”. Modelling studies indicate that floodplain woodland could make a significant contribution to mitigating downstream flooding for large flood events”. Riparian woodlands also have a role in the amelioration of nutrient runoff from agriculture and other land use. “The protective function of native riparian woodland is particularly relevant to water quality, which also affects instream biodiversity value. Their value for nature conservation, landscape enhancement and recreation are exceptional. Most importantly, they are often the only woodlands remaining in some landscapes, and therefore, the last refuge for woodland species. They provide a vital conduit for the transfer of nutrients between terrestrial and aquatic ecosystems and play a vital role in capturing nutrients and silt which run off from adjacent lands”. The Native Woodlands Establishment Scheme which is part of the overall current afforestation scheme allows for the creation of riparian woodland, however in the absence of specific area targets or support measures as envisaged in Forests, Products and People the impacts are likely to be small with little expansion in riparian forests or woodlands.

Cultural heritage (archaeological heritage)

Ireland is exceptionally rich in upstanding archaeological sites and monuments and previously unrecorded monuments are also routinely uncovered in the course of large scale developments. Many upstanding “field monuments” were built by, and relate to the activities of farmers during the past six millennia. Most are located in areas that are in continuing agricultural use, but others are in now-marginal and remote upland areas that were once more attractive and densely settled.

The regime for addressing the potential impact of initial afforestation or forest road development proposals on the archaeological resource is set down in the European Communities (Forest Consent and Assessment) Regulations 2010 (SI 558 of 2010) (as amended by SI 442 of 2012), which supplement the core provisions of the National Monuments Acts 1930 to 2004. The Regulations include an obligation to refer applications to relevant environmental authorities or “Consultation Bodies”, which in the case of archaeological sites and monuments is the National Monuments Service (NMS) of the Department of Arts, Heritage and the Gaeltacht (DAHG).

These procedures are also integrated into the afforestation and forest road scheme application processes and referenced in the Forestry Schemes Manual. Approval for grant-

37 See Forest Service Circular 4 of 2013: Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and revised Native Woodland Scheme Establishment Site Appraisal Framework (14Feb13),
38 http://www.srr.ac.uk/downloads/shah_nisbet_fc.pdf
39 http://www.woodlandsofireland.com/docs/No.%204%20Riparian.pdf
40 http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/2012/NativeWoodlandEstablishmentScheme.pdf
41 Note that areas adjoining streams, rivers and lakes submitted under NWS Establishment must satisfy the same general site requirements as apply under the Afforestation Scheme and FEPS. NWS Establishment projects focused on creating significant areas of native riparian woodland primarily to protect a designated riparian or aquatic habitat or species (e.g. Freshwater Pearl Mussel) may also be eligible for funding. Such projects will be examined on a case-by-case basis by the Forest Service at a national level, with a focus on site suitability, relative strategic merit and other factors.
aid under the schemes is contingent on the project adhering to conditions set out in any approval issued under the Regulations, which include inter alia a standard requirement that all initial afforestation or forest road developments adhere to the relevant elements of the Forestry and Archaeology Guidelines\textsuperscript{43} of the Forest Service.

The Regulations set mandatory thresholds for full EIA: 50 ha in the case for initial afforestation development proposals and 2 km in the case of forest road development proposals. There is also provision for screening for sub-threshold EISs or other forms of environmental assessment prior to approval for both forms of development being given.

The regime for addressing the potential impact of harvesting proposals on the archaeological resource is based upon the felling licence provisions of the Forestry Act 1946, which again supplement the core provisions of the National Monuments Acts 1930 to 2004.

In terms of day-to-day practice, nearly all initial afforestation development, forest road development, or felling licence applications within 200 m of a designated archaeological site or monument, i.e. a Recorded Monument, are identified for referral to the NMS. The Forest Service Inspectorate also includes a staff member who is qualified professional archaeologist and who acts as permanent point of contact for NMS, Coillte Teoranta, applicants and consultant foresters, and other concerned parties such as the Heritage Council and environmental NGOs in relation to archaeology.

In each referred case a desk-based assessment is undertaken that includes checks, not only against the RMP, but also against published descriptions in the county-based NMS inventory and surveys and other known published surveys. A close examination is made of different sets of orthographically rectified digital aerial photographs. Cognisance is also taken of additional cultural-heritage-related notes, comments or observations made by the applicant, the consultant forester, Forest Service District Inspector, other “Consultation Body” (such as the Local Planning Authority) and/or third parties. This may be followed up by field inspection by an archaeologist in certain circumstances.

The result of the desk-based assessments is the imposition of one or more archaeological conditions for each and every referred initial afforestation application. These are taken from a tiered hierarchy of archaeological mitigation responses, with the lowest condition being (as noted above) 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 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.

In the case of forest road development proposals the desk-based assessments result in the imposition of one or more archaeological conditions. The lowest condition is adherence to the relevant elements of the Forestry and Archaeology Guidelines. A minimum 30 m exclusion

\textsuperscript{43} http://www.agriculture.gov.ie/media/migration/forestry/publications/archaeology.pdf
zone is routinely required for the creation of a new forest road near an archaeological site or monument, or an area of elevated archaeological potential, with archaeological monitoring conditions routinely imposed on all significant new ground disturbance and deep excavations during the road’s construction within 100 m of a designated archaeological site or monument. In addition, any proposal for a new forest road greater than 1 km in continuous length is required to be accompanied by an archaeological walkover survey/assessment report.

In the absence of *Forests, Products and People* the potential impact on the archaeological resource of any expansion in forest cover through initial afforestation and/or increase in harvesting activities will be assessed, preferably avoided, and if not absolutely avoidable mitigated or ameliorated by these established procedures. However the guidance will not have been updated in the light of new information and consequently there will be a continuing risk of negative impacts by adhering to guidance introduced more than a decade ago.

**Landscape**

*Forests, Products and People* proposes the expansion of forest to cover 18% of the land area by 2045. Most new forests will be located on former agricultural land, for the productivity and environmental reasons outlined previously in this and the proceeding Chapter. For this reason the potential landscape impact of afforestation is likely to be less than in the past when afforestation took place largely in open landscapes and on hill and mountain slopes.

Notwithstanding these considerations, forests and forest operations should be planned and managed in a way that is consistent with good landscape practice. A recent report from the UK, which also has an active afforestation programme, states: “Forests and woodlands are important visual elements in the landscape that change over time. They have great potential to enhance and enrich the environment and make a significant contribution ... in the landscape, shaping and enclosing space, framing views and providing colour, texture and scale. Forests and woodlands provide a place for recreational activities and can bring people closer to nature in both town and country. Management activities provide a context for engaging local people, which can help promote community cohesion and environmental awareness”.

The *Forestry Schemes Manual* outlines current procedures with regard to afforestation and the landscape. Where proposals are located within a prime scenic area (high landscape sensitivity area as designated by the Local Authority – see Figure 6) in the County Development Plan they are referred to the relevant Local Authority and *An Taisce*. Prime scenic areas have been incorporated as a layer in the iFORIS/Indicative Forestry Statement system. The *Forestry and the Landscape Guidelines* provide wider guidance applicable to landscape character types.

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Overall, forest expansion and forest operations, carried out in compliance with regulations and guidelines, and in keeping with the landscape character of the area, have significant potential to enhance existing landscapes. However in the absence of *Forests Products and People* the guidance will not be updated and an improved understanding of how forestry fits in with existing landscapes will be lacking.
Chapter III

Environmental characteristics of areas likely to be significantly affected by the implementation of the recommendations in Forests, Products and People and screening and related measures in place that influence the character of areas that may be affected

This Chapter should be read in conjunction with Chapter VI which deals with measures to deal with potential adverse environmental impacts arising from the recommendations in Forests Products and People.

In this Chapter measures that will influence the character of areas to be afforested and harvested are described, as they are important determinants of the types of areas that will be afforested etc. In other words measures in place and envisaged will strongly influence the type of areas that are likely to be impacted. For example, the productivity threshold for afforestation grant aid will exclude a significant area of designated habitats. Overall Forests, Products and People envisages a very significant increase in forest cover in Ireland, from the current level of 752,000 ha (2011), or nearly 11% of total land area forest cover to 18% or 1,230,000 ha by 2045. The main rationale is: 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 m³ per annum. It sets out a number Strategic Actions/Recommendations to achieve the plan, and sets an afforestation target in Strategic Action 1.1:

The afforestation target will be 10,000 ha per annum up to 2014 and 15,000 ha per annum for the period 2015 to 2045. This will, with reforestation of clearfell areas, provide a forest cover of 18%. Targets will be reviewed by the Department of Agriculture Food and the Marine every five years, beginning in 2017 in the context of long term sustainable roundwood supply and other policy considerations.

The plan also foresees that the annual level of roundwood harvest will increase from around 3 million cubic metres per annum at present to between 7 and 8 million cubic metres per annum by 2030. This is largely irrespective of the level of afforestation up that point, as depending on site and species, it takes 10-20 years after forest establishment before wood is harvested.

Afforestation

Given the Indicative Forest Statement approach (see explanatory text below), the Forestry Schemes Manual guidance, the productivity threshold being maintained at yield class 14 for Sitka spruce (endorsed in Strategic Action 1.12), the updating of environmental

[47] Yield class is the potential mean maximum annual volume increment (expressed as cubic metres per ha, per year, to a 7 cm top diameter). It is based on full stocking and the forest reaching the age maximum mean annual increment.
[48] DAFM to monitor and, in consultation with stakeholders, periodically review the overall average yield class for afforestation as set out in Growing for the Future in the light of the quality of land being afforested and the more widespread use of genetically improved planting stock with a view to increasing both the minimum and average productivity levels.
guidelines on water quality, landscape, biodiversity, and the Forest Service policy to restrict the afforestation of unclosed land, it is envisaged that the areas which will be afforested over the period of the plan will, in the main, comprise wet mineral soils which are currently or were formerly enclosed for agriculture (broadly comparable to category GS4 wet grassland in Fossitt 2000⁴⁹). In addition, other categories of semi-natural grassland, improved grassland and heath (categories GA1 and HH respectively, in Fossitt op cit.) are likely to be afforested. Where these areas contain or are adjacent to Natura 2000 areas, including Hen Harrier SPAs and SACs designated for Freshwater Pearl Mussel (FPM)⁵⁰, permission for afforestation, forest roads or aerial fertilisation is contingent on the Forest Service arriving at a conclusion, through its Appropriate Assessment Procedure, that the project – either singly or in combination with other plans and projects – will not significantly affect the Natura site⁵¹,⁵².

**Indicative Forestry Statement**

The overall aim of the Indicative Forestry Statement is to:

“... provide high-level, national guidance in relation to the suitability of land for afforestation. 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 industry with the earliest indication of the areas where potentially sensitive issues may arise in relation to, for example, landscape, water quality, archaeology and biodiversity. Because of the large number and density of recorded archaeological monuments they are not represented on the IFS national map. Instead all forestry applications that may affect an archaeological monument or site are forwarded to the Forest Service archaeologist who consults with the National Monuments Service (NMS). It is planned that maps of all “archaeological areas”, “zones of archaeological potential”, and World Heritage Sites will be included on the IFS map when digitisation is finalised by the NMS⁵³.

“The IFS is a map-based approach [Figure 7] 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”.


⁵⁰ http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/schemecirculars/AppendixD AAPregardingFPMAug12210812.pdf

⁵¹ http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/schemecirculars/ForestServiceAppropriateAssessmentProcedureInfoNote140312.pdf

⁵² An updated version of the procedure has been issued in *Forest Service Appropriate Assessment Procedure Information Note*, March 2012. It covers Natura Impact Statements as well as procedures in relation to freshwater pearl mussel and Hen Harrier.

⁵³ Whilst not visually represented at present on the IFS national map potential impacts on “archaeological areas”, “zones of archaeological potential”, and World Heritage Sites, are also taken into consideration. See pages 27 to 29 above.
The IFS recognises four broad categories to identify opportunity and constraint areas for afforestation:

- 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 and,

- Category 4 - Unsuitable, unproductive or unplantable areas.

Afforestation will take place largely in categories 1 and 2.
Afforestation will take place largely in categories 1 and 2.

More recent work by Teagasc54 (Appendix 1) provides an estimate of land suitable for afforestation by county. It should be noted that most of the land in the “wide use” and “limited use” categories, currently in grass/arable and wet grassland and shown as land suitable for afforestation net of conservation areas in the Farrelly and Gallagher report, is already under intensive agriculture (3,464,000 ha).

**Roundwood harvesting**

All forest harvesting (thinnings, clearfellings and regeneration fellings) are licensable activities under the 1946 Forestry Act. Felling licenses are for a limited time period (5 years) and approval by the Forest Service is subject to compliance with environmental guidelines and best practice. The current area threshold for clearfelling is 25 ha but this can be reduced depending on an assessment of the site in question. Licences may have one or more conditions attaching depending on the area being harvested and this can extend to the planned reforestation species. The felling approvals process considers the potential environmental impact of harvesting operations.

Roundwood harvesting and associated forest roading operations will take place on a range of site types including blanket peat over the coming decade and the period encompassed in *Forests, Products and People*. Over 40% of the forest estate is estimated to be located on peat soils (Forest Service 200755). Harvesting may also take place in areas designated under the Birds Directive as Hen Harrier SPAs56 and in SACs designated for Freshwater Pearl Mussel (FPM)57, where, following the application of its Appropriate Assessment Procedure, the Forest Service has determined that the project – either singly or in combination with other plans and projects – will not significantly affect the Natura site (see Chapter V re AAP).

The national roundwood production forecast58 (Figure 8) shows that almost all of the potential increase in harvesting over the period from 2012 to 2028 will come from the private sector. The private sector estate is generally characterised as being located on better quality, more productive sites than the Coillte estate59, comprising smaller plantations and where there is likely to be less potential for adverse impacts of harvesting on habitats and watercourses.

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56 Subject to the terms and conditions set out in the Forest Service *Appropriate Assessment Procedure* being met http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/schemecirculars/AppendixC AAPRequirementsHenHarrierSPAsFelling140312.pdf

57 http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/schemecirculars/AppendixD AAPRegardingFPMAug12210812.pdf

58 http://www.coford.ie/media/coford/content/publications/projectreports/forecast_31Jan11.pdf

Aerial fertilising

Aerial fertilising is carried mainly on peat soils and peaty podzols where phosphorus and/or nitrogen limit the growth of established forest plantations. It is licensed by the Forest Service under the European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No. 125 of 2012). Given the Indicative Forest Statement approach, the Forestry Schemes Manual guidance, the productivity threshold for Sitka spruce (endorsed in Strategic Action 1.12), the updating of environmental guidelines on water quality, landscape, biodiversity, and the Forest Service policy to restrict the afforestation of unclosed land, it is envisaged that the areas which will be afforested over the period of the plan will, in the main, comprise wet mineral soils which would not require any second or aerial fertilisation. This is not to say that some parts of the existing forest estate planted prior to the implementation of Forests, Products and People will require second and or aerial fertilisation. In this event compliance with statutory requirements and with the updated guidance will be a requirement.

Figure 8: Forecast of roundwood production for the period up to 2028. (NI is Northern Ireland and NIFS is the Northern Ireland Forest Service.)
Chapter IV

Existing environmental problems that are relevant to *Forests, Products and People* including, in particular, those relating to any areas of a particular environmental importance, such as areas designated under the Birds and Habitats Directives

Environmental issues relevant to the current forest estate and any expansion of forest cover and harvesting outlined in *Forests, Products and People* are mainly the possible impacts on surface water quality, and on Annex 1 habitats and species. *Ireland’s Environment 2012 - An Assessment* states: “The management of forest lands is challenging from an environmental perspective. The potential for adverse disturbance of vegetation, soils and landscape during afforestation and forest harvesting is large. These processes can also impact on water quality through acidification and nutrient mobilisation. Also of concern are the location and scale of forestry activities. Although Ireland has notably less forest than other European countries, the rate of afforestation in Ireland has been relatively high”.

**Water quality**

Environmental objectives have been established for all groundwater and surface water bodies in Ireland in the River Basin Management Plans\(^60\) (Figure 9) which were adopted and published by Local Authorities in 2010 in compliance with the EU Water Framework Directive (WFD).

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\(^{60}\) [http://www.wfdireland.ie/](http://www.wfdireland.ie/)
The EPA 2012 report states that of 2,500 aquatic monitoring sites assessed that 953 were polluted, of which 4% were suspected as being caused by forestry. The Forest Service’s iFORIS GIS-based management system for forestry grants is being used to ensure that planting, felling and road building operations in forests are approved only following detailed environmental consultation with a range of public bodies and the general public.”
**Biodiversity and habitats**

The main aim of the Habitats Directive is to achieve and maintain favourable conservation status for habitats and species which are considered at risk. The most recent national assessment of the conservation status of EU protected habitats and species in Ireland was reported in 2008 by the National Parks and Wildlife Service. Forestry is not identified as one of the key threats to protected habitats or Annex species, but it is listed as a pressure in relation to both habitats and Annex species.

**Freshwater Pearl Mussel**

The Freshwater Pearl Mussel (FPM) is a bivalve with a distribution range across northern Europe from Ireland to Russia, and across North America. For most of its life, the animal is a filter feeder, pumping large quantities of water through its siphons to trap food particles. There are two types of FPM in Ireland. The most common is *Margaritifera margaritifera*, which is present in 139 rivers across the country but in serious decline throughout its entire range. The second species is *Margaritifera durrovensis*, which is unique to Ireland and found only in the River Nore catchment where it is extremely rare and in danger of becoming extinct. Consequently, measures to conserve this species include a captive breeding programme.

The Republic of Ireland is estimated to hold 46% of total European Union FPM population. Individual populations range from very small relic populations comprising a few remaining older mussels that have not successfully recruited for 50 years, to some of the largest populations of FPM in the world.

The FPM 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). It is listed on Appendix 3 of the Bern Convention. It is also listed as critically endangered in the Republic of Ireland in the IUCN threat status of Irish molluscs. Under Irish law, the Wildlife Act 1976, the Wildlife (Amendment) Act 2000 and the European Communities (Birds and Natural Habitats) Regulations 2001 (S.I. No. 477 of 2011), it is illegal to interfere with the FPM. Finally, there are 19 Special Areas of Conservation (SACs) for the species in Ireland, including 27 separate mussel populations.

In September 2011, Irish authorities produced a *Road Map for Conservation of the Freshwater Pearl Mussel in Ireland*. The road map prioritises the conservation of FPM populations in eight of the 27 sub-basin catchments. The eight sub-basin catchments are: Bundorragha (Mayo), Currane (Kerry), Dawros (Galway), Caragh (Kerry), Kerry Blackwater (Kerry), Ownagappul (Cork), Owenriff (Galway) and Glaskeelan (Donegal).

These eight priority catchments contain approximately 80% of the total known Irish FPM population (c.9.58 million individuals) and have been identified as having the greatest potential for the successful long-term conservation of the species. The strategy aims to achieve maximum conservation outputs for the restoration effort in terms of the numbers of mussels and individual populations conserved and protected over the long term.

The roadmap details measures for various sectors in the eight priority catchments. With regard to forestry, the road map proposes the production of detailed FPM Catchment Forest Management Plans (CFMPs) for each of the catchments. Forest activities such as afforestation, harvesting and road construction represent a potential source of sediment and nutrients (particularly phosphorus) to rivers. This is especially the case where forests are planted on peat or peaty soils. Consequently, the principal conservation measure set out in the CFMP is the control of forest management operations during the life-cycle of a forest, such as thinning, clearfelling, forest road construction and reforestation. The CFMP identifies the

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most appropriate options for different forest activities, based on the sensitivity of the site regarding sedimentation and eutrophification. This may result in some forest areas being identified for long-term retention, alternative silvicultural regimes such as continuous cover forestry, the establishment of protective forests (predominantly native woodland), or no replanting in selected areas.

The CFMPs provide a structure for forest owners and registered foresters to assess the sensitivity of an individual site in relation to FPM, and to select from a range of presented options the most appropriate approach to the project in question which best reflects that level of sensitivity. By following this process, applicants and registered foresters can develop applications for Forest Service approval/licensing which take account of the risk to FMP populations. The information provided may then enable the Forest Service to arrive at the conclusion after AA Screening that the project, alone and in combination with other plans and projects, will not have a significant impact on FPM (or other qualifying interests of the NATURA site).

If AA Screening results in the Forest Service arriving at the conclusion that the project may have a significant effect, or where uncertainty exists (which might arise in situations where the above process is not followed by the applicant and registered forester), an Appropriate Assessment is necessary and the applicant will be required to submit a NATURA Impact Statement (NIS) to facilitate that process. Therefore, applications to the Forest Service for approval/licensing within the priority eight FPM catchments can only advance where: (i) the applicant and registered forester have assessed individual site sensitivity and have tailored the proposed project accordingly (either at initial application stage following the above process, or through a NIS, with its associated cost and time delay); and where (ii) the Forest Service is satisfied that the project will have no significant effect on the NATURA site.

It is intended that this approach, coupled with proactive engagement with forest owners and foresters, and the availability of proposed incentives primarily under the Native Woodland Scheme (to establish new protective native woodland and to convert existing conifer forest to native woodland along watercourses), will minimise the potential for impact arising from forestry, and will, over time, change the profile of forest cover within the catchments in terms of species mix and silviculture, to contribute proactively to the long-term protection of the FPM.

Under the Native Woodland Establishment (NWS) Scheme, landowners can avail of grants to develop new native woodland. The NWS scheme document highlights the potential to develop native riparian woodland and it specifically notes that projects focussed on creating significant areas of native riparian woodland primarily to protect a designated riparian or aquatic habitat or species (e.g. Freshwater Pearl Mussel) may also be eligible for funding. Such projects to be examined, on a case-by-case basis, by the Forest Service at a national level, with a focus on site suitability, relative strategic merit and other factors.

In a meeting with the European Commission in September 2011, a draft pilot plan for forestry in the Caragh FPM Catchment was presented by the Forest Service. This plan has been used as a template for the completion of a single CFMP which will include all eight catchments. Draft text for the first four catchments is nearing completion and draft text for the remaining catchments will be finalised early in the New Year. Engagement of forest stakeholders in the development of the CFMP has commenced, and will intensify once draft text is finalised and prepared for consultation.

**Hen Harrier**

A recent COFORD Connects Note62 states “*Hen Harriers are listed, along with 32 other rare and vulnerable bird species, on Annex I of the Birds Directive (79/409/EEC). This instrument legally requires Ireland to ensure their protection and to designate a suite of the most* 

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important sites for this species as SPAs, or else face heavy fines in the European Court. Over recent centuries a number of raptor species have been lost from the island of Ireland, and the Hen Harrier (Figure 10), one of our rarest birds of prey, is now classed as vulnerable here and at a European scale. Traditionally it used heather moors for nesting during the breeding season and foraged in the surrounding landscape which included extensive farmland. Due to the depletion of significant proportions of suitable habitat from the Irish landscape by afforestation and reclamation, they have adapted to nesting in young conifer plantations and are now frequently associated with these forests.

The conversion of unimproved/unenclosed open moorland and heath/bog habitats to forestry and other land uses such as agriculture and windfarms, can negatively affect Hen Harriers by removing nesting and foraging habitats in the long term. There is also some evidence to indicate that nests located in second rotation pre-thicket forests may be associated with low levels of breeding success. In addition, other forestry operations such harvesting and road construction can cause disturbance to nesting harriers, resulting in nest abandonment. Forest expansion and operations therefore need to be carefully planned in SPAs that have been designated for Hen Harrier protection.

Since the SPAs were designated in 2007, afforestation has been severely restricted and confined to improved agricultural grassland within each SPA, with no afforestation permitted on unimproved land such as open moorland and heath/bog habitats.

More recently, approval for afforestation within these SPAs has been curtailed. As communicated to the forestry sector by Forest Service Circular 13/2013 (August 2013), the National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage and the Gaeltacht is commencing the development of a Threat Response Plan (TRP) for the conservation of Hen Harrier, as provided for under Regulation 39 of the European Communities (Birds and Natural Habitats) Regulations 2011 (Statutory Instrument No. 477 of 2011). The plan is expected to take approximately 2 years to complete. Forestry will form an important element of the plan, given the significance presence of this landuse in relevant SPAs. The Forest Service will be liaising closely with the NPWS in its formulation of the TRP, on aspects relating to afforestation, felling and replanting with a view to wider forest restructuring, and will be consulting with key forest stakeholders during this process. Until the TRP is completed and the measures involving forestry are clear, the Forest Service is not in a position to issue approvals for afforestation within Hen Harrier SPAs.

Afforestation applications outside of Hen Harrier SPAs continue to be subjected to the Forest Service Appropriate Assessment Procedure, with individual AA Screening and follow-up Appropriate Assessment applied, as required.

Forest management operations, including thinning, felling and forest road construction, still continue within Hen Harrier SPAs, subject to Forest Service approval under the relevant legislation. Due to the possibility of disturbance to breeding birds arising from associated operations, the Forest Service operates a procedure developed with NPWS and embedded within the Forest Service AAP, whereby operations within designated ‘Red Areas’ centred on known nesting sites are not permitted within the Hen Harrier breeding season. These restrictions also apply to sections of Red Areas extending beyond the SPA boundary. The procedure is set out in Appendix C (‘AAP requirements regarding Hen Harrier SPAs, felling and other disturbance operations’) of the Forest Service AAP Information Note.

Former planting now considered unsuitable
There are areas, typically on upland and poorer organic soils and, principally within the Coillte estate, which in the light of current knowledge and environmental guidelines should never have been planted. To reforest these areas would only serve to continue the process of environmental degradation as their continuation under forestry may not be the best use of these areas. *Forests, Products and People* identified that the management options of these areas are limited to "(a) harvest the forest crop and allow nature take its course with minimal intervention, (b) leave these areas untouched and again allow nature take its course over time, (c) harvest the crop and undertake replanting with minimal disturbance and more appropriate species or (d) harvest the forest crop and convert the area to its former state". The recommendation is to introduce guidance and criteria for the identification and future management of peat areas currently afforested which are to be deforested to mitigate continued environmental degradation (Strategic Action 3.8). This would include carefully considering options other than full reforestation, particularly where there are strong indications that full reforestation could contribute to a delay in a recovery of surface water to good status.

![Female and male Hen Harriers in flight](image)

*Figure 10: Female and male Hen Harriers in flight (courtesy of Richard Mills).*
Chapter V

Environmental protection objectives, established at international, European or national level, which are relevant to Forests, Products and People and the way those objectives and any environmental considerations have been taken into account during its preparation

Chapter 3 of Forests, Products and People deals with environmental aspects of forestry and provides an outline of how national and international environmental objectives were taken into account in undertaking the policy review:

“The Forest Service Appropriate Assessment procedures for forestry activities, which were issued in March 2012, encompass forestry plans or projects including applications under the Afforestation Scheme, the Forest Environmental Protection Scheme (FEPS) which is limited to REPS farmers, the Native Woodland Scheme (Element 1 and Element 2) and the Forest Road Scheme, and also felling licence applications, aerial fertilisation licence applications and applications for consent without grant aid for afforestation or forest road construction under S.I. 558 of 2010.”

Regarding Natura sites (SACs and SPAs), the Forest Service operates an Appropriate Assessment Procedure (AAP) in relation to all forestry operations requiring its consent, i.e. afforestation, forest road construction, felling (thinning and clearfell/replanting) and aerial fertilisation. Under the AAP, individual projects are screened to assess whether or not there is the possibility for a significant effect on a Natura site. Where the possibility is identified, or where uncertainty exists, the proponent of the plan is required to submit a Natura Impact Statement and the Forest Service undertakes the appropriate assessment. The appropriate assessment is undertaken to assess the nature of possible impacts, and the effectiveness of any mitigation measures proposed. A project can only receive approval if the Forest Service has determined that it will not significantly affect the Natura site. Full details on how the Forest Service AAP operates are set out in the Forest Service Appropriate Assessment Procedure Information Note (consolidated version March 2013) http://www.agriculture.gov.ie/media/migration/forestry/publications/ForestServiceAAPInformationNoteMarch12CONSOLIDATED060312.pdf and the Forest Service Appropriate Assessment Procedure Forestry Inspector’s Manual (September 2013).

“The main environmental guidelines are in place since 2000 and were originally intended to be reviewed after five years. In the interim, our knowledge and understanding of the potential impacts of forestry (afforestation, reforestation and forest management) on the environment has improved and the regulatory framework has changed e.g. transposition of the Water Framework Directive. There is a compelling need to update the 2000 series of guidelines and the Code of Best Forest Practice to reflect the changed regulatory framework and to bring together under a single protocol all environmental, biodiversity and best practice compliance requirements.

“Compliance with environmental regulations is becoming increasingly complex and can be daunting to new entrants and existing forest owners alike. There is a need for a more integrated approach which would bring together the various bodies, guidelines and procedures and allow for clarity of purpose and provide a transparent basis for decision making.

“The use to date of GIS has been limited in the evaluation of environmental impacts of forestry either existing or planned. The inclusion in iFORIS of layers for NPWS consultation
zones, archaeology, landscape designation, EPA river data set etc is a welcome and progressive development. iFORIS use in collaboration with the recent IFS from the Forest Service would support a more robust and scientific approach to any mitigation measures and the avoidance of environmental damage by forestry.

“The Water Framework Directive (WFD) is a policy driver that necessitates governments, stakeholders and analysts to understand the implications of land use on catchments and water bodies, water allocation policies and develop the tools needed for applied economic analysis. The policy goal is good ecological status of surface water by 2015. The key pressures on WFD defined water bodies from forestry include phosphorus, sedimentation, acidification and dangerous substances. To identify the most appropriate forestry measures there is a need for co-operation between COFORD, Coillte, the Environmental Protection Agency (EPA), DoAHG (Department of Arts, Heritage and Gaeltacht), Department of Environment, Community and Local Government (DoECLG), the Forest Service, non-governmental organisations (NGOs) and associated researchers to help extract and gather information on effectiveness of measures and their costs. The forestry sector has shown an ability to meet new environmental challenges and will need to act responsibly and to continuously respond to environmental challenges in line with best environmental practices.

“The archaeological features located in the Coillte estate are a significant part of the national heritage. There are estimated to be some 1,600 Recorded Monuments and Protected Structures, along with many thousands of other cultural heritage features and structures, on the Coillte estate. This is more than double the number of National Monuments in direct State or Local Authority ownership or guardianship. The upgrading and maintenance of a wide network of trails and recreation sites by Coillte, coupled with the incorporation of many of these 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.

“The Cost Benefit Analysis (CBA) of the planned afforestation demonstrates that the environmental benefits due to carbon sequestration/climate mitigation could outweigh the value of the roundwood produced (Appendix 6). It will be important therefore to ensure that the non-marketable benefits are realised and that there are measures in place to monitor their delivery at a national level.”

The policy considerations in relation to the planned expansion of forest cover state covered in Chapter 1 of Forests, Products and People include the following:

“The expansion of the forest estate must be compatible with environmental sustainability and must be undertaken in a planned manner that ensures that only appropriate afforestation takes place in accordance with the principles of sustainable forest management (SFM) which balances the economic, environmental and social aspects. Environmental protection and enhancement measures will need to be adequately communicated and supported to ensure that they are fully understood and that all stakeholders are aware of their respective responsibilities.”

Recommendations, previously listed, are made in the review in relation to biodiversity, water quality, climate change and renewable energy provision, all of which are related to national and international environmental protection objectives.

64 The MCPFE defines SFM as the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.
Environmental protection objectives that are established in national, EU and international law, and which were taken into consideration in the preparation of *Forests Products and People* include:

**Primary legislation**

- National Monuments Acts and Amendments 1930-2004 – see archaeological heritage in Chapter II.
- Wildlife Acts 1976, 2000 and 2010 – see biodiversity in Chapters I, IV and VI and biodiversity fauna and flora in Chapter II.

**Secondary legislation**

- The European Communities (Water policy) Regulations 2003 (SI 722 of 2003), The European Communities environmental objectives (surface water) Regulations 2009 (SI 272 of 2009), see Chapters I, II, IV and VI.
- European Communities (Environmental Impact Assessment) (Amendment) Regulations 2001 (S.I. No. 538 of 2001), as amended by the European Communities (Environmental Impact Assessment) (Forestry Consent System) (Amendment) Regulations 2006 (S.I. No. 168 of 2006) – see Chapter II.
- European Communities (Forest Consent and Assessment) Regulations 2010 (S.I. No. 558 of 2010) – see Chapter II.
- European Communities (Aerial Fertilisation) (Forestry) Regulations 2006 (S.I. No 592 of 2006), as amended by The European Communities (Aerial Fertilisation) (Forestry) (Amendment) Regulations 2007 (S.I. 790 of 2007) as amended by European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No. 125 of 2012) – see aerial fertilising in Chapters I and II.
- Freshwater Pearl Mussel Regulations. (S.I. No. 296 of 2009) – see Chapter II
- Water Framework (S.I. No. 722 of 2003 and S.I. No. 413 of 2005) – see Chapters II and VI.
- European Communities (Marketing of Forest Reproductive Material) Regulations 2002 – see Table 1, Chapter I and reference to Strategic Action 2.12 in *Forests, Products and People*.
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) – see Chapters II and VI.

**EU legislation**

- Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment - see Chapter II.
- Council Directive 91/676/EC concerning the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources - see below
• Council Directive 1999/105/EC on the marketing of forest reproductive material – see Table 1, Chapter I and reference to Strategic Action 2.12 in *Forests, Products and People*.

• Directive 2000/60/EC establishing a framework for Community action in the field of water policy - see Chapters I, II, IV and VI.

• Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment – the Strategic Environmental Assessment Directive, under which this Environmental Report and associated consultation is being conducted.

• Directive 2009/28/EC on the promotion of the use of energy from renewable sources - see Chapter I.

**Nitrates Directive**
The Council Directive concerning the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources (91/676/EEC) was finalised in 1991. Its purpose is to protect all aquatic ecosystems from pollution caused by livestock effluents and the excessive use of fertilisers. These materials all contain significant levels of nitrogen, with the Directive requiring EU states to designate sensitive aquatic environments as nitrate vulnerable zones. Action programmes are to be put in place to safeguard and improve water quality. A code of practice is required to be drawn up, covering relevant protection measures such as appropriate periods for fertilizer spreading and storage vessel construction. The Directive is transposed into Irish law by the European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2006 (S.I. No 378 of 2006).

**International agreements that Ireland is Party to**

• Ministerial Council on the Protection of Forests in Europe (MCPFE) – concerns primarily the elaboration of criteria and indicators for sustainable forest management - see Chapter I, Table 1 and reference to policy statement from *Forests, Products and People* on the need to ensure that forest related legislation underpins the principles of sustainable forest management while recognising the multifunctional nature of forestry.

• The United Nations Framework Convention on Climate Change and the Kyoto Protocol – see Chapters I, II and IV.

• The Convention on Biological Diversity – see Chapters I, II and IV.

• Granada Convention for the Protection of the Architectural Heritage of Europe - see below.

• European Landscape Convention - see below.

**Granada Convention for the Protection of the Architectural Heritage of Europe**

Ratified by Ireland in 1997, the 1985 Convention for the Protection of the Architectural Heritage of Europe is intended to reinforce and promote policies for the conservation and enhancement of Europe's heritage. The Convention is dual-purpose, involving the promotion of architectural heritage policies while fostering European-wide co-operation measures. Covering monuments, groups of buildings and sites of importance, the Convention requires a national inventory of architectural heritage to be developed. Legal protection measures must be established, with a system of formal authorisation being required for works affecting
protected sites and structures. Architectural heritage conservation considerations are required to feature in the Convention signatories’ town and regional planning processes.

**European Landscape Convention**
The 2000 European Landscape Convention was adopted in Florence and was ratified by Ireland in 2002. It promotes the protection, management and planning of EU landscapes, being a response to European-wide concerns that the quality and diversity of landscapes were deteriorating. The underlying purpose of the Convention is to encourage public authorities to adopt policies and measures at local, regional, national and international level to protect and manage landscapes throughout Europe. It requires the landscape dimension to feature in a country’s spatial planning and environmental policies and for landscape quality objectives to be drawn up.

**Environmental guidelines**
The suite of six Guidelines are the mechanisms by which the Forest Service will ensure that the environmental aspects of FPR are implemented. Adherence to the guidelines is a condition of grant aid and the issuing of a felling licence. The penalty for non-compliance is the withholding of approvals for grants and felling licences.

**Forestry and Water Quality Guidelines**
The guidelines describe a range of measures intended to cover all situations relating to forestry (Sensitive Areas, Buffer Zone Guidelines, Ground Preparation and Drainage, Fertiliser Application and Storage, Chemicals, Fuel and Machine Oils, Roads, Bridges, Culverts and Fords and Harvesting) and water quality. Not all of the measures outlined will be applicable to every site. However, it is the responsibility of forest owners to identify and apply those measures which are appropriate to their particular forest. The guidelines were developed through extensive consultation with a wide range of relevant parties. They set out sound and practical measures based on the principles of Sustainable Forest Management (SFM), and are based on the best available scientific information.

**Forestry and the Landscape Guidelines**
The guidelines address the (a) response to landscape character, (b) planning and design criteria and factors, (c) planning and design factors for various forest development scenarios, (d) forest landscape planning and design for distinct landscape character types and (e) landscape recommendations for forest harvesting. They describe a range of measures intended to cover all situations relating to forestry and the landscape. Not all of the measures outlined will be applicable to every site. However, it is the responsibility of forest owners to identify and apply those measures which are appropriate to their particular forest.

**Forestry and Archaeology Guidelines**
The guidelines were developed through extensive consultation with a wide range of relevant parties. They set out sound and practical measures based on the principles of SFM, and are firmly rooted in the best available information. The guidelines cover the potential Impact of the forest cycle on archaeology (soil preparation, drainage and harvesting), legal aspects, what to do in relation to identified sites of interest (buffer and exclusion zones, access, forest activities), what to do for previously unrecorded sites and non archaeological sites. The guidelines also provide a detailed review of archaeological site types and identifying features.
Forestry and Biodiversity Guidelines
The guidelines describe a range of measures intended to cover all situations relating to forestry and biodiversity. Not all of the measures outlined will be applicable to every site. It is recognised that, due to limitations imposed by size, some of the measures set out may be impractical in smaller forest holdings, particularly in relation to promoting age and structural diversity. However, it is the responsibility of forest owners to identify and apply those measures which are appropriate to their particular forest. The guidelines cover site development, species selection, age and structural diversity, over-mature trees and deadwood, areas for biodiversity enhancement (open space and retained habitats to account for 15% of total forest area), pest management and troublesome species e.g. rhododendron, and machine operations.

Forest Harvesting and Environmental Guidelines
The guidelines address issues relating to soil conservation, the protection of water quality, archaeological sites, biodiversity and the visual landscape and the maintenance of forest health and productivity. They are presented in the context of timber harvesting and forest road construction and maintenance. Guidelines are provided for (a) harvest planning, (b) harvest operations, (c) harvest site restoration, (d) road planning, (e) road construction and (f) machine servicing.

Forest Protection Guidelines
The document describes the twelve significant threats to Irish forests both biotic and abiotic and for each outlines (a) the potential damage, (b) the vulnerable stage of forest growth, (c) the vulnerable season, (d) prevention and (e) control procedures and methodology. There is a separate section on guidelines for the use of pesticides in Irish forests. Only pesticides that are on the current Register of Approved Pesticides published by the Department of Agriculture, Food and Marine are permitted. Guidance is provided on (a) integrated forest management, (b) minimising the amount of pesticide to be applied, (c) exclusion zones, (d) safety and hygiene, (e) personal protective equipment, (f) transport and storage of pesticides, (h) spillage, (i) disposal of surplus pesticide and containers and (k) record keeping and site management before and after application.

Other relevant guidance

Forestry and Freshwater Pearl Mussel Requirements
Site Assessment and Mitigation Measures - The Requirements will apply to all potentially impacting forest operations within the catchments of FPM populations in rivers designated candidate Special Areas of Conservation (cSACs) for the species. The Requirements describe a range of measures intended to reduce potential negative impacts on the species arising from forest operations and supplement all other Forest Service Guidelines and regulations. Effective mitigation requires site-specific information and detailed planning. This assessment forms part of the application for approval or licence. Relevant Forest Service environmental guidelines, the Forestry Schemes Manual and the Code of Best Forest Practice – Ireland must be adhered to. Possible mitigations and appropriate measures are listed and expanded upon within the document,
Forestry and Otter Guidelines, and Forestry and Kerry Slug Guidelines
These species are listed in Annex IV of the Habitats Directive and require strict protection as detailed in Article 12 and 13 of the Habitats Directive. This makes it an offence to deliberately disturb each of these species or damage or destroy its breeding or resting place wherever it occurs. Forestry has been identified as an activity with the potential to impact on these Annex IV species. These Guidelines have been developed by the Forest Service in consultation with National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government. They are a result of a review of relevant literature and expert advice. The Guidelines describe the species, their habitats and the methods by which they will be protected during forest operations and how the Forest Service will take them into consideration when issuing license and approvals for forest operations.

Forestry and Aerial Fertilizer Requirements
Aerial fertilisation of forest plantations can only be undertaken after an aerial fertilisation licence has issued from the Forest Service. This is required under S.I. No. 592 of 2006 and S.I. No. 790 of 2007, European Communities (Aerial Fertilisation) (Forestry) (Amendment) Regulations 2007. It is an offence to carry out aerial fertilisation of a forest without a valid licence. The requirements sets out the application procedures and provides guidance on site suitability, consultation, timing, exclusion zones, operational measures, fertiliser types and application rate and communications.

Forestry Schemes Manual
This sets out clearly and concisely the procedures and operational standards required for the various forestry support schemes as described in the scheme documents administered by the Forest Service of the Department of Agriculture, Food and the Marine. These scheme documents are available on the Departments website. The Manual complements, and should be read in conjunction with, the National Forest Standard, the Code of Best Forest Practice and the suite of environmental guidelines published by the Department relating to Archaeology, Biodiversity, Landscape, Water Quality, Aerial Fertilisation, Harvesting, Forest Protection and Forest Recreation. Adherence to these publications is a condition of all grant schemes and aims to ensure that all timber produced in Ireland is derived from sustainably managed forests and that State investment in forestry is protected.

Code of Best Forestry Practice
This is a comprehensive listing of all forestry operations and the manner in which they should be carried out to ensure the implementation of SFM in Ireland, as agreed at the Third Ministerial Conference on the Protection of Forests in Europe, Lisbon, 1998. The Code is designed to ensure that forest operations in Ireland are carried out in a way which meets high environmental, social and economic standards.

Indicative Forestry Statement
The aim of the Indicative Forestry Statement is to provide high-level, national guidance in relation to the suitability of land for afforestation. It 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.

National Forest Standard
The standard applies to all forests in Ireland and was developed in accordance with Ireland's commitment to the six pan-European criteria for SFM adopted at the Third Ministerial Conference on the Protection of Forests in Europe, Lisbon, 1998. It is the framework within which the development and evaluation of sustainable forest management takes place and its underlying principles and key processes are outlined. The standard identifies: criteria, which define the essential elements of sustainable forest management; indicators, which provide a basis for assessing forest or forest industry conditions for each criterion; and measures which describe the type of information needed to evaluate how indicators change over time.
Chapter VI

Measures envisaged to prevent, reduce and as fully as possible to offset any significant adverse effects on the environment that may be caused by implementing the recommendations in *Forests Products and People*

The measures in place and envisaged to prevent, reduce and as fully as possible to offset any significant adverse effects on the environment caused by implementing *Forests, Products and People* are referred to in Chapters I, II and elsewhere in this report and are tabulated in Table 2.

**Table 2**: Environmental effects likely to arise as a result of the recommendations in *Forests, Products and People* and measures envisaged prevent, reduce and offset them.

<table>
<thead>
<tr>
<th>Environmental issue</th>
<th>Existing and envisaged measure(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habits, biodiversity and flora and fauna</td>
<td>Compliance with the procedures outlined in the Forest Service <em>Forestry Schemes Manual</em> and the Appropriate Assessment Procedures in relation to habitats and species(^\text{65})</td>
</tr>
<tr>
<td></td>
<td>Updating and implementation of the Forest Service Guidelines on:</td>
</tr>
<tr>
<td></td>
<td><em>Forestry Biodiversity</em></td>
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<td></td>
<td><em>Forest Harvesting and the Environment</em></td>
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<td><em>Forestry and Freshwater Pearl Mussel Requirements</em></td>
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<td><em>Forestry and Otter</em></td>
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<td><em>Forestry and Kerry Slug</em></td>
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<td></td>
<td><em>Forestry Protection</em></td>
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<tr>
<td>Water quality</td>
<td><strong>Implementation of the Programme of Measures and Standards For Forest and Water</strong> under the Water Framework Directive</td>
</tr>
<tr>
<td></td>
<td>Implementation of the Protocol for the determination of the acid sensitivity of surface water in the context of afforestation and the recent update(^\text{66}), and water quality protection measures laid out in the <em>Forestry Schemes Manual</em>.</td>
</tr>
<tr>
<td></td>
<td>Updating and implementation of the Forest Service Guidelines on:</td>
</tr>
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<td></td>
<td><em>Forestry and Water Quality</em></td>
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<tr>
<td></td>
<td><em>Forestry and Aerial Fertilisation</em></td>
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</tbody>
</table>

\(^\text{65}\) An updated version of the procedure has been issued in *Forest Service Appropriate Assessment Procedure Information Note*, March 2012. It covers Natura Impact Statements as well as procedures in relation to freshwater pearl mussel and Hen Harrier.

\(^\text{66}\) See Forest Service Circular 4 of 2013: Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and revised Native Woodland Scheme Establishment Site Appraisal Framework (14Feb13),
Forests, Products and People proposes that the Forest Service Guidelines be updated to reflect scientific findings in the period since they were drafted:

**Strategic Action 3.3**

DAFM in collaboration with the main sector stakeholders to update the complete set of environmental guidelines with priority given to guidelines that address water quality, fertilisation and biodiversity. In the revision consideration should be given to structuring the guidelines so they can be used either at forest developmental stages (establishment, thinning, harvesting) or thematically to deal with water, biodiversity etc. The revised guidelines should be comprehensive, provide clarity regarding requirements and permitting procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework.
Chapter VII

An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information

The development and assessment of alternatives (or options) is a legal requirement under the SEA Directive. Under Article 5 (O.J. 2001) plans and programme proponents should ensure that: Reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated (Article 5.1)

The Forest Policy Review group undertook the assessment of alternatives and policy recommendations, as outlined in Policy formulation process in Chapter I.

The reasons for selecting and making the policy recommendations in Forests, Products and People are set out in the Current Features and Policy Considerations sections in each Chapter of the review, and in a number of the accompanying appendices. Environmental aspects and general overarching issues considered in formulating the recommendations in each Chapter have been extracted for ease of reference and are presented below (the full rationale for the Strategic Actions is set out in each Chapter of Forests, Products and People). In addition, accompanying technical analysis of policy issues and alternatives is presented in Appendices 2-6 in Forests, Products and People.

Forests, Products and People – Chapter 1: Expansion of the Forest Resource Area

The main alternatives considered by the FPRG were:

- a) Continuation of current levels of afforestation i.e. 6-7,000 ha per annum
- b) Increase level of afforestation to 10,000 ha per annum
- c) Increase level of afforestation to 15,000 ha per annum
- d) Increase level of afforestation to 20,000 ha per annum

“Due to the time lag between planting and harvesting, the long term forecast of roundwood production will be relatively unaffected by future planting levels until 2035 and beyond. The long term forecast) shows a steady increase in volumes up to 2035 followed by a dramatic decrease in the following ten years. The extent of this decrease is dependent on afforestation rates, the productivity of the species being planted and on the species mix. At current levels of afforestation the estimated volume production will fall from over 8 million m³ in 2035 to just less than 5 million m³ by 2049. To address this trough in future supply and to achieve the percentage forest cover set out in Growing for the Future, it will be necessary to extend the period of afforestation envisaged to 2045 assuming an afforestation programme of circa 15,000 ha per annum.

“Analysis of soil types suitable for afforestation, including their current land use indicates that there is sufficient potential supply of suitable land available for the afforestation levels considered in this report⁶⁷. That analysis was limited to soil types only and did not address designated areas unavailable or with limited application for afforestation.

“The long term forecast of broadleaf production shows a steady increase over the next half century. The ability of this resource to sustain a viable hardwood processing industry is

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⁶⁷ Potential level of land available for afforestation that is marginal to economic agriculture and the likely level of productivity that can be attained on it using Sitka spruce. Unpublished report by Niall Farrelly, Teagasc, Forest Research, Mellows Centre, Athenry, Co Galway.
dependent on a combination of suitable species, correct tending and management and inherent timber quality. The impact of a 15,000 ha afforestation programme on future woodflows is to significantly reduce the estimated decline in roundwood supply post 2035 and the number of years before recovery in supply takes place (Appendix 5).

“The onus for the expansion of the forest estate now rests primarily with the private sector. State organisations which have land assets, apart from Coillte, have by and large not been involved in meeting national targets, even in relation to purely environmental planting. There is potential for limited planting of native species within National Parks and expanding native woodlands onto some industrial cutaway peats.

“The expansion of the forest estate must be compatible with environmental sustainability and must be undertaken in a planned manner that ensures that only appropriate afforestation takes place in accordance with the principles of sustainable forest management (SFM68) which balances the economic, environmental and social aspects. Environmental protection and enhancement measures will need to be adequately communicated and supported to ensure that they are fully understood and that all stakeholders are aware of their respective responsibilities.

“The current approach to afforestation requires that each new plantation complies, site permitting, with species targets and facilitates the full range of environmental benefits while at the same time being economically viable. This can lead to sub-optimisation of benefits at a national level. An alternative would be to divide the afforestation programme into two main components, one with the provision of environmental services and social benefits as the principal management objective and the second component with commercial forestry and the production of timber as the principal management objective. Areas, with the main objective as the provision of environmental services and social benefits, would still provide timber benefits but as a secondary objective while areas with production of timber as the main aim would provide environmental and social benefits but not as their primary objective. The Indicative Forestry Statement (Forest Service, 2008) and other GIS land use tools which aim to provides high-level, national guidance in relation to the suitability of land for afforestation and facilitate the establishment of forests serving a variety of purposes have potential for wider application as for example to identify the most appropriate areas for environmental and timber production objectives and could be overlaid with river basin plans and other data layers to guide afforestation including the expansion of the native woodlands.

“Climate change is a reality and poses a serious threat with impacts on Irish forests. The climate of Ireland is predicted to get warmer and drier in the southeast and wetter in the west, with an increase in the frequency of droughts and floods (McGrath et al. 2005). The temperate forest oceanic regions of Europe are estimated to be subject to increasing changes in storm, insect and pathogen disturbance regimes along with shifts in tree species compositions (EFI 2011). These changes pose a risk to forests in Ireland and are likely to impact on the performance of the tree species now being planted. Drought will impact on the productivity of certain species (Ray et al. 2010) and may lead to an increased frequency of forest fire. Future species choice (this could require more extensive use of mixtures and species more resilient to drought and insect attack) should reflect these long term changes in climate and forest management should aim to increase adaptability to the impacts of climate change. The CLIMADAPT tool has a role to play in guiding species choice and related management decisions (available at http://82.165.27.141/climadapt_client/index.jsp).

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68 The MCPFE defines SFM as the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.
“An analysis of grant aided plantations shows that there are over 44,000 ha where the plantation size was less than 5 ha and that almost 25% of the private forest area was more than 100 metres from a county road. Accessibility is vital if plantations are to be thinned and roading costs kept within economic levels. Increased plantation size and proximity to existing plantations will make them more attractive for thinning and facilitate cost savings at time of harvesting.

“The use of broadleaves envisaged in this policy reduces roundwood production in the shorter term due to their lower growth rates. For this reason, the area to be afforested has been increased while at the same time volume production targets have been reduced compared with Growing for the Future. Opportunities to increase volume production include the choice of faster growing tree species and the use of improved planting stock for the main conifer species. Improved Sitka spruce would result in an increase of at least one yield class.

“The COFORD Roundwood Demand Group estimates that the demand for wood fibre for energy will increase to 1.7 million m³ between now and 2020, in a scenario that assumes significant expansion of the purpose-grown energy crop area and a substantial level of imported material. The increased levels of afforestation recommended here will not begin to contribute volume production until 2028. There may be scope to increase the level of harvest and biomass recovery from existing plantations over and above forecasted levels. Nevertheless, even under the most optimistic scenarios, the wood energy supply gap is likely to be in the region of 1-1.25 million m³ per annum, about one third of the current overall level of supply. Imports of wood fuels such as woodchip and pellets could address this shortfall but there is also potential to mobilise additional indigenous supplies of biomass from short rotation coppice (mainly willow) and short rotation forestry (fast growing conifers and broadleaves). Achieving an appropriate balance between short rotation coppice/forestry and conventional afforestation also needs to be considered, given the underlying objectives of security of energy supply and climate change mitigation. Afforestation provides a wider range of mitigation opportunities (including carbon sequestration, materials substitution and fossil fuel replacement) compared with biomass crops as well as non-timber benefits. Given the likely level of future State/EU investment that will be involved in biomass crops and afforestation, DAFM should examine these issues.

“The quality and productivity of forest plantations are dependent upon the genetic quality of the seed and reproductive material used during establishment. Forest nurseries have an important role to play in ensuring that the genetic quality of planting stock is well adapted and fit for purpose and that improved planting stock is made available for future planting programmes. This should include selection and improvement of native species such as alder, ash, and birch”.

*Forests, Products and People – Chapter 2: Management of the Resource*

The main alternatives considered by the FPRG were:

**Forest Management and Silvicultural Systems**

a) Continuation of the status quo where the majority of forests are managed under a clearfell system and once felled are replanted or

b) Support the greater use of continuous cover type silvicultural systems and low impact silvicultural systems (LISS) which rely on natural regeneration supplemented where necessary by artificial regeneration.

c) Continue with the current initiatives to promote active forest management including thinning or
d) Adopt a more pro-active approach with forest owners and the management of their forests through education and awareness and support collaborative arrangements between owners

e) Maintain the Forest Road Scheme as is where funding has been intermittent or

f) Introduction of prioritised road scheme for the private sector to facilitate thinning and the active management of plantations together with delivery at national level of the forecast volumes for the forest and wood energy sectors.

g) Consider the National Forest Inventory (NFI) completed in 2007 as a once off exercise or

h) Establish an NFI unit within the Forest Service with responsibility for inventory, forecasting and the estimation of annual allowable cut (AAC) for both public and private forests.

i) Continue with the current system of health monitoring or

j) Integrate and develop the current monitoring schemes on forest health and biogeochemistry, climate change mitigation and adaptation, biodiversity, nutrient status and phenological observations within the NFI framework and use them to assess biodiversity, monitor the impacts of climate change thereby contributing to the improved future management of the forest resource

Forest Management Planning

a) Continuation of the status quo where forest management plans while a requirement under support measures are basic, paper based and are neither co-ordinated nor collated at county, regional or national levels or

b) Introduction of a more comprehensive based forest management planning system for all forests which would facilitate certification, the forecasting of future roundwood supply, felling compliance and public good. This system would use iNET to allow for electronic submission.

“The most common silvicultural system practised in Ireland is the clearfell system, where planted crops are grown to maturity with one or more intervening thinnings and then felled and following some site preparation activities are replanted. This system does have the potential to impact negatively on the environment especially during the final felling and site preparation activities. Good management practices are needed in harvesting in sensitive catchments to mitigate possible sedimentation and nutrient run-off. There is now an increasing interest in continuous forest cover (CCF) silvicultural systems especially for broadleaves and mixed high forest areas. There is also support for the contention that, when compared with clearfelling, CCF systems can provide enhanced climate change mitigation benefits and improve delivery of biodiversity objectives and other environmental services (Bosbeer et al 200869).

“The Forest Service supports the drafting of management plans at age 10 for grant-aided plantations over 10 ha (5 ha for broadleaves). The scope of the management plans is basic and they are not entered into any form of electronic information retrieval system. Enhancement of the management plan format in line with the requirements of certification to support the principles of SFM and prescribe the appropriate management regime and the use of this information to support the forecasting process would provide for more reliable roundwood production information at national, regional, county and catchment levels, thus

facilitating improved investment decisions by the processing and wood energy sectors. Coillte has developed an integrated forest management planning system with a scope and capability over and above that envisaged to be introduced to the private sector. Thus it will be important to ensure that both systems are aligned.

“At a project level, the lack of an initial statement of objectives and management plan, has arguably lessened the level of return on investment. In order to achieve a better return, the wider use of forest management planning, which sets out both owner’s and State’s objectives, the levels of support and the benefits/products or services to be achieved needs to be put in place.

“The annual allowable cut (AAC) which is typically calculated during the preparation of forest management plans (FMPs) provides an indicator of the permissible volume that can be harvested in each year of the FMP. Harvesting at levels greater than the AAC will impact on the sustainability of the resource, thus the AAC can be viewed as an indicator or parameter against which sustainable forest management can be monitored. The approach adopted in Ireland is to simply reforest the same areas that are clearfelled and use this as evidence that the forest resource is being managed on a sustainable basis. There are a number of shortcomings with this approach in that areas can be clearfelled at almost any age impacting on the sustainable level of roundwood production but once they are reforested, and then the impact is assumed to be zero. The estimation at a national level of an AAC would enable the management of the forest resource to be objectively assessed and monitored for compliance with SFM. Equally the estimation of an AAC for State forests under the stewardship of Coillte would provide the two shareholders (Minister for Finance and Minister for Agriculture, Food and the Marine) with a further criterion to monitor the management of the forest resource.

“Unless the NFI is repeated at regular intervals, Ireland’s reporting under the United Nations Framework Convention on Climate Change (UNFCCC) will be required to use the prescribed default methodologies. These defaults are conservative and based on current estimated sequestration levels could reduce the volume of carbon sequestered by up to 30% which will bring an onus to purchase additional carbon credits for national compliance with emission reduction targets. The second NFI is currently underway and to the end of February 2012 had re-measured approximately 55% of the inventory plots. When complete it will provide valuable information on increment which can be used to estimate the AAC and to report against the principles of SFM.

“The COFORD Wood Supply and Demand Group reports show a significant shortfall between projected timber supply and wood fibre demand especially for wood energy. Any increase in roundwood production over existing levels can only come from privately owned forests as Coillte’s production forecast for the next two decades is relatively flat. Notwithstanding the role that harvesting infrastructure and owner awareness plays, the increased private sector production can only be accessed if there is a long term commitment to the funding of forest roads. Obviously it makes sense to ensure that the funding is put to best use in terms of wood volume accessed per unit of funding while recognising that for smaller areas, a simple bell-mouth entrance may suffice. Implementation of any new proposed roads programme will require procedures whereby private owners can signal their intentions to harvest crops in advance as for example through the proposed forest management planning system.

“Continuous cover forestry (CCF) silvicultural systems encourage structural and species diversity and result in uneven-aged and mixed species type forests. This in turn can increase

the resilience of forests to pests and diseases; extreme weather events; as well as facilitating carbon storage and benefitting biodiversity and ecosystems services. Coillte initiated trials with CCF in 2002 with a focus on conifers, however, more recently, Coillte’s Low Impact Silvicultural Systems (LISS) policy states that all broadleaf high forest (BHF) will be managed under CCF and that CCF will be the favoured silvicultural system in amenity areas. CCF has a role to play in Irish forestry and not just for amenity and recreational areas. Further research will be necessary to determine the most appropriate practices for the management of plantations under CCF silvicultural systems.

“Wood has a role to play in ensuring that secure sources of renewable energies are developed in line with the Government’s Energy White Paper 2007. Oil is becoming scarcer and increasing in price with knock-on effects on oil-based products such as artificial fertilizers. Forest management practices will need to adapt to embrace the requirement for wood energy and the implications of decreasing oil resources.

“In 2007, COFORD published “Sustaining and Developing Ireland’s Forest Genetic Resources – An outline Strategy”. This report, which was developed by a working group brought together and chaired by COFORD, to review national forest genetic resources, contains a number of recommendations designed to safeguard and enhance Ireland’s forest genetic resources on a sustainable basis.

“Long-term forest monitoring is an essential activity to ensure sustainable use of forestry resources. There are currently many international long-term monitoring/research projects dealing with health and biogeochemistry, climate change mitigation and adaptation, biodiversity, nutrient status and phenological observations (see Chapter 6 Forest Protection and Health) There is now an opportunity to better integrate all monitoring, long term research projects and national forest inventory (NFI) activities. The NFI now provides vital baseline information across a nationally representative sub-sample of forest types and habitats. This could be used, for example, to assess biodiversity, to monitor the impacts of climate change or to estimate the climate-mitigation potential of forest ecosystems, thereby contributing to EU and UNFCCC reporting commitments”.

Forests, Products and People – Chapters 3 and 6: Environment and Public Goods and Forest Protection and Health

The main alternatives considered by the FPRG were:

Environment

a) Continuation of the status quo where environmental guidelines have not been updated to include advances in scientific knowledge or awareness and where permitting procedures and responsibilities are not always clear or

b) Update the complete set of environmental guidelines with priority given to specific areas. The revised guidelines should be comprehensive, provide clarity regarding requirements and permitting procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework.

Non Wood Benefits

a) Continue to rely on findings and research from outside of Ireland or

b) Undertake a comprehensive quantification of non wood benefits under Irish conditions
**Forest Protection**

a) Continuation of the status quo where individual risks are assessed separately and measures not always co-ordinated across various agencies or

b) The development of a more co-ordinated approach e.g. forest fires with the updating of Forest Protection guidance and measures around deer and other forest pests and diseases.

Please refer to the full *Current Features* and *Policy Considerations* sections in both Chapters.

**Forests, Products and People – Chapter 7 - Support – Education, Training and Research**

The main alternatives considered by the FPRG were:

a) Continuation of the *status quo* with the existing range of supports and measures or

b) Consider a more focused, prioritised and targeted approach and the more active engagement of the private sector.

“The introduction of updated codes of practice, management plans and environmental guidelines recommended elsewhere in this report, will require the provision of training support.

“National forest research competence also needs to be maintained and developed in the programme areas outlined in recent COFORD reports. There is a need to consolidate work in critical forest research areas such as climate change mitigation, forest genetic resources, forest management planning, forest policy and economics, silviculture and wood energy. These areas require continuity of effort and national coordination to provide value for money and a level of expertise to achieve the potential of the forest sector.

“While a significant proportion of the current investment in forest research and development is to address policy needs in areas such as water quality, biodiversity and climate change mitigation, areas such as forest management planning and silviculture must also be viewed in the overall context of innovation, which the recent Forfás report, *Innovation Ireland - The Smart Economy Report of the Innovation Taskforce*, elaborated upon.

**Forests, Products and People – Chapter 11: Legislation**

The main alternatives considered by the FPRG were:

a) Continuation of the *status quo* with the existing forestry legislation or

b) Update forestry legislation to reflect current context and the requirement for improved forest management planning and permitting procedures.

“Forest legislation needs updating in light of the changing role of the State and the development of the private sector. Much of the legislation is based upon the State’s ownership role in afforestation. There is now an opportunity to amend the legislation to underpin the principles and practice of sustainable forest management, recognise and facilitate the provision of environmental services and to relieve part of the regulatory burden on forest owners.

“The felling licence procedure can lead to delays in bringing timber volumes to market. In its present form it does not protect against overexploitation of the resource. Its relevance has been eroded over time, especially in regard to thinnings and it has the potential to be streamlined. In countries with a strong tradition in forest management planning, the
approved forest management plan acts as a permitting procedure for the specified harvesting interventions.

“Regulation (EU) No 995/2010 also known as the (Illegal) Timber Regulation requires EU traders who place timber products on the EU market for the first time to exercise due diligence; and to keep records of their suppliers and customers (traceability). The draft rules are currently under public consultation. Member States are expected to draft implementing legislation, designate competent authorities (CA), lay down penalties (fines and or seizure of goods) and to designate/establish monitoring organisations (MO). The regulation has implications not only for timber growers but also manufacturers of wood and wood based products. It will be important to ensure that procedures for compliance and monitoring are appropriate and do not adversely impact on the wood paying capacity within the sector.

“The obligation to replant following a clearfell or natural disaster essentially means that once land is afforested, it must remain under that land use in perpetuity. The legislation does allow for the removal of land from forestry, but the process is seen by many as too rigid and reflects the previous situation where the private sector had only a very minor role in afforestation. The consequence is that many landowners are now reluctant to afforest part of their holding as it locks the land into forestry and does not allow an "out" in the event of changing family or market circumstances. While it may not be in the interest of the State from a climate mitigation perspective to allow uncontrolled change of land use from forestry to agriculture or other uses, some more flexibility and clearer guidance could help to allay concerns about the maintenance of the land under forestry in perpetuity”.
Chapter VIII
A description of the measures envisaged concerning monitoring in accordance with Article 10

Monitoring measures envisaged include:

1. In relation to the expansion of forest cover in general, screening is carried out for afforestation project proposals as part of the Appropriate Assessment Procedure (see Chapter V) approved projects are inspected (monitored by the Forest Service Inspectorate in relation to adherence to regulations and guidelines at the establishment phase and during the later premium payment phase.

2. In relation to potential impacts of forest expansion and increases in forest road construction and harvesting: environmental audits of forest operations are carried out on a regular basis by the Forest Service Inspectorate.

3. Water quality monitoring in afforested catchments is carried out by the EPA as part of the implementation of the Water Framework Directive. In addition, water quality monitoring is carried out in connection with forest operations in certain freshwater pearl mussel catchments and in other instances such as afforestation of cutaway peatland.

4. Assessments of the status of EU Protected Habitats and Species in Ireland, including forests, are carried out by the National Parks and Wildlife Service under the Habitats Directive.

5. Floral biodiversity and the level of native tree species cover, as well as carbon stocks in a number of pools (including living and dead biomass, soil and litter) are assessed at 5-year intervals in 1800 permanent sample plots as part of the National Forest Inventory (based in the Forest Service). Forest carbon stock changes are also reported on an annual basis to the United Nations Framework Convention on Climate Change.
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Figure 7: Location of permanent National Forest Inventory plots in the second phase of assessment to the end of 2012 (total number of plots is 1,827).

6. Forest health and soil quality is assessed in a number of forest plots as part of a project funded under the national forest research programme. This area of work has been underway for over 20 years and provides a baseline for the assessment of the level of atmospheric deposition of SO\textsubscript{2} and NO\textsubscript{x} in forests, and impacts on forest heath and biogeochemical cycling, including soil water chemistry.
Chapter IX

Non-technical summary of the information provided

A Glossary at the end of this document covers the more common forestry technical terms, while the Silvavoc system provides a comprehensive dictionary of forestry terms at http://www.iufro.org/science/special/silvavoc/silvaterm/query-silvaterm-database.

The development of the forest policy review Forests, Products and People began with the Renewed Programme for Government, issued in October 2009, which contained a number of references to forest policy, including a commitment to increase annual planting of new forest to 10,000 ha per year (25,000 acres). It also committed to review State forestry policy to take account of its critical role in relation to climate change and its importance to construction, bio-energy, bio-diversity and its potential to deliver long-term employment in other downstream industries e.g. eco-tourism, furniture, crafts etc.

In April 2010 the Department of Agriculture, Fisheries and Food (DAFF), now the Department of Agriculture, Food and the Marine (DAFM), established a Forest Policy Review Group (FPRG) which was comprised of representatives from the forest sector: Irish Timber Growers Association (ITGA), Coillte (The Irish Forestry Board), forest companies, the National Council for Forest Research and Development (COFORD), the Irish Forestry and Forest Products Association (IFFPA), the Society of Irish Foresters (SIF), Teagasc, the Irish Farmers Association (IFA) and Crann, from the environment sector: Environmental Pillar of Social Partnership/An Taisce, and from government departments and bodies: the Department of Environment, Heritage and Local Government (DEHLG), the Department of Finance, DAFM and the Sustainable Energy Authority of Ireland (SEAI).

The terms of reference (ToR) of the FPRG were to review and update national forest policy goals with reference to:

1. The level of afforestation, taking into account its contribution to rural development and employment generation, the funding of the afforestation programme, and the provision of public goods and services, including climate change mitigation;

2. Species composition and structure of the forest estate, taking into account sustainability and competitiveness in wood supply, and the conservation of indigenous biodiversity and tree species;

3. Future roundwood supply and demand and
   a. Its ability to meet national bio-energy targets;
   b. Its ability to meet raw material demand for wood product manufacture (including locally based enterprises); and
   c. Investment in forest roads and other infrastructure to mobilise the supply.

4. Research and development, and innovation in the forestry sector; and

5. Standards, guidelines and monitoring.
Policy formulation process

The policy formulation process consisted of five main elements:

1. An open call for submissions to the policy review (see Appendix 7 in Forests, products and people - Ireland’s forest policy – a renewed vision)

2. Reports from the two interdepartmental groups looking at Coillte and the funding for afforestation\textsuperscript{71};

3. Workshops where the revised policy and supporting actions were formulated;

4. Meetings where the main topics being addressed by policy were discussed and where the final policy document was developed and agreed; and

5. Invited presentations by sector experts on specific topics under discussion by the FPRG.


An overview of the development of forest policy is given in Chapter I, and a summary of the other Chapters in this document are provided below.

Chapter I - Contents, main objectives of *Forests, Products and People* and its relationship with other relevant plans and programmes

An overview the forest sector today, aimed at a general readership, is provided in the introductory material to *Forests, Products and People*, as well as a review of *Growing for the Future*, the previous policy statement, which dates back to 1996.

The policy goal proposed in *Forests, Products and People* is:

*To develop an internationally competitive and sustainable forest sector that provides a full range of economic, environmental and social benefits to society.*

Economic benefits include jobs, investment, trade, and the general expansion of economic activity, in which the forest sector has an important role. The policy sets out to expand the level of forest cover in order to increase and sustain wood production from the national forest resource, public and private. Environmental benefits cover a wide range, and include climate change mitigation, conservation and expansion of native woodlands, use of riparian woodlands to promote biodiversity, and amelioration of water quality. Well planned and executed expansion of forest cover will cater for these needs also. Social benefits include rural development, provision of recreation facilities (forest parks and forest walks) and the

\textsuperscript{71} The report of the interdepartmental group reviewing Coillte was not made available to the FPRG. The report on funding for afforestation was made available to the FPRG on 27th March 2012 which was subsequent to the group’s final draft of the policy review.
health benefits of forest recreation, which are important in the context of growing population and increased urbanisation.

The Chapter outlines the relationship between *Forests, Products and People* and other policy measures at national level:

- *Growing for the Future* – the 1996 forest policy statement – and the aims and objectives it contained. The objectives and targets in *Growing for the Future* were examined as part of the policy review process and are dealt with in detail in *Forests, Products and People*.

- *Food Harvest* – presents a strategy for the medium-term development of the agri-food sector and an outline strategy for the fisheries and forestry sectors for the period to 2020. It includes key actions to ensure that the sector contributes to the maximum extent to export-led economic recovery and the full development of the smart economy. The recommendations for forestry focus on (a) competitiveness, (b) environmental issues and (c) research and development. These have been further elaborated and expanded in *Forests, Products and People*.

- Renewable energy policy at the national and EU levels is an important consideration in the development of forest policy. The role of forest-based biomass in meeting renewable heat and other targets is outlined.

- Likewise the related policy area of climate change mitigation is an important driver of forest policy, not simply in the role of trees taking up carbon dioxide as part of the growth cycle, but also the increasing use of forest thinnings and other components in the energy market, and solid wood products as carbon stores, and their role in replacing energy-intensive materials such as steel, aluminium, and plastics.

- Forest expansion needs to be carefully planned so as to avoid damaging habitats and biodiversity in general. On the other hand forest policy has a role in promoting the conservation and expansion of native woodlands and through forest practice in existing woodlands. This Section in Chapter I outlines the interactions between forest policy and biodiversity policy.

- Expansion of forest cover and forest operations, particularly harvesting, are important issues in the implementation of the Water Framework Directive in Ireland. National policy in relation to forests and water is set out in the Programme of Measures and Standards for Forest and Water, published by the Western River Basin District as part of the implementation of the Water Framework Directive for Ireland.

**Chapter II**

**Relevant aspects of the current state of the environment and likely significant effects with and without implementation of the recommendations in *Forests, Products and People***

Chapter II deals with the current state of the environment and likely significant effects with and without implementation of the recommendations in *Forests, Products and People*.

Environmental aspects covered in the Chapter are:

- biodiversity,
- human health,
- fauna,
- flora,
- soil,
- water,
- climatic factors,
- cultural heritage (archaeological heritage),
- landscape and
- the interaction of these factors.

In addressing aspects of the current state of the environment for which the policy recommendations in *Forests, Products and People* are relevant, and the future evolution of the environment, the Environmental Protection Agency (EPA 2012) report *Ireland’s Environment 2012 - An Assessment*, is used as a baseline reference point. It “… provides an integrated assessment of the overall quality of Ireland’s environment, the pressures being placed on it and the societal responses to current and emerging environmental issues”.

Each of the environmental aspects listed above are dealt with in the Chapter, by providing a description of the current state of the environment in each area, in so far as the forest sector impinges on the area or has a role to play in contributing to its betterment. It outlines how the recommendations made in *Forests, Products and People* in relation to each of the environmental aspects are likely to impinge on them. By way of example, in terms of climate change mitigation, the net level of carbon sequestration in Irish forests established post 1990 is estimated as 8.5 million tonnes of CO$_2$ over the 3-year period 2008-2010. Projections developed by the Department of Agriculture, Food and the Marine and as reported to the EPA$^{72}$, predict that this level of net mitigation will increase to 4.8 million tonnes per annum by 2020. In the absence of *Forests, Products and People*, forests would continue to sequester carbon at these rates. However the increased levels of sequestration associated with increased afforestation levels up to 2035 would not be realised. Nor would the projected sustainable use of wood for energy (domestic, industry and facility) or the substitution of fossil fuels be possible in the absence of increased levels of afforestation.

### Chapter III

**Environmental characteristics of areas likely to be significantly affected by the implementation of the recommendations in Forests, Products and People and screening and related measures in place that influence the character of areas that may be affected**

This Chapter should be read in conjunction with Chapter VI which deals with measures to deal with potential adverse environmental impacts arising from the recommendations in *Forests Products and People*.

In this Chapter measures that will influence the character of areas to be afforested and harvested are described, as they influence the type of areas that will be afforested etc. In other words measures in place and envisaged will strongly influence the type of areas that are likely to be impacted. For example, the conditions for afforestation grant aid will exclude a significant area of designated habitats.

Overall *Forests, Products and People* envisages a very significant increase in forest cover in Ireland, from the current level of 752,000 ha (2011), or nearly 11% of total land area forest cover to 18% or 1,230,000 ha by 2045. The main rationale is: *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 m$^3$ per annum*. It sets out a number Strategic Actions/Recommendations to achieve this objective, and sets an afforestation target in Strategic Action 1.1:

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The afforestation target will be 10,000 ha per annum up to 2014 and 15,000 ha per annum for the period 2015 to 2045. This will, with reforestation of clearfell areas, provide a forest cover of 18%. Targets will be reviewed by the Department of Agriculture Food and the Marine every five years, beginning in 2017 in the context of long term sustainable roundwood supply and other policy considerations.

The review also foresees that the annual level of roundwood harvest will increase from around 3 million cubic metres per annum at present to between 7 and 8 million cubic metres per annum by 2030. This is largely irrespective of the level of afforestation up that point, as depending on site and species, it takes 10-20 years after forest establishment before wood is harvested.

Indicative Forestry Statement
The overall aim of the Indicative Forestry Statement is to:

“... provide high-level, national guidance in relation to the suitability of land for afforestation. 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 industry with the earliest indication of the areas where potentially sensitive issues may arise in relation to, for example, landscape, water quality, archaeology and biodiversity. Because of the large number and density of recorded archaeological monuments they are not represented on the IFS national map. Instead all forestry applications that may affect an archaeological monument or site are forwarded to the Forest Service archaeologist who consults with the National Monuments Service (NMS).

“The IFS is a map-based approach [Figure 7 repeated] 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”.

Afforestation
Given the Indicative Forest Statement approach, the Forestry Schemes Manual guidance and planned measures, it is envisaged that the areas which will be afforested over the period of the plan will, in the main, comprise wet mineral soils (generally land with poor drainage with varying levels of rush covered, which are currently or were formerly enclosed for agriculture. In addition, other categories of semi-natural grassland, improved grassland and heath) are likely to be afforested. Where these areas contain or are adjacent to Natura 2000 areas, including Hen Harrier Special Protection Areas and SACs designated for Freshwater Pearl Mussel (FPM), permission for afforestation, forest road construction or aerial fertilisation is contingent on the Forest Service arriving at the conclusion, through its Appropriate Assessment Procedure, that the project – either singly or in combination with other plans and projects – will not significantly affect the Natura site (see Chapter V for AAP).
Figure 7 (repeated): Indicative forest statement forest development (afforestation) land suitability map.

The IFS recognises four broad categories to identify opportunity and constraint areas for afforestation:

- 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 and,

• Category 4 - Unsuitable, unproductive or unplantable areas.

Afforestation will take place largely in categories 1 and 2.

More recent work by Teagasc\textsuperscript{73} (Appendix 1) provides an estimate of land suitable for afforestation by county. It should be noted that most of the land in the “wide use” and “limited use” categories, currently in grass/arable and wet grassland and shown as land suitable for afforestation net of conservation areas in the Farrelly and Gallagher report, is already under intensive agriculture (3,464,000 ha).

\textbf{Harvesting of wood}

Roundwood harvesting and associated forest roading operations will take place on a range of site types including peat over the coming decade and the period encompassed in \textit{Forests, Products and People}. Over 40\% of the forest estate is estimated to be located on peat soils (bogland) (Forest Service 2007\textsuperscript{74}). Harvesting may also take place in areas designated under the Birds Directive as Hen Harrier SPAs\textsuperscript{75} and in SACs designated for Freshwater Pearl Mussel (FPM)\textsuperscript{76}, where, following the application of its Appropriate Assessment Procedure, the Forest Service has determined that the project – either singly or in combination with other plans and projects – will not significantly affect the Natura site.

The national roundwood production forecast\textsuperscript{77} shows that almost all of the potential increase in harvesting over the period from 2012 to 2028 will come from the private sector. The private sector estate is generally characterised as being located on better quality, more productive sites than the Coillte estate\textsuperscript{78}, and where there is likely to be less potential for adverse impacts of harvesting on habitats and watercourses.

\textbf{Aerial fertilising}

Aerial fertilisation is licensed by the Forest Service under the European Communities (Aerial Fertilisation) (Forestry) Regulations 2012 (S.I. No. 125 of 2012). It is carried mainly on peat soils and peaty podzols (low nutrient level soils) where phosphorus and/or nitrogen limit the growth of established forest plantations. It is unlikely that given the procedures and controls in place that any new afforestation will require aerial fertilisation. However that is not to say that some parts of the existing forest estate may require such treatment.


\textsuperscript{74} Forest Service. 2007. \textit{National Forest Inventory. Republic of Ireland. Results}. Forest Service, Johnstown Castle Estate, Co Wexford.

\textsuperscript{75} Subject to the terms and conditions set out in the Forest Service \textit{Appropriate Assessment Procedure} being met http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/schemecirculars/AppendixCAAPRequirementsHenHarrierSPAsFelling140312.pdf

\textsuperscript{76} http://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/schemecirculars/AppendixDAAPregardingFPMAug12210812.pdf

\textsuperscript{77} http://www.coford.ie/media/coford/content/publications/projectreports/forecast_31Jan11.pdf

Chapter IV
Existing environmental problems that are relevant to *Forests, Products and People* including, in particular, those relating to any areas of a particular environmental importance, such as areas designated under the Birds and Habitats Directives

Environmental issues relevant to the expansion of forest cover and harvesting outlined in *Forests, Products and People* are mainly the possible impacts on surface water quality, and on Annex 1 habitats and species.

**Water quality**
In relation to water quality environmental objectives have been established for all water bodies in Ireland in the River Basin Management Plans which were adopted and published by Local Authorities in 2010 in compliance with the EU Water Framework Directive (WFD).

An EPA report states that of 2,500 aquatic monitoring sites assessed that 953 were polluted, of which 4% were suspected as being caused by forestry. The report goes on to state: “Afforestation on peat soils has the potential to cause significant nutrient and silt losses at the establishment and harvesting phases especially. Large areas of maturing conifers planted on upland peat soils are due to be harvested in the coming years. Residual phosphorus left behind can leach out into surface waters due to the low capacity of peat to bind phosphorus. Silt loss from harvesting operations can damage salmonid spawning beds or freshwater pearl mussel populations. Control of silt and nutrient losses is required to minimise the impact of forestry on water quality. The Forest Service’s iFORIS GIS-based management system for forestry grants and approvals is being used to ensure that planting, felling and road building operations in forests are approved only following detailed environmental consultation with a range of public bodies and the general public”.

**Biodiversity and habitats**
The main aim of the Habitats Directive is to achieve and maintain favourable conservation status for habitats and species which are considered at risk. The most recent national assessment of the conservation status of EU protected habitats and species in Ireland was reported in 2008 by the National Parks and Wildlife Service. Forestry is not identified as one of the key threats to protected habitats or Annex species, but it is listed as a pressure in relation to both habitats and Annex species.

**Freshwater pearl mussel**
The freshwater pearl mussel is widespread in Ireland, and has been recorded in more than 130 rivers. It is listed as critically endangered in the Republic of Ireland in the IUCN threat status of Irish molluscs. There are 19 Special Areas of Conservation for the species in Ireland. The 19 SACs include 27 separate mussel populations.

Forest activities such as afforestation, harvesting and road construction are a potential source of sediment and nutrients (particularly phosphorus) to rivers. This is especially the case where forests are planted on peat or peaty soils. Consequently very sensitive management is required to minimise the potential impact on the freshwater pearl mussel. This includes (a) limiting management interventions e.g. harvesting and road construction to certain times of the year, (b) the use of buffer zones adjoining the watercourse where activities are no allowed and (c) change to low impact or continuous cover silvicultural system instead of the more traditional clearfell.
Hen Harrier
A recent COFORD Connects Note states “Hen Harriers are listed, along with 32 other rare and vulnerable bird species, in Annex 1 of the Birds Directive (79/409/EEC). This instrument legally requires Ireland to ensure their protection and to designate a suite of the most important sites for this species as SPAs, or else face heavy fines in the European Court. Over recent centuries a number of raptor species have been lost from the island of Ireland, and the Hen Harrier, one of our rarest birds of prey, is now classed as vulnerable here and at a European scale. Traditionally it used heather moors for nesting during the breeding season and foraged in the surrounding landscape which included extensive farmland. Due to the depletion of significant proportions of suitable habitat from the Irish landscape by afforestation or reclamation, they have adapted to nesting in young conifer plantations and are now frequently associated with these forests.

Forest expansion and operations need to be carefully planned in SPAs that have been designated for Hen Harrier protection. Currently, afforestation limits for Hen Harrier SPAs are under review pending the development of a Threat Response Plan, which is being led by the National Parks & Wildlife Service (NPWS) while harvesting and other forest activities are restricted to the non-nesting period.

Chapter V
Environmental protection objectives, established at international, European or national level, which are relevant to Forests, Products and People and the way those objectives and any environmental considerations have been taken into account during its preparation

Chapter 3 of Forests, Products and People deals with environmental aspects of forestry and provides an outline of how national and international environmental objectives were taken into account in undertaking the policy review:

Key EU Directives
Habitats Directive
The Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC) is the most important EU initiative to support national and international biodiversity. Its purpose is to both protect and restore the conservation status of a list of key habitats. For Ireland, these include raised bogs, active blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coasts), heaths, lakes, rivers, woodlands, estuaries and sea inlets. The Directive requires Ireland and other EU member states to designate these habitats as special areas of conservation (SACs). In conjunction with the Special Protection Areas (SPAs) under the EU Birds Directive, the SACs make up the so-called Natura 2000 network or European sites.

Birds Directive
The Council Directive on the Conservation of Wild Birds (79/409/EEC) obligates EU states to preserve, maintain and re-establish sufficient areas in order to safeguard the habitat for all bird species. Additional requirements are mandated in relation to a list of key bird species set down in the Directive’s Annex 1, with EU states being required to designate special protection areas (SPAs) for them. For Ireland, this causes protection to be conferred on such species such as the whooper swan and migratory species such as ducks and geese.
In a similar manner to the requirements on SACs under the Habitats Directive, plans or projects which may significantly affect an SPA must be subjected to an Appropriate Assessment (based *inter alia* on a submitted Natura Impact Statement), to assess the nature of the possible impact and the effectiveness of any mitigation measures proposed.

**Appropriate Assessment Procedure**

Regarding Natura sites (SACs and SPAs), the Forest Service operates an Appropriate Assessment Procedure (AAP) in relation to all forestry operations requiring its consent, i.e. afforestation, forest road construction, felling (thinning and clearfell/replanting) and aerial fertilisation. Under the AAP, individual projects are screened to assess whether or not there is the possibility for a significant effect on a Natura site. Where the possibility is identified, or where uncertainty exists, the proponent of the plan is required to submit a Natura Impact Statement and the Forest Service undertakes the appropriate assessment. The appropriate assessment is undertaken to assess the nature of possible impacts, and the effectiveness of any mitigation measures proposed. A project can only receive approval if the Forest Service has determined that it will not significantly affect the Natura site. Full details on how the Forest Service AAP operates are set out in the Forest Service Appropriate Assessment Procedure Information Note (consolidated version March 2013) [http://www.agriculture.gov.ie/media/migration/forestry/publications/ForestServiceAPINoteMarch12CONSOLIDATED060312.pdf](http://www.agriculture.gov.ie/media/migration/forestry/publications/ForestServiceAPINoteMarch12CONSOLIDATED060312.pdf) (See Annex 1) and the Forest Service Appropriate Assessment Procedure Forestry Inspector’s Manual (September 2013).

**Water Framework Directive**

Directive 2000/60/EC establishing a Framework for Community Action in the Field of Water Policy was agreed in 2000. It rationalised a number of earlier Directives, taking into account nearly 20 years’ experience of water-related EU legislation. The Directive is intended to establish a comprehensive framework for the management of water resources in each EU state, covering inland surface waters, the estuarine and coastal environment and groundwater. Key objectives are to maintain good water quality where it already exists, as well as to cause a substantial improvement where water quality has deteriorated. EU states have to ensure that a co-ordinated approach is adopted for the achievement of the objectives of the Directive.

**Key International Agreements/Conventions**

**European Landscape Convention**

The 2000 European Landscape Convention was adopted in Florence and was ratified by Ireland in 2002. It promotes the protection, management and planning of EU landscapes, being a response to European-wide concerns that the quality and diversity of landscapes were deteriorating.

**Granada Convention for the Protection of the Architectural Heritage of Europe**

Ratified by Ireland in 1997, the 1985 Convention for the Protection of the Architectural Heritage of Europe is intended to reinforce and promote policies for the conservation and enhancement of Europe’s heritage. The Convention is dual-purpose, involving the promotion of architectural heritage policies while fostering European-wide co-operation measures.

**UN Convention on Biological Diversity**

The UN Convention on Biological Diversity was a direct result of the Earth Summit in Rio de Janeiro. It came into force in 1993, being ratified by Ireland in 1996. Its objective is the conservation of global biodiversity, as well as to ensure equitable access to the world’s
genetic resources. It requires each party to develop strategies, plans or programmes for the conservation and sustainable use of biological diversity and that these should be integrated into other national initiatives that may have biodiversity implications.

“The Forest Service Appropriate Assessment procedures for forestry activities, which were issued in March 2012, encompass forestry plans or projects including applications under the Afforestation Scheme, the Forest Environmental Protection Scheme (FEPS) which is limited to REPS farmers, the Native Woodland Scheme (Element 1 and Element 2) and the Forest Road Scheme, and also felling licence applications, aerial fertilisation licence applications and applications for consent without grant aid for afforestation or forest road construction under Statutory Instrument (S.I.) 558 of 2010. The main environmental guidelines are in place since 2000 and were originally intended to be reviewed after five years. In the interim, our knowledge and understanding of the potential impacts of forestry (afforestation, reforestation and forest management) on the environment has improved and the regulatory framework has changed e.g. transposition of the Water Framework Directive. There is a compelling need to update the 2000 series of guidelines and the Code of Best Forest Practice to reflect the changed regulatory framework and to bring together under a single protocol all environmental, biodiversity and best practice compliance requirements.

“Compliance with environmental regulations is becoming increasingly complex and can be daunting to new entrants and existing forest owners alike. There is a need for a more integrated approach which would bring together the various bodies, guidelines and procedures and allow for clarity of purpose and provide a transparent basis for decision making.

“The use to date of GIS has been limited in the evaluation of environmental impacts of forestry either existing or planned. The inclusion in iFORIS of layers for NPWS consultation zones, archaeology, landscape designation, EPA river data set etc is a welcome and progressive development. iFORIS use in collaboration with the recent IFS from the Forest Service would support a more robust and scientific approach to any mitigation measures and the avoidance of environmental damage by forestry.

“There are areas, principally within the Coillte estate, which in hindsight should never have been planted. Many of these areas have either been clearfelled or are approaching clearfell age. To reforest these areas in a similar manner as they were planted originally would only serve to continue the process of environmental degradation as their continuation under forestry may not be the best use of these areas. The management options are limited to (a) harvest the forest crop and allow nature take its course with minimal intervention, (b) leave these areas untouched and again allow nature take its course over time, (c) harvest the crop and undertake replanting with minimal disturbance and more appropriate species or (d) harvest the forest crop and convert the area to its former state.

“The Water Framework Directive (WFD) is a policy driver that necessitates governments, stakeholders and analysts to understand the implications of land use on catchments and water bodies, water allocation policies and develop the tools needed for applied economic analysis. The policy goal is good ecological status of surface water by 2015. The key pressures on WFD defined water bodies from forestry include phosphorus, sedimentation, acidification and dangerous substances. To identify the most appropriate forestry measures there is a need for co-operation between COFORD, Coillte, the Environmental Protection Agency (EPA), DoAHG (Department of Arts, Heritage and Gaeltacht), Department of Environment, Community and Local Government (DoECLG), the Forest Service, non-governmental organisations (NGOs) and associated researchers to help extract and gather information on effectiveness of measures and their costs. The forestry sector has shown an ability to meet
new environmental challenges and will need to act responsibly and to continuously respond to environmental challenges in line with best environmental practices.

“The archaeological features located in the Coillte estate are a significant part of the national heritage. There are estimated to be some 1,600 Recorded Monuments and Protected Structures, along with many thousands of other cultural heritage features and structures, on the Coillte estate. This is more than double the number of National Monuments in direct State or Local Authority ownership or guardianship. The upgrading and maintenance of a wide network of trails and recreation sites by Coillte, coupled with the incorporation of many of these 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.

“The Cost Benefit Analysis (CBA) of the planned afforestation demonstrates that the environmental benefits due to carbon sequestration/climate mitigation could outweigh the value of the roundwood produced (Appendix 6). It will be important therefore to ensure that the non-marketable benefits are realised and that there are measures in place to monitor their delivery at a national level.”

The policy considerations in relation to the planned expansion of forest cover state covered in Chapter 1 of *Forests, Products and People* include the following:

“The expansion of the forest estate must be compatible with environmental sustainability and must be undertaken in a planned manner that ensures that only appropriate afforestation takes place in accordance with the principles of sustainable forest management (SFM<sup>79</sup>) which balances the economic, environmental and social aspects. Environmental protection and enhancement measures will need to be adequately communicated and supported to ensure that they are fully understood and that all stakeholders are aware of their respective responsibilities.”

Recommendations, previously listed, are made in the review in relation to biodiversity, water quality, climate change and renewable energy provision, all of which are related to national and international environmental protection objectives.

Environmental protection objectives that are established in national, EU and international law, and which were taken into consideration are referred to in Chapter V in this document and include cross references to Chapters where they are called up.

**Chapter VI**

**Measures envisaged to prevent, reduce and as fully as possible to offset any significant adverse effects on the environment that may be caused by implementing the recommendations in *Forests Products and People***

The measures in place and envisaged to prevent, reduce and as fully as possible to offset any significant adverse effects on the environment caused by implementing *Forests, Products and People* are referred to in Chapters I, II and elsewhere in this report and are presented in Table 2 repeated.

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<sup>79</sup> The MCPFE defines SFM as the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.
Table 2 (repeated): Environmental effects likely to arise as a result of the recommendations in Forests, Products and People and measures envisaged prevent, reduce and offset them.

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<td><em>Forestry and Water Quality</em></td>
</tr>
<tr>
<td></td>
<td><em>Forestry and Aerial Fertilisation</em></td>
</tr>
<tr>
<td></td>
<td><em>Forest Harvesting and the Environment</em></td>
</tr>
<tr>
<td>Archaeological heritage and landscape</td>
<td>Updating and implementation of the Forest Service Guidelines on:</td>
</tr>
<tr>
<td></td>
<td><em>Forestry and Archaeology</em></td>
</tr>
<tr>
<td></td>
<td><em>Forestry and the Landscape</em></td>
</tr>
<tr>
<td></td>
<td><em>Forest Harvesting and the Environment</em></td>
</tr>
<tr>
<td>Soils</td>
<td>Compliance with the procedures outlined in the Forest Service <em>Forestry Schemes Manual</em></td>
</tr>
</tbody>
</table>

80 An updated version of the procedure has been issued in *Forest Service Appropriate Assessment Procedure Information Note*, consolidated version March 2013. It covers Natura Impact Statements as well as procedures in relation to freshwater pearl mussel and Hen Harrier.

81 See Forest Service Circular 4 of 2013: Native Woodland Establishment Scheme – Acid Sensitivity Protocol for Afforestation and revised Native Woodland Scheme Establishment Site Appraisal Framework (14Feb13).
Implementation of the recommendations on minimum site productivity for afforestation

Introduction of guidance and criteria for the identification and future management of peat areas currently afforested which are to be deforested to mitigate continued environmental degradation.

*Forests, Products and People* proposes that the Forest Service Guidelines be updated to reflect scientific findings in the period since they were drafted:

**Strategic Action 3.3**
DAFM in collaboration with the main sector stakeholders to update the complete set of environmental guidelines with priority given to guidelines that address water quality, fertilisation and biodiversity. In the revision consideration should be given to structuring the guidelines so they can be used either at forest developmental stages (establishment, thinning, harvesting) or thematically to deal with water, biodiversity etc. The revised guidelines should be comprehensive, provide clarity regarding requirements and permitting procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework.

**Chapter VII**
An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.

The development and assessment of alternatives (or options) is a legal requirement under the SEA Directive. Under Article 5 (O.J. 2001) plans and programme proponents should ensure that: Reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme are identified, described and evaluated (Article 5.1).

The Forest Policy Review group undertook the assessment of alternatives and policy recommendations, as outlined in *Policy formulation process* in Chapter I.

The reasons for selecting and making the policy recommendations in *Forests, Products and People* are set out in the *Current Features* and *Policy Considerations* sections in each Chapter of the review, and in a number of the accompanying appendices. Environmental aspects and general overarching issues considered in formulating the recommendations in each Chapter have been extracted for ease of reference and are presented below (the full rationale for the Strategic Actions is set out in each Chapter of *Forests, Products and People*). In addition, accompanying technical analysis of policy issues and alternatives is presented in Appendices 2-6 in *Forests, Products and People*.

*Forests, Products and People – Chapter 1: Expansion of the Forest Resource Area*
The main alternatives considered by the FPRG were:-
a) Continuation of current levels of afforestation i.e. 6-7,000 ha per annum  
b) Increase level of afforestation to 10,000 ha per annum  
c) Increase level of afforestation to 15,000 ha per annum  
d) Increase level of afforestation to 20,000 ha per annum  

“The long term forecast of roundwood production (conifer and broadleaf) shows a steady increase in volumes up to 2035 followed by a dramatic decrease in the following ten years. The extent of this decrease is dependent on afforestation rates, the productivity of the species being planted and on the species mix. At current levels of afforestation the estimated volume production will fall from over 8 million m\(^3\) [cubic metres] in 2035 to just less than 5 million m\(^3\) by 2049. To address this trough in future supply and to achieve the percentage forest cover set out in Growing for the Future, it will be necessary to extend the period of afforestation envisaged to 2045 assuming an afforestation programme of circa 15,000 ha per annum.

“Analysis of soil types suitable for afforestation, including their current land use indicates that there is sufficient potential supply of suitable land available for the afforestation levels considered in this report. This analysis was limited to soil types only and did not address designated areas unavailable or with limited application for afforestation.

“The long term forecast of broadleaf production shows a steady increase over the next half century. The ability of this resource to sustain a viable hardwood processing industry is dependent on a combination of suitable species, correct tending and management and inherent timber quality. The impact of a 15,000 ha afforestation programme on future woodflows is to significantly reduce the estimated decline in roundwood supply post 2035 and the number of years before recovery in supply takes place (Appendix 5).

“The onus for the expansion of the forest estate now rests primarily with the private sector. State organisations which have land assets, apart from Coillte, have by and large not been involved in meeting national targets, even in relation to purely environmental planting. There is potential for limited planting of native species within National Parks and expanding native woodlands onto some industrial cutaway peats.

“The expansion of the forest estate must be compatible with environmental sustainability and must be undertaken in a planned manner that ensures that only appropriate afforestation takes place in accordance with the principles of sustainable forest management (SFM\(^{82}\)) which balances the economic, environmental and social aspects. Environmental protection and enhancement measures will need to be adequately communicated and supported to ensure that they are fully understood and that all stakeholders are aware of their respective responsibilities.

“The current approach to afforestation requires that each new plantation complies, site permitting, with species targets and facilitates the full range of environmental benefits while at the same time being economically viable. This can lead to sub-optimisation of benefits at a national level. An alternative would be to divide the afforestation programme into two main components, one with the provision of environmental services and social benefits as the principal management objective and the second component with commercial forestry and the production of timber as the principal management objective. Areas, with the main objective as the provision of environmental services and social benefits, would still provide timber benefits but as a secondary objective while areas with production of timber as the main aim would provide environmental and social benefits but not as their primary objective. The

\(^{82}\) The MCPFE defines SFM as the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.
Indicative Forestry Statement and other GIS [geographic information system] land use tools which aim to provide high-level, national guidance in relation to the suitability of land for afforestation and facilitate the establishment of forests serving a variety of purposes have potential for wider application as for example to identify the most appropriate areas for environmental and timber production objectives and could be overlaid with river basin plans and other data layers to guide afforestation including the expansion of the native woodlands.

“Climate change is a reality and poses a serious threat with impacts on Irish forests. The climate of Ireland is predicted to get warmer and drier in the southeast and wetter in the west, with an increase in the frequency of droughts and floods. The temperate forest oceanic regions of Europe are estimated to be subject to increasing changes in storm, insect and pathogen disturbance regimes along with shifts in tree species compositions. These changes pose a risk to forests in Ireland and are likely to impact on the performance of the tree species now being planted. Drought will impact on the productivity of certain species and may lead to an increased frequency of forest fire. Future species choice (this could require more extensive use of mixtures and species more resilient to drought and insect attack) should reflect these long term changes in climate and forest management should aim to increase adaptability to the impacts of climate change. The CLIMADAPT tool has a role to play in guiding species choice and related management decisions (available at http://82.165.27.141/climadapt_client/index.jsp).

“An analysis of grant aided plantations shows that there are over 44,000 ha where the plantation size was less than 5 ha and that almost 25% of the private forest area was more than 100 metres from a county road. Accessibility is vital if plantations are to be thinned and roading costs kept within economic levels. Increased plantation size and proximity to existing plantations will make them more attractive for thinning and facilitate cost savings at time of harvesting.

“The use of broadleaves envisaged in this policy reduces roundwood production in the shorter term due to their lower growth rates. For this reason, the area to be afforested has been increased while at the same time volume production targets have been reduced compared with Growing for the Future. Opportunities to increase volume production include the choice of faster growing tree species and the use of improved planting stock for the main conifer species. Improved Sitka spruce would result in an increase of at least one yield class.

“The COFORD Roundwood Demand Group estimates that the demand for wood fibre for energy will increase to 1.7 million m$^3$ [cubic metres] between now and 2020, in a scenario that assumes significant expansion of the purpose-grown energy crop area and a substantial level of imported material. The increased levels of afforestation recommended here will not begin to contribute volume production until 2028. There may be scope to increase the level of harvest and biomass recovery from existing plantations over and above forecasted levels. Nevertheless, even under the most optimistic scenarios, the wood energy supply gap is likely to be in the region of 1-1.25 million m$^3$ per annum, about one third of the current overall level of supply. Imports of wood fuels such as woodchip and pellets could address this shortfall but there is also potential to mobilise additional indigenous supplies of biomass from short rotation coppice (mainly willow) and short rotation forestry (fast growing conifers and broadleaves). Achieving an appropriate balance between short rotation coppice/forestry and conventional afforestation also needs to be considered, given the underlying objectives of security of energy supply and climate change mitigation. Afforestation provides a wider range of mitigation opportunities (including carbon sequestration, materials substitution and fossil fuel replacement) compared with biomass crops as well as non-timber benefits. Given the likely level of future State/EU investment that will be involved in biomass crops and afforestation, DAFM should examine these issues.
“The quality and productivity of forest plantations are dependent upon the genetic quality of the seed and reproductive material used during establishment. Forest nurseries have an important role to play in ensuring that the genetic quality of planting stock is well adapted and fit for purpose and that improved planting stock is made available for future planting programmes. This should include selection and improvement of native species such as alder, ash, and birch”.

Forests, Products and People – Chapter 2: Management of the Resource

The main alternatives considered by the FPRG were:

Forest Management and Silvicultural Systems

a) Continuation of the status quo where the majority of forests are managed under a clearfell system and once felled are replanted or
b) Support the greater use of continuous cover type silvicultural systems and low impact silvicultural systems.

c) Continue with the current initiatives to promote active forest management including thinning or

d) Adopt a more pro-active approach with forest owners and the management of their forests

The main alternatives considered by the FPRG were:

Forest Management Planning

a) Continuation of the status quo where forest management plans while a requirement under support measures are basic, paper or
b) Introduction of a more comprehensive based forest management planning system for all forests which would facilitate certification, the forecasting of future roundwood supply, felling compliance and public good.

“An estimated 95% of grant-aided forests are managed on a clearfell system although there is increasing interest in continuous cover forest (CCF) silvicultural systems [where the forest canopy is largely maintained in perpetuity through selective and/or group felling] especially for broadleaves. Good management practices are needed in harvesting in sensitive catchments to mitigate possible sedimentation and nutrient run-off. There is support for the contention that, when compared with clearfelling, CCF systems can provide enhanced climate change mitigation benefits and improve delivery of biodiversity objectives and other environmental services.

“The Forest Service supports the drafting of management plans at age 10 for grant-aided plantations over 10 ha (5 ha for broadleaves). The scope of the management plans is basic and they are not entered into any form of electronic information retrieval system.
Enhancement of the management plan format in line with the requirements of certification to support the principles of SFM and prescribe the appropriate management regime and the use of this information to support the forecasting process would provide for more reliable roundwood production information at national, regional, county and catchment levels, thus facilitating improved investment decisions by the processing and wood energy sectors. Coillte has developed an integrated forest management planning system with a scope and capability over and above that envisaged to be introduced to the private sector. Thus it will be important to ensure that both systems are aligned.

“At a project level, the lack of an initial statement of objectives and management plan, has arguably lessened the level of return on investment. In order to achieve a better return, the wider use of forest management planning, which sets out both owner’s and State’s objectives, the levels of support and the benefits/products or services to be achieved needs to be put in place.

“The annual allowable cut (AAC) which is typically calculated during the preparation of forest management plans (FMPs) provides an indicator of the permissible volume that can be harvested in each year of the FMP. Harvesting at levels greater than the AAC will impact on the sustainability of the resource, thus the AAC can be viewed as an indicator or parameter against which sustainable forest management can be monitored. The approach adopted in Ireland is to simply reforest the same areas that are clearfelled and use this as evidence that the forest resource is being managed on a sustainable basis. There are a number of shortcomings with this approach in that areas can be clearfelled at almost any age impacting on the sustainable level of roundwood production but once they are reforested, then the impact is assumed to be zero. The estimation at a national level of an AAC would enable the management of the forest resource to be objectively assessed and monitored for compliance with SFM. Equally the estimation of an AAC for State forests under the stewardship of Coillte would provide the two shareholders (Minister for Finance and Minister for Agriculture, Food and the Marine) with a further criterion to monitor the management of the forest resource.

“Unless the NFI is repeated at regular intervals, Ireland’s reporting under the United Nations Framework Convention on Climate Change (UNFCCC) will be required to use the prescribed default methodologies. These defaults are conservative and based on current estimated sequestration levels could reduce the volume of carbon sequestered by up to 30% which will bring an onus to purchase additional carbon credits for national compliance with emission reduction targets. The second NFI is currently underway and to the end of February 2012 had re-measured approximately 55% of the inventory plots. When complete it will provide valuable information on increment which can be used to estimate the AAC and to report against the principles of SFM.

“The COFORD Wood Supply and Demand Group reports show a significant shortfall between projected timber supply and wood fibre demand especially for wood energy. Any increase in roundwood production over existing levels can only come from privately owned forests as Coillte’s production forecast for the next two decades is relatively flat. Notwithstanding the role that harvesting infrastructure and owner awareness plays, the increased private sector production can only be accessed if there is a long term commitment to the funding of forest roads. Obviously it makes sense to ensure that the funding is put to best use in terms of wood volume accessed per unit of funding while recognising that for smaller areas, a simple bell-mouth entrance may suffice. Implementation of any new proposed roads programme will require procedures whereby private owners can signal their intentions to harvest crops in advance as for example through the proposed forest management planning system.
“Continuous cover forestry (CCF) silvicultural systems encourage structural and species diversity and result in uneven-aged and mixed species type forests. This in turn can increase the resilience of forests to pests and diseases; extreme weather events; as well as facilitating carbon storage and benefitting biodiversity and ecosystems services. Coillte initiated trials with CCF in 2002 with a focus on conifers; however, more recently, Coillte’s Low Impact Silvicultural Systems (LISS) policy states that all broadleaf high forest (BHF) will be managed under CCF and that CCF will be the favoured silvicultural system in amenity areas. CCF has a role to play in Irish forestry and not just for amenity and recreational areas. Further research will be necessary to determine the most appropriate practices for the management of plantations under CCF silvicultural systems.

“Wood has a role to play in ensuring that secure sources of renewable energies are developed in line with the Government’s Energy White Paper 2007. Oil is becoming scarcer and increasing in price with knock-on effects on oil-based products such as artificial fertilizers. Forest management practices will need to adapt to embrace the requirement for wood energy and the implications of decreasing oil resources.

“In 2007, COFORD published Sustaining and Developing Ireland’s Forest Genetic Resources – An outline Strategy. This report, which was developed by a working group brought together and chaired by COFORD, to review national forest genetic resources, contains a number of recommendations designed to safeguard and enhance Ireland’s forest genetic resources on a sustainable basis.

“Long-term forest monitoring is an essential activity to ensure sustainable use of forestry resources. There are currently many international long-term monitoring/research projects dealing with health and biogeochemistry, climate change mitigation and adaptation, biodiversity, nutrient status and thinning observations (see Chapter 6 Forest Protection and Health). There is now an opportunity to better integrate all monitoring, long term research projects and national forest inventory (NFI) activities. The NFI now provides vital baseline information across a nationally representative sub-sample of forest types and habitats. This could be used, for example, to assess biodiversity, to monitor the impacts of climate change or to estimate the climate-mitigation potential of forest ecosystems, thereby contributing to EU and UNFCCC reporting commitments”.

Forests, Products and People – Chapters 3 and 6: Environment and Public Goods and Forest Protection and Health
The main alternatives considered by the FPRG were:

Environment
   a) Continuation of the status quo where environmental guidelines have not been updated to include advances in scientific knowledge or awareness or
   b) Update the complete set of environmental guidelines with priority given to specific areas. The revised guidelines should be comprehensive, provide clarity regarding requirements and permitting procedures and facilitate compliance of forestry activities with the overall environmental regulatory framework.

Non Wood Benefits
   a) Continue to rely on findings and research from outside of Ireland or
   b) Undertake a comprehensive quantification of non wood benefits under Irish conditions
Forest Protection

a) Continuation of the status quo where individual risks are assessed separately and measures not always co-ordinated across various agencies or

b) The development of a more co-ordinated approach e.g. forest fires with the updating of Forest Protection guidance and measures around deer and other forest pests and diseases.

Please refer to the full Current Features and Policy Considerations sections in both Chapters.

Forests, Products and People – Chapter 7 – Support – Education, Training and Research

The main alternatives considered by the FPRG were:

a) Continuation of the status quo with the existing range of supports and measures or

b) Consider a more focused, prioritised and targeted approach and the more active engagement of the private sector.

“The introduction of updated codes of practice, management plans and environmental guidelines recommended elsewhere in this report, will require the provision of training support.

“While a significant proportion of the current investment in forest research and development is to address policy needs in areas such as water quality, biodiversity and climate change mitigation, areas such as forest management planning and silviculture must also be viewed in the overall context of innovation, which the recent Forfás report, Innovation Ireland – The Smart Economy Report of the Innovation Taskforce, elaborated upon.”

Forests, Products and People – Chapter 11: Legislation

The main alternatives considered by the FPRG were:

a) Continuation of the status quo with the existing forestry legislation or

b) Update forestry legislation to reflect current context and the requirement for improved forest management planning and permitting procedures.

“Forest legislation needs updating in light of the changing role of the State and the development of the private sector. Much of the legislation is based upon the State’s ownership role in afforestation. There is now an opportunity to amend the legislation to underpin the principles and practice of sustainable forest management, recognise and facilitate the provision of environmental services and to relieve part of the regulatory burden on forest owners.

“The felling licence procedure can lead to delays in bringing timber volumes to market. In its present form it does not protect against overexploitation of the resource. Its relevance has been eroded over time, especially in regard to thinning and it has the potential to be streamlined. In countries with a strong tradition in forest management planning, the approved forest management plan acts as a permitting procedure for the specified harvesting interventions.

“Regulation (EU) No 995/2010 also known as the (Illegal) Timber Regulation requires EU traders who place timber products on the EU market for the first time to exercise due diligence; and to keep records of their suppliers and customers (traceability). The draft rules are currently under public consultation. Member States are expected to draft implementing legislation, designate competent authorities (CA), lay down penalties (fines and or seizure of
goods) and to designate/establish monitoring organisations (MO). The regulation has implications not only for timber growers but also manufacturers of wood and wood based products. It will be important to ensure that procedures for compliance and monitoring are appropriate and do not adversely impact on the wood paying capacity within the sector.

“The obligation to replant following a clearfell or natural disaster essentially means that once land is afforested, it must remain under that land use in perpetuity. The legislation does allow for the removal of land from forestry, but the process is seen by many as too rigid and reflects the previous situation where the private sector had only a very minor role in afforestation. The consequence is that many landowners are now reluctant to afforest part of their holding as it locks the land into forestry and does not allow an “out” in the event of changing family or market circumstances. While it may not be in the interest of the State from a climate mitigation perspective to allow uncontrolled change of land use from forestry to agriculture or other uses, some more flexibility and clearer guidance could help to allay concerns about the maintenance of the land under forestry in perpetuity”.

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Chapter VIII
A description of the measures envisaged concerning monitoring in accordance with Article 10

Monitoring measures envisaged include:

1. In relation to the expansion of forest cover in general, screening is carried out for afforestation project proposals as part of the Appropriate Assessment procedure, approved projects are inspected (monitored) by the Forest Service Inspectorate in relation to adherence to regulations and guidelines, at the establishment phase and during the later premium payment phase.

2. In relation to potential impacts of forest expansion and increases in harvesting: environmental audits of forest operations are carried out on regular basis by the Forest Service Inspectorate.

3. Water quality monitoring in afforested catchments is carried out by the EPA as part of the implementation of the Water Framework Directive. In addition, water quality monitoring is carried out in connection with forest operations in certain freshwater pearl mussel catchments and in other instances such as afforestation of cutaway peatland.

4. Assessments of the status of EU Protected Habitats and Species in Ireland, including forests, are carried out by the National Parks and Wildlife Service under the Habitats Directive.

5. Floral biodiversity and the level of native tree species cover, as well as carbon stocks in a number of pools (including living and dead biomass, soil and litter) are assessed at 5-year intervals in 1800 permanent sample plots as part of the National Forest Inventory (based in the Forest Service). Forest carbon stock changes are also reported on an annual basis to the United Nations Framework Convention on Climate Change.

6. Forest health and soil quality is assessed in a number of forest plots as part of a project funded under the national forest research programme. This area of work has been underway for over 20 years and provides a baseline for the assessment of the level of atmospheric deposition of sulphur dioxide (SO₂) and nitrous oxides in forests, and impacts on forest heath and biogeochemical cycling, including soil water chemistry.
# Appendix 1

Table 1: Land availability by county net of the main environmental constraint areas.

<table>
<thead>
<tr>
<th>County</th>
<th>Land Area</th>
<th>Suitable*</th>
<th>'Wide Use'</th>
<th>'Limited Use'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grass/Arable</td>
<td>Wet Grassland</td>
<td>Unenclosed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ha</td>
<td></td>
<td>ha</td>
</tr>
<tr>
<td>Carlow</td>
<td>89,684</td>
<td>33,670</td>
<td>198</td>
<td>99</td>
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<td>Cavan</td>
<td>193,204</td>
<td>28,771</td>
<td>4,222</td>
<td>20</td>
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<td>Clare</td>
<td>324,343</td>
<td>56,596</td>
<td>2,843</td>
<td>989</td>
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<tr>
<td>Cork</td>
<td>747,403</td>
<td>250,389</td>
<td>4,087</td>
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<td>Donegal</td>
<td>484,783</td>
<td>44,484</td>
<td>14,442</td>
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<td>Dublin</td>
<td>92,165</td>
<td>34,858</td>
<td>57</td>
<td>35</td>
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<tr>
<td>Galway</td>
<td>614,265</td>
<td>189,391</td>
<td>7,080</td>
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<td>Kerry</td>
<td>475,054</td>
<td>42,546</td>
<td>3,911</td>
<td>2,559</td>
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<td>Kildare</td>
<td>169,463</td>
<td>100,153</td>
<td>2,312</td>
<td>663</td>
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<tr>
<td>Kilkenny</td>
<td>207,200</td>
<td>109,338</td>
<td>1,575</td>
<td>171</td>
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<tr>
<td>Laois</td>
<td>171,984</td>
<td>35,825</td>
<td>1,213</td>
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<td>Leitrim</td>
<td>158,549</td>
<td>2,637</td>
<td>852</td>
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<td>Longford</td>
<td>109,148</td>
<td>45,724</td>
<td>2,825</td>
<td>656</td>
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<td>Louth</td>
<td>82,282</td>
<td>55,971</td>
<td>797</td>
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<td>Mayo</td>
<td>559,529</td>
<td>85,067</td>
<td>24,580</td>
<td>3,705</td>
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<tr>
<td>Meath</td>
<td>234,573</td>
<td>178,343</td>
<td>2,458</td>
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<td>Monaghan</td>
<td>129,569</td>
<td>54,675</td>
<td>4,722</td>
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<td>Offaly</td>
<td>200,116</td>
<td>93,040</td>
<td>3,023</td>
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<td>Roscommon</td>
<td>254,860</td>
<td>77,552</td>
<td>10,012</td>
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<td>Sligo</td>
<td>183,774</td>
<td>59,910</td>
<td>5,480</td>
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<td>Tipperary</td>
<td>430,514</td>
<td>240,924</td>
<td>8,319</td>
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<td>Waterford</td>
<td>184,869</td>
<td>80,243</td>
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<td>Westmeath</td>
<td>183,954</td>
<td>112,762</td>
<td>4,164</td>
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<td>Wexford</td>
<td>236,920</td>
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<td>Wicklow</td>
<td>202,606</td>
<td>27,009</td>
<td>427</td>
<td>415</td>
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<td><strong>Total</strong></td>
<td><strong>6,989,705</strong></td>
<td><strong>3,750,238</strong></td>
<td><strong>2,303,021</strong></td>
<td><strong>120,845</strong></td>
</tr>
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*3,463,510 ha are estimated as currently being farmed (Farrelly and Gallagher 2013).
<table>
<thead>
<tr>
<th>Glossary</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afforestation</td>
<td>Forest establishment on land not previously carrying forest</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>The diversity of life on earth, including diversity within species (genetic diversity), between species and of ecosystems</td>
</tr>
<tr>
<td>Carbon sequestration</td>
<td>The storage of carbon by forests and soils during growth and soil development</td>
</tr>
<tr>
<td>Discount rate</td>
<td>The rate at which money received or spent in the future loses value when valued in present day terms</td>
</tr>
<tr>
<td>Exotic species</td>
<td>Non-native species</td>
</tr>
<tr>
<td>Genetically improved planting material.</td>
<td>Tree reproductive material derived from the selection and breeding of superior individual trees chosen for their productivity, wood quality and stem form.</td>
</tr>
<tr>
<td>GIS</td>
<td>A computerised mapping system that can incorporate several layers of information such as location, soils, tree species for display and analysis.</td>
</tr>
<tr>
<td>MDF</td>
<td>Medium density fibreboard</td>
</tr>
<tr>
<td>[age of] MMAI</td>
<td>The age at which the average annual roundwood volume growth of a forest crop reaches its maximum</td>
</tr>
<tr>
<td>Net realisable volume</td>
<td>The estimated roundwood volume that will potentially be available to the enduser</td>
</tr>
<tr>
<td>OSB</td>
<td>Oriented strand board</td>
</tr>
<tr>
<td>Rotation</td>
<td>The length of time (expressed in years) between forest establishment or regeneration and final felling</td>
</tr>
<tr>
<td>Thinning</td>
<td>The removal of a proportion of immature and/or poorly formed trees from a forest in order to improve the growth of the remainder and the overall quality of the forest area</td>
</tr>
<tr>
<td>Yield class</td>
<td>A measure of site productivity expressed as cubic metres roundwood /ha/yr at the age of MMAI</td>
</tr>
</tbody>
</table>