



An Roinn Talmhaíochta,  
Bia agus Mara  
Department of Agriculture,  
Food and the Marine

# Ireland's State of Forest Knowledge Report

Prepared by the Department of Agriculture,  
Food and the Marine

[agriculture.gov.ie](http://agriculture.gov.ie)

This report was prepared by the Department of Agriculture, Food and the Marine, in consultation with the members of the *Project Woodland Working Group 2 – Shared National Approach*.

The Department of Agriculture, Food and the Marine is responsible for ensuring the development of forestry within Ireland in a manner and to a scale that maximises its contribution to national socio-economic well-being on a sustainable basis that is compatible with the protection of the environment.

Project Woodland was established in February 2021 to reform the regulation and vision for forestry in Ireland. Through extensive consultation with stakeholders, Project Woodland will develop a new forest strategy that will underpin a new Forestry Programme for the period 2023-2027.

Published by:

Department of Agriculture, Food & the Marine,  
Johnstown Castle Estate  
Co. Wexford  
Tel. 053 91 63400 / Lo-Call 0761 064 415  
E-mail [forestryinfo@agriculture.gov.ie](mailto:forestryinfo@agriculture.gov.ie)  
Web [www.agriculture.gov.ie/forests-service](http://www.agriculture.gov.ie/forests-service)

© Department of Agriculture, Food & the Marine, Ireland  
March 2022

<b>Executive Summary .....</b>	<b>i</b>
<b>1. Introduction.....</b>	<b>1</b>
1.1 The forest policy context.....	1
1.2 The Economic context.....	1
1.3 Environmental protection and enhancement .....	2
1.4 Social & recreation context .....	2
<b>2. Forests and Forestry in Ireland .....</b>	<b>3</b>
2.1 Forest Area and Distribution.....	3
2.2 Species Composition .....	6
2.3 Silvicultural Systems.....	8
2.4 Forest Health.....	9
2.5 International reporting requirements and research.....	9
<b>3. Forests and Biodiversity .....</b>	<b>11</b>
3.1 Habitat Creation .....	11
3.2 Forest Management .....	12
3.3 Challenges regarding Forests and Biodiversity.....	13
3.4 Species Protection .....	15
<b>4. Forest Industry .....</b>	<b>16</b>
4.1 Employment.....	16
4.2 Timber Production .....	16
4.3 Markets and Trade.....	18
4.4 Forest Certification.....	19
<b>5. Forests and Climate Change .....</b>	<b>19</b>
5.1 Forests and Carbon .....	19
5.2 Carbon Sequestration from Forests .....	22
5.3 Forests and Climate Adaptation.....	23
<b>6. UN Strategic Development Goals (SDG) Assessment of forests and Woodlands.....</b>	<b>24</b>
<b>7. Forestry and Environmental regulations.....</b>	<b>25</b>
7.1 Forestry Act, 2014 .....	25
7.2 Forestry Appeals Committee.....	25
7.3 Appropriate Assessments.....	25
<b>References.....</b>	<b>27</b>
<b>Appendices.....</b>	<b>30</b>
Appendix 1.....	30
Appendix 2.....	30

Appendix 3.....	33
Appendix 4.....	34

## Executive Summary

Forests, well planned and executed, can make a significant contribution to Ireland's climate change mitigation efforts, can enhance biodiversity, improve water quality, provide shade and shelter for farmed animals and amenity opportunities for citizens. Harvested wood products are also essential for climate mitigation. Together they also support economic development and employment creation in rural areas and provide alternatives for fossil fuel-based materials in construction and energy generation.

Over the coming decade and beyond, forestry (and forest products) will be the single largest land-based climate mitigation measure available to Ireland, while forest creation is the single most effective land-use change for meeting Ireland's carbon emission targets<sup>1</sup>. As trees grow and mature, they take up carbon dioxide by photosynthesis and storage of carbon in biomass and soils. The carbon stock in forest soils is the dominant component, accounting for 79.1% of the carbon stock in Ireland's forest estate. It is important to acknowledge also that forests themselves are vulnerable to the impact of climate change and need to be adaptable to its impact. In contrast with other land-use sectors, forestry operates over a much longer planning horizon, where decisions taken today need to take into account the likely climate and associated growing conditions in 50 years, or even 100 years or more, for some forest types.

Biodiversity is at the very foundation of our environment and forests are among the most biologically diverse ecosystems on earth. Ireland's remaining natural forests are fragmented across the country and often degraded. However, planned correctly, both planted and semi-natural forests can complement and enhance the important biodiversity that we have, both within their boundaries and serving as wildlife corridors and refuges in the wider landscape. While there is a growing appreciation of the multifunctional role of forests at both the national and European level and a greater understanding of the range of ecosystem services that forests provide, there is nevertheless, associated risks for our natural and cultural heritage if good forest practice is not followed (EEA, 2019). Forestry can impact negatively on habitats, species and water bodies, it is essential therefore that good practice is followed to avoid and mitigate against these impacts.

---

<sup>1</sup> [An-Analysis-of-Abatement-Potential-of-Greenhouse-Gas-Emissions-in-Irish-Agriculture-2021-2030.pdf](https://www.teagasc.ie/publications/An-Analysis-of-Abatement-Potential-of-Greenhouse-Gas-Emissions-in-Irish-Agriculture-2021-2030.pdf)  
([teagasc.ie](https://www.teagasc.ie))

For the majority of forest owners selling timber is the primary source of income from forests. It has been estimated that by using just 1 tonne of wood in construction instead of concrete or steel it is possible to avoid 2.4 tonnes of CO<sub>2</sub> emissions on average<sup>2</sup>. This highlights the importance of using wood as a building material to mitigate against climate change. Softwoods (wood-derived from conifers) are essential in providing us with wood products. The Irish hardwood resource is currently very limited but as broadleaf forests mature it is expected that the volume of hardwood will increase. This will create new opportunities around this supply.

Trees and forests can also support a strong and sustainable economy and thriving and resilient communities. Forest creation can provide opportunities for income and enterprise diversification, particularly in rural areas and for farmers. Total employment generated by activities in the forest and wood products sector is estimated at 9,000 full-time equivalents. Since 1980, nearly 23,500 private landowners have received grant aid to establish forests, the majority of which were farmers<sup>3</sup>. In 2019 over €64 million was paid in forest premium payments to forest owners. This has driven an increase in the availability of timber for harvest. For instance, the roundwood harvest (including firewood) in 2020 was 3.91 million m<sup>3</sup>, the highest level since records began, 1 million m<sup>3</sup> of which came from the private sector. While it is forecasted that production will increase to 7.9 million m<sup>3</sup> by 2035, the increase again largely driven by the availability of timber coming on stream from the private sector<sup>4</sup>.

There is also an ever-increasing demand for activity-based pursuits in Ireland's forests and significant opportunities also exist around their potential use as centres of learning and in outdoor education. For instance, visits to Coillte forests increased by nearly 40% during the Covid-19 pandemic, with 2.2 million people visiting Coillte's top 50 forests between March and December 2020.

Under the Climate Action Plan 2021 a target has been set to achieve 8,000 hectares of newly planted forest per annum but we are currently far from reaching this target with just 2,016 ha of

---

<sup>2</sup> The European Forest Institute – Key Questions on Forests in the EU - <https://efi.int/publications-bank/key-questions-forests-eu>

<sup>3</sup> DAFM. Annual Review and Outlook for Agriculture, Food and the Marine, 2021. Department of Agriculture, Food and the Marine, Dublin, Ireland.

<sup>4</sup> [COFORD. 2021. All Ireland roundwood production forecast, 2021- 2040. COFORD, Dublin, Ireland.](#)

newly planted forest in 2021. Low planting rates in recent years have been identified as a future risk in terms of our forests continuing to act as a significant carbon sink<sup>5</sup>. If targets are to be meaningful, realistic and achievable then it is essential that they are set with the support of society; the people who will be creating new forests and living with them in their communities.

---

<sup>5</sup> EPA (2020) Land Use, Land Use Change and Forestry emissions and removals 1990-2019, Available at: <https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/lulucf/#>

## **1. Introduction**

This report presents a summary of the state of knowledge of forests and forestry in Ireland. The purpose of this report is to provide an accessible summary of the available information in a format that will be of use to the public and stakeholders alike. This document does not claim to be absolutely comprehensive, however it does draw on official data, expertise, and statistical information to provide interested parties with information that is accurate and verified. This should contribute to the discourse and dialogue around a new Forest Strategy for Ireland by acting as a reservoir of information for those interested in the future of Irish Forests to create a new national strategy that is built on environmental, economic, and social sustainability.

### **1.1 The forest policy context**

*Forests, products and people* - Ireland's forest policy, a renewed vision, was adopted by the Department of Agriculture Food and the Marine (DAFM) in 2014 which provides a statement of forest policy in Ireland that “*accords with the Forest Europe definition of sustainable forest management*” (DAFM, 2014a). More recently the Mackinnon Report (Mackinnon, 2019) has set out an agenda for a review of the approval processes for afforestation and as well as providing a series of recommendations including a new Forest Strategy.

Forest policy, practice and operations have several external influences and constraints which include: political, economic, social, technological, legal, and environmental. Politically the European Green Deal; the EU Biodiversity strategy and the new EU Forest Strategy for 2030 provide a framework for a new strategy. Domestic factors will need to consider policy on land use options, Food Vision 2030 and the significant role that forestry plays in achieving our climate change targets.

Internationally, forest management has been guided by the principles of Sustainable Forest Management (SFM). These principles have been defined and understood at a European level since 1993 (MCPFE, 1993). These have contributed to underpinning the current EU policy instruments (the EU Forestry Strategy and the EU Forest Action Plan). At a national level, Ireland has incorporated these into national forest programmes and environmental guidelines (Forest Service, 2000).

### **1.2 The Economic context**

From an economic perspective exports of forest products from the Republic of Ireland are important to the circular economy; valued at €450 million in 2018. Wood-based panels accounted



for nearly 54% of the value of forest product exports, the balance comprised mainly of sawn timber. Ireland became a net exporter of sawn timber in 2010, the first time since 1961 when forest products statistics began to be compiled by the FAO. Direct and induced employment is estimated to support 9,400 jobs in the forest and wood processing sector (COFORD, 2022). Of these, 1,978 are directly employed in the forestry sector while 3,611 are directly employed in the wood processing sector with the balance as induced employment.

As Ireland's forest area increases and matures, significant opportunities may arise to harness the economic potential of our forests in the construction sector, farm income/lifestyle diversification and recreational forest opportunities amongst others. Equally, the other positive benefits generated by forests must be recognised from an economic and environmental perspective in terms of mitigating climate change, aiding in the conservation of native forests or woodlands as well as creating and protecting habitats.

### **1.3 Environmental protection and enhancement**

Environmental protection and enhancement are important components of sustainable forestry. Climate Change mitigation, carbon management, environmental protection, enhanced biodiversity and, where appropriate, ecological restoration are integral to forest policy and are complementary to economic and societal objectives. The statement 'the right tree in the right place for the right reasons with the right management' is an aspiration shared by stakeholders of various perspectives in forestry. This statement can act as an aid in achieving sustainable forestry by also adhering to policy and evidence. By identifying what is known about forestry in Ireland through a state of knowledge, it becomes easier to ask the right questions and provide evidence-informed answers.

### **1.4 Social & recreation context**

The sustainable benefits of forests in terms of social, environmental, and economic benefits are tied together through promoting recreation, supporting local economies, rural development, and an appropriate land use policy. For example, 2.2 million people visited Coillte's fifty top forests between March-December 2020, displaying the importance of forests as a recreational outlet for people and communities. In addition, positive mental health benefits associated with walking in forests were identified in the 'Woodlands for Health' project, established in 2012, which showed that 82% of participants benefitted from direct access to nature in Irish forests.

## 2. Forests and Forestry in Ireland

### 2.1 Forest Area and Distribution

Globally forests cover 31% of the world's land area which equates to 4.06 billion hectares. Approximately half the world's forest area is relatively intact, and more than one-third is primary forest. In the European Union, forests cover approximately 40% of the land area (159 million hectares). These forests comprise a range of species such as Norway spruce, silver fir, Scots pine, oak, beech and birch.

The development of forests in Ireland after the last ice age is briefly described in this section based on descriptions and interpretations (Mitchell and Ryan, 1997; O'Carroll, 2004). Trees began re-colonising Ireland at the end of the last glacial stage approx. 10,000 years ago. Analysis of pollen from peat illustrates the establishment of forests that once covered 80% of the land surface (Mitchell, 1995). The changes in forest cover and events in Ireland are summarised in Table 1. Since the foundation of the State, forest cover in Ireland has grown from 1.4% of the land area to the current 11% (or 770,020 hectares), excluding inland water bodies. The current level of forest cover is estimated to be at its highest level in over 350 years (DAFM, 2021).

Table 1: Chronological events in the development of Irish forests (Adapted from OCarroll, 2004)

Time Period	Forest Status/ Event
13,000-8,000 BP	Climate improving post ice-age, some tree species arrive
~10,000 BP	Closed forests including Birch, pine, Oak, Elm, etc.
7,000-5,000 BP	Climax Woodland across landscape
~7,000 BP	Development of midland raised bogs
~4,000 BP	Development of blanket bogs, Woodland overcome and suppressed
Early AD	Scots pine close to extinction, introduction of fallow deer and rabbits
Medieval period	Increasing demand for wood for industry
Late 16 <sup>th</sup> century	Concerns for the security of wood supply
Early 18 <sup>th</sup> century	Closure of ironworks due to exhaustion of timber fuel
18 <sup>th</sup> century	Laws to protect Woods
1798-1850	Approx. 10,000 ha planted
1850-1920	Land Acts and cheap imported timber inhibited investment in forestry

Early 1920s	Continued large-scale fellings
1928	Forest Act introduced the state control of tree felling
1930s +	State and private afforestation programmes and conservation of existing semi-natural woodland

\*Abbreviations include: Before present (BP)

Of the total forest area, 89.3% (or 687,525 ha) comprises areas occupied by trees or potentially occupied by trees, while the permanently unstocked open area within the forest (roads, ridelines, powerlines, etc.) comprises 10.7% (or 82,496 ha). Public ownership (mainly Coillte) accounts for 50.8% (or 391,357 ha) of the total forest area is in public ownership, with the balance in private ownership. Private afforestation started to increase dramatically in the mid-1980s following the introduction of grant schemes. The area of privately-owned forests has increased from 81,958 ha in 1973 to 378,663 ha in 2017, over a four-fold increase (Figure 1).

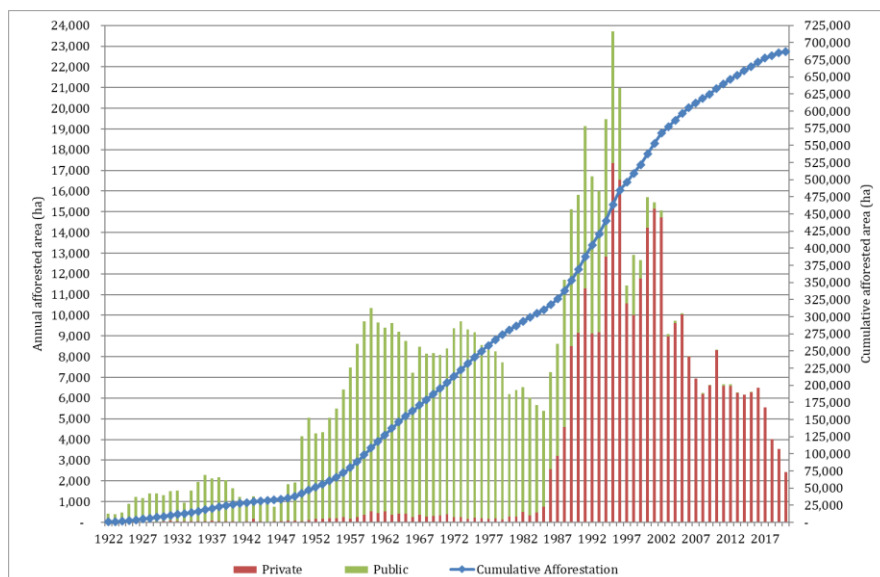


Figure 1. Annual State and private afforestation (1922-2020).

Nearly two-thirds (65.5%) of the stocked forest area are conifer forest, while 20.5% is broadleaved forest and 14% is mixed. Leitrim and Wicklow are the two counties with the highest percentage of forest cover (18% and 19% respectively), while Cork has the largest forest area of 90,020 ha (Table 2).

Table 2. Forest Area by County (NFI, 2017)

County	Forest Area (ha)	Forest Cover by County (%)
Carlow	8,403	9.4
Cavan	18,032	9.3
Clare	55,106	17.2
Cork	90,020	12.1
Donegal	55,534	11.4
Dublin	6,011	6.5
Galway	60,605	9.9
Kerry	57,540	12.1
Kildare	10,396	6.1
Kilkenny	19,825	9.6
Laois	26,462	15.4
Leitrim	30,061	18.9
Limerick	27,933	10.4
Longford	9,160	8.4
Louth	2,428	2.9
Mayo	51,325	9.2
Meath	13,326	5.7
Monaghan	5,997	4.6
Offaly	29,332	14.7
Roscommon	28,311	11.1
Sligo	20,980	11.4
Tipperary	50,241	11.8
Waterford	26,949	14.7
Westmeath	15,163	8.2
Wexford	14,620	6.2
Wicklow	36,262	17.9
Total	770,020	

## 2.2 Species Composition

Sitka spruce is the most common tree species, occupying 44.6% of the total forest area. Over one-quarter of the forest estate contains broadleaves. One-third (33.6%) of the broadleaves are 'Other broadleaf species' (both long-living and short-living), of which over half are willow<sup>6</sup>. The next largest broadleaf species group was birch (24.4%), followed by ash (13.1%) and oak (9.2%). Conifers occupy 479,530 ha while broadleaved species cover 193,580 ha (Table 3).

Table 3 Forest Composition ( NFI, 2017)

Forest Composition		Area (1,000s ha)	%
Stocked Forest Area (i.e. the area with trees present)	Sitka spruce	343.3	44.6
	Norway spruce	25.8	3.3
	Scots pine	7.7	1.0
	Other pine spp.	64.9	8.4
	Douglas fir	10.4	1.3
	Larch spp.	24.5	3.2
	Other conifers	3.0	0.4
	Total Conifer	479.5	62.3
	Pedunculate and sessile oak	17.9	2.3
	Beech	10.0	1.3
	Ash	25.3	3.3
	Sycamore	10.1	1.3
	Birch spp.	47.3	6.1
	Alder spp.	17.9	2.3
	Other short living broadleaves	53.3	6.9
	Other long living broadleaves	11.8	1.5
	Total Broadleaf	193.6	25.1
	Total stocked forest	673.1	87.4
Forest Open Area		82.5	10.7
Temporarily Unstocked Area		14.4	1.9
Overall Forest Area		770.0	100

The age structure of the national forest estate is relatively young with just under three-quarters consisting of trees of 30 years old or less. Conifers tend to be managed using a shorter rotation than broadleaves, and 79.6% of conifers are 30 years old or less while 60.9% of broadleaves are 30 years old or less.

---

<sup>6</sup> The species group composition of long living broadleaves are as follows: field maple, maple, horse chestnut, strawberry tree, hornbeam, sweet chestnut, holly, nothofagus spp., white poplar, black poplar, Turkey oak, red oak, whitebeam, small-leaved lime, large-leaved lime, wych elm. The species group composition of short living broadleaves are as follows: crab apple, aspen, cherry, blackthorn, goat willow, other willows, mountain ash, and hazel.

During the 1930s and 1940s, afforestation consisted of approximately 90% conifer species and 10% broadleaf species, and from the late 1940's to the early 1990s, broadleaves comprised approximately 4% of all afforestation (Figure 2). As a result of the positive differential in favour of broadleaf species in both the afforestation grant and premium schemes, the proportion of broadleaves planted increased significantly from 1993 up to the present, reaching a high of 37% from 2008 to 2011.

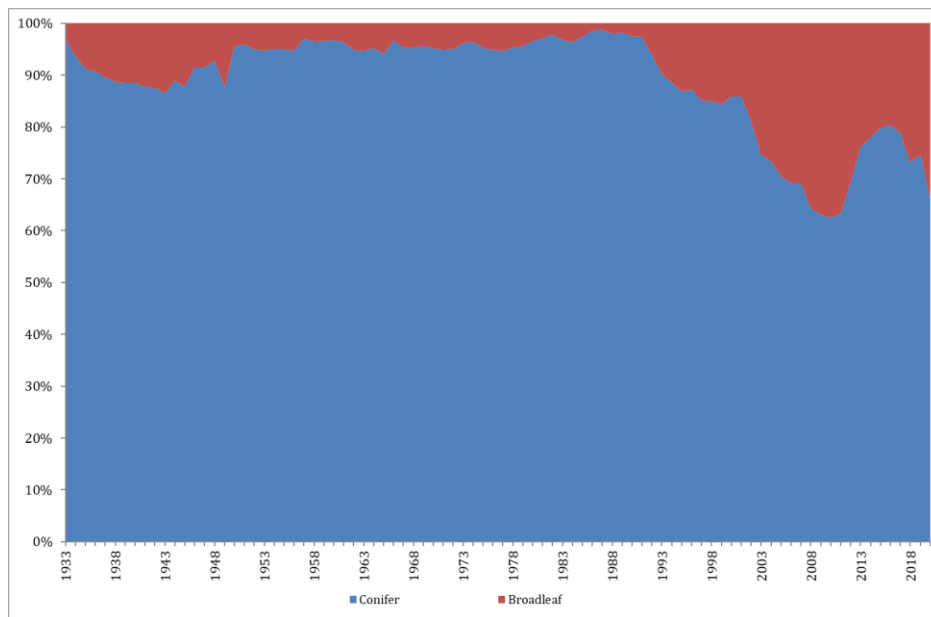


Figure 2. Conifer and broadleaf afforestation (1935-2020).

A range of conifer species were planted in the 1930s and 1940s, including Norway spruce, Scots pine and larch, along with Sitka spruce and lodgepole pine. At the time, many of these tree species were untested in Irish climatic conditions while there was also an increasing demand for home-grown timber. Following successful trials on a range of sites producing a good quality timber product, confidence in Sitka spruce and lodgepole pine grew, leading to their dominance in afforestation up to the mid-1990s.

From the mid-1990s onwards a wider range of tree species have been planted, with ash and oak dominating broadleaf planting. However, more recently, the fungal disease *Hymenoscyphus fraxineus* (Ash Dieback detected in 2012) has resulted in the cessation of grant aid for this species and a subsequent contraction in broadleaf species for afforestation from 2012 to 2016.

A national survey of native woodlands (NPWS 2003-2008) estimated the area under native trees at approximately 133,000 ha, however, what the authors considered as native woodland was estimated at less than 100,000 ha (Perrin *et al.*, 2008). The National Forest Inventory (DAFM,

2018) records a relatively high proportion of native broadleaved species within forests and represent over 26.6% of the total stocked area.

## **2.3 Silvicultural Systems**

Most forests in Ireland have been established and managed under an even-aged management structure. Trees are planted at a high density and thinned over the lifetime of the forest before the final crop is felled and the timber used to generate forest products. The forests are then replanted and the cycle starts again. Large forests are typically managed in smaller sections where trees of different ages are harvested at different times creating a matrix of open spaces, newly planted trees and trees reaching maturity.

Even-aged forest management has been widely adopted in Ireland for several reasons:

- The afforestation of the country following centuries of exploitation meant that planting forests created uniform even-aged crops of trees that require harvesting at the same time. This facilitates internationally competitive softwood timber production and harvesting of the raw material for the building of houses in the construction industry
- Commercial afforestation for many decades was confined to wet and exposed locations which are suited to conifer species. Conifers are generally shallow rooting and coupled with restricted rooting depth due to high watertables, many forest stands are growing on sites vulnerable to windthrow.
- Ireland has a very windy climate which is prone to experiencing catastrophic storms, usually the end of hurricanes. More intensive silvicultural systems on certain site types can expose stands to the risk of windthrow in unsheltered locations. On these exposed and wetter site types, typically thinning would be foregone to ensure the stability of a stand

While thinning and felling is the main silvicultural system utilised in Ireland and in the north of Europe, continuous cover silvicultural systems are more common in central Europe. There are a range of other silvicultural systems within which include a vast range of continuous cover silvicultural systems. In central Europe, such shelterwood systems or selection systems, are typically used in forest management. These systems maintain a continuous forest cover with trees being harvested when they reach the required sizes. Natural regeneration of stands is encouraged through the careful felling and management of the canopy to allow sufficient light to the forest floor. Over time, the older trees are removed allowing the young trees to reach the upper canopy. By this method, a multi-storied and multi-aged stand structure is formed, and a continuous forest

cover is maintained in perpetuity. Relatively few forests in Ireland are currently being managed in CCF silvicultural systems but there is interest from forest owners supported by specialised advice from forest managers, consultants and advisors.

The Forest Service of the DAFM operates policy and procedures in relation to tree felling which is underpinned by the provisions of the Forestry Act 2014 and includes significant ecological input in the assessment and the legal requirement for felling licences.

## **2.4 Forest Health**

Ireland's forest health status overall is relatively good, largely as a consequence of our island status, the relative newness of the forest estate and the implementation of import controls. Ireland does not have the range of forest pests and diseases that are endemic on the European continent and further afield. However, serious threats from pests and diseases are on the increase due to globalisation and trade and the impacts of climate change. In recent years there have been a number of serious disease outbreaks in trees and forests, most notably Ash Dieback Disease caused by the fungus *Hymenoscyphus fraxineus* and *Phytophthora ramorum*, a fungus-like organism, that can damage and kill plants and trees it infects, notably larch spp, and before that Dutch elm disease affecting species of elm, caused by fungus *Ophiostoma* spp and spread by elm bark beetles. Ireland has "Protected Zone" (PZ) status within the EU for 14 forestry-related harmful organisms (HO) which recognise in legal terms the freedom from their presence, despite having conditions that are suitable for their establishment. Annual mandatory surveys are conducted for the presence of these HO (to continue to prove their absence) which is critical for both the health status of the forest estate and also for the forest industry. In addition to the Protected Zone surveys, other mandatory surveys are carried out annually for a range of harmful organisms which are of EU wide importance, known as EU priority pests, including pinewood nematode, Asian longhorn beetle and emerald ash borer. The impact of ash dieback disease, in particular, has had a substantial negative impact on the health of ash trees, it was first identified in Ireland in 2012, and is now present throughout the island of Ireland. The common ash is one of Ireland's most important native tree species; it comprises approximately 3.8% of the forest estate or 25,280 ha, 60% of which has been planted since 1990 (DAFM, 2018), mainly by private owners.

## **2.5 International reporting requirements and research**

The Department of Agriculture, Food, and the Marine (DAFM) is responsible for the collection and publication of forest statistics. Forest stakeholders and policymakers require such reliable



statistics to plan and make decisions. Ireland also has a series of international reporting requirements relating to forests and forestry. Some examples of these can be found in Appendix 1. Ireland is striving to create a world-class research system that drives innovation and economic success. DAFM plays an important role in this vision for the Agri-Food and Forestry sectors, via the publicly-funded agrifood and forestry research programmes that are in place. The Programme of Competitive Forest Research for Development (CoFoRD) provides funding, on a competitive basis, to public research performing organisations and higher education institutes for ‘public good’ forestry research, to develop a scientific foundation and support for a sustainable, competitive market-orientated and innovative forest industry. These DAFM funded research projects outlined in Table 4 provide a connection between science and policy as well as improvements to forestry practice in Ireland.

Table 4. DAFM funded research projects from 2011 to 2021 organised by thematic area

FORI Research Theme <sup>7</sup>	Completed	Ongoing	Total
Adding Value	3	4	7
Climate Change	2	3	5
Ecosystem Services	3	3	6
Expansion of the forest resource	1	1	2
Forest Expansion		1	1
Forest Productivity	2	2	4
Forest Resource Protection	2	4	6
Forest Resource Utilisation	5	5	10
Total	18	23	41

---

<sup>7</sup> Research themes are available from DAFM (2014b)

### **3. Forests and Biodiversity**

Ireland is fully committed to the European Union's Biodiversity Strategy for 2030. The strategy represents a comprehensive, ambitious, and long-term plan to protect nature and reverse the degradation of ecosystems. Crucially it places Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments. The aim of the European Commission is to restore degraded ecosystems, in particular, those which provide potential to:

- Capture and store carbon
- Prevent and reduce the impact of natural disasters
- Deliver further benefits, such as soil health and pollination
- Improve knowledge and monitoring of ecosystems and their services

Biodiversity is the variety of life found on Earth, and it is fundamental to thriving ecosystems and communities. Animals, plants, fungi and micro-organisms are important in ecosystems and to humans. Diversity within ecosystems provides for quality of life and boosts ecosystem stability.

#### **3.1 Habitat Creation**

Appropriately sited and designed afforestation creates forests that contribute to biodiversity, both in-situ on the site itself and ex-situ in the context of the surrounding landscape. The biodiversity of afforestation sites can be enhanced by the inclusion/protection of supplementary habitats such as deadwood, hedgerows, pocket wet habitats and areas of semi-natural scrub. Setbacks are prescribed by the Environmental Requirements for Afforestation (DAFM, 2016). Furthermore, species diversification rules and the range of forest/woodland types supported by the Afforestation Scheme enable the development of forests that are diverse in both tree species composition and future management regimes.

New native woodlands can serve to reinforce and conserve existing native woodlands, provide wider habitat connectivity at a landscape level, and protect water quality. They can expand and enhance Ireland's four Annex I woodland habitats, which are recognised as being internationally important under the EU Habitats Directive. The concept of strategically deploying native woodlands to protect and enhance water quality and aquatic/riparian ecosystems is becoming established in Ireland with grant aid available under the native woodland scheme.

Forests and biodiversity are hugely important to the public as they provide direct contact with woodland ecosystems and nature. While the use of Ireland's forests by walkers provides an obvious and valuable point of contact, the creation of easily accessible woodland amenities close to centres of the population will prove vital, to ensure interactions with woodlands in the face of increasing urbanisation. The DAFM NeighbourWood Scheme is aimed at delivering such interaction, not only to promote an awareness and appreciation of the natural world and Ireland's natural heritage but also to realise the health and wellbeing benefits that visiting forests can deliver.

### **3.2 Forest Management**

The capacity for a forest to support biodiversity during its rotation varies on the initial tree species selection and the management regime applied. During the initial years following canopy closure, conifer stands subjected to a standard thinning regime, supporting a reduced amount of biodiversity in terms of plant species, due to the shade cast from canopy closure. However, in terms of macrofungi, the shading nature of many conifers offers an optimum habitat for many native fungi species. After each successive thinning cycle, the light regime becomes more favourable to ground and understorey development of plant species, thus changing the habitat as more light becomes available. Newly afforested sites with a diverse range of conifers and broadleaves will inherently support a wider range of habitats for woodland species to thrive. In relation to forest management, DAFM offers funding for various interventions, including the Forest Road Scheme (introduces edge habitat into forest stands), the CCF Scheme (funds the conversion of existing stands to CCF) and the Native Woodland Conservation and Woodland Improvement Scheme, that funds the restoration of existing native woodlands.

Felling a forest stand can represent a major disruption to whatever woodland ecosystem may be present beneath the canopy, dramatically changing the light and moisture levels and opening the 'footprint' of the felling to more generalist flora and fauna. The process itself can also give rise to unwanted impacts, including the disturbance (through noise and vibration) of certain bird species and the potential of runoff for sediment and nutrients into adjoining watercourses. Clearfells also offer a change in the landscape which can benefit the habitat for ground-nesting birds in the years proceeding the clearfell event. This may be most effective in larger forests that are managed in sub-sections offering a matrix of different coupe ages, structures and potential habitats. The licensing process applied by the DAFM includes significant ecological input, for example through the Appropriate Assessment process. All felling and reforestation must adhere to the measures set out in the Felling & Reforestation Policy (DAFM, 2017). There are of course

potential negative impacts for biodiversity associated with tree felling, these are discussed in section 3.3.

Reforestation represents a unique opportunity to redesign a forest to take better account of a more multipurpose approach to forestry with particular reference to ecology, water, carbon sequestration and other environmental receptors. This is particularly applicable to older plantations situated in upland areas and on peat, originally planted with few safeguards regarding the protection of water and other environmental features. The ecological value of the subsequent forests can be enhanced greatly, with the introduction of tree species diversity, environmental setbacks regarding water, habitats, landscape, public road, and dwellings (as per the requirements for afforestation sites) and other features such as guidelines, which can introduce 'wind-firm' edges that will enable smaller felling coupes in the future.

Forest establishment and management to deliver ecosystem services regarding habitats and species (including those associated with aquatic ecosystems) have begun to take on a collaborative approach involving both the ecologist and the forester. DAFM require that any mitigation presented in a NATURA Impact Statement (NIS) is developed and agreed to by both the ecologist and the forester. Similarly, any applications under its Native Woodland Conservation Scheme must include a woodland plan compiled jointly by a forester and an ecologist, both of whom must have completed a prescribed DAFM/Woodlands of Ireland training.

### **3.3 Challenges regarding Forests and Biodiversity**

Forests have a key role to play in protecting and enhancing Ireland's biodiversity, both *in-situ* biodiversity (associated with native woodlands and other forest habitats) and *ex-situ* (concerning wider habitat linkage, protection of water and aquatic ecosystems). New and existing forests have a specific role in water protection particularly in the context of efforts under the Water Framework Directive. The role of forests is set out clearly at a national level in Ireland's current National Biodiversity Action Plan and Prioritised Action Framework for NATURA 2000 (2021-2027), and at a European level in the EU's Forest Strategy for 2030 and Biodiversity Strategy for 2030.

However, existing habitats and species of conservation importance must be protected from poorly sited afforestation, even afforestation with native woodlands. Large-scale afforestation on bog habitats and in water-sensitive upland areas is no longer possible, due to the application of the Land Types for Afforestation (DAFM, 2016). The Environmental Requirements for Afforestation also preclude the planting of undesignated Annex I habitats, and Forestry Programme rules require the agreement of NPWS to any afforestation within a European Site.

Furthermore, the ecological assessment applied by DAFM will preclude the planting of lands of value to (e.g.) bird species of Special Conservation Interest in relation to a SPA, or other ecological receptors.

DAFM is acutely aware that as well as the positive attributes of forests, the potential exists for negative impacts on biodiversity that need to be considered and managed. This is evidenced by legacy issues associated with past forestry practice. For instance, under the Habitats Directive Article 17 reporting framework forestry is listed as both a threat and a pressure affecting just over 30 % of Annex I habitats, with a high impact for a little over 15 % (EEA, 2019).

These negative impacts include:

- Habitat loss through inappropriate afforestation, affecting important on-site habitats and rare plant species
- Habitat displacement through inappropriate afforestation, displacing birds and other fauna that rely on the site for foraging, breeding, etc.
- The threat of increased predation closer to important breeding areas for ground-nesting bird species such as Hen Harrier and Curlew, created by afforestation within the proximity
- The fragmentation of existing habitats at a landscape scale, through afforestation
- Threats to water quality and aquatic ecosystems from forest-based sources of sediments and nutrients, and arising from changes in hydrological patterns, especially in relation to summer flow
- Negative impacts rising from large scale even-aged forests dominated by a limited number of tree species. This is especially the case in relation to Hen Harrier SPAs, where the largely uniform forest cover within landscapes creates a 'boom-bust' cycle whereby suitable nesting habitat within the forest footprint only becomes available over large areas at a particular stage in the forest rotation, i.e., pre-thicket
- Disturbance resulting from forestry operations, including disturbance of the breeding behaviour of certain raptor species, namely Hen Harrier and Merlin, arising from noise and vibration associated with forestry operations typically involving machinery
- Hydrological changes to terrestrial wetland habitats (e.g. peatlands) resulting from afforestation and associated drainage

Significant challenges also face current forests in delivering favourable results for biodiversity, particularly those in environmentally sensitive areas. For example, a cohort of maturing conifer plantations are located in upland areas and on peatland, on sites that are no longer being

afforested. These sites often coincide strongly with protected habitats (e.g., Blanket Bog and Wet Heath Annex I habitats) and species (e.g., Hen Harrier, Freshwater Pearl Mussel) and with sensitive water catchments (namely High-Status Objective Waterbodies). Careful management needs to consider the knock-on effects of restoring the site to the pre-forest habitat in terms of deforestation which can impact the carbon sequestration potential of the forest estate.

Practical challenges also exist, for example, in relation to unsustainably high deer populations in many parts of the country, the supply of appropriate native planting material and the danger of new or existing pests and diseases. For example, the arrival and spread of the Ash Dieback Disease in Ireland over recent years has removed ash from the list of suitable species for afforestation, thereby ruling out the planting of this tree species as a commercial broadleaf or as part of a native woodland mix.

Notwithstanding the above challenges, appropriately sited and managed forests and woodlands provide many opportunities to protect and enhance biodiversity, including in-situ and ex-situ biodiversity, the latter including aquatic ecosystems.

### **3.4 Species Protection**

Ireland is committed to the principles of Sustainable Forest Management. With regard to the conservation of protected species, forest operations must be carried out in accordance with EU and national legislation, including the Birds and Habitats Directives, the Birds and Natural Habitats Regulations, the Wildlife Acts, and the Flora Protection Order. Natural habitats are being created or retained in plantations through the planting of native species, leaving open spaces, creating deadwood habitat, and retaining veteran trees and other micro-habitats/features.

The scarcity of natural woodlands in Ireland means that plantations have the potential to provide important habitats for populations of some forest species that would otherwise be even scarcer. Managed forests can provide important habitats for a range of native species and offer habitats for threatened populations of forest specialists including rare plants, animals, and fungi. Forests are home to a diversity of birds. They can support nationally important populations of some rare or declining species, e.g., Hen Harrier, Nightjar and Merlin and may provide opportunities for other species to colonise Ireland. Recently the Great Spotted Woodpecker has bred in Ireland and their range and population has expanded rapidly. The increased presence of forest specialists, such as lesser horseshoe bats, crossbills, pine martens and siskin, in Ireland is due in large part to increased afforestation in recent times. Early successional forests can provide habitat for bird species of scrub and open habitat, including those of conservation concern such as the

Grasshopper Warbler, Whinchat and Linnet. Forests also provide habitat for the native red squirrel and pine martens.

## **4. Forest Industry**

### **4.1 Employment**

Direct and induced employment supported by the forest sector was estimated to be 3,501, while in the wood processing sector direct and induced employment was estimated to be 5,922 (COFORD, 2022). It is estimated that the total employment generated by activities in the forest and wood products sector is approximately 9,400 full-time equivalents (COFORD, 2022). According to the Labour Force Survey, the number of people employed directly in the forestry sector has averaged 2,800 between 1998 and 2017 while the average number employed directly in sawmilling and planning of wood has averaged 7,200 for the same period.

### **4.2 Timber Production**

Timber production in Ireland is typically measured in terms of roundwood output from forestry. Roundwood includes all industrial wood sawlogs, pulpwood, and stake, as well as wood chip and residues derived from processing. The national roundwood harvest (excluding firewood & hardwood) from Irish forests between 1955 and 2018 is shown in Figure 3. Sitka spruce has proven to be one of the most productive conifers in Ireland with a timber quality that is accepted by the roundwood processing sector and end-users.

Up until the early 1980s, the roundwood harvest was low due to relatively low afforestation rates. The early 1980s saw the opening of the Finsa and Medite board mills which increased demand for roundwood and sawmilling residues. In 2020, 3.91 million m<sup>3</sup> of roundwood was harvested in Ireland (CSO, 2022a), the highest level since records began.

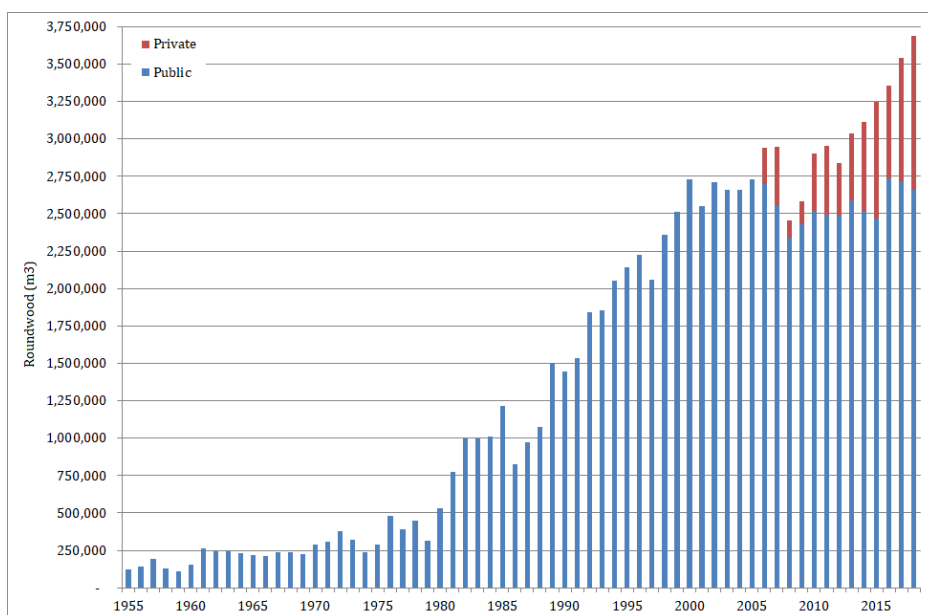


Figure 3. Roundwood harvest 1955-2018

Between 2015 and 2020, roundwood production from privately owned forests averaged 32% (1.2 million m³) of the total roundwood. In 2020, 1.58 million m³ of roundwood came from privately owned forests, a 21% increase over the 2019 output (CSO, 2022a). This is reflective of the maturing private forest estate. Roundwood forecasts project that the annual potential roundwood supply will increase from 4.9 million m³ in 2021 to 7.9 million m³ by 2035 (Figure 4), followed by a small decrease to remain constant at about 7.6 million cubic metres up to 2040 (COFORD, 2021a).

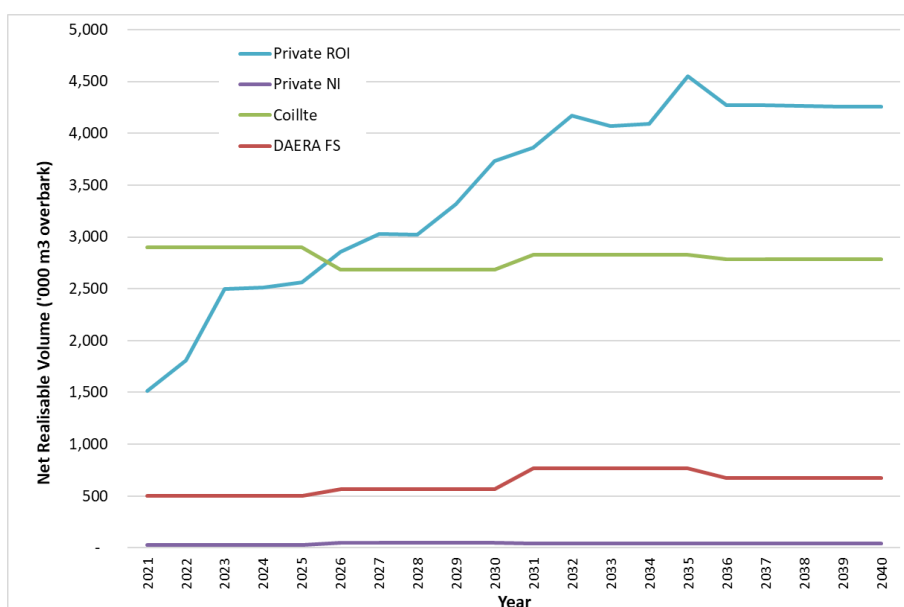


Figure 4. Forecast of total net realisable volume (2021 - 2040).



### 4.3 Markets and Trade

In 2020 the volume of roundwood input purchases by industry was 3 million m<sup>3</sup> (CSO, 2022b). This is a decrease of 3.9% compared with 2019 purchases of 3.1 million m<sup>3</sup>. Roundwood purchases from publicly-owned forests made up 69.4% (2.1 million m<sup>3</sup>) of 2020 purchases with the remainder from privately-owned forests (CSO, 2022b).

Commercial hardwoods are still a minor element of the annual roundwood available for processing; the figure has increased substantially for non-coniferous roundwood between 2019 and 2020, from 12,000 m<sup>3</sup> to 25,000 m<sup>3</sup> (CSO, 2022a). DAFM recognise the need for continued investment in research and innovation and have provided funding to increase the utilisation of broadleaved forest to come from the forest estate. Increased knowledge and continued management of broadleaved forests is required to ensure crops produce quality timber.

Forests provide a source of renewable raw materials, and replace materials and energy produced from fossil fuels which help mitigate rises in greenhouse gases. Usage of wood fuels is increasing due to renewable energy policies and because of young plantations entering the production stage. The available fuelwood has increased substantially from 103,000 m<sup>3</sup> in 2019 to 207,000 m<sup>3</sup> in 2020 (CSO, 2022a). The firewood market in Ireland has an estimated worth of €35 million (COFORD, 2018b). The introduction of grant aid in 2009 for first thinning of broadleaf forests has resulted in substantial mobilisation of firewood from first thinning, principally for domestic use. In addition, firewood is also harvested by forest owners for their own use, and this is not accounted for in current figures. The burning of wood for fuel is an important market for small-diameter timber and stimulates thinning in forests<sup>8</sup>.

The exports of wood and paper products from Ireland were valued at €751 million in 2020, a slight decrease from €790 million in 2019 (CSO, 2022b). Wood-based panels accounted for approximately 31% of the value of forest and paper products exports, the balance comprising of sawn timber exports. In value terms, Ireland became a net exporter of sawn timber in 2010, the first time since 1961, when forest products statistics began to be compiled by the FAO.

---

<sup>8</sup> Note that it is important when burning wood that it is dry to least 25% moisture content and preferably burned in an efficient stove which reduces the emitted levels of particulate matter significantly. Irish suppliers of firewood can get certified with Wood Fuel Quality Assurance to ensure adherence to a quality product. The EU Ecodesign directive will require that all new wood burning stoves in 2022 meet strict air quality guidelines and standards. The Department of the Environment, Climate and Communications have recently introduced new legislation in 2021 which provides a range of controls in the burning of fuels, including timber.

## **4.4 Forest Certification**

International voluntary forest certification schemes are operated by non-governmental organisations to promote sustainable forest management practices. In Ireland, there are two international forest certification schemes in place: the Programme for the Endorsement of Forest Certification (PEFC) and the Forest Stewardship Council (FSC).

Most of our sawn timber and panelboards are exported and to access these export markets, processors require their output to be certified to one or both of these international forest certification schemes. For processed timber to be sold as 'certified', at least 70% of a processor's roundwood throughput must be sourced from certified forests. The Coillte estate is certified to both the FSC and PEFC Standards and a proportion of the private forest estate has achieved forest certification. This is an important achievement for our national forest resource. As harvesting in the private sector increases as highlighted above, certification will become an important and growing issue for private forest owners.

## **5. Forests and Climate Change**

### **5.1 Forests and Carbon**

Forests and forest products play an important role in mitigating climate change by sequestering and storing atmospheric carbon dioxide (CO<sub>2</sub>). Sequestration is the net removal of CO<sub>2</sub> from the atmosphere, mainly related to the growth of biomass. The carbon is stored in plant biomass, soil, deadwood, and harvested wood product pools. CO<sub>2</sub> is taken up during photosynthesis and stored as biomass while some carbon is released back into the atmosphere due to plant respiration and from the forest deadwood, litter, and soils pool due to decomposition (Figure 5). Forestry can be considered a carbon sink as it is an activity that removes greenhouse gases from the atmosphere. However, forests in Ireland that have been planted since 1990 are at risk of becoming an emission of carbon back into the atmosphere due to an unbalanced age structure and a reduction in afforestation rates in recent years (COFORD, 2021b; Hendrick and Black, 2008). Peat soils also emit carbon when disturbed and afforestation on these soils can be a net source of CO<sub>2</sub> (Jovani-Sancho et al. 2021).

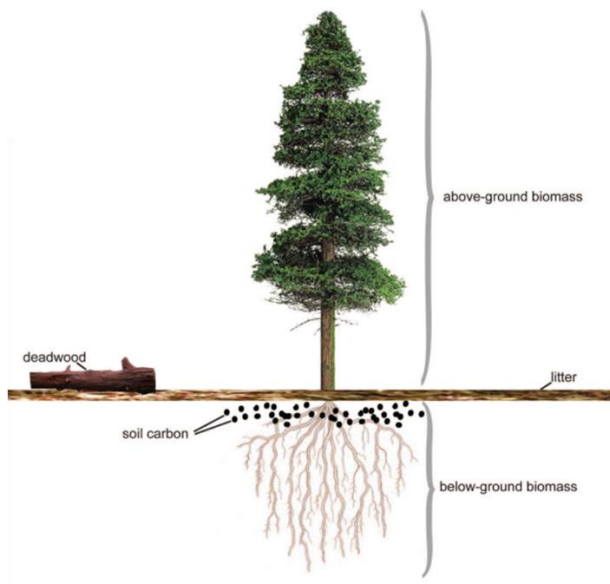


Figure 5. The five forest ecosystem carbon pools (Hendrick and Black, 2008)

Sustainably managed forests should be a net sink for carbon when all factors are considered. However, unmanaged, and degrading forests can become a net emitter of carbon back into the atmosphere. Large emissions can also occur during catastrophic disturbance events, such as fires and windthrow. Approximately half of the carbon in harvested timber is stored in wood products and when these are used in long-lived products, the carbon can be “locked-in” for decades. The use of wood for bioenergy replaces fossil fuel use and has the potential to reduce overall emissions creating a substitution effect that is also relevant to energy-intensive materials (concrete, steel, etc.) with wood products (i.e., product substitution). Many of these are outlined in the forestry carbon cycle in Figure 6. Detailed data on the carbon balance between emissions and sinks from the forestry sector can be found in Ireland’s National Inventory Report 2021 (EPA, 2021).

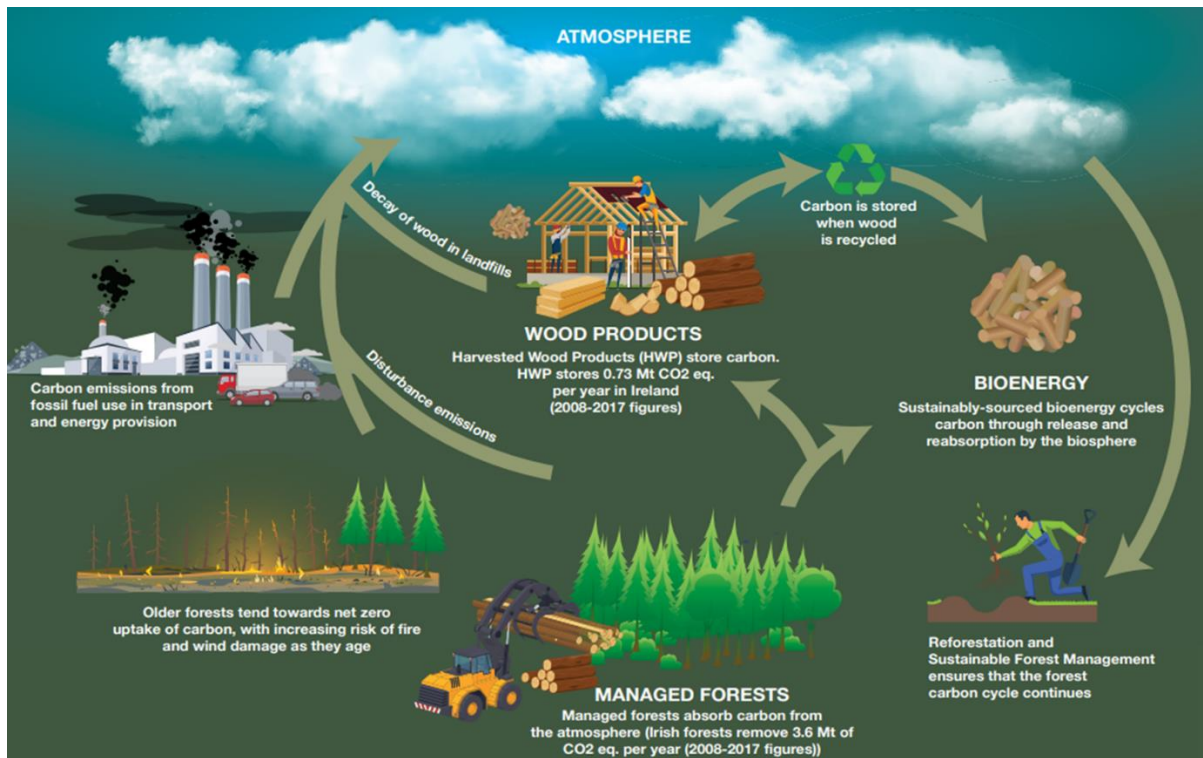


Figure 6. The forest carbon cycle (COFORD, 2021b)

The national forest estate is an important carbon reservoir, amounting to approximately 312 million tonnes of carbon in 2017 as estimated using data from the 3<sup>rd</sup> cycle NFI (Table 5). Carbon in biomass and litter pools has increased from 2012 to 2017. The carbon stock in forest soils is the dominant component, accounting for 79.1% of the carbon in the forest estate in 2017. Total living tree biomass amounted to 17.9% of the total carbon stock, while deadwood, including logs, stumps and standing dead trees along with litter constituted the remaining 3%.

Table 5. Forest carbon stocks 2006, 2012 and 2017 (units in million tonnes of carbon)

	2006		2012		2017	
Carbon stock	Million t	% Total	Million t	% Total	Million t	% Total
Above-ground biomass*	30.6	8.9	39.7	10.4	45.6	14.6
Below-ground biomass**	6.7	1.9	8.8	2.3	10.3	3.3
Deadwood***	1.2	0.4	2.5	0.6	2.1	0.7
Litter	2.3	0.7	6.3	1.6	7.1	2.3
Soil	304.9	88.1	323.7	85.1	246.6	79.1
Total	348.4	100.0	381.0	100.0	311.7	100.0

\* Above-ground biomass includes all living stems, branches and needles/leaves based on a stump height at 1% of total tree height.

\*\* Below-ground biomass includes all roots to a minimum diameter of 5 mm.

\*\*\* Deadwood includes all logs, stumps, and branches with a minimum diameter of 7 cm.

## 5.2 Carbon Sequestration from Forests

Greenhouse gas (GHG) emissions and removals are estimated using a carbon budget model based on data from the NFI, FAO-EUROSTAT data on harvested wood products (HWP) and other data sources. Reporting uses emission factors and activity data derived from national and international research, in accordance with IPCC good practice and UNFCCC rules, such as carbon dioxide (CO<sub>2</sub>) and non-CO<sub>2</sub> emissions from fires, drained organic soils and harvested wood products (EPA, 2021).

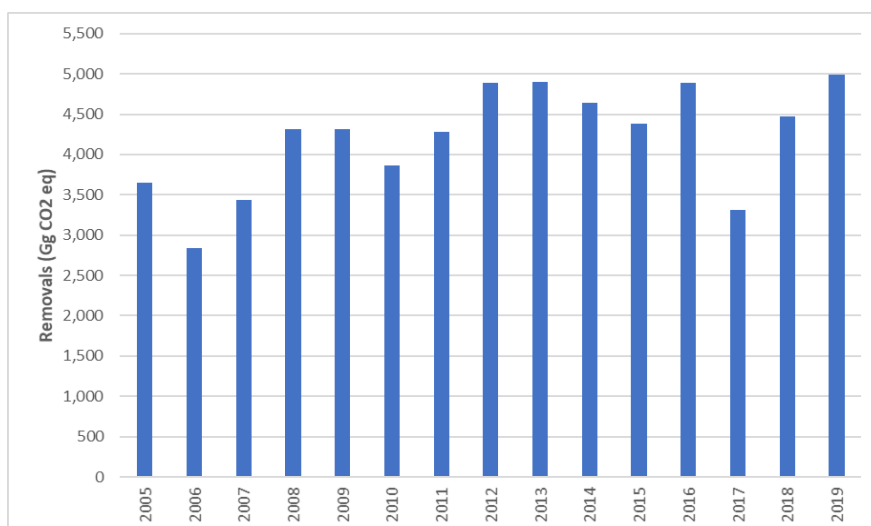


Figure 7. Greenhouse gas removals from forests 2005-2019

Removals of carbon by Ireland's forests (i.e., net sequestration) increased from 3.8 Mt carbon dioxide equivalents (CO<sub>2</sub> eq.) in 1990 to 4.9 Mt CO<sub>2</sub> eq. by 2019 (Figure 7). The trends in forest GHG removals are related to the level of the annual harvest, the extent of afforestation or deforestation and changes in the age class structure of the national forests over time (Black et al., 2012). In the medium to long term projections, a decline in the national forest sink and a transition to a net emission is projected for a short period of time. However, the forest estate becomes a net removal again post 2050, which is caused by a number of factors, including land use, forest management, climatic events, etc.

The carbon sink of the forest is typically expressed on a per hectare per year basis. The sequestration rates of a forest are dependent on age, productivity, and tree species. The *forests and wood products and their importance in the climate change mitigation report* (COFORD, 2021b) outlines a simplistic rule of thumb where for conifer crops in Ireland the range in mean carbon uptake over a rotation is between 3 and 10 tonnes of carbon dioxide per hectare per year. For broadleaved species, the mean ranges from 2 to 5 tonnes of carbon dioxide per hectare, per year.

### 5.3 Forests and Climate Adaptation

It is important to acknowledge that forests themselves are vulnerable to the impact of climate change and need to be adaptable to its impact. For instance, in Ireland, climate change may alter local forest site conditions, the frequency and degree of disturbances (e.g. fire, drought, extreme storms), phenology (seasonal timing of biological activity), and the distribution and abundance of invasive species and pests. This has the potential to lead to increased tree maladaptation and mortality and changes in competitive interrelationships leading to reduced forest health and

economic loss. Conversely, predicted climate changes could see an increase in the suitability of some tree species and, relatedly, higher productivity levels. In contrast with other sectors, forestry operates over a much longer planning horizon, where decisions taken today need to take into account the likely climate and associated growing conditions in 50 years, or even 100 years' time for some forest types. The COFORD Council (2021b) highlighted a range of adaptation measures particular to forests and the forestry sector based around three key themes of forest genetics, forest design and forest management. The Agriculture, Forest and Seafood, Climate Change Sectoral Adaptation Plan was published by the Department of Agriculture, Food and the Marine (DAFM, 2019). This cross-sectoral document, prepared under the National Adaptation Framework, sets out the overall adaptation goal and objectives of the agriculture, forest and marine sectors.

## **6. UN Strategic Development Goals (SDG) Assessment of forests and Woodlands**

In 2015, the United Nations (UN) established 17 interlinking Sustainable Development Goals (SDGs) with the ambition of seeing these goals achieved by 2030. Forests are home to more than 80% of terrestrial species, including plants, animals & insects. They are crucial to reducing the risk of natural disasters (including droughts, floods & other extreme events) and play a vital role in mitigating climate change through carbon sequestration. The multiple roles and functions of forests, along with other types of forests lands and woodlands must be protected. Due to the important and diverse role that Forests play in sustainable development, the UN adopted the first-ever UN strategic plan for forests 2017-2030. This plan provides a global framework for actions to halt deforestation and forest degradation and aims to help contribute to progress across the SDG's.

This demonstrates how a clear forest strategy can help to achieve the aims of not only SDG 15 "*Life on land*" but can also help achieve the goals of many other SDG's. Forests are integral to the success of the 2030 agenda in terms of biodiversity, but also the green economy among other areas.

Forests can help contribute here with the production of renewable & sustainable timber products, aligning with SDG12 aim of sustainable use and management of natural resources. Forests can help drive the move to low carbon and circular economy. While the SDG12 targets and indicators make no outright or direct reference to forests or forest-related communities, forestry can still

play a vital role in achieving these. Linkages can also be found, for example between agricultural commodities and sustainable forest management. The DAFM Annual review and outlook contains detailed information on activities that can be linked to specific Sustainable Development Goals. These SDGs can be found in Appendix 2.

## **7. Forestry and Environmental regulations**

The pivotal piece of legislation with respect to forestry in Ireland is the Forestry Act 2014 coupled with other legal requirements and frameworks. A list of forestry legislation can be found in Appendix 3.

### **7.1 Forestry Act, 2014**

The Forestry Act, 2014 (Number 31 of 2014) was commenced on 24<sup>th</sup> May 2017 and with it, the Forestry Regulations, 2017 (SI No. 191/2017) were signed. The Act provides a regulatory basis for forestry activities in Ireland, including the licensing of tree felling, afforestation, forest road construction and the aerial fertilisation of forestry. The 2014 Act repealed and replaced the Forestry Act, 1946, having been in place for over 70 years, needed an overhaul, particularly for the licensing of tree felling. The Forestry Act provides a tree felling consent system and includes tough penalties for felling trees without a valid licence. The aim of this provision was to prevent future deforestation. A site notice must be erected at the time of application for afforestation & forest road works licences and when a tree felling licence is granted, to notify the public that a valid licence is in place.

### **7.2 Forestry Appeals Committee**

For the first time, appeals against decisions on applications for forestry licences were put on a statutory footing, under Section 35 of the Forestry Act, 2014, which amended the Agriculture Appeals Act, 2001. These provisions established the Forestry Appeals Committee (FAC), and lead by an independent Chair. The remit of the FAC is to accept and determine appeals against decisions on forestry licence applications. Further details on the secondary regulations arising from the forest act can be found in Appendix 4.

### **7.3 Appropriate Assessments**

Article 6(3) of the Habitats Directive sets out the requirement for Appropriate Assessment in relation to SACs and SPAs (or 'Natura sites'). Any application for a Forestry Regulation S.I.191 / 2017 licence and/or forestry grant support is regarded as a 'project'. DAFM is the 'competent national authority', and it must be sure that the project meets the exacting requirements set out



under Article 6(3). The process comprises two steps: AA screening, and (if necessary) Appropriate Assessment. They are often referred to as 'Stage 1' and 'Stage 2', respectively. More details of the AA process are available from DAFM.

## References

Black, K., Hendrick, E., Gallagher, G., Farrington, P. (2012). Establishment of Irelands projected reference level for Forest Management for the period 2013-2020 under Article 3.4 of the Kyoto Protocol. Irish Forestry 69: 7-32.

COFORD, (2018a). COFORD Forest Policy Review Group Report on 'Forests, products and people - Ireland's forest policy – a renewed vision' (2014). A Report on Policy Implementation with Recommendations. Department of Agriculture, Food and the Marine, Dublin.

COFORD, (2018b). Woodflow and forest-based biomass energy use on the island of Ireland. COFORD, Department of Agriculture, Food, and the Marine.

COFORD, (2021a). All Ireland Roundwood Production Forecast 2021-2040. COFORD, Kildare St., Dublin 2.

COFORD, (2021b). Forests and wood products, and their importance in climate change mitigation – a series of COFORD statements. COFORD, Kildare St. Dublin 2.

COFORD, (2022). Employment and economic impact associated with the forest sector. COFORD, Kildare St. Dublin 2. (Currently in draft, expected 2022)

CSO, (2022a). Forest Wood Removals. Central Statistics Office. Available at: <https://www.cso.ie/en/statistics/environmentstatistics/forestwoodremovals/>

CSO, (2022b). Wood and Paper Exports and Imports 2020. Central Statistics Office. Available at: <https://www.cso.ie/en/releasesandpublications/ep/p-wpei/woodandpaperexportsandimports2020/>

DAFM, (2014a). Forests, products and people. Ireland's forest policy—a renewed vision. Department of Agriculture Food and the Marine, Dublin. 97 pp.

DAFM, (2014b). Forest Research Ireland FORI. Department of Agriculture Food and the Marine, Dublin.

DAFM, (2016). Environmental Requirements for Afforestation. Department of Agriculture Food and the Marine, Dublin.

DAFM, (2017). Felling & Reforestation Policy. Department of Agriculture Food and the Marine, Dublin.

DAFM, (2018). The Third National Forest Inventory 2017, Republic of Ireland, Results. Department of Agriculture Food and the Marine. Forest Service, Johnstown Castle Estate, Co. Wexford.

DAFM, (2019). Agriculture, Forest and Seafood, Climate Change Sectoral Adaptation Plan – Prepared under the National Adaptation Framework. Agriculture House, Kildare St. Dublin 2.

DAFM, (2020). Annual Review and Outlook for Agriculture. Department of Agriculture, Food, and the Marine, Food, and the Marine. Dublin.

DAFM, (2021). Forest Statistics Ireland 2021. Department of Agriculture Food and the Marine. Forest Service, Johnstown Castle Estate, Co. Wexford.

EEA, (2019). State of nature in the EU – main pressures and threats – habitats. Available at: <https://www.eea.europa.eu/themes/biodiversity/state-of-nature-in-the-eu/article-17-national-summary-dashboards/main-pressures-and-threats>

EPA (2020) Land Use, Land Use Change and Forestry emissions and removals 1990-2019, Available at: <https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/lulucf/#>

EPA, (2021). Ireland's National Inventory Report 2021. Environmental Protection Agency, Johnstown Castle, Co. Wexford, Ireland

Forest Service, (2000). Irish National Forest Standard. Forest Service, Department of the Marine and Natural Resources, Leeson Lane, Dublin, Ireland.

Hendrick, E. and Black, K. (2008). Climate Change and Irish Forestry. COFORD, Department of Agriculture, Food, and the Marine.

Mackinnon, J. (2019). Review of Approval Processes for Afforestation in Ireland. Report commissioned by the Department of Agriculture Food and Marine (DAFM), Dublin

Jovani-Sancho, A. J., Cummins, T., & Byrne, K. A. (2021). Soil carbon balance of afforested peatlands in the maritime temperate climatic zone. *Global Change Biology*, 27(15), 3681–3698.

MCPFE, (1993). Ministerial Conferences on the Protection of Forests in Europe: General Guidelines for the Sustainable Management of Forests in Europe. Resolution H1. Second Ministerial Conference in Helsinki in 1993. Helsinki.

Mitchell, F. and Ryan, M., (1997). Reading the Irish landscape. Dublin: Town House.

Mitchell, J. G. (1995). The Dynamics of Irish Post-Glacial Forests. In: Wood, trees, and forests. Royal Irish Academy. Proceedings of a Seminar Held on 22 and 23 February 1994. Dublin

O'Carroll N. (2004). Forestry in Ireland – A Concise History. COFORD, Dublin.

Perrin, P.M, Martin, J.R., Barron, S.J., O'Neill, F.H., McNutt, K.E. & Delaney, A.M. (2008) National Survey of Native Woodlands 2003-2008: Volume I: Main report. Report submitted to National Parks & Wildlife Service, Dublin.

## Appendices

### Appendix 1

#### International reporting requirements

- United Nations Framework Convention on Climate Change (UNFCCC) for carbon stocks and stock changes; “Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU”, commonly referred to as the LULUCF Regulation”
- Food and Agriculture Organisation (FAO) for series of forest related data including the Global Forest Resource Assessment.
- Statistical office of the European Union (EUROSTAT).
- United Nations Economic Commission for Europe (UNECE) for wood harvest and trade data (the Joint Forest Sector Questionnaire).
- Joint Wood Energy Enquiry of the UNECE, IEA and FAO.
- FOREST EUROPE (The brand name of the Ministerial Conference on the Protection of Forests in Europe).
- European Commission in respect of forest health.

### Appendix 2

#### Sustainable Development Goals linked to Actions

<b>SDG6: Clean water and sanitation:</b> Well-sited, designed and managed woodlands and forests benefit water quality and aquatic ecosystems significantly, by delivering a range of ‘ecosystem services’ such as the prevention of sediment and nutrient runoff, the protection of banks from erosion, ‘food drop’ of insects and leaf litter into the aquatic ecosystem, the shading and cooling of water, the overall restoration of riparian habitats, and helping floodwater control. Ireland’s approach to using forests to improve water quality is set out in the “Forests & Water Achieving Objectives under Ireland’s River Basin	<ul style="list-style-type: none"><li>• DAFM published forests and water guidelines which set out how the forest sector will help achieve the objectives of the water framework directive.</li><li>• Woodlands for water scheme explores how new native woodland can be used to deliver meaningful ecosystem services that protects and enhance water quality.</li><li>• DAFM continues to work closely with a range of project partners including Local Authorities programme (LAWPRO)</li></ul>
---	---

<p>Management Plan 2018-2021". Through combining tree planting with their other farming activities, farmers can actively create buffer zones to protect water streams from farm pollutants and riparian erosion. The Agricultural Sustainability Support and Advice Programme (ASSAP)</p> <p>Is an important targeted measure in the second River Basin Management Plan published in April 2018. This joint Government/Industry initiative, running from 2018 to 2021, is a well-structured collaborative programme involving all stakeholders to facilitate improvements in water quality. The ASSAP involves a resource of 30 Agricultural Sustainability Advisors, 20 of whom are funded by Government and 10 by the Dairy Industry. These Advisors will promote on-farm best practice to farmers in 190 'Areas for Action', which have been identified by the EPA, where the status of Water quality is at risk of regressing. The planting of native woodlands is one option in the toolbox of measures that has been promoted by the Department in these vulnerable areas.</p>	<ul style="list-style-type: none"> <li>• In 2019/2020 the DAFM further strengthened its process and revised its Appropriate Assessment procedures under the EU Natural Habitats and bird's directive.</li> </ul>
<p><b>SDG 8: Decent Work and economic Growth:</b> Forests provide multiple opportunities for value added products and services, supporting local employment and economic development. These include sawnwood and panel boards for construction, high-value timber products from rustic craftwork to bespoke furniture, and non-timber products such as mushrooms and foliage. Forests enhance the landscape while also providing the venues for visitor centres, holiday accommodation and adventure sports, thus contributing to our domestic and international tourism economy.</p>	<ul style="list-style-type: none"> <li>• In 2018, exports of forestry products from the Republic of Ireland were €430 million, an increase of 1% on 2018 figures. Wood Based Product exports were €36 million in 2019, a decrease of 31% on 2018 figures.</li> </ul>
<p><b>SDG 12: Responsible Consumption and Production:</b> A greater uptake of Forestry as part of the farming mix, will contribute towards an increase in the production of renewable &amp; sustainable timber products. This is in alignment with the SDG12 aim of sustainable use and management of natural resources.</p> <p>Greater use of wood and wood products for house building and other construction activities will also help drive more responsible and sustainable consumption and production.</p>	<ul style="list-style-type: none"> <li>• Encouraging farmers to consider forestry as part of the farming mix by Improved grant and premium rates for Agro-forestry and Forestry for Fibre have been introduced which may encourage farmers to consider forestry as a possible option on their farm alongside other farming activities</li> <li>• Encouraging the housing sector to adopt timber and wood products as the material of choice for housing building in Ireland.</li> </ul>

<p><b>SDG 13: Climate Action:</b> Forests and the wider woodland ecosystem, including the soil, sequester carbon from the atmosphere to provide carbon sinks while wood products continue to store carbon after harvesting. The role of forests is recognised in the Government Climate Action Plan 2019 and as a pathway to reducing greenhouse gas emissions in the land use sector.</p>	<ul style="list-style-type: none"> <li>• The Role of Forestry is recognised in the Government Climate Action Plan and as a pathway to reducing greenhouse gas emissions in the land use sector</li> <li>• In recognition of the historic investment in forestry and the low mitigation potential in Agriculture, Ireland has been provided flexibility under the effort sharing regulation to mobilise carbon credit of 2.6MT CO2 per annum over 2021-2030</li> </ul> <p>Existing forest will provide around 12 MT on a rolling 30-yr basis (net of deforestation) over the 10-year period 2021- 2030.</p> <ul style="list-style-type: none"> <li>• Greater levels of Afforestation of Carbon sequestration will take time to impact on Climate Action as new planted trees take time to mature. The impact should become visible in the data from 2030 onwards</li> </ul>
<p><b>SDG 15: Life on Land:</b> Forests provide a semi-natural environment that provides a home for a wide range of plants and animals, including woodland specialists, woodland generalists and ‘ruderals’ (or opportunists). Native woodlands can be used strategically to augment existing ancient woodland and to create linkage throughout the landscape between other semi-natural habitats, including rivers, species-rich grasslands, and upland heaths. These biodiversity functions further explored in the publication ‘Management Guidelines for Ireland’s Native Woodlands (2017)’ contribute in a meaningful way to the overall richness of wildlife in our countryside.</p>	<ul style="list-style-type: none"> <li>• Forestry Programme amended in 2018 to give higher grant and premium rates for broadleaf and diverse conifer plantations.</li> <li>• Forest Fencing and tree shelter scheme introduced to reduce deer damage to existing broadleaf forestry plantations.</li> <li>• Continuous Cover Forestry, Woodland Improvement schemes and Native Woodland schemes introduced to help enhance biodiversity and generate wider ecosystems services.</li> <li>• Most recent forest Inventory found that native and mixed forest comprises 31.7% of Ireland’s forest area. Mixed forests have a range of species found intimately mixed in the forest canopy.</li> <li>• DAFM published a range of guidelines targeting protection of the environment when new forest is created, and existing forest harvested.</li> </ul>

Information sourced from (DAFM, 2020).

## **Appendix 3**

List of related legislation on forestry

Primary legislation

The Forestry Act 2014 (Number 31 of 2014)

The Forestry Act 1988 (to establish Coillte)

Agriculture Appeals Act 2001, as amended

Forestry (Miscellaneous Provisions) Act, 2020 (Number 15 of 2020)

Secondary legislation

Forestry Regulations, 2017 (S.I. No. 191 of 2017)

Forestry (Amendment) Regulations, 2017 (S.I. 498 of 2017)

Forestry (Amendment) Regulations, 2020 No. 1 and 2 (S.I. 31 of 2020 and S.I. 39 of 2020)

Forestry Appeals Committee Regulations 2018 (S.I. No. 68 of 2018)

Forestry (Amendment) No. 3 Regulations, 2020 (S.I. No. 416 of 2020)

Forestry (Licence Application and Submission Fees) Regulations, 2020 (S.I. No. 417 of 2020)

Forestry Appeals Committee Regulations, 2020 (S.I. No. 417 of 2020)

European Union (Timber and Timber Products) (Placing on the Market) Regulations 2014 (SI Number 316/2014)

European Union (FLEGT Licensing Scheme for Imports of Timber) Regulations, 2015 (SI Number 251/2015)

European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)

European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. No. 296 of 2009)

European Communities (Water Policy) Regulations 2003 (S.I. No. 722/2003)



European Communities (Marketing of Forest Reproductive Material) Regulations 2002 (S.I. No. 618 of 2002)

European Communities (Phytosanitary Measures) Regulations, 2004 (SI Number 578/2004).

European Communities (Control of Organisms Harmful to Plants and Plant Products) Regulations 2004 (SI Number 894/2004)

European Communities (Control of Organisms Harmful to Plants and Plant Products) Regulations, 2004 (SI Number 894/2004).

## **Appendix 4**

- Secondary Regulations Arising from the Forestry Act: Forestry Regulations, 2017 (S.I. No. 191/2017)

The Forestry Regulations were signed at the same time as the Forestry Act, commenced. The Regulations provide more detail, for example on the format in which forestry licence applications may be submitted. The Regulations also set out the information that must appear on a site notice.

- Forestry Appeals Committee Regulations, 2018 (S.I. No. 68/2018)

These Regulations make specific provision for the establishment of the Forestry Appeals Committee, following from the amendment to the Agriculture Appeals Act, mentioned above. They set out the format in which the FAC should sit the timeframe for appeals

- Forestry (Miscellaneous Provisions) Act, 2020 (Number 15 of 2020)

This Act introduces a fee to make an application for a forestry licence and to bring an appeal to the Forestry Appeals Committee. The Act makes other provisions for the FAC, for example, to sit in divisions of itself to enable a greater number of appeals to be heard.

- Single Consent System for Forest Road Works

Between 2002 and 2008, under the Planning and Development Act 2000, the construction, maintenance, and improvement of a non-public road serving a forest or woodland (and ancillary works), was classed as “exempted development” for the purposes of planning permission. From 7th February 2020 applicants were no longer required to have planning permission from the local authority for such developments as part of the forest road works licensing process.