Forestry Training and Education Needs Analysis

April 2011
Table of Contents:

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>8</td>
</tr>
<tr>
<td>Section 1 - Overview of the Development of Forestry Education &amp; Skills Training in Ireland</td>
<td>9</td>
</tr>
<tr>
<td>1.1 Introduction</td>
<td>9</td>
</tr>
<tr>
<td>1.2 The Development of the State Forestry Training Schools</td>
<td>9</td>
</tr>
<tr>
<td>1.3 The Development of Third Level Forestry Education Resources</td>
<td>10</td>
</tr>
<tr>
<td>1.4 The Development of Forestry Skills Training Resources</td>
<td>11</td>
</tr>
<tr>
<td>1.5 The Development of Forestry Sector Representative Bodies and Associated Education and Skills Training Resources</td>
<td>13</td>
</tr>
<tr>
<td>1.6 Summary of Key Points from this Review</td>
<td>13</td>
</tr>
<tr>
<td>1.7 Summary Timeline of the Development of Forestry Education &amp; Skills Training in Ireland</td>
<td>14</td>
</tr>
<tr>
<td>Section 2 - The Current Structure and State of Forestry Education &amp; Skills Training in Ireland</td>
<td>15</td>
</tr>
<tr>
<td>2.1 Introduction</td>
<td>15</td>
</tr>
<tr>
<td>2.2 Overview of Current Forestry Education &amp; Skills Training Resources</td>
<td>15</td>
</tr>
<tr>
<td>2.2.1 Full Time Education &amp; Skills Training Courses</td>
<td>16</td>
</tr>
<tr>
<td>2.2.2 Short Education &amp; Skills Training Courses</td>
<td>16</td>
</tr>
<tr>
<td>2.2.3 Teagasc Forestry Advice &amp; Training Services</td>
<td>17</td>
</tr>
<tr>
<td>2.2.4 On-the-Job Training</td>
<td>17</td>
</tr>
<tr>
<td>2.2.5 Other Training and Knowledge Sharing Initiatives</td>
<td>17</td>
</tr>
<tr>
<td>2.3 Overview of Current Funding Structures</td>
<td>18</td>
</tr>
<tr>
<td>2.4 Critical Analysis</td>
<td>19</td>
</tr>
<tr>
<td>2.4.1 Strengths</td>
<td>19</td>
</tr>
<tr>
<td>2.4.2 Weaknesses</td>
<td>20</td>
</tr>
<tr>
<td>Section 3 - Forecasting Sectoral Developments and Associated Trends in Education &amp; Skills Training Needs</td>
<td>24</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>24</td>
</tr>
<tr>
<td>3.1.1 Quantifying the Scale of the Irish Forest Industry Workforce</td>
<td>25</td>
</tr>
<tr>
<td>3.1.2 The General Requirement for Education and Skills Training within the Irish Forest Industry Workforce</td>
<td>25</td>
</tr>
<tr>
<td>3.1.3 Predicting Sectoral Education and Skills Training Needs</td>
<td>26</td>
</tr>
<tr>
<td>3.1.4 Identification of Major Trends in the Development of the Industry that may Impact on Education and Skills Training Needs</td>
<td>27</td>
</tr>
<tr>
<td>3.2 Forest Establishment Sector</td>
<td>31</td>
</tr>
<tr>
<td>3.2.1 Afforestation Sector: Activity Forecast</td>
<td>31</td>
</tr>
<tr>
<td>3.2.2 Reforestation Sector: Activity Forecast</td>
<td>31</td>
</tr>
<tr>
<td>3.2.3 Combined Forest Establishment Sector: Activity Forecast</td>
<td>32</td>
</tr>
<tr>
<td>3.2.4 Forest Establishment Sector: Future Trends in Manpower Requirements</td>
<td>32</td>
</tr>
<tr>
<td>3.2.5 Forest Establishment Sector: Education and Skills Training Needs</td>
<td>32</td>
</tr>
<tr>
<td>3.2.6 Forest Establishment Sector: Training Initiatives Required &amp; Training Priorities</td>
<td>34</td>
</tr>
<tr>
<td>3.3 Forest Nursery Sector</td>
<td>35</td>
</tr>
<tr>
<td>3.3.1 Forest Nursery Sector: Activity Forecasts</td>
<td>35</td>
</tr>
<tr>
<td>3.3.2 Forest Nursery Sector: Future Trends in Manpower Requirements</td>
<td>35</td>
</tr>
<tr>
<td>3.3.3 Forest Nursery Sector: Education and Skills Training Needs</td>
<td>36</td>
</tr>
<tr>
<td>3.3.4 Forest Nursery Sector: Training Initiatives Required &amp; Training Priorities</td>
<td>37</td>
</tr>
<tr>
<td>3.4 Silviculture / Forest Management Sector</td>
<td>38</td>
</tr>
<tr>
<td>3.4.1 Silviculture / Forest Management Sector: Activity Forecasts</td>
<td>38</td>
</tr>
<tr>
<td>3.4.2 Silviculture / Forest Management Sector: Future Trends in Manpower Requirements</td>
<td>38</td>
</tr>
<tr>
<td>3.4.3 Silviculture / Forest Management Sector: Education and Skills Training Needs</td>
<td>39</td>
</tr>
<tr>
<td>3.4.4 Silviculture / Forest Management Sector: Training Initiatives Required &amp; Training Priorities</td>
<td>41</td>
</tr>
<tr>
<td>3.5 Timber Harvesting Sector</td>
<td>42</td>
</tr>
<tr>
<td>3.5.1 Timber Harvesting Sector: Activity Forecast</td>
<td>42</td>
</tr>
<tr>
<td>3.5.2 Timber Harvesting Sector: Future Trends in Manpower Requirements</td>
<td>44</td>
</tr>
<tr>
<td>3.5.3 Timber Harvesting Sector: Education and Skills Training Needs</td>
<td>46</td>
</tr>
<tr>
<td>3.5.4 Timber Harvesting Sector: Training Initiatives Required &amp; Training Priorities</td>
<td>48</td>
</tr>
<tr>
<td>3.6 Timber Haulage Sector</td>
<td>49</td>
</tr>
<tr>
<td>3.6.1 Timber Haulage Sector: Activity Forecasts</td>
<td>49</td>
</tr>
<tr>
<td>3.6.2 Timber Haulage Sector: Manpower Requirements</td>
<td>49</td>
</tr>
<tr>
<td>3.6.3 Timber Haulage Sector: Education and Skills Training Needs</td>
<td>49</td>
</tr>
<tr>
<td>3.6.4 Timber Haulage Sector: Training Initiatives Required &amp; Training Priorities</td>
<td>50</td>
</tr>
<tr>
<td>3.7 Timber Processing Sector</td>
<td>51</td>
</tr>
<tr>
<td>3.7.1 Conventional Timber Processing Sector (Sawmills &amp; Boardmills)</td>
<td>51</td>
</tr>
<tr>
<td>3.7.2 Emerging Wood Energy Sector</td>
<td>51</td>
</tr>
<tr>
<td>3.8 Forestry Student Sector</td>
<td>52</td>
</tr>
</tbody>
</table>
## Section 4 - Identification of Education & Skills Training Priorities

4.1 Introduction ............................................................................................................................ 53
4.2 Maintaining Existing Workforce Skills .................................................................................. 53
4.3 Prioritising Education & Skills Training Needs ................................................................. 54
4.3.1 Prioritising Candidates ..................................................................................................... 55
4.4 Education & Skills Training Priorities .................................................................................. 55

## Section 5 - Review of Forestry Education & Skills Training Systems in Europe

5.1 Introduction .......................................................................................................................... 59
5.2 Potential Models for Implementation in Ireland ................................................................. 61

## Section 6 - A Strategy for the Provision of Forestry Education & Skills Training

6.1 Introduction .......................................................................................................................... 62
6.2 Maintenance & Development of 3rd Level Forestry Education Programmes ....................... 62
6.3 Maintenance & Development of Teagasc Farm Forestry Training Capacity ......................... 62
6.4 Expansion of the VET Capacity at Ballyhaise and Broadening of its Scope ......................... 63
6.5 Development of an Adapted FTEI Funding Strategy ........................................................... 64
6.6 Development of a Nationally Accredited Forestry Skills Learning Syllabus ....................... 65
6.7 Development a Nationally Standardised System of Skills Certification / Accreditation ......... 66
6.8 Development of a National Forestry Skills Register .......................................................... 67
6.9 Development of a Traineeship / Apprenticeship Programme for Forestry Operatives .......... 67
6.10 Other Proposed Strategies for the Delivery of Education & Skills Training Needs ............. 68

## Section 7 - Education & Training Support Requirements and Potential Funding Sources

7.1 Introduction .......................................................................................................................... 69
7.2 Supports and Incentives to Encourage Participation in Forestry Education and Skills Training Initiatives ................................................................................................................. 69
7.3 Potential Funding Sources for Forestry Education & Skills Training Initiatives .................. 70
Forestry Training & Education Ireland (FTEI) is currently charged with the administration and management of the nationally approved forestry skills training programme, and has administered a comprehensive training programme over the past four years, based on the defined needs of the industry. As well as this ongoing role in delivering Forest Service funded training programmes, FTEI has a wide remit relating to forestry training and education matters, including the longer term, strategic planning of forestry education & training provision to meet the changing needs of the Irish forest industry.

FTEI has commissioned this forestry training and education needs analysis in order to identify current training priorities within the industry and to assist in the development of a plan for the sustainable delivery of education and training resources into the future. Predicting future developments and associated training needs will help to form a more strategic approach to the provision and funding of training and, in the context of funding limitations, informed prioritisation of training provision can be implemented. A critical analysis of current training structures and funding arrangements will help to identify improved systems of training delivery to meet future needs.

The analysis has been conducted under the detailed terms of reference provided by FTEI and has incorporated a comprehensive consultation process with a wide range of industry members representing both requirers and providers of forestry education and skills training. The report is presented in seven sections.

Section 1 presents a historical review of Ireland’s developing education & training resources and has been prepared as a prelude to the training needs analysis in order to provide some background information for the reader and to contextualise a critical analysis of existing education & skills training resources in Ireland. This review shows that Ireland’s forestry education & training resources have evolved in line with the changing needs of the developing forestry sector, from the opening of Ireland’s first forestry training school at Avondale Estate in 1904 to today's comprehensive resource encompassing a diverse range of education and training facilities across the state, semi-state and private sectors. The delivery and certification of forestry skills training has been standardised, formalised and generally improved over time, with significant developments in the 1990s with the introduction of skills accreditation systems within certain forestry training activities. However, this historical review highlights the fact that forestry skills training initiatives have been highly dependent on government funding over the years, with periods of reduced funding resulting in declining levels of training activity.

Section 2 reviews the current structure and state of forestry education and training operating in Ireland today, showing that the Irish forestry sector is well served by a range of strong and adaptable education and training resources. However, with the exception of the farm forestry sector where Teagasc training activity has increased, there has been a marked decline in government funded forestry training activity in recent years. This has been largely due to the cessation of EU funding for forestry sector training activities in Ireland and more recently due to the considerable national budgetary constraints. A comparison between government funded Coillte forest sector training activity in the late 1990s (when significant EU funding was available) and more recent FTEI funded forest sector training activity shows a 54% drop in the number of candidates trained annually. FTEI administered forestry sector skills training is currently at a low ebb with regard to government funding and resulting levels of skills training delivery. FTEI's training budget has fallen from a high of €720,000 in 2008 to a low of €380,000 in 2010. The demand for funded training courses currently exceeds supply and reduced funding could threaten the delivery of a sufficient volume of training initiatives.

Some weaknesses have been identified relating to funding levels, funding security, training resource capacity, training structures and systems of funding allocation and administration. Most notably, the
current system of allocating Forest Service funding for skills training delivery through FTEI has a very short term focus and is not sufficiently strategic to address operational skills development requirements necessitating longer term training initiatives. While the current system facilitates funded training initiatives to address the shorter term, on-going needs of the industry, it does not address more strategic training needs. A lack of longer term funding security is a definite obstacle to the structured development of more strategic training programmes.

This review has identified under capacity within the vocational education & training sector and a notable absence of a VET course tailored towards the mechanised timber harvesting sector, primarily due to a lack of funding and resources. There is no structured vocational career development path for operatives currently employed within the forestry sector and no progressive accreditation system that recognises a range of completed skills courses and work experience. Also, there is currently no centrally compiled national database of forestry sector skills certification and skills training activity. This makes the on-going analysis of training needs and the strategic planning for the provision of skills training initiatives difficult.

Some observers feel that there is currently an over emphasis on training, assessment and certification activities to address specific environmental, forest certification and occupational health & safety requirements, with a “tick the box” approach. The focus is on asking “has the operator got his cert” rather than “is the operator fully trained to carry out the job efficiently and safely”. The development of a more structured career path for forestry operatives with a centrally administered register of skills training and work experience may help to refocus training motives. Recommendations relating to how such weaknesses might be addressed have been presented in Section 6.

Section 3 presents an assessment of future education & training needs in general terms within the different sectors of the Irish forest industry, based on best estimates of how each sector might develop over a ten year forecast period. This assessment has looked at the forest establishment, forest nursery, forest management, timber harvesting, timber haulage and timber processing sectors. Specific education and skills training needs have been identified for each sector and any significant changes in potential manpower requirements to meet forecast activity levels have been highlighted.

One of the most notable trends to potentially affect future education & training needs is the movement of the management cycle of a significant area of the private sector forest resource from the establishment phase to the timber production phase, bringing with it a significant increase in potential timber harvesting activity, the majority of which will be focused in first and second thinnings. It is estimated that training initiatives to cater for about 35 new harvesting machine operators and 25 new forwarder operators will be required to develop harvesting capacity in line with forecast increases in timber harvesting activity over the next ten years. There is a limited timeframe for first thinning operations to be carried out. If first thinning operations are not carried out on time a no-thinning regime will be prescribed by default and timber harvesting activity (and associated timber production) will be delayed for many years. Thinning activity levels may be affected by a shortage of knowledgeable foresters and skilled operatives unless suitable training initiatives are put in place. Many private sector foresters previously active in the forest establishment sector are now beginning to work in the forest management and timber harvesting sectors, and many of these foresters require up-skilling in the area of sustainable forest management throughout the timber production phase.

While Coillte’s potential annual harvest volume is forecast to remain relatively stable over the next 10 years, the current age class structure of the Coillte forest estate will result in a 25% decrease in potential clearfell volumes and an 80% increase in potential thinning volumes over this period. This will result in a significant increase in thinning operations within Coillte’s timber harvesting activities. As with the private sector, Coillte are facing an increase in mechanised timber harvesting capacity requirements specific to thinning machine operators. Increased thinning activity within Coillte’s forecast timber harvesting operations may require additional training initiatives aimed at up-skilling harvester and forwarder operators for work in thinning operations.

With increasing environmental restrictions being placed on timber harvesting sites, Ireland’s annual timber harvest includes more and more sites considered to be very environmentally sensitive. It is estimated that about 15% or 400,000 m³ of Coillte’s annual harvest forecast is on such sites. In order to ensure the continuation of harvesting operations within more environmentally sensitive catchments and thus ensure the realisation of future timber supply forecasts, there is an increasing need for highly trained specialist timber harvesting contractors that are expert in sensitive harvesting operations and
minimising environmental impact. Training initiatives will be required to up-skill a small number of specialist harvesting contractors (about 15 to 20) for operations on highly sensitive sites.

In addition to increased capacity in mechanised timber harvesting, an increase in motor manual timber harvesting capacity will be required, specific to broadleaf thinning operations and thinning of small conifer plantations considered too small for harvesting with conventional mechanised systems. There will be an increasing need for training initiatives that will increase the capacity of specialist chainsaw thinning operators with high levels of silvicultural skills. Initiatives should include both chainsaw skills training and silvicultural training and should be focused on individuals and companies who intend to be actively engaged in motor manual thinning operations in broadleaf and conifer farm forestry crops.

Potential increases in private sector timber harvesting activity and associated timber sales to the processing sector will eventually bring about a requirement for certification of private sector timber. Controlled wood quotas will not be sufficient to absorb all of the potential private sector timber supply in future. Given that there will be a lead in time for certification initiatives to yield certified timber supply, there may be a requirement for the initiation of private sector certification schemes within the next 5 years, with associated training initiatives for foresters and forestry owners.

New education & training needs are also forecast within the timber processing sector specific to the wood energy sub-sector, based on strong forecast demand for wood energy products over the next ten years.

Section 4 discusses various criteria for the prioritisation of funded education and training initiatives and outlines a list of priority education and skills training needs facing the Irish forestry sector over the next five years based on findings from the training needs analysis outlined in Section 3. The underlying criterion for prioritisation is the addressing of existing or developing knowledge and skills gaps that may hinder the optimal development of the industry.

Refresher training for existing operators within the industry is a major element of annual training needs and should be prioritised to maintain and improve the forest industry’s knowledge and skill base. This is particularly relevant to the higher risk operations including mechanised harvesting, chainsaw use and pesticide application. It is suggested that any future refresher training should only be funded under the proviso that a new national skills training register is developed and maintained in cooperation with all interested parties. Recommendations relating to such an initiative have been presented in Section 6. Priority should also be given to:

- training initiatives that address skills development in areas where there is a forecast increase in activity, employment and output;
- training initiatives that combine both “hard” operational skills and complimentary silvicultural skills;
- training initiatives that cater for the development of skills unique to the forestry sector.

Recommendations have also been presented in relation to the prioritisation of individual candidates wishing to engage in funded education and training initiatives.

Section 5 reviews some of the forestry education and skills training systems in Europe in order to identify potential models that may be suitable for implementation in Ireland. While Ireland’s forestry education and skills training structure is currently based on largely similar models to those operating across Europe, there are some initiatives that should be considered in the context of planning for future structural arrangements. Most notably, the dual system of vocational training or the apprenticeship model, incorporating a structured programme of training provided both in the workplace and in a vocational school should be considered for use in Ireland. There is a notable presence of such systems in many European countries and a notable absence in Ireland. It differs from the current forestry vocational training model operating in Ireland in that it requires an employment and training contract between an employer and a trainee. In particular, this model could be developed to create a more structured system of training new operatives for work within the timber harvesting sector. Currently there is no vocational training programme within the forestry sector that involves a full time formal link between employers and trainees. However, such a system could be developed in conjunction with the current forestry VET offering at Ballyhaise College.
Section 6 outlines possible modifications to the systems of education and skills training currently operating in Ireland, with the objective of developing a more strategic approach to the delivery of education and skills training initiatives. Most notably, proposals have been made relating to the development of an adapted FTEI funding strategy supported by a multi-annual funding allocation and budget, based on a longer term strategic plan for training delivery. This would allow the development and delivery of a more strategic training programme and would support the sustainable development of training resources. It is proposed that FTEI training budgets are divided into short term and longer term allocations. Short term allocations would cater for the ongoing background demand across all sectors for immediate skills training, refresher training and certification while more strategic, longer term allocations would provide for training initiatives to address forecast gaps in workforce capacity and associated education & skills training needs along with some structural developments such as the development of a new nationally accredited forestry skills learning syllabus, the development of a national forestry skills register and the development of a new apprenticeship / traineeship programme for forestry operatives.

Section 7 identifies some initiatives to encourage entry into the forestry workforce and active participation in formal training initiatives. It also identifies a range of potential funding sources outside of existing conventional sources.
INTRODUCTION

The forest industry, comprising growing, harvesting and processing of forest products, makes a significant and increasing contribution to the Irish economy. Output in 2008 was an estimated €1.89 billion, or just under 1% of GDP\(^1\). Over 10.5% of Ireland is now under forest, supporting a vibrant and export focused forest products sector. It is estimated that the establishment, harvesting and logistics sectors of Ireland’s forestry sector employ over 3,700 people directly, with over 2,300 people employed in the sawmilling and panel board manufacturing sectors\(^2\).

An industry served by a well educated and suitably skilled workforce will ensure that optimal benefits accrue from the considerable investments that have been made in the Irish forestry sector to date. The maintenance of a skilled forestry workforce, capable of working to a defined specification safely, efficiently and with due regard to environmental standards, requires on-going investment in education and skills training activities. In general terms, all parties involved in the Irish Forestry Sector agree that education and skills training play a critical role in the sustainable development of our industry.

FTEI has commissioned this forestry education and skills training needs analysis in order to identify current training priorities within the industry and to develop a plan for the sustainable delivery of education and training resources into the future. Predicting future developments and associated training needs will help to develop a more strategic approach to the provision and funding of training and, in the context of funding limitations, informed prioritisation of training provision can be implemented. The analysis has been conducted under the detailed terms of reference provided by FTEI and has incorporated a comprehensive consultation process with a wide range of industry members representing both requirers and providers of forestry education and skills training.

\(^1\) COFORD (2009). FORESTRY 2030; Irish Forestry and the Economy.
\(^2\) COFORD (2009). The economic impact of the forestry and wood products sectors in Ireland.
Section 1
Overview of the Development of Forestry Education & Skills Training in Ireland

1.1 Introduction
Ireland’s forestry education & skills training resources have evolved significantly over the past century to meet the ever changing needs of our developing forestry sector. Forest cover has increased from a low of only 1% in the 1900s to a high of 10.7% today. This development has been mirrored by a developing forestry education & skills training sector, evolving over time to meet the increasing and changing demand for a suitably qualified and skilled workforce. From a starting point at the beginning of the 20th century when there were no formal forestry education or skills training resources within the state, we now have a comprehensive array of resources spanning the state, semi-state and private sectors, serving all sectors of the Irish forest industry.

This section presents a brief historical review of Ireland’s developing education & skills training resources since the foundation of the state. It has been prepared as part of the training needs analysis in order to provide some background information for the reader and to contextualise the critical analysis of existing education & skills training resources in Ireland, the results of which are presented in Section 2.

The following sub-sections present an overview of the principal developments within the sector. The final sub-section presents a summary timeline of developments relating to education and skills training resources within the state over the last century.

1.2 The Development of the State Forestry Training Schools
Modern Irish forestry really began in 1904 when the Department of Agriculture and Technical Instruction purchased Avondale Estate in Rathdrum, County Wicklow for forestry research and training purposes under the supervision of one of Ireland’s great forestry pioneers, A.C. Forbes. At this time the majority of forestry in Ireland was privately owned and was mainly associated with the large estates. There were no formal forestry training or education resources within the state and the majority of knowledge and expertise was being “imported” from the UK and mainland Europe. Forbes set up a forester training school at Avondale and in 1904 there were eight “forest apprentices” recruited. While the research and training resources established at Avondale were initially set up to serve the needs of private woodland owners, it played a significant role in the development of the state forestry sector during the 20th Century.

Following the foundation of the Irish state in 1922, there was a significant shift from privately owned “estate” forestry to state forestry, including a significant state afforestation programme. Afforestation progress was slow initially, with less than 2% forest cover by the start of the 1950s. As the principal forestry training school in the state during the 1920s, 30s and 40s, Avondale forestry training centre was responsible for the training of foresters and forestry foremen for work in the new state forestry sector and by the mid 1940s about 28 students were being trained there.

Following the adoption of an aggressive state afforestation policy and associated targets, the 1950s, 60s and 70s saw a dramatic increase in afforestation levels, resulting in 7% forest cover by the 1980s. During this period of rapid forestry development there was a significant demand for foresters and forestry workers and the Irish state established two additional forestry training schools for state foresters. Shelton Abbey Estate in Arklow, County Wicklow was acquired by the state in 1951 and served as a residential forestry training school from 1953 until 1972, linked to and expanding the state forestry training resource originally provided by nearby Avondale. Similarly, Kninitty Castle Estate in Kinnitty, County Offaly was developed by the state in 1955 to further expand the state’s capacity for training foresters to serve in the rapidly expanding forestry sector. Kninitty Castle forestry training school was operational until 1985 and served as a base for practical forestry training, providing easy

3 Source: Forest Service (2010).
access to a forest nursery and thousands of acres of state forests across the Slieve Bloom Mountains. During this time state foresters were typically trained over a three year period, with their time divided between Shelton Abbey and Kinnitty Castle. By 1962 there were over 90 trainees undergoing instruction at the state’s forestry training establishments.

These state forestry schools provided a structured training facility, principally aimed at preparing school leavers for a career as foresters within the Irish civil service (Forestry Service). During this period much of the skills training for forest workers was provided “on the job” by qualified foresters working for the Forestry Service who were responsible for training and managing a dedicated workforce operating within a specific geographic area.

Avondale forestry training centre was temporarily closed following the development of Shelton Abbey during the 1950s. However it was redeveloped by the Forestry Service in the 1960s as a training centre for short-term refresher and specialised courses for existing technical staff working within the Forestry Service, following the identification of on-going training needs for foresters practicing at a time of rapid technological development.

With the advent of the Common Agricultural Policy in the early 1970s much of the land source for state afforestation projects dried up and the level of state forestry sector expansion slowed rapidly. This period was associated with a sharp decline in the demand for new foresters. The chronic shortage of foresters experienced during the 1950s and 60s had been addressed and the state identified the need for only one principal forestry training school, providing about 15 qualified foresters annually to serve the on-going requirements of the Forestry Service. To this end, Shelton Abbey forestry training school was closed in 1972, leaving Kinnitty Castle as the principal state forestry training school during the 1970s and 80s. During this period forestry trainees underwent an 18 month training period in Kinnitty, a year of practical field training in selected forests and a final six months study and revision period in Avondale.

Kinnitty Castle forestry training school was finally closed in 1985 due to an on-going decline in demand for new foresters within the state forestry sector and the development of a significant backlog of qualified foresters. While this closure saw the end of a significant era of state sector forestry training, the Forest Service continued to provide education and skills training for its workforce “in-house” up until the formation of Coillte in 1989.

1.3 The Development of Third Level Forestry Education Resources

The first formal forestry education resource in Ireland was the Forestry Department at the Royal College of Science, Dublin, established in 1913 under the professorship of Augustine Henry. This was later to become part of University College Dublin (UCD), which has offered a forestry degree programme since 1927 and has been responsible for the education of many leading Irish and international foresters. Formerly a five year course incorporating a full year of practical work experience, UCD’s undergraduate degree programme is now run over four years, resulting in a HETAC<sup>5</sup> Level 8 Honours Bachelor Degree in Agricultural Science (B AgrSc (Forestry)). The UCD forestry degree programme has always been complimented by a strong post-graduate research component and this has grown significantly in recent years, reaching a high of twenty post graduate positions in 2011<sup>6</sup>.

In 1994 the Wood Science and Technology degree was established in the University of Limerick (UL) to meet the growing demand for qualified scientists to work in the developing timber and furniture industries. Still being offered today, this course is run over four years, resulting in a HETAC Level 8 Honours Bachelor Degree in Science.

Following the closure of the last state forestry training school at Kinnitty in 1985 (see Section 1.2) there was no full-time forestry training course available in Ireland, with the exception of the UCD forestry degree programme. In 1988 Ballyhaise Agricultural College developed an Agri-forestry course aimed at providing students with the necessary knowledge and skills to start their own farm forestry enterprise. This development happened at a time when there was a significant increase in farm forestry activity due to the availability of EU afforestation grants and premiums. In 1994, this

---

<sup>5</sup> HETAC – Higher Education & Training Awards Council; National Framework of Qualifications (www.nfq.ie).

<sup>6</sup> Source: UCD Forestry Department, 2011.
course was developed into a two year Certificate in Forestry course with the objective of training young people for careers within the forestry sector, incorporating a relatively large element of practical skills training. Teagasc now offer two forestry course options at Ballyhaise, a one year FETAC\(^7\) Level 5 course and a two year FETAC Level 6 course.

Third level forestry education capacity was expanded significantly in the late 1990s with the development of two new forestry degree programmes, at Waterford Institute of Technology (WIT) in 1997 and at Galway Mayo Institute of Technology (GMIT) in 1998. Both programmes were developed to cater for an increased demand for new forestry graduates by Coillte which was engaging in a graduate recruitment process to increase its numbers of foresters following a period of staff reductions through a series of early retirement schemes. The new degree courses at WIT and GMIT were developed in close consultation with industry employers including Coillte, who had identified a need for technical foresters with practical skill sets necessary for field work and supervisory positions within their forests. This increase in forestry education capacity during the late 1990s also coincided with an increase in demand for foresters from private forestry companies operating within the private forestry establishment and management sector which was undergoing a period of strong activity.

Both courses were run over three years, resulting in a HETAC Level 7 Ordinary Bachelor Degree in Science (BSc in Forestry). While the GMIT course suspended student intake in 2008 and is currently not being offered, WIT expanded their offering in 2008 with an additional one year land management course with a forestry specialisation, resulting in a HETAC Level 8 Honours Bachelor Degree in Science (BSc (Hons) in Land Management.

A decision by Coillte in 2000 to seek forest certification under the Forest Stewardship Council (FSC) scheme resulted in a greater emphasis on environmental protection and the sensitive management of forests and their biodiversity components. A new course was developed at University College Cork (UCC) to provide existing foresters with a scientific understanding of biological and other issues facing forest biodiversity. The one year part time course leading to a Certificate in Biodiversity Components of Forestry was first offered by UCC in 2001 and in 2008 it was extended to a two year part time Diploma course. This course is under review and is currently not being offered by UCC.

1.4 The Development of Forestry Skills Training Resources

Prior to the establishment of Coillte in 1989 the majority of forestry skills training within the Irish forestry sector was conducted “in-house” by the Forest Service. Most workers were trained in the necessary skills to conduct their daily work tasks by experienced foresters. There was no formal means of certifying skills training and associated learning outcomes. In 1984 the Forest Service opened a skills training school in Mountrath, County Laois for the purpose of training their own staff in specific forestry skills including chain saw operations, forwarding machinery operations and pesticide application operations. During the mid 1980s AnCO provided some forestry skills training courses in the area of timber harvesting and these courses were delivered by instructors provided by the Forest Service.

The 1990s marked the beginning of a period of significant investment by the Irish Government in training within the forestry and timber processing sectors, largely funded by Europe through the European Social Fund (ESF). Funding was administered and coordinated by the Forest Service and channelled through three state agencies, namely Coillte, Teagasc and Forbairt (later to become Enterprise Ireland in 1998). Funding for Coillte was targeted at the mainstream forestry sector, funding for Teagasc was targeted at the developing farm forestry sector while funding for Enterprise Ireland was targeted at the timber processing sector. While this funding initiative was largely seen as a positive step towards the development of a better trained and more skilled forestry workforce, it largely precluded the development of any private sector skills training resources during this period.

Coillte’s role as the principal skills training provider to the Irish forestry sector began in the early 1990s when they established a comprehensive network of Training & Safety Officers and instructors across Ireland, delivering a wide range of forestry related skills courses covering Forest Nurseries, Forest Establishment, Forest Management and Timber Measurement & Harvesting. This period saw a major improvement in the volume and standard of forestry skills training across the forestry sector and was associated with a move to formal certification of skills training outcomes through the adoption

\(^7\) FETAC – Further Education & Training Awards Council; National Framework of Qualifications (www.nfq.ie).
of the National Proficiency Tests Council (NPTC) certification systems from the UK. Most of the skills training courses were designed around the need for safe and best practice and involved training and retraining in safer, more efficient and more environmentally friendly practice. Coillte is now approved as a FETAC course provider, allowing them to develop modularised training programmes leading to FETAC awards at levels 1 to 6 within the National Framework of Qualifications.

Enterprise Ireland has provided various training courses to the timber processing sector since the mid 1990s primarily in the areas of timber grading, timber drying, timber frame house specification / construction and timber marketing. During the 1990s this training was funded by the Forest Service under the Operational Programme for Agriculture, Rural Development and Forestry 1994 to 1999.

In the mid 1990s Teagasc recruited their first three forestry advisers to engage in promotional, advisory and training activities within the farm forestry sector. This coincided with a period of significant farmer afforestation activity when annual private sector planting levels were exceeding 15,000 hectares. Since then the Teagasc farm forestry training resource has grown steadily and there are now nine farm forestry advisors within the Teagasc Farm Forestry Development Department. Training courses provided by Teagasc have always had a strong promotional function, fitting with their mandate to promote forestry activity within the agricultural sector. At first their focus was predominantly on promoting forestry as an alternative farming venture and training farm forestry owners in the areas of farm forestry establishment and management. However, Teagasc have evolved their range of forestry advisory and training services in line with the development of the farm forestry resource over the years, and are now offering advice and training in the areas of timber harvesting and sales. Teagasc are also an approved FETAC course provider.

Following government cutbacks in 2002, support funding for forestry skills training was withdrawn and the Irish Forestry sector experienced a four year period with significantly reduced training activity. Training activities became a direct cost to forestry businesses and many training needs were not met, resulting in significant concerns about workforce capacity across the forestry sector. A new Forestry Operative Traineeship was developed by the Irish Forestry Contractors Association (IFCA) in 2004 with funding from FAS and the Forest Service. However this initiative experienced operational and funding difficulties and was discontinued in 2005.

In 2005 a diverse range of organisations and representative bodies across the Irish forest sector came together to address the rapidly developing gap in training needs within the industry as a result of low levels of government funding and uncoordinated training activities. The group, which represented a broad range of training providers and requirers, planned for the sustainable provision of training and education within the sector, resulting in the formation of Forestry Training and Education Ireland (FTEI) in late 2006. FTEI was incorporated as a Limited Company in 2007 and has one full time independent coordinator. It is governed by nine board members, spanning a cross section of the forest industry, with broad representation from training requirers and training providers. FTEI is currently funded by the government through the Forest Service, under the National Development Plan 2007-2013. FTEI is now charged with the administration and management of the nationally approved forestry skills training programme, and has administered a comprehensive training programme over the past four years, based on the defined needs of the industry. As well as its ongoing role in delivering Forest Service funded training programmes, FTEI has a wide remit including the promotion of forestry education & training, the development of standards in forestry education & training and the longer term, strategic planning of forestry education & training provision to meet the changing needs of the forestry industry.

The incorporation of FTEI brought about a significant change in the manner in which government funded forestry training services had previously been delivered. FTEI operate under an open procurement process whereby all training service requirements are tendered out, allowing all suitably qualified trainers the opportunity to compete for the delivery of training services to the forest industry.

In 2009, FTEI reported that “analysis from the state forest monitoring systems indicates a significant reduction in both the accident and incident rate since the commencement of the current skills training funding cycle in 2006\(^8\). However, recent constraints to government funding have resulted in a significant reduction in skills training courses being funded through FTEI over the past two years. FTEI's training budget has fallen from a high of €720,000 in 2008 to a low of €380,000 in 2010.

---

1.5 The Development of Forestry Sector Representative Bodies and Associated Education and Skills Training Resources

A significant development in the evolution of Ireland’s forestry sector education & skills training resources has been the establishment of several representative bodies, associations and societies that have played an important role in the coordination and delivery of education and skills training to their members. Such organisations include:

- The Society of Irish Foresters (SIF), established in 1942;
- The Irish Timber Growers Association (ITGA), established in 1977;
- The Tree Council of Ireland, established in 1985;
- Woodlands of Ireland, established in 1998;
- Pro Silva Ireland, established in 2000.

These organisations have been involved to varying degrees in educating and training their members and the general public in forestry related topics since their establishment. A more detailed overview of the role currently played by such representative bodies in forestry sector education and skills training delivery is presented in Section 2 of this report.

1.6 Summary of Key Points from this Review

The following key points relating to the development of forestry education and skills training in Ireland since the foundation of the state should be considered as part of this training needs analysis:

- There has been a constant yet evolving higher level education resource providing formal training for foresters in Ireland for the past 85 years. This resource has developed over time in response to changing industry needs;
- The state has played a major role in the formal training of foresters and in the provision of skills training to forestry operatives from the initial development of the state forestry sector through to the more recent development of the private (farm) forestry sector;
- Forestry skills training initiatives have always been highly dependent on government funding. Periods of reduced funding have resulted in a significant decline in training activity;
- The delivery and certification of forestry skills training has been standardised, formalised and generally improved over time, with significant developments in the 1990s with the introduction of NPTC certification and FETAC accreditation within certain skills training activities;
- While the provision of forestry skills training was largely the remit of state and semi-state sectors prior to the formation of FTEI in 2007, a new and more open system of procuring skills training services has widened the remit to include private sector providers;
- Forestry sector skills training is currently at somewhat of a low ebb with regard to government funding and resulting levels of skills training delivery.
1.7 Summary Timeline of the Development of Forestry Education & Skills Training in Ireland

Table 1 below presents a summary timeline of significant events relating to the development of Ireland’s forestry education and skills training resources over the past century.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1904</td>
<td>Establishment of Avondale forestry training school at Rathdrum, County Wicklow.</td>
</tr>
<tr>
<td>1913</td>
<td>Foundation of the Forestry Department at the Royal College of Science, Dublin (later to become part of University College Dublin (UCD)).</td>
</tr>
<tr>
<td>1927</td>
<td>Foundation of the forestry degree programme at UCD.</td>
</tr>
<tr>
<td>1942</td>
<td>The Society of Irish Foresters (SIF) is founded.</td>
</tr>
<tr>
<td>1953</td>
<td>Establishment of Shelton Abbey forestry training school at Arklow, County Wicklow.</td>
</tr>
<tr>
<td>1955</td>
<td>Establishment of Kinnitty Castle forestry training school at Kinnitty, County Offaly.</td>
</tr>
<tr>
<td>1965</td>
<td>Redevelopment of Avondale forestry training school as a training centre for short-term refresher and specialised courses for existing technical staff working within the Forestry Service.</td>
</tr>
<tr>
<td>1972</td>
<td>Closure of Shelton Abbey forestry training school.</td>
</tr>
<tr>
<td>1977</td>
<td>The Irish Timber Growers Association (ITGA) is established.</td>
</tr>
<tr>
<td>1985</td>
<td>Closure of Kinnitty Castle forestry training school.</td>
</tr>
<tr>
<td>1988</td>
<td>The Tree Council of Ireland is established.</td>
</tr>
<tr>
<td>1989</td>
<td>Foundation of the Wood Science and Technology degree programme at UL.</td>
</tr>
<tr>
<td>1994</td>
<td>Foundation of the Wood Science and Technology degree programme at UL.</td>
</tr>
<tr>
<td>1995</td>
<td>Recruitment of the first Farm Forestry Advisors by Teagasc.</td>
</tr>
<tr>
<td>1997</td>
<td>Foundation of the Forestry degree programme at Waterford Institute of Technology (WIT).</td>
</tr>
<tr>
<td>1998</td>
<td>Foundation of the Forestry degree programme at Galway-Mayo Institute of Technology (GMIT). Woodlands of Ireland is established.</td>
</tr>
<tr>
<td>2000</td>
<td>Woodlands of Ireland is established.</td>
</tr>
<tr>
<td>2001</td>
<td>Pro Silva Ireland is established.</td>
</tr>
<tr>
<td>2002</td>
<td>Foundation of the Biodiversity Components of Forestry course at UCC.</td>
</tr>
<tr>
<td>2004</td>
<td>Development of the Forestry Operative Traineeship by the Irish Forestry Contractors Association (IFCA).</td>
</tr>
<tr>
<td>2005</td>
<td>Beginning of an industry wide initiative to address rapidly developing gap in training needs, eventually resulting in the formation of FTEI (see below).</td>
</tr>
<tr>
<td>2007</td>
<td>Incorporation of Forestry Training &amp; Education Ireland (FTEI).</td>
</tr>
<tr>
<td>2008</td>
<td>Suspension of the Forestry degree programme at GMIT.</td>
</tr>
<tr>
<td>2010</td>
<td>Suspension of the Biodiversity Components of Forestry course at UCC.</td>
</tr>
</tbody>
</table>

Table 1 – Timeline of Developments within Forestry Education & Skills Training in Ireland
Section 2
The Current Structure and State of Forestry Education & Skills Training in Ireland

2.1 Introduction

The maintenance of a skilled forestry workforce, capable of working to a defined specification safely, efficiently and with due regard to environmental standards requires on-going investment in education and skills training activities. In general terms, all parties involved in the Irish Forestry Sector agree that education and skills training play a critical role in the sustainable development of our industry. As documented in Section 1, forestry education & skills training resources have evolved significantly over time to meet the ever changing needs of our developing forestry sector. Current government policy on education and training within the sector is “to ensure the availability and delivery of suitable programmes of education and training to cater for the increasing number of new entrants into forestry and the growth in scale and diversity of the sector”9. While this policy is currently under review, its general focus is unlikely to change significantly. A more recent strategic statement by the Department of Agriculture, Fisheries & Food10 regarding the development of the Forestry & Bio-Energy Crops sectors states that “industry and representative organisations should support operator training and education” while “Teagasc and the relevant third-level institutions should ensure relevant and up-to-date training to meet new developments”.

This section presents an overview of the current structure and state of forestry education and skills training operating in Ireland today, including current funding arrangements and the identification of strengths and weaknesses. It sets the scene regarding what we have to work with and build upon in order to meet the education and skills training needs identified in Sections 3 and 4 of this report.

2.2 Overview of Current Forestry Education & Skills Training Resources

Ireland has a relatively well developed forestry education and skills training resource operating across the state, semi-state and private sectors. It can be broadly broken down into the following five categories:

- Full time education & skills training courses designed for preparing people for a working career within the Irish forest industry. These courses typically run for a minimum of one year.
- Short education & skills training courses aimed at developing specific knowledge and skill sets. These courses typically run for one day to six weeks.
- Teagasc extension services, providing training and knowledge sharing initiatives to the farm forestry sector.
- In house, on-the-job training.
- Other training and knowledge sharing initiatives coordinated by the Forest Service, COFORD and forestry sector representative bodies, providing a range of useful continuous professional development opportunities for existing industry members.

2.2.1 Full Time Education & Skills Training Courses

There are currently four main providers of full time education and skills training courses catering for the forestry sector in Ireland. These courses are funded through the Department of Education & Skills11 and primarily cater for new entrants preparing for a career within the forestry sector but also cater for existing practitioners now seeking formal educational qualifications. All courses are

---

10 Department of Agriculture, Fisheries & Food (2010). *Food Harvest 2020; a vision for Irish agri-food & fisheries.*
11 With the exception of Teagasc (Ballyhaise) which is funded by the Department of Agriculture, Fisheries & Food.
experiencing a significant increase in demand in the last three years, including increased demand from mature students wishing to change careers into the forestry sector.

- **University College Dublin (UCD)**\(^{12}\)
  UCD offers a full-time four-year forestry honours degree programme (NFQ\(^{13}\) Level 8), with a current intake of about 20 students per year. The programme is considered to be more focused on providing a broad forestry education rather than on preparing students for specific jobs within the forestry sector. UCD also offers masters degree and doctoral degree opportunities through its broad range of forestry related research programmes. The honours degree and masters programmes are accredited by the Society of Irish Foresters and the UK Institute of Chartered Foresters.

- **Waterford Institute of Technology (WIT)**\(^{14}\)
  WIT offers a full-time three-year forestry ordinary degree programme (NFQ Level 7) with the option of an additional one-year honours degree programme in land management (NFQ Level 8). Current intake totals about 26 students per year. The ordinary degree programme is considered to be somewhat more vocational than UCD, and is more focused on preparing students for specific technical jobs within the forestry sector. WIT also offers masters degree and doctoral degree opportunities through its broad range of forestry and wood energy related research programmes. Currently five students are registered on post-graduate degree programmes by research.

- **Teagasc (Ballyhaise)**\(^{15}\)
  Teagasc offers a full-time one-year forestry certificate programme (NFQ Level 5) with the option of an additional one-year advanced certificate programme (NFQ Level 6). Current intake for the Level 5 course totals about 18 students. This is a highly practical vocational education and training (VET) programme primarily aimed at preparing students for practical, operational jobs within the forestry sector, and in particular the establishment and management sectors. There is considerable emphasis placed on practical work experience, particularly in the second year. Students attaining their Level 5 certificate can progress to WIT outside of the CAO system, under the FETAC - HETAC linkages programme. About four students progress from Ballyhaise to WIT annually.

- **University of Limerick (UL)**\(^{16}\)
  UL offers a full-time four-year honours degree programme in wood science and technology (NFQ Level 8), with a current intake of about 30 students. The programme focuses on the creative and effective use of wood and wood-based materials in commercial products and prepares students for careers in the timber processing sector and associated downstream industries.

### 2.2.2 Short Education & Skills Training Courses

This is one of the principal training structures used to develop and maintain the operational skills base of the Irish forestry sector. There are currently a number of dedicated skills training companies offering short courses tailored specifically for the forestry sector, ranging in duration from one day to six weeks. Such companies include Coillte Training & Safety Services, Tree Care Ireland, Kearney Training & Consultancy, Future Training Environmental & Safety Services and Dermot Casey Tree Care. Many of these companies are also involved in other land use skills training sectors including arboriculture, horticulture and agriculture. While some of the smaller companies specialise in chainsaw skills and safety training, companies such as Coillte offer a wider range of forestry related training courses encompassing all aspects of forestry operations including forest nursery, forest establishment, forest management, timber measurement, timber harvesting and environmental skills. Some university and college departments are currently providing or are considering providing forestry skills training through short courses.

---

\(^{12}\) Further details of UCD course offerings can be seen at [www.ucd.ie/agandvet/newforestry.html](http://www.ucd.ie/agandvet/newforestry.html).

\(^{13}\) The National Framework of Qualifications (NFQ) provides a way to compare qualifications, and to ensure that they are quality assured and recognised at home and abroad. See [www.nfq.ie](http://www.nfq.ie).

\(^{14}\) Further details of WIT course offerings can be seen at [www.wit.ie/StudyatWIT/UndergraduateCourses/Science/BScinForestry-WD076/](http://www.wit.ie/StudyatWIT/UndergraduateCourses/Science/BScinForestry-WD076/).

\(^{15}\) Further details of Teagasc course offerings can be seen at [www.teagasc.ie/training/courses/vc_forestry.asp](http://www.teagasc.ie/training/courses/vc_forestry.asp).

\(^{16}\) Further details of UL course offerings can be seen at [www.ul.ie/courses/WoodScienceAndTechnology.shtml](http://www.ul.ie/courses/WoodScienceAndTechnology.shtml).
training services within this sector in order to generate much needed external revenues. Some UK companies are also now offering services within this sector including Mearns and Angus Services, SelectFor and TKF Training.

Funding for short education & skills training courses either comes from candidate fees or from Forest Service funding administered through FTEI. Training companies and universities tender periodically to provide specific forestry sector training courses specified and funded by FTEI (see Section 2.3). Coillte also provide a range of in house training courses for their own staff members.

### 2.2.3 Teagasc Forestry Advice & Training Services

The Teagasc Farm Forestry Development Department has a national network of nine forestry advisors involved in promotional, advisory and training services within the private farm forestry sector. This service is funded by the Forest Service and is the principal training structure for owners of farm forests who require forestry knowledge and skills to enable them to establish and manage their forestry enterprises. Teagasc organise periodic field demonstrations, talks and seminars to keep private forestry owners abreast of developments within the farm forestry sector. Teagasc also provide a series of short courses in farm forestry related skills, accredited under the FETAC system. More recently, the Teagasc Farm Forestry Development Department have begun to promote and facilitate the formation of regional farm forestry producer groups as farm forests begin to enter the timber production phase for the first time.

### 2.2.4 On-the-Job Training

A large amount of education and skills training activity within the Irish forestry sector is through on-the-job, in-house training. For example, Coillte have operated a highly successful Graduate Recruitment Programme where new graduates are recruited and placed in a variety of sectors during their first years of employment to ensure they gain a wide variety of experience at an early stage. On-going in-house training is provided to ensure the necessary skills are acquired for each placement. Similarly, many timber harvesting machine operators in Ireland begin work without any formal or structured training. Basic on the job training is provided by existing operators or machine owners and experience is gained gradually. Contractors often employ a slow and phased approach to trainee machine time exposure. Some contractors start their trainees on chainsaw activities, supporting harvesting operators and observing the machines in operation. Some supervised machine time is then allocated to trainees during operator breaks and, eventually some un-supervised machine time is allocated outside of normal operating hours (evenings and weekends) so as not to impact on the day-to-day productivity of an operation.

### 2.2.5 Other Training and Knowledge Sharing Initiatives

Other training and knowledge sharing initiatives coordinated by the Forest Service, COFORD and forestry sector representative bodies provide a range of useful education and skills training and continuous professional development opportunities for existing industry members. Initiatives include:

- **Woodlands of Ireland Native Woodland Scheme Course**<sup>17</sup>
  This is funded by the Forest Service and is targeted at training people involved in the planning and management of native woodlands and working with the Forest Service Native Woodland Scheme. It offers a basic introduction to native woodland ecology and management. The courses are run as part of the joint Forest Service / Woodlands of Ireland programme.

- **Tree Council of Ireland Landscape Design Course**<sup>18</sup>
  This is funded by the Forest Service and covers the concept of landscape and its importance, character, sensitivity and distinctiveness. It also examines the role forests play in the Irish landscape of today and how to manage the changes that afforestation and forest management bring. The course, which represents a useful opportunity to present the

---

<sup>17</sup> Further details of the Native Woodland Scheme Course can be seen at [www.woodlandsofireland.com](http://www.woodlandsofireland.com).

<sup>18</sup> Further details of the Landscape Design Course can be seen at [www.treecouncil.ie](http://www.treecouncil.ie).
Sustainable Forest Management message, is run as part of the joint Forest Service / Tree Council of Ireland programme.

- **COFORD Workshops**
  COFORD runs a range of workshops focused on the forestry and wood energy sectors. These knowledge sharing and training initiatives disseminate up-to-date and highly relevant research outputs to practicing forestry professionals, including timber yield modelling tools (GROWFOR) and timber supply forecasting tools (FORECAST GIS).

- **Society of Irish Foresters (SIF)**
  SIF, the representative body of the forestry profession in Ireland, provides a range of education and knowledge transfer services to its members and the wider forestry sector. Its objectives include the promotion of a greater knowledge and understanding of forestry in all its aspects and the establishment, securing and monitoring of standards in forestry education. SIF host a range of field days, study tours, workshops, lectures and symposia, often organised in co-operation with other bodies such as ITGA (see below), COFORD and Teagasc. SIF also provides regular updates to its members about ongoing training and knowledge transfer activities within the Irish forestry sector. SIF introduced a programme of Continuous Professional Development (CPD) in 2003 as a means of confirming that professional foresters are up to date in current forestry practice and other matters of professional development. CPD involves the continuous acquisition of knowledge to improve professional performance. The SIF CPD programme is currently at a voluntary phase, with members registering their attendance at appropriate courses and events to gain an annual quota of CPD credits. Plans to formalise the CPD programme and link it with Technical SIF Membership status are ongoing.

- **Irish Timber Growers Association (ITGA)**
  ITGA, the representative body of private woodland owners in Ireland, offers education and knowledge transfer to its members through an annual schedule of field days, seminars and meetings. Education and training initiatives are often organised in co-operation with other bodies such as SIF, COFORD and Teagasc. ITGA’s emphasis is on knowledge transfer among Ireland’s private forest owners with an underlying aim to maximise the potential from private forestry plantations by the implementation of good forest management practices throughout their rotation.

- **ProSilva Ireland**
  ProSilva Ireland is a non-profit organisation founded to develop and promote continuous cover forestry management principles as an alternative to clear felling in Irish forestry. Its members are convinced of the need in Ireland for a greater range of management skills amongst foresters and forest owners. ProSilva Ireland offers formal training to its members on different aspects of continuous cover forestry. They provide on-going education and knowledge transfer to members through training courses, field days and foreign visits.

### 2.3 Overview of Current Funding Structures

The Department of Education & Skills currently funds full time forestry education & skills training courses offered by UCD, WIT and UL under a capitation system. Funding is based on the numbers of full time equivalent students attending a particular course. The Department of Agriculture, Fisheries & Food funds the Teagasc (Ballyhaise) forestry course, with some funding coming from Forest Service budgets. The Forest Service currently funds the ongoing activities of the Teagasc Farm Forestry Development Department (see Section 2.2.3), along with periodic short courses on the Native Woodland Scheme and landscape design, run by Woodlands of Ireland and Tree Council of Ireland respectively (see Section 2.2.5). The Forest Service also funds Forestry Training and Education Ireland (FTEI23) which administers and manages the national approved forestry skills training programme.

---

19 Further details of COFORD education & training initiatives can be seen at [www.coford.ie/](http://www.coford.ie/).
20 Further details of SIF education & training initiatives can be seen at [www.societyofirishforesters.ie/](http://www.societyofirishforesters.ie/).
21 Further details of ITGA education & training initiatives can be seen at [www.itga.ie/](http://www.itga.ie/).
22 Further details of ProSilva Ireland education & training initiatives can be seen at [www.prosilvaireland.org/](http://www.prosilvaireland.org/).
23 Further details of FTEI’s role in the administration of funding for forestry sector training can be seen at [www.ftei.ie/](http://www.ftei.ie/).
FTEI acts as a channel between the Forest Service and the Irish forestry sector for the allocation of funded training initiatives. Requirers of training specify their specific training needs to FTEI, typically on an annual basis. These requirements are assessed, compiled and prioritised if necessary and a provisional training programme is prepared. An application is then made to the Forest Service for funding of the programme. Following the allocation of a programme budget by the Forest Service, FTEI deliver the programme on a quarterly basis through a tendering process. Training providers tender for the provision of forestry sector training courses specified within the FTEI training programme.

With the exception of the farm forestry sector where Teagasc training activity has increased significantly, there has been a marked decline in government funded training activity in recent years. This has been largely due to the cessation of EU funding for forestry sector training activities in Ireland and more recently due to the considerable national budgetary constraints. A comparison between government funded Coillte forest sector training activity in the late 1990s (when significant EU funding was available) and more recent FTEI funded forest sector training activity during 2008 and 2009 shows a 54% drop in the number of candidates trained annually (see Table 2 below). Given that the scale of the forest industry vis-à-vis afforested area has increased by over 18 percent during this 10 year period, the considerable decline in funding for skills training is concerning.

<table>
<thead>
<tr>
<th>Period</th>
<th>Government Funded Forestry Sector Training</th>
<th>Average No. of Trainees per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998/1999</td>
<td>Coillte Training Courses</td>
<td>2032</td>
</tr>
<tr>
<td>2008/2009</td>
<td>FTEI Training Courses</td>
<td>927</td>
</tr>
</tbody>
</table>


FTEI’s training budget has fallen from a high of €720,000 in 2008 to a low of €380,000 in 2010. While investment in training and promotional activities within the developing farm forestry sector via Teagasc has been very worthwhile and is seen by most observers as a highly successful venture, the majority of operations within the farm forestry sector have been and will continue to be carried out by forestry sector operatives. Investment in training contractor foremen and operatives has declined significantly in recent years. The maintenance of a skilled contracting workforce, capable of working safely, efficiently and with regard to environmental standards requires on-going investment in training activities.

2.4 Critical Analysis

The main findings from a review and critical analysis of the current forestry education and skills training systems operating in Ireland today are listed below. Following consultation with a wide range of industry representatives, the strengths and weaknesses of the current systems have been identified. These have been considered in the development of a strategy for forestry education and skills training presented in Section 6.

2.4.1 Strengths

The following strengths have been identified in the current systems of education and skills training operating in Ireland today:

- In general terms, the Irish forestry sector is well served by a range of strong education and skills training resources.
- There is a well developed forestry education resource covering a broad range of levels within the National Framework of Qualifications, ranging from Level 5 to Level 8. The forestry education system allows progression through the National Framework of Qualifications system within and between colleges and there is a good level of co-operation between the forestry colleges.

---

• Links have been developed between forestry colleges and industry, particularly at postgraduate level through cooperative research & development projects, many of which are funded by COFORD which actively promotes a multi sectoral (academic / commercial) approach to research project team formations.

• There is a well developed forestry skills training resource within Coillte, partly a legacy from a period of significant government funding during the 1990’s but also due to Coillte’s on going policy of training provision.

• There is a limited but developing private sector training resource primarily focused on occupational health & safety and “hard” skills training such as chainsaw operation and machine driving. The formation of FTEI has opened up the market for training provision within the forestry sector to all qualified providers. This is seen as a very positive step and should help to foster the development of a more diverse forestry training resource, tapping into the skills and resources of the private sector.

• FTEI’s policy to combine education and skills training initiatives with formal certification wherever possible is generally seen as a positive development, particularly in relation to skills training involving a strong emphasis on operator safety such as chainsaw operation.

• FTEI continues to be actively supported in a voluntary capacity by high profile forestry sector representatives since its formation in 2006.

• Along with the provision of important training initiatives relating to operator health & safety, there have been several good examples recently of strategic skills training initiatives focused on the teaching of new skills to capitalise on technological developments within the forestry sector. For example, training initiatives associated with the recent introduction / adoption of ICT into Coillte’s timber supply chain management systems has resulted in a significant improvement in the quality and speed of data flow from timber harvesting sites, while providing scope for more efficient resource utilisation (optimal cross cutting decisions etc.). This training was an essential component in the on-going development of an improved harvesting skills base which is leading to improved efficiencies through better information flow from harvesting sites to timber supply managers and their customers.

• Considerable progress has been made in the development of education and skills training initiatives targeted at the farm forestry sector. Funding allocation towards the development of the Teagasc Farm Forestry Development Department has been highly strategic. Funded training initiatives are assisting in the on-going development of the sector, supporting its continued expansion and, more recently, guiding its transition into the timber production phase.

2.4.2 Weaknesses

The following weaknesses have been identified in the current systems of education and skills training operating in Ireland today:

Weaknesses in Funding Scale & Security:

• FTEI administered forestry sector skills training is currently at a low ebb with regard to government funding and resulting levels of skills training delivery. The demand for funded training courses exceeds supply and reduced funding could threaten the delivery of a sufficient volume of training initiatives.

• Forestry skills training initiatives have always been highly dependent on government funding. Periods of reduced funding in the past have resulted in a significant decline in training activity. The majority of forestry operative training is currently funded through FTEI which has no long term funding security, and is currently operating on a quarterly budget. This lack of long term training & education funding security is a definite obstacle to the structured development of more strategic training resources.

• Forestry is a relatively specialist subject and full time forestry courses do not always operate on a commercially viable basis when viewed in isolation within college faculties. Given the relatively small student numbers and the requirement for relatively low student / teacher ratios to allow for a large element of practical learning (field trips, project work, problem based
learning, etc.), some forestry departments are under financial pressure. With reducing Department of Education & Skills budgets there is growing uncertainty over the funding of some college departments and their forestry courses.

- There is no strategic funding budget allocation for the incorporation of some practical “hard” skills training modules into full time forestry course syllabi. Colleges are incorporating this training whenever possible, if and when funding is made available annually through FTEI. An element of hard skills training is seen as an important part of an all-round forestry education as it gives students firsthand experience of operator skills requirements and provides a basic skills set for students and graduates who wish to pursue an element of manual work as part of their training and career path development. There is a risk that if funding is cut, forestry colleges will not be able to provide skills training as part of a forester’s training programme.

**Weaknesses in Training Resource Capacity:**

- There is a strong reliance on Coillte’s large forestry skills training capacity, particularly in relation to their expensive mechanised timber harvesting training resource. Coillte is currently reviewing the potential for outsourcing many of its current operations, including training, as part of its *Destination 2012* strategic business review. While the potential for outsourcing Coillte’s current training needs is being considered, many observers feel that this may not be considered a practical option in the short to medium term given the highly specialised nature of many forestry sector training requirements and the significant reliance Coillte currently has on its in-house skills training resources.

- It is difficult for SME training providers to develop and maintain forestry skills training capacity within such a specialised sector. The previous system of funding forestry skills training was focused on state agency providers (Coillte, Teagasc and Enterprise Ireland). Therefore, with the exception of the past 4 years, there has been very little development of private sector training capacity within the forestry sector. The development of training capacity requires a long term investment in training resources by providers (training of trainers, development of certification and accreditation systems etc). This is difficult for SMEs to justify in the context of the relatively small and specialised market and relatively small and uncertain tender offers from FTEI.

- Lack of funding of college departments and their forestry courses may result in reduced full time forestry course capacity.

- There is relatively low student capacity within the VET sector with only 18 students entering Ballyhaise annually. There is a notable absence of a VET course tailored towards the mechanised timber harvesting sector.

- Student placement for practical work experience within the industry is informal and is often difficult to organise. All of the forestry colleges stressed the importance of incorporating practical work experience into their teaching programmes. However, there is currently no formal system of student placement and good placements with strong learning opportunities can often be difficult to organise.

- Some practical skills training courses that are considered important in the education of foresters are not part of the modularised curriculum due to uncertain funding. This is most apparent in the more vocational course at Ballyhaise. While colleges are incorporating this training whenever funding is made available, it is never certain and cannot be formalised within annual course offerings.

**Weaknesses in Training Structures:**

- There is currently no single national certifying body / system for forestry skills certification in Ireland. While FETAC is the nationally recognised skills certifying body and can certify forestry skills, there are a number of other certifying systems currently in use (NPTC, “Coillte”, Lantra Awards etc.). There is a clear requirement for a national industry standard to be

25 Including practical skills such as chainsaw operation and pesticide application.
adopted. Similarly, there is no nationally recognised system of recognising and monitoring training competency within the forestry sector.

- Under the current system of FTEI tendering for the provision of skills training services, training, assessment and certification services are being provided to candidates under a single contract with a training provider. This is not best practice as it can lead to possible conflicts of interest.

- There is a lack of available information about skills training certification options within Ireland and about what levels of certification employers and companies awarding forestry work contracts currently require.

- There is currently no centrally compiled national database of forestry sector skills certification and skills training activity. This makes the on-going analysis of training needs and the strategic planning for the provision of skills training initiatives very difficult.

- There is no structured vocational career development path for operatives currently working in the sector. There is no progressive accreditation system for existing forestry operatives that recognises a range of completed skills courses and work experience.

- There are no standardised / structured / formal on-the-job training systems for operatives within the forestry sector.

- Many skills training initiatives and courses are not multi-disciplinary and focus on the teaching of a single operational skills set, often lacking any significant silvicultural elements necessary to foster the development of a broader forestry skills base.

- Some observers feel that skills training courses provided through FTEI funding have an over emphasis on the attainment of certification and that courses are focused on shepherding candidates through a certification process. The primary focus of training initiatives should be on the development of a sustainable knowledge and skills base which will eventually lead to certification.

- There is a possible imbalance in the systems of quantifying returns on / benefits of skills training initiatives. In 2009, FTEI reported that “analysis from the state forest monitoring systems indicates a significant reduction in both the accident and incident rate since the commencement of the current skills training funding cycle in 2006”\(^{26}\). While health & safety and environmental records are an excellent benchmark for assessing returns on investment in education & skills training, other efficiency based benchmarks should also be used. For example, some recent training initiatives relating to the introduction of ICT into the timber supply chain have led to reduced costs in timber measurement and timber supply management, better utilisation of the timber resource and improvements in real-time log supply information\(^{27}\).

- There may be lower levels of skills training and associated certification prevailing in private sector forestry operations. While significant developments are being made with regard to the defining of clear standards for training and associated certification for operations within Coillte forests, this is not currently the case for private sector forests which are managed by a diverse range of forest owners, SMEs and forestry consultants. Currently, forestry operatives who are not sufficiently qualified to work in Coillte forests can often find work within the private sector.

- There is a possible imbalance in the current motives for skills training and associated prioritisation of training activity. Individual motives for the delivery of education and training can vary considerably. Some training initiatives are driven by a desire to attain best practice and achieve optimal levels of safety and efficiency while others are driven by a requirement to “tick the box” to satisfy legislative requirements or minimise employers liabilities. Personnel undergoing training with this pre-conception of training motives may not fully embrace the training process and training outcomes may not be optimised. While it is essential that the Irish forestry sector workforce are trained (and certified) in accordance with best practice with regard to occupational health & safety and that suitable training resources are allocated to this need, it is important that training initiatives (and associated funding sources) are also allocated to the development of knowledge and operational skills that will promote more

---


\(^{27}\) Automated Weighbridge System user training & Blackberry PDA Harvest Site Data Communication System user training funded by FTEI in 2006 & 2007.
innovative, progressive and efficient operations to foster a more competitive industry. Some observers feel that there is a developing focus on training, assessment and certification activities to address specific environmental / forest certification and occupational health & safety requirements, with a “tick the box” approach. The focus is on asking “has the operator got his cert” rather than “is the operator fully trained to carry out the job efficiently and safely”. The development of a more structured career path for forestry operatives with a centrally administered register of skills training and work experience may help to refocus training motives. This is discussed further in Sections 6 and 7.

Weaknesses in the System of Funding Allocation & Administration:

- The current system of allocating Forest Service funding for skills training delivery through FTEI has a very short term focus and may not be strategic enough to address operational skills development requirements necessitating longer term training initiatives. While the current system facilitates funding for addressing the short term, on-going needs of the industry, it does not address more strategic training needs. This is in contrast to the current system of funding initiatives relating to the development of the farm forestry sector.

- The FTEI system of skills training funding and delivery is seen as very rigid and complex by some observers. It carries an excessive administrative burden for both training requirers and providers. Approved training course funding stipulations are linked to specific names within specific geographic areas scheduled for specific course delivery dates. This can lead to inflexible and unworkable situations for both requirers and providers.

- A number of training requirers operating within the private sector were found to be unaware of the availability of training funding through FTEI. Only one private sector management company has applied for training funding through FTEI. While FTEI has engaged in some promotional activities within the industry, it does not appear to have had a significant impact within the private sector.

- Coillte is a large semi-state organisation generating considerable annual profits. While it is appropriate for Coillte to qualify for FTEI administered Forest Service funding for the training and development of contractors working within their forests, some observers have questioned whether they should qualify for funding to service their in-house training requirements, particularly when they have a well developed in-house training resource.

- While several industry representatives consulted during this analysis commented on the very controlled and accountable means by which FTEI currently administers the funding of training courses, some noted the absence of a formal approach to the control of quality within funded training systems and the monitoring of training outcomes in a standard and transparent manner. There is no structured system in place to monitor true learning outcomes and feedback from course participants.

- The relatively strong focus on price within the FTEI system of tendering for the provision of skills training services may reduce the quality of training over time. Some observers feel that the tendering process is too price focused and is possibly leading to a potential lowering of teaching quality. Optimal candidate / trainer ratios are possibly being compromised to keep tendered prices down.
Section 3
Forecasting Sectoral Developments and Associated Trends in Education & Skills Training Needs

3.1 Introduction

In order to forecast future education & skills training needs over the next 10 years, it is necessary to make grounded predictions on how the Irish forest industry is likely to develop over this period. This section presents an assessment of future training needs in general terms within the different sectors of the Irish forest industry, based on best estimates of how the various industry sectors might develop over the forecast period. Predicting future developments and associated training needs will ensure that a more strategic approach can be taken to the funding and provision of training and, in the context of funding limitations, informed prioritisation of training provision can be implemented (see Section 4).

Development scenarios are based on a review of past developments, the current state of industry development including the current structure of the forest resource, forecasts relating to the future development of the forest resource and current policy regarding the future development of the industry. Forecasts have been made following consultation with industry members, analysis of available data and consideration of current policy.

It should be noted that this process has proven difficult as many of the forecasts are highly subjective and dependent on many uncertain variables. In the absence of up to date cohesive policy for the industry with associated targets and funding allocations, predicting some sectoral developments is highly uncertain, particularly those which rely on significant government funding such as afforestation. For example, future activity levels within the afforestation sector are currently very uncertain due to many interrelated factors such as limited government funding availability and competition with alternative land uses. Also, future activity levels within the developing private sector timber supply chain are uncertain. While it is possible to forecast the volume of timber that will be available for harvesting from the private sector resource over the next 10 years with reasonable accuracy, it is considerably more difficult to forecast the volumes that will actually be made available for harvesting. Also, the availability or unavailability of a suitably trained workforce will have an impact on future levels of activity within this sector.

While is has been possible to identify future education & skills training needs in general terms based on forecast developments, it has been more difficult to quantify these needs in terms of human resource numbers. This is primarily due to a lack of any comprehensive database of the current workforce within each sector and their current status regarding education & skills training uptake and skills certification / accreditation within the industry (as noted in Section 2). This is particularly the case within the forest establishment sector which has a more transient workforce and a greater degree of cross-over with other land use sectors. Recommendations have been made in Section 6 to address this current knowledge gap relating to the training and skills base status of the industry workforce. Where significant increases in operational activity have been forecast (predominantly within the timber harvesting sector) estimates of additional manpower requirements and associated training needs have been made.

The consultation process involved discussions with a broad range of industry representatives with ongoing training needs. This process proved useful in assessing requireers’ definitions of current needs and the drivers behind these needs. However, many of the specified needs were non strategic and were driven by a requirement to satisfy changing health & safety policy and / or tendering pre-qualification criteria, often defined in terms of specific training course certification titles such as “NPTC PA6”. This analysis has attempted to assess training needs at a broader, more strategic level while taking into consideration the requirement for a background level of training relating to the attainment of certified training outcomes.
3.1.1 Quantifying the Scale of the Irish Forest Industry Workforce

The Irish forest industry, comprising growing, harvesting and processing of forest products makes a significant and growing contribution to the Irish economy. Output in 2008 was an estimated €1.89 billion, or just under 1% of GDP\textsuperscript{28}. While there are no current statistics available for exact employment numbers within the various sectors of the forest industry, the total employment directly engaged in growing and using forest products or engaged in related sectors was estimated to be over 16,000 in 2004\textsuperscript{29}. A more recent study on the economic impact of the forestry and wood products sectors in Ireland, published by COFORD in 2008, provides the following estimates of employment full-time equivalents (FTEs) specifically within the forestry sector and the sawmilling and panel board sub-sectors of the wood products sector:

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employment (FTEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry Sector</td>
<td>3,780</td>
</tr>
<tr>
<td>Sawmilling</td>
<td>1,607</td>
</tr>
<tr>
<td>Panel board manufacture</td>
<td>705</td>
</tr>
<tr>
<td>Total:</td>
<td>6,092</td>
</tr>
</tbody>
</table>

Table 3: Estimates of Employment Full-Time Equivalents\textsuperscript{30}

This is a significant workforce which is forecast to grow further over the next decade and face changing knowledge and skill requirements and associated training needs. Allowing a modest annual budget of €250 per FTE for the maintenance and development of the skill base of the existing workforce would require over €1.5 million in annual training expenditure.

It should be noted that these employment figures do not include farm forestry owners, now totalling approximately 16,000, many of whom will work to varying degrees within their own forests.

3.1.2 The General Requirement for Education and Skills Training within the Irish Forest Industry Workforce

A skilled and educated workforce is an essential component to the success and sustainability of all industry sectors. This is particularly relevant to the forestry sector which involves a very wide range of operations associated with a relatively high degree of health & safety and environmental risk, often performed in isolated locations with low levels of management supervision.

There has been a large investment in education & skills training within the Irish forestry sector over the past 20 years, funded by the Irish government with considerable support from the EU, particularly during the 1990s. However, education and training is an ongoing process and given the continued expansion of the Irish forest resource, averaging over 9,000 hectares of new planting per annum during the past 10 years, there is a definite need for maintaining a strong focus on developing the knowledge and skills base of our growing workforce.

In order to analyse education and skills training needs it is necessary to break the industry down into several sub-sectors. These are listed below. It should be noted that there is often cross over between these sub-sectors.

- Forest Establishment
- Forest Nursery
- Forest Management
- Timber Harvesting
- Timber Haulage
- Timber Processing

\textsuperscript{28} COFORD (2009). FORESTRY 2030; Irish Forestry and the Economy.
\textsuperscript{30} COFORD (2009). The economic impact of the forestry and wood products sectors in Ireland.
Among these sub-sectors there are several types of training required including:

- Training of new entrants to the workforce
- Training of the existing workforce in new skills / knowledge
- Refresher training of the existing workforce
- Retraining of the existing workforce to work in different sub-sectors

Forestry education and skills training requirements cover an extensive range of subject matters. These can be broadly classified into the following groupings:

- Gaining a basic awareness of a particular subject matter / operation to appreciate the subject / operation and promote further learning / training uptake;
- Gaining specific knowledge and skills to be able to do the job correctly to a pre defined specification and to required output / efficiency levels;
- Gaining specific knowledge and skills to minimise health & safety risks and optimise workforce and public safety;
- Gaining specific knowledge and skills to minimise environmental risks;
- Gaining specific knowledge and skills to ensure compliance with occupational health & safety regulations & guidelines;
- Gaining specific knowledge and skills to ensure compliance with environmental regulations & guidelines;
- Gaining specific knowledge and skills to perform operations more efficiently (in some cases making best use of available technological developments) in order to reduce the cost base of our timber supply chain.

3.1.3 Predicting Sectoral Education and Skills Training Needs

For each of the sub-sectors listed in Section 3.1.2 above we have:

- a) Documented future development scenarios (with associated rationale) and presented an estimate of potential activity within the sector over the next 10 years;
- b) Identified any significant changes in forecast manpower requirements to meet forecast activity demands;
- c) Outlined in general terms the main education & training needs associated with the sector;
- d) Identified any specific training initiatives that may be required and that should be prioritised.

This analysis has focused on general trends and likely directions within the industry regarding activity levels within sectors, development of new sectors and changes within sectors resulting in new training needs. It should be noted that the process of forecasting sectoral activity levels is difficult. For example, private sector afforestation activity levels are largely driven by current levels of funding, and timber harvesting activity levels are driven by prevailing market conditions. Also, the terms of reference for this training needs analysis includes reference to the outcome of Forest Service policy reviews which were scheduled for completion in early 2011 but are currently, as of yet uncompleted and not yet within the public domain. In the absence of defined government policy on the future development of the forestry sector, assumptions have to be made based on current and past developments. For example, a cessation of government support for the construction of forest roads to meet the timber harvesting requirements of private sector forests would have the effect of reducing levels of timber harvesting activity within the private sector and reducing demand for skilled operatives required within the timber harvesting sector.
3.1.4 Identification of Major Trends in the Development of the Industry that may Impact on Education and Skills Training Needs

In order to plan for changing education & skills training needs it is important that past and future trends in the development of the industry are identified and considered in the analysis of training needs and the formulation of a prioritised education & skills training delivery strategy. A list of the major trends and forecasts are presented below. These are considered further within the individual sectoral analysis in Sections 3.2 to 3.8.

Forest Establishment Activity:

- There is an ongoing level of afforestation activity within the private sector, albeit at significantly lower levels than those reached in the mid 1990s. While future levels of activity are uncertain primarily due to uncertainties regarding government funding of the afforestation programme, afforestation activity is unlikely to increase significantly in the short to medium term.

- Coillte are no longer pursuing an afforestation policy and virtually all of their forest establishment activity is now focused on re-planting of clearfelled areas.

- The majority of reforestation activity will continue to be focused in Coillte forests where over 98% of current activity is occurring. It is estimated that reforestation activity will average approximately 6,900 hectares per annum over the 10 year forecast period.

- Ireland’s forest nursery stock production facilities have been largely consolidated in recent years into two main production centres with a combined capacity of between 40 and 50 million plants, sufficient to meet and exceed the forecast demands of the afforestation and reforestation sectors. Production processes have been streamlined and significant technological advances have been made in relation to vegetative propagation, plant nutrition and cold storage.

---

31 Source: Forest Service (2010).
Timber Harvesting Activity:

- Large areas of the private sector forest resource are now at or approaching the thinning phase. It is estimated that there are over 7,500 hectares of private forestry suitable for thinning this year (2011) and that potential annual thinning harvest areas will increase steadily over the next 10 years to over 15,000 hectares\(^{32}\). If these volumes are to be realised, there will need to be a significant increase in timber harvesting activity within the private sector.

![Figure 2: Forecast of Potential Net Realisable Volume Production from Private Sector Forests (2011 to 2020)](image)

- Reported timber harvests from the private sector are beginning to follow an upward trend, in line with forecasts of net realisable volumes. There is a notable increase in management activities relating to timber harvesting and sales within the private sector\(^{33}\).

![Figure 3: Recent Harvesting Activity within Private Sector Forests (2006 to 2010)](image)

- The combined potential net realisable volume production from Coillte and private sector forests is forecast to increase by 22% over the next 10 years.


\(^{33}\) Applications for Felling Licences and forest road construction grants show an ongoing upward trend (Forest Service Monthly Activity Reports).

\(^{34}\) Sources: UNECE Timber Committee Market Reports for Ireland (2007 – 2009); COFORD / Forest Service (2011); Teagasc Forestry Development Department (2011).
While Coillte’s potential annual harvest volume is forecast to remain relatively stable over the next 10 years at about 2.8 million m$^3$, the current age class structure of the Coillte forest estate will result in a 25% decrease in potential clearfell volumes and an 80% increase in potential thinning volumes over this period\(^\text{35}\).

If forecast potential net realisable volume production from Coillte and private sector forests is to be harvested over the next 10 years, thinning activity will potentially increase by over 85%.

Timber Supply & Demand Estimates:

- The Irish forest products sector has traditionally utilised all roundwood which has been harvested from Irish forests. There is currently strong demand for roundwood from sawmills, panelboard mills and from the emerging wood energy sector\(^\text{36}\).

- Demand for roundwood timber from the conventional forest products sector on the island of Ireland (existing sawmills and boardmills) is forecast to increase by over 10% during the next 10 years from 3.45 million m$^3$ in 2011 to 3.83 million m$^3$ in 2020\(^\text{37}\).

- Demand for forest based biomass on the island of Ireland to meet renewable energy targets is forecast to increase by over 75% during the next 10 years from 0.95 million m$^3$ in 2011 to 1.69 million m$^3$ in 2020\(^\text{38}\).

- Combined demand for timber from the conventional forest products sector and the renewable energy sectors on the island of Ireland is forecast to total over 5.5 million m$^3$ by 2020. With forecast supply potential on the island of Ireland (including Northern Ireland Forest Service forecast volumes) reaching approximately 4.6 million m$^3$ by 2020, demand is forecast to outstrip potential supply, indicating a strong driving force for timber harvesting activity over the forecast period.

- There is a significant increase in new operations within the timber supply chain relating to wood energy production (wood chip & firewood production).

---


\(^{36}\) The Irish Forestry and Forest Products Association (2010). *An Overview of the Irish Forestry and Forest Products Sector 2010*.


Forest Management Developments, Environmental Standards and SFM:

- Coillte forests have been certified under the Forest Stewardship Council (FSC) scheme since 2001, allowing them to supply the Irish timber processing sector with certified timber, a critical development to address the increased demand from international markets for certified timber products. There is currently very little private sector forestry currently being managed under a forest certification scheme. In order to ensure future markets and associated demand for timber grown in private sector forests, it will be important that suitable certification schemes are developed (see Section 3.4).

- Environmental standards in the management of Irish forests have risen considerably over the last 20 years, in line with developing EU and national environmental regulations, forest certification requirements and a general heightening of environmental awareness within the forestry sector. Compliance with environmental standards is being driven by legislation, certification requirements and Forest Service Grant & Premium criteria.

- The Forest Service is currently revising the existing suite of six environmental guidelines and revised versions are scheduled for publication during 2012. Forest managers and operators across all sectors of the industry will be a required to adopt any new or changed guidelines into their day to day work practices.

Occupational Health & Safety Developments:

- Developments in occupational health & safety standards and associated training requirements have placed considerable emphasis on health & safety training activities (and associated certification) in recent years. This training is considered essential and when budgets and training times are limited, will often take precedence over silvicultural skills development training. This trend has been experienced across all of Ireland’s industrial and agricultural sectors.

- Coillte is currently reviewing its policy regarding minimum levels of skills training (and associated certification) for all operators, contractors and supervisors / managers operating within their forests. This review is nearing completion and will be published soon. While standards of certification for many operations will not change significantly, there will be increased emphasis on ensuring that minimum standards are met for all operations. FTEI and the Forest Service should be fully informed of these new standards once published.

Other General Developments / Considerations:

- There has been a significant move over the last 15 years to contracted forestry operations. The majority of forestry companies operating in Ireland (including Coillte) employ contracted labour to carry out their establishment, management and harvesting operations. With the exception of a few specialist areas such as inventory and timber measurement, Coillte contract out the majority of their forest operational requirements to contracting companies who tender for specific work packages. There is an emphasis on reduced management costs and the development of systems requiring higher levels of contractor self-management.

- A large number of SME’s have developed within the Irish forestry sector to serve the growing demand for contracted forest operations. For example, there are currently about 90 active timber harvesting businesses registered with Coillte39.

- There have been significant advances in the availability and use of technology within the forestry sector, particularly within the timber harvesting sector. However, many observers feel that the level of technology adoption has been low when compared to some other progressive forest industries in Europe.

3.2 Forest Establishment Sector

3.2.1 Afforestation Sector: Activity Forecast

Forecasting afforestation activity is difficult. For the purpose of this analysis we have relied on an assessment of current policy, past trends and future predictions from industry experts and observers. The current government policy for the forestry sector sets aggressive annual afforestation targets of 20,000 hectares, only ever reached in 1995 and 1996. This policy is currently under review and whilst it will not be published until 2012, it is likely that lower targets will be set based on experiences over the past decade. A review of recent private sector afforestation activity shows that an average of about 7,000 hectares was planted annually over the period 2008 to 2010\(^\text{40}\). Teagasc Forestry Development Department reports a reasonably strong demand from farmers and predicts 2011 afforestation to reach between 7,000 and 8,000 hectares\(^\text{41}\). An allocation for 7,000 hectares of afforestation was made in the 2011 Department of Finance Budget.

Coillte are currently not actively pursuing a land acquisition and afforestation programme and this is likely to be the case for the short to medium term. Government funding of the forestry sector in the short to medium term is uncertain and a significant expansion in allocations for afforestation is unlikely. Therefore, afforestation activity is unlikely to increase significantly in the short to medium term and for the purpose of this analysis an afforestation activity forecast has been set at 7,500 hectares per annum.

3.2.2 Reforestation Sector: Activity Forecast

A forecast of activity within the reforestation sector over the next 10 years has been conducted using data relating to forecast clearfell areas within Coillte and private sector forests\(^\text{42}\) and Coillte’s Draft District Strategic Plans (2011-2015)\(^\text{43}\). These data show that the majority of reforestation activity will continue to be focused in Coillte forests where over 98% of current activity is occurring (see Figure 5 below). Based on this analysis it is estimated that reforestation activity will average approximately 6,900 hectares per annum over the 10 year forecast period. The level of activity is reasonably constant, with no significant upward or downward trend, with the exception of a developing upward trend towards the end of the forecast period which is set to continue during the 2020s as levels of private sector clearfell activity increases\(^\text{44}\).

\[\text{Figure 5: Forecast of Coillte & Private Sector Reforestation Activity} \quad \text{(2011 to 2020)}\]


\(^{41}\) Source: Teagasc Forestry Development Department (2011).

\(^{42}\) Forecast reforestation activity has been derived from a forecast of potential clearfell harvest areas presented in Phillips, H. (2011). All Ireland Roundwood Production Forecast 2011-2028. COFORD, Department of Agriculture, Fisheries and Food, Dublin. It should be noted that areas forecast by COFORD / Phillips for clearfelling within the Coillte estate are somewhat higher than areas forecast for reforestation within Coillte’s 5 year district plans (2010 to 2015).

\(^{43}\) Source: Coillte (2011).

\(^{44}\) This assumes a continuation of the current government policy / legislation requiring forest owners to replant clearfelled areas.
3.2.3 Combined Forest Establishment Sector: Activity Forecast

Figure 6 below shows a combined forest establishment activity forecast for the next 10 years. It should be reiterated that while the forecasting of reforestation activity levels is a relatively reliable process, the forecasting of afforestation activity is highly subjective and actual levels may vary considerably from forecast levels.

Based on this analysis it is estimated that forest establishment activity will average approximately 14,000 hectares per annum over the 10 year forecast period.

3.2.4 Forest Establishment Sector: Future Trends in Manpower Requirements

Given that the forest establishment sector is likely to remain stable in terms of required output and associated workforce requirements over the next 10 years, future training demand from the sector is also likely to remain reasonably stable. Given the nature of the sector, comprising a large number of relatively small operators, it has not been possible to quantify its current scale in terms of contractor and operator numbers. While there is no means of assessing current capacity, an assumption can be made that a decline in recent afforestation levels will have left some over capacity within the sector. However, given the somewhat seasonal and transient nature of the sector’s workforce, it cannot be assumed that future stability in manpower requirements equates to stability in skills training demand. Initiatives to focus training resources on operators who are more permanently involved in the sector should be considered (see Section 4). An overview of training needs is presented in Section 3.2.5 below.

3.2.5 Forest Establishment Sector: Education and Skills Training Needs

General Observations: The following general observations can be made regarding the education and skills training needs of the forest establishment sector:

- Operations are dispersed and are often carried out with relatively low levels of supervision.
- It can be a transient employment sector with a high degree of seasonal work. There is significant cross over with the forest management sector (see Section 3.4).
- Virtually all afforestation activity is associated with Forest Service Grant & Premium payments. High operational standards are maintained through Forest Service Afforestation Scheme criteria.
There has been considerable training activity within the forest establishment sector over the past 15 years, targeting foresters, the contracting sector and the farm forestry sector (through Teagasc Forestry Development Department).

While some productive work is carried out within the farm forestry sector by forest owners, the majority of work is undertaken by specialist contractors.

High levels of activity within the private sector over the past 15 years have fostered a strong establishment culture among private sector foresters and a high level of expertise in this area.

**Types of Operator Training Required**: The following is a list of on-going training requirements for establishment sector operatives:

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Training Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment Operations</td>
<td>~ Ground Cultivation / Drainage Methods</td>
</tr>
<tr>
<td></td>
<td>~ Fencing</td>
</tr>
<tr>
<td></td>
<td>~ On Site Plant Storage &amp; Handling</td>
</tr>
<tr>
<td></td>
<td>~ Planting (including mechanical planting systems)</td>
</tr>
<tr>
<td></td>
<td>~ Vegetation Control</td>
</tr>
<tr>
<td></td>
<td>~ Weevil Control</td>
</tr>
<tr>
<td>Working with Machinery</td>
<td>~ Tractor Operation</td>
</tr>
<tr>
<td></td>
<td>~ Quad Bike / ATV Operation</td>
</tr>
<tr>
<td>Working with Chemicals</td>
<td>~ Pesticide Application with Knapsack Sprayer</td>
</tr>
<tr>
<td></td>
<td>~ Pesticide Application with Tractor or Quad Mounted Sprayer</td>
</tr>
<tr>
<td></td>
<td>~ Working with Chemically Treated (Dipped) Plants</td>
</tr>
<tr>
<td></td>
<td>~ Pollution Control</td>
</tr>
<tr>
<td>Occupational Health &amp; Safety</td>
<td>~ First Aid</td>
</tr>
<tr>
<td></td>
<td>~ Manual Handling</td>
</tr>
<tr>
<td>Other</td>
<td>~ Other minor training requirements including the use of hand held machinery (brush cutters etc.</td>
</tr>
</tbody>
</table>

Table 4: Summary of Establishment Sector Operational Training Requirements

While there are no significant changes forecast in the forest establishment sector manpower requirements over the next 10 years, there will be an on-going training requirement for the maintenance of the existing skills base and the training of new entrants resulting from staff turnover.
3.2.6 Forest Establishment Sector: Training Initiatives Required & Training Priorities

Along with ongoing requirements for operational and health & safety training defined above, the following training initiatives are considered priority areas:

- Training to promote more efficient and environmentally friendly management practices in line with SFM and forest certification. Principles of SFM are driving the need for more environmentally friendly management practices and this is particularly relevant in the area of pesticide use which is widely practiced at forest establishment stage. There is a need for training initiatives that focus on the development of knowledge and skills to operate a more holistic approach to forest management/ protection and a reduced level of pesticide use wherever possible. This may be particularly important if private sector forest owners & managers begin the process of attaining forest certification.

- Training initiatives should be focused on individuals and forest establishment contracting companies that are attempting to develop stable employment with relatively low levels of staff turnover. Training new planting gangs to create a short term boost in seasonal planting capacity does not represent good value for money and training should focus on more permanent, multi disciplinary operatives.

- Training & promotional initiatives to support an on-going level of afforestation within the farm forestry sector. This must be maintained if afforestation targets are to be achieved. This role is being successfully carried out by Teagasc Forestry Development Department, the Forest Service and businesses involved in the farm forestry establishment and management sector. It is important that recent increases in the workloads of Teagasc forestry advisors associated with farm forestry owners at or approaching the timber production phase (see Sections 3.4 and 3.5) does not impact upon necessary training & promotional activities within the afforestation sector.

- Training initiatives to support the introduction of revised Forest Service environmental guidelines, scheduled for publication during 2012 (see Section 3.1.4).

---

45 Coillte’s use of pesticides (recorded as kgs of active ingredient per ha) has reduced by about 60% since 2000, when it began the process of forest certification. Source: Coillte (2011).
3.3 Forest Nursery Sector

3.3.1 Forest Nursery Sector: Activity Forecasts

Forecasts for Ireland’s combined afforestation and reforestation programmes presented in Sections 3.2.1 and 3.2.2 above equate to a requirement for approximately 43 million trees per annum over the next 10 years. This is based on the assumptions outlined in Table 5 below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Area (ha)</th>
<th>Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Afforestation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coniferous species afforestation @ 70% of area</td>
<td>5,250 ha</td>
<td></td>
</tr>
<tr>
<td>Coniferous species stocking @ 2,500 plants/ha</td>
<td></td>
<td>13.12 million plants</td>
</tr>
<tr>
<td>Broadleaf species afforestation @ 30% of area</td>
<td>2,250 ha</td>
<td></td>
</tr>
<tr>
<td>Broadleaf species stocking @ 3,300 plants/ha</td>
<td></td>
<td>7.43 million plants</td>
</tr>
<tr>
<td><strong>Annual Reforestation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coniferous species reforestation @ 80% of area</td>
<td>5,520 ha</td>
<td></td>
</tr>
<tr>
<td>Coniferous species stocking @ 2,500 plants/ha</td>
<td></td>
<td>13.80 million plants</td>
</tr>
<tr>
<td>Broadleaf species reforestation @ 20% of area</td>
<td>1,380 ha</td>
<td></td>
</tr>
<tr>
<td>Broadleaf species stocking @ 3,300 plants/ha</td>
<td></td>
<td>4.55 million plants</td>
</tr>
<tr>
<td><strong>Total Planting Stock Requirements</strong></td>
<td></td>
<td>42.8 million plants</td>
</tr>
</tbody>
</table>

There are currently two principal businesses producing forestry planting stock in Ireland (Coillte and None-so-Hardy), operating on 5 nursery sites. The combined annual capacity of the two largest suppliers is between 40 and 50 million plants. This analysis concludes that there is sufficient capacity to meet forecast afforestation and reforestation planting stock demand over the next 10 years and there is additional (potential) annual capacity of about 7 million trees, sufficient to cater for an additional 2,500 hectares of annual afforestation (10,000 in total).

It should be noted that consultation with industry representatives from both the nursery and establishment sectors has stressed the importance of maintaining an indigenous nursery stock production capacity capable of meeting the demands of forecast afforestation and reforestation activity. Reliance to any significant degree on imported nursery stock is not a viable option as there is an excessive supply risk vis-à-vis available quantity, quality and species (and provenance) requirements. A secure supply of planting stock is an essential component of the sustainable development of our forest industry. This has been recognised by the Irish government who have provided considerable funding towards the on-going development of the forest nursery sector.

3.3.2 Forest Nursery Sector: Future Trends in Manpower Requirements

Given that the forest nursery sector is likely to remain stable in terms of required output and associated workforce requirements over the next 10 years, future training demand from the sector is also likely to remain stable. The two principal forest nursery businesses have a combined workforce of about 225 during seasonal peaks which cover about 70% of the year. This comprises about 40 key staff including experienced nurserymen, supervisors and machine operators, and about 185 contract labourers. An overview of training needs is presented in Section 3.3.3.

---

46 Allowing for 10% additional capacity for beating up requirements.
47 There are also several smaller nurseries supplying forestry planting stock to specialist and niche markets.
48 Consultation with None-so-Hardy and Coillte Nurseries.
49 Additional capacity is provided by smaller nurseries and imports.
3.3.3 Forest Nursery Sector: Education and Skills Training Needs

**General Observations:** The following general observations can be made regarding the training needs of the forest nursery sector:

- Operations are relatively focused (spatially) and the majority of workers operate under relatively high levels of supervision (when compared with other forestry sectors operating in the forest such as establishment and harvesting). This allows for more controlled management of health & safety risk and good opportunities for on-the-job learning when operators are working in close company with nurserymen and supervisors on a regular basis.

- The majority of workers are engaged in labour intensive operations with relatively low skill level requirements and relatively low health & safety risk. These operations include plant lining out, lifting, grading and packaging.

- A relatively small cohort of more experienced workers is engaged in operations which require a higher degree of knowledge. These include machinery operation (forklifts and tractors), monitoring of nursery stock growth, supervision of transplanting, lifting & grading, spraying of pesticides and the application of fertilisers.

- Professional nurserymen are usually trained in-house. An education (degree) in forestry, agriculture or horticulture is considered an ideal starting point when training to become a nursery manager.

- It is noteworthy that Ireland’s leading private sector nursery meets the majority of its skills training needs through in-house training and the development of a leading worker (nurseryman) system with skills being passed down from supervisors to general operatives. Training and knowledge sharing is also provided by pesticide & fertiliser suppliers at no cost. Nurserymen work closely with international nurseries in developing expertise in new nursery practices. Also, the maintenance of a very low level of contract worker turnover, by providing contract employment for the majority of the year, ensures continuity of their skills base.

- While Coillte have developed systems of in-house training for certain requirements, they are more reliant on outsourced training for some of their skills and occupational health & safety training needs, particularly those involving higher risk operations such as pesticide application. Many of these requirements are met by Coillte Training & Safety Services. While Coillte Nurseries received no funding for training from FTEI in 2010, funding for 94 candidates was received during the 2008 – 2009 period.

**Types of Operator Training Required:** The following is a list of on-going training requirements for nursery sector operatives:

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Training Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursery Operations</td>
<td>~ Plant Lifting&lt;br&gt;~ Plant Grading</td>
</tr>
<tr>
<td>Working with Machinery</td>
<td>~ Tractor Operation&lt;br&gt;~ Forklift Operation</td>
</tr>
<tr>
<td>Working with Chemicals</td>
<td>~ Pesticide Application with Knapsack Sprayer&lt;br&gt;~ Pesticide Application with Tractor Mounted Sprayer&lt;br&gt;~ Pesticide Treatment of Plants (Dipping)&lt;br&gt;~ Fertiliser Application&lt;br&gt;~ Pollution Control</td>
</tr>
<tr>
<td>Occupational Health &amp; Safety</td>
<td>~ First Aid&lt;br&gt;~ Manual Handling</td>
</tr>
<tr>
<td>Other</td>
<td>~ Other minor training requirements including the use of hand held machinery (pole saw, hedge cutter, chainsaw).</td>
</tr>
</tbody>
</table>

*Table 6: Summary of Nursery Sector Operational Training Requirements*
While there are no significant changes forecast in the forest nursery sector manpower requirements over the next 10 years, there will be an on-going training requirement for the maintenance of the existing skills base and the training of new entrants resulting from staff turnover.

3.3.4 Forest Nursery Sector: Training Initiatives Required & Training Priorities

Along with ongoing requirements for operational and health & safety training defined above, the following training initiatives are considered priority areas:

- Training to support the implementation of innovative developments in nursery practices. Training and knowledge sharing initiatives should be supported to ensure optimal efficiencies are attained in the production of forest planting stock through the adoption of new nursery practices such as Vegetative Propagation, Cold Storage Techniques and Nursery Stock Nutrition. Strategically, funding should be considered for the ongoing up-skilling of key nurserymen in new technologies in order to ensure that the Irish nursery sector maintains its highly developed status. Shared learning initiatives with other international nurseries involved in nursery stock production innovation should be supported.

- Training to increase the capacity and quality of in-house training. Efforts should be made to further develop in-house training resources wherever possible to minimise the reliance on costly external training requirements. Leading workers / nurserymen with high levels of experience should be trained as trainers.
3.4 Silviculture / Forest Management Sector

3.4.1 Silviculture / Forest Management Sector: Activity Forecasts

Ireland’s forest area will continue to increase modestly over the next 10 years. For the purpose of this analysis an afforestation activity level of 7,500 hectares per annum has been assumed, approximately equating to a 1% increase in forest area per annum or a 10% increase over the next 10 years. While this increase is modest and will be associated with modest increases in general forest management activities (not related to timber harvesting), there will be a significant shift in management requirements as large areas of private sector forests approach or enter the timber production phase. Figure 7 below shows that the percentage of forests at 15 years or older is forecast to increase from about 40% to about 65%.

![Figure 7: Forecast Percentage of Private Sector Forests 15 Years or Older](image)

3.4.2 Silviculture / Forest Management Sector: Future Trends in Manpower Requirements

Management operations between the forest establishment phase and the timber harvesting phase are primarily concerned with forest protection, forest health monitoring, forest management planning and preparations for timber harvesting operations. Operational activity is considerably lower than the establishment and timber harvesting phases and much of the activity relates to crop monitoring and management planning by foresters. Many foresters previously active in the forest establishment sector are now beginning to work in the forest management and timber harvesting sectors. While there may not be a significant requirement for additional manpower within this sector, there is an immediate need to up-skill existing foresters in the area of sustainable forest management throughout the timber production phase. An overview of training needs is presented in Section 3.4.3.
3.4.3 Silviculture / Forest Management Sector: Education and Skills Training Needs

General Observations: The following general observations can be made regarding the training needs of the forest management sector:

- Operations are dispersed and are often carried out with relatively low levels of supervision. However, most labour intensive operations are generally associated with timber harvesting activity (see Section 3.5).

- Some specific knowledge and skills gaps were identified during the consultation phase of this analysis, particularly relating to foresters / forest managers operating within the private sector. These relate to:
  - development of sustainable forest management plans based on multi-criteria decision making principles;
  - forest protection (most notably deer management and forest fire control knowledge and skills);
  - forest inventory operations and crop assessment for thinning suitability & prescription of thinning operations;
  - planning and development of forest roading requirements;
  - broadleaf silviculture.

- The incidence of *Phytophthora ramorum* in Irish forests is a recent development requiring new training initiatives to minimise the potentially harmful impact on the relatively good health status of Irish forests.

- Deer populations are increasing in many parts of Ireland and are reaching critical levels resulting in considerable economic loss. Given that current afforestation policy requires a high proportion of broadleaf planting, the management of deer populations within sustainable densities will be essential for the future success of broadleaf silviculture in Ireland. Recent studies have identified considerable knowledge gaps among foresters and forestry owners on the subject of deer management\(^5\).

- There is currently very little private sector forestry currently being managed under a forest certification scheme. In order to ensure future markets and associated demand for timber grown in private sector forests, it will be important that suitable certification schemes are developed. It is generally felt that there is no immediate need for concern in this regard as most Irish sawmills operating under a forest certification chain of custody system can currently process up to 30% uncertified timber (controlled wood) without affecting the validity of their certification status. However, from discussions with some sawmilling enterprises, it is apparent that the issue of timber processors reaching their controlled wood quotas may restrict their plans to expand their log purchasing operations within the private sector in the near future. This trend will prompt demand for the certification of private sector management systems and associated education & training requirements.

- Over the past few years, the Teagasc Forestry Development Department have begun some training and promotional initiatives within the farm forestry management sector specifically aimed at informing farm forestry owners about entering the timber production phase of forest management and how to prepare for thinning operations. They have also facilitated the formation of regional farm forestry producer groups which is beginning to stimulate activity within the sector. These initiatives are associated with specific training priorities identified in Section 3.4.4.

- Good access is an essential precursor to good forest management. Many private sector plantations have poor access and the cutting of well planned inspection paths will ensure developing forest crops can be properly monitored and prepared for timber harvesting operations. Private sector inspection path cutting operations are often a stimulus for eventual timber harvesting activity. Inspection path cutting is seen as a suitable “DIY” operation for farm forestry owner, and in particular the more active members of producer groups.

Types of Operator Training Required:  The following is a list of on-going training requirements for management sector operatives:

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Training Subjects</th>
</tr>
</thead>
</table>
| Management Operations       | ~ Formative shaping of broadleaf plantations  
|                             | ~ High pruning  
|                             | ~ Deer management including culling practices  
|                             | ~ Plant health monitoring including identification of new diseases such as Phytophthora ramorum  
|                             | ~ Cutting of inspection paths for crop surveying, management planning and timber measurement purposes  
|                             | ~ Inventory procedures  
| Working with Machinery      | ~ Tractor Operation  
|                             | ~ Quad Bike / ATV Operation  
|                             | ~ Pruning saw use (manual & mechanised)  
|                             | ~ Chain saw use for brashing & inspection path cutting  
| Working with Chemicals      | ~ Fertiliser application & pollution control  
| Occupational Health & Safety| ~ First Aid  
|                             | ~ Manual Handling  
| Other                       | ~ Other minor training requirements including the use of hand held machinery (brush cutters etc)  
|                             | ~ Training for foresters engaged in private sector forest certification initiatives with emphasis on proper management planning, environmental monitoring & management record keeping  
|                             | ~ Training for foresters moving from the afforestation sector to the forest management & timber harvesting sectors including:  
|                             |   o Site surveying / crop inventory procedures;  
|                             |   o Yield forecasting & management planning procedures including the use of new dynamic yield models;  
|                             |   o Crop assessment for thinning suitability;  
|                             |   o Prescription of thinning operations.  

Table 7: Summary of Management Sector Operational Training Requirements

While there are no significant changes forecast in the forest management sector manpower requirements over the next 10 years, there will be a significant training requirement for the up-skilling of foresters previously active in the forest establishment sector, now beginning to operate within the forest management & timber harvesting sectors.
3.4.4 Silviculture / Forest Management Sector: Training Initiatives Required & Training Priorities

Along with ongoing requirements for operational and health & safety training defined above, the following training initiatives are considered priority areas:

- Training initiatives targeted at foresters and forest management supervisors to develop knowledge and skills in the identification and management of Phytophthora ramorum outbreaks and to generally raise awareness of the new disease within the forest management sector.

- Training initiatives targeted at foresters and forest management supervisors relating to deer management including culling practices.

- Training initiatives targeted at foresters and forest management supervisors relating to fire fighting & fire management planning.

- Training initiatives targeted at forestry operatives and farm forestry owners relating to good practice in inspection path cutting. This should include basic chain saw skills (if necessary) and, most importantly, cover topics such as path lay out, path densities and mapping. Training initiatives should be focused on individuals and forest management contracting companies who intend to be actively engaged in inspection path cutting operations.

- Training initiatives targeted at private sector foresters to up-skill in timber production stage forest inventory procedures and procedures relating to the assessment of crops for thinning suitability and prescription of thinning operations (including broadleaves). There is an immediate need to up-skill existing private sector foresters in forest management practices throughout the timber production stage. These training initiatives should be offered in conjunction with other timber harvesting management skills development initiatives outlined in Section 3.5.

- Training initiatives targeted at foresters and forest management supervisors relating to the introduction of forest certification systems within the private forestry sector. This may include specific training courses relating to forest certification systems (interpretation of standards, management records, audits etc.) or more generic environmental training with emphasis on water quality and biodiversity

- Training & promotional initiatives to support an on-going level of forest management activity within the farm forestry sector.

This must be maintained if farm forestry owners are to be encouraged to take an active role in the management of their plantations. In general, higher quality plantations are associated with more active farm forestry owners and this is especially the case in broad leaf plantations where much of the intensive management activity necessary to ensure good quality stem formation can be carried out by owners following some basic training. This role is being successfully carried out by Teagasc Forestry Development Department, the Forest Service and businesses involved in the farm forestry establishment and management sector. It is important that recent increases in the workloads of Teagasc forestry advisors associated with farm forestry owners at or approaching timber production phase (see Section 3.5) does not impact upon necessary training activities within the forest management sector.

- Training initiatives to support the introduction of revised Forest Service environmental guidelines, scheduled for publication during 2012 (see Section 3.1.4).

---

51 It is noteworthy that about 75 Colitile Managers have graduated from UCC with a Certificate in Biodiversity Components of Forestry since 2002 following their move to attain and maintain forest certification.
3.5 Timber Harvesting Sector

3.5.1 Timber Harvesting Sector: Activity Forecast

For the purpose of forecasting education and skills training needs associated with the development of a skilled harvesting infrastructure to meet the demands of the industry it is necessary to make some assumptions relating to the likely levels of harvesting activity over the next 10 years. It is reasonable to assume that forecast harvest volumes from the Coillte estate will be largely realised unless there is a significant negative market event. However, predicting the degree of harvesting activity within the private sector is more complex and will depend on several factors such as the availability of forest road construction grants, the level of progress made by Teagasc and other organisations in motivating farm forestry owners to thin their crops and future timber demand and associated prices.

While 2008 & 2009 saw very low levels of harvesting activity within the private sector partly due to reduced demand and low prices, reported timber harvests from the private sector are beginning to follow an upward trend, in line with but somewhat below forecasts of net realisable volumes. There is now a notable increase in management activities relating to timber harvesting and sales within the private sector. More forest roads are being constructed and more felling licences are being issued\(^{52}\). This assessment of potential timber harvesting activity has used the most up-to-date data available, contained in the recently published COFORD document, *All Ireland Roundwood Production Forecast 2011-2028*. This up-to-date forecast presents a practical estimate of potential harvest volumes, referred to as Net Realisable Volume\(^{53}\), including forecast data from the private sector and data from Coillte’s latest Net Roundwood Forecast (2011). By using these data, levels of timber harvesting activity have been forecast along with associated estimates of manpower requirements (see Section 3.5.2)\(^{54}\).

The combined potential net realisable volume production from Coillte and private sector forests is forecast to increase by over 730,000 m\(^3\) or 22% over the next 10 years.

![Figure 8: Forecast of Combined Potential Net Realisable Volume Production from Coillte & Private Sector Forests (2011 to 2020)](image)

While Coillte’s potential annual harvest volume is forecast to remain relatively stable over the next 10 years at about 2.8 million m\(^3\), the current age class structure of the Coillte forest estate will result in a

---

\(^{52}\) Source: Forest Service Monthly Activity Reports.

\(^{53}\) Source: Phillips, H. (2011). *All Ireland Roundwood Production Forecast 2011-2028*. COFORD, Department of Agriculture, Fisheries and Food, Dublin. Using a system of geospatial analysis, the forecast volumes have been adjusted to exclude thinnings from small plots and those plantations with a potential uneconomic forest roading requirement. The author notes that actual harvested volumes will vary depending on future market conditions and may be smaller or greater than the net realisable volumes forecast.

\(^{54}\) This analysis provides an update to forecasts previously presented in the 2009 Timber Harvesting Operator Training Needs Analysis and shows somewhat lower yield forecasts from both Coillte and private sector forests and therefore somewhat lower activity forecasts.
25% decrease in potential clearfell volumes and an 80% increase in potential thinning volumes over this period.

![Forecast of Potential Net Realisable Volume Production from Coillte Forests (2011 to 2020)](image)

**Figure 9:** Forecast of Potential Net Realisable Volume Production from Coillte Forests (2011 to 2020)

If forecast potential net realisable volume production from Coillte and private sector forests is to be harvested over the next 10 years, thinning activity will potentially increase by over 85%.

![Forecast of Potential Thinning & Clearfell Activity in Coillte and Private Sector Forests (2011 to 2020)](image)

**Figure 10:** Forecast of Potential Thinning & Clearfell Activity in Coillte and Private Sector Forests (2011 to 2020)

It should be noted that not all farm forestry plantations are of a scale or in a location suitable for mechanised thinning operations and considerable areas have been assigned a no thin regime within the recent COFORD forecast referred to in this section, based on scale and access constraints. While there are several on-going initiatives to address the issues of scale and distribution of the farm forestry resource and compile more viable harvest areas through the clustering of several farm forestry sites, many sites will simply not be suitable for mechanised harvesting due to issues such as scale, site type, access and environmental constraints. These sites do have the potential to produce timber volumes and should not be totally discounted when considering potential timber harvesting activity and associated manpower and training requirements. However, while chain saw harvesting activity in such plantations may provide local revenues and employment and will release timber volumes to local processing and wood energy sectors, the cost / benefit of training initiatives within
this sector could be marginal unless they are clearly focused on full time operators providing a niche silvicultural thinning service (see Section 3.5.3).

### 3.5.2 Timber Harvesting Sector: Future Trends in Manpower Requirements

The definite upward trend in potential harvesting activity outlined in Section 3.5.1 will be associated with both additional manpower requirements and associated training demand. In the absence of a national register of timber harvesting capacity and associated skills training records, we must rely on Coillte’s comprehensive data base of timber harvesting contractors and machines to assess current manpower capacity. The majority of timber harvesting contractors currently operating within the private sector are also operating within Coillte forests and therefore Coillte’s database presents a reasonably reliable picture of current national capacity. There are currently about 300 timber harvesting machines registered with Coillte (about 160 Harvesters and about 140 Forwarders). These machines are owned by about 90 active timber harvesting contractors, ranging in capacity from 2 machines to 20 machines.

For the purpose of this analysis it is assumed that there is currently sufficient capacity (vis-à-vis machinery and operators) to accommodate existing timber harvesting activity. Estimates of potential timber harvesting activity outlined in Section 3.5.1 above have been analysed for each harvest type (1st Thinning, 2nd Thinning, Subsequent Thinning and Clearfell) in order to equate potential harvesting activity to upper estimates of manpower requirements. This analysis shows that:

- The total number of machine operators (harvesters & forwarders) required to harvest Coillte timber over the next 10 years will remain reasonably stable, at approximately 220 FTEs. However, there will be a significant increase in the number of operators required to work in thinnings. Clearfell operator requirements will fall from about 143 to 106 FTEs while thinning operator requirements will rise from about 77 to 117 FTEs (see Figure 11). This shift in operational focus may require additional training to up-skill existing operators in thinning related mechanised harvesting skills.

![Figure 11: Forecast of Machine Operator Requirements for Coillte Harvest (2011 to 2020)](image)

- The total number of machine operators (harvesters & forwarders) required to harvest private sector timber over the next 10 years will increase from about 50 FTEs to about 110 FTEs. The majority of operators will be required to work in thinnings (see Figure 12). This increase in capacity requirements will require new training initiatives focused on thinning related mechanised harvesting skills.

---

55 Recommendations relating to a national register of harvesting machinery and the development of a new Certified Thinning Operator status have been made in Section 6 of this report.

56 FTEs = Full time equivalents.
Currently, the majority of timber harvesting activity within Irish forests is carried out using mechanical harvesting systems. However, there is still a requirement for chain saw use within mechanical harvesting operations for brashing and dealing with oversized and difficult trees. An allowance for one trained chainsaw operator for every two harvesters should be considered when estimating future trends in manpower requirements. This equates to a current requirement for about 75 chainsaw operators, increasing to about 95 over the next 10 years. The manpower requirements and associated training demand to service potential levels of motor manual harvesting activity within smaller scale private sector plantations is uncertain.

Many foresters previously active in the forest establishment sector are now beginning to work in the forest management and timber harvesting sectors. Therefore, while there may not be a significant requirement for additional management manpower within the timber harvesting sector, there is an immediate need to up-skill existing foresters in the area of forest management throughout the timber production phase. An overview of training needs is presented in Section 3.5.3.

57 Dedicated chain saw operators are engaged in some mechanical harvesting operations while some machine operators may carry out any necessary chain saw work themselves. However, specific chain saw skills and safety training is necessary, and in the case of Coillte operations, skills certification is also required.
3.5.3 Timber Harvesting Sector: Education and Skills Training Needs

**General Observations**: The following general observations can be made regarding the training needs of the timber harvesting sector:

- Operations are relatively dangerous and dispersed and are often carried out with relatively low levels of supervision. Timber harvesting machinery is very expensive and requires highly skilled operators to maximise their productive potential and make harvesting operations economically viable. This is particularly the case in private sector thinning operations where harvest areas can be relatively small. A detailed analysis of training requirements specific to timber harvesting machine operators working in thinning operations was commissioned by FTEI in 2009.\(^5\)

- The Irish forest industry will require significant additional capacity in the mechanical timber harvesting sector if potential net realisable volumes are to be harvested over the next 10 years.

- Mechanised timber harvesting operations require a very wide skills base, incorporating both operational and silvicultural skills. Many observers feel that there is currently a shortage of silvicultural skills among operators which are of particular importance in thinning operations.

- With increasing environmental restrictions being placed on timber harvesting sites, Coillte’s annual harvest includes more and more sites considered to be very environmentally sensitive. It is estimated that up to 400,000 m\(^3\) of Coillte’s 2.8 million m\(^3\) annual harvest forecast is on such sites. In order to ensure the continuation of harvesting operations within more environmentally sensitive catchments and thus ensure the attainment of future timber supply forecasts, Coillte have identified an increasing need for highly trained specialist timber harvesting contractors that are expert in sensitive harvesting operations and minimising environmental impact.

- Certification of driver skill levels, knowledge and experience specific to harvesting machine type (harvester or forwarder) is currently a pre-requisite to the awarding of contract work by Coillte to mechanised timber harvesting operatives. This is not the case within the private sector. However, many certified timber harvesting contractors are operating across both sectors.

- Some specific knowledge and skills gaps were identified during the consultation phase of this analysis, particularly relating to foresters / forest managers operating within the private sector. Some private sector foresters are currently being guided by timber harvesting contractors regarding the prescription and implementation of thinning systems. The knowledge gap in this area needs to be addressed so that foresters can work confidently with timber harvesting contractors to make informed decisions together. A concerted education and training initiative to address the training needs of foresters crossing over from the establishment sector to the forest management & timber harvesting sector may well be a catalyst for the release of potential volumes from the private sector. Knowledge and skills gaps identified include:
  - Harvest site planning & managing health & safety risk on harvesting sites;
  - Silvicultural monitoring / control of thinning operations;
  - Appreciation of harvesting machine technology regarding calibration, log specification, measurement & production recording capabilities;
  - Timber supply chain management, timber security issues and linking private timber supply into existing control systems;
  - Timber measurement (pre & post sale).

- There is a substantial level of expertise among timber harvesting contactors which should be tapped into when developing any future training initiatives.

- There is an ongoing trend towards greater utilisation of on-board technology within mechanised timber harvesting operations. This is being largely driven by developments within Coillte’s timber supply chain management systems.

---

There are currently 18 producer groups registered with Teagasc and there is a growing demand for education and skills training within this new sector, including skills training to prepare some owners to carry out their own thinning operations. However, while chainsaw harvesting activity in small scale plantations may provide local revenues and employment and will release some timber volumes to local processing and wood energy sectors, the cost / benefit of training initiatives within this sector could be marginal unless they are clearly focused on full time operators providing a silvicultural thinning service to a number of forestry owners. At a time of limited training funding, the forestry sector should not develop a policy to fund chainsaw skills training for a large number of farm forestry owners as returns on investment (volumes harvested per € spent on training) will be low when compared to main stream forestry operative training.

Types of Operator Training Required: The following list of on-going training requirements within the timber harvesting sector has been prepared based on consultation with industry representatives:

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Training Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Harvesting Operations</td>
<td>A comprehensive listing of training subjects relating to mechanical harvesting operations is documented in the 2009 Timber Harvesting Operators Training Needs Analysis (Section 6.2.3). Some additional training subjects are listed below:</td>
</tr>
<tr>
<td></td>
<td>- Cable &amp; skidder extraction systems</td>
</tr>
<tr>
<td></td>
<td>- Chainsaw skills to support mechanical harvesting operations</td>
</tr>
<tr>
<td></td>
<td>- Thinning &amp; extraction systems in broadleaf plantations</td>
</tr>
<tr>
<td>Chain Saw Harvesting Operations</td>
<td>- Thinning &amp; extraction systems in broadleaf plantations (with associated chainsaw skills training if necessary)</td>
</tr>
<tr>
<td></td>
<td>- Thinning &amp; extraction systems in conifer plantations (with associated chainsaw skills training if necessary)</td>
</tr>
<tr>
<td></td>
<td>- Extraction methods suitable for smaller scale harvesting operations</td>
</tr>
<tr>
<td>Environmental Awareness</td>
<td>- Safe transportation &amp; use of chemicals / pollution control</td>
</tr>
<tr>
<td></td>
<td>- General Forest Environment Awareness</td>
</tr>
<tr>
<td></td>
<td>- Specialist training for mechanised harvesting on environmentally sensitive sites</td>
</tr>
<tr>
<td>Occupational Health &amp; Safety</td>
<td>- First Aid</td>
</tr>
<tr>
<td></td>
<td>- Manual Handling</td>
</tr>
<tr>
<td></td>
<td>- Managing health &amp; safety risk on harvesting sites (HIRA)</td>
</tr>
<tr>
<td>Technology Adoption &amp; Use</td>
<td>- Optimal use of harvesting machine technology systems (e.g. calibration, log specification, measurement &amp; production monitoring systems) and associated communication of data from these systems to timber supply chain managers</td>
</tr>
<tr>
<td>Other</td>
<td>- Training for foresters moving from the afforestation sector to the forest management &amp; timber harvesting sectors including:</td>
</tr>
<tr>
<td></td>
<td>o Harvest site planning</td>
</tr>
<tr>
<td></td>
<td>o Managing health &amp; safety risk on harvesting sites</td>
</tr>
<tr>
<td></td>
<td>o Development of skills relating to thinning tree selection and timber quality management / monitoring during thinning operations (thinning control);</td>
</tr>
<tr>
<td></td>
<td>o Appreciation of harvesting machine technology regarding calibration, log specification, measurement &amp; production recording capabilities</td>
</tr>
<tr>
<td></td>
<td>o Timber supply chain management &amp; timber security issues</td>
</tr>
<tr>
<td></td>
<td>o Linking private timber supply into existing control systems</td>
</tr>
<tr>
<td></td>
<td>o Timber measurement (pre &amp; post sale)</td>
</tr>
</tbody>
</table>

Table 8: Summary of Timber Harvesting Sector Operational Training Requirements
3.5.4 Timber Harvesting Sector: Training Initiatives Required & Training Priorities

Forecast changes in the timber harvesting sector manpower requirements over the next 10 years should be considered in planning future training initiatives. It is estimated that training initiatives to cater for about 35 new harvester operators and 25 new forwarder operators will be required to develop harvesting capacity in line with forecast increases in timber harvesting activity over this period. Increased thinning activity within Coillte’s forecast timber harvesting operations may require additional training initiatives aimed at up-skinging about 23 harvester operators and 17 forwarder operators. There will also be an on-going training requirement for the up-skingling, certification and maintenance of the existing workforce.

The following training initiatives are considered priority areas:

- Training initiatives to increase mechanised timber harvesting capacity (within thinning operations), focused on new entrants who can demonstrate a long term commitment to the sector and who ideally, but not necessarily, already have some forestry sector skills and experience.
- Training initiatives to increase silvicultural skills among existing timber harvesting machine operators, focused on best practice within thinning operations.
- Training initiatives to up-skill a small number of specialist harvesting contractors (about 15 to 20) for operations on highly sensitive sites, focusing on specific skills to minimise environmental impact.
- Training initiatives that support the development of more efficient harvesting systems, focused on cost minimisation and resource optimisation. This should include initiatives to up-skill existing harvesting machine operators, particularly in relation to efficient practices in first thinning operations to improve the economic viability of smaller scale operations. It should also include initiatives to optimise the adoption of ICT systems (by operators and foresters) and the communication and use of harvesting machine data through the timber supply chain.
- Training initiatives that will specifically result in the release of potential timber volumes from the private sector forestry resource.
- Training initiatives targeted at private sector foresters to up-skill in timber harvesting management skills including timber measurement (pre & post sale), thinning control and harvesting site management.
- Training & promotional initiatives to encourage and support timber harvesting activity within the farm forestry sector. Training activity in this sector must be maintained if farm forestry owners are to be encouraged to take an active role in the management of their plantations and ensure that potential volumes of timber are released from the farm forestry sector. This role is currently being carried out by Teagasc Forestry Development Department, the Forest Service and businesses involved in the farm forestry management sector. Teagasc has become increasingly active in this sector over the past two years, resulting in the establishment of many new farm forestry producer groups.
- Training initiatives that will increase the capacity of specialist chainsaw thinning operators with high levels of silvicultural skills. Initiatives should include both chainsaw skills training and silvicultural training and should be focused on individuals and companies who intend to be actively engaged in motor manual thinning operations in broadleaf and conifer farm forestry crops.
- Training initiatives to support the introduction of revised Forest Service environmental guidelines, scheduled for publication during 2012 (see Section 3.1.4).

---

This assumes that existing clearfell capacity is comprised of harvesting machine operators who are dedicated to clear felling operations and have no experience in thinning operations. This is not always the case as some operators regularly cross over between clear felling and thinning operations.
3.6 Timber Haulage Sector

3.6.1 Timber Haulage Sector: Activity Forecasts

This sector involves the road transportation of unprocessed logs from the forest to the processing sector in timber trucks. Virtually all haulage operations are carried out by contracted hauliers working either for Coillte (primarily within the pulpwod sector) or for sawmilling businesses. As outlined in Section 3.5, the combined potential net realisable volume production from Coillte and private sector forests is forecast to increase by over 730,000 m$^3$ or 22% over the next 10 years. If potential harvest volumes equate to harvesting activity, there will be a similar 22% increase in timber haulage activity.

3.6.2 Timber Haulage Sector: Manpower Requirements

Assessing current and future haulage capacity is difficult, primarily due to the fact that not all timber trucks (and their drivers) are dedicated to log haulage operations. There are currently over 400 timber trucks registered on Coillte’s weight docket database. However, only about 120 trucks are considered to be moderately to fully active, hauling at least 9,000 m$^3$ of logs annually, equivalent to about one load per working day. 90% of all log haulage activity is associated with about half of the registered trucks / drivers.

For the purpose of assessing potential requirements for additional lorry drivers to accommodate a 22% increase in timber haulage activity, an annual capacity of 12,000 m$^3$ has been used, reflecting a full time log lorry hauling about 1.5 loads per working day. Therefore, an increase in timber harvest volumes of 730,000 m$^3$ equates to about 22,800 lorry loads or about 60 full time log lorry drivers. However, much of this additional activity may be accommodated by existing, underutilised capacity and improvements in timber allocation efficiencies and haulage logistics, resulting in shorter haulage distances (see Section 3.6.3 below).

3.6.3 Timber Haulage Sector: Education and Skills Training Needs

General Observations: The following general observations can be made regarding the training needs of the timber haulage sector:

- The timber haulage sector is characterised by a highly transient workforce. While there is a cohort of regular drivers primarily hauling logs, there are many part-time drivers and drivers engaged in other haulage sectors. Any training initiatives targeted at this sector may be inefficient unless they are focused on full time log lorry drivers.
- Timber haulage operations involve a high degree of interaction with the general public when compared with other sectors. Timber haulage operations are predominately on public roads with potential health & safety risks affecting the general public.
- There has been a marked absence of training initiatives aimed at the timber haulage sector with the exception of basic training in the use of sawmill Automated Weighbridge Systems. With a current industry spend on log haulage in the region of €30 to €35 million, some industry members involved in the timber supply chain feel that the industry should develop a more inclusive attitude to this sector with regard to skills training with a view to ensuring optimal occupational health & safety, public safety and operational efficiencies.
- While there is a Code of Best Practice for timber haulage operations in Ireland, certification of driver skill levels, knowledge or experience specific to timber lorries is currently not considered when awarding contract work to timber hauliers. Coillte is currently reviewing this position and may be introducing new minimum standards in the area of timber lorry driver certification.

60 Analysis of Coillte 2010 weight docket records. It is assumed that the majority of trucks hauling private sector timber will also be hauling some Coillte timber and will therefore be registered on their weight docket system.
61 Assuming an average load volume of 32m$^3$.
Coillte are currently engaged in assessing the feasibility of moving to a system of delivered in timber sales for most or all of their annual timber production. Such a move would involve the tendering of large volumes of timber haulage work with significant potential for the development of improved efficiencies through route optimisation, centralised timber haulage coordination and more strategic timber allocation. The successful implementation of such a system will require a level of up-skilling among timber haulage contractors and timber truck drivers.

Many timber truck drivers currently working within the Coillte forest resource have become accustomed to the main forest locations within their catchment. However, the private sector forestry resource is new territory to them, in new areas, relatively dispersed in nature. The adoption of innovative systems to assist in efficient harvest site location will improve haulage efficiencies. Training initiatives may be necessary to ensure the adoption of such systems.

Types of Operator Training Required: The following list of on-going training requirements for timber hauliers has been prepared based on consultation with industry representatives involved in the management of timber haulage operations:

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Training Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber Haulage Operations</td>
<td>~ Driver CPC (Certificate of Professional Competency)</td>
</tr>
<tr>
<td></td>
<td>~ Crane Operations – Log Loading &amp; Unloading</td>
</tr>
<tr>
<td></td>
<td>~ Safety Signage</td>
</tr>
<tr>
<td></td>
<td>~ Safe Loading &amp; Correct Timber Load Securing</td>
</tr>
<tr>
<td></td>
<td>~ Efficient / Optimal Loading (use of on-board weighing devices)</td>
</tr>
<tr>
<td></td>
<td>~ Driving on Forest Roads</td>
</tr>
<tr>
<td></td>
<td>~ Fuel Efficient Driving Practice</td>
</tr>
<tr>
<td></td>
<td>~ Route Planning</td>
</tr>
<tr>
<td></td>
<td>~ Use of Satellite Navigation systems and innovations such as Loc8Codes (particularly relevant for locating new, private sector harvesting sites)</td>
</tr>
<tr>
<td></td>
<td>~ Compliant Working within Coillte Timber Removal Permit System</td>
</tr>
<tr>
<td></td>
<td>~ Compliant Working within Private Sector Timber Sales Dispatch System(^{63})</td>
</tr>
<tr>
<td></td>
<td>~ Use of Sawmill Automated Weighbridge Systems</td>
</tr>
<tr>
<td>Environmental Awareness</td>
<td>~ Dealing with oil and diesel spillage.</td>
</tr>
<tr>
<td></td>
<td>~ General Forest Environment Awareness</td>
</tr>
<tr>
<td>Occupational Health &amp; Safety</td>
<td>~ First Aid</td>
</tr>
<tr>
<td></td>
<td>~ Driving Legislation including Tachograph Use &amp; Legislative Compliance</td>
</tr>
</tbody>
</table>

Table 9: Summary of Timber Haulage Sector Operational Training Requirements

3.6.4 Timber Haulage Sector: Training Initiatives Required & Training Priorities

Forecast changes in the timber haulage sector manpower requirements over the next 10 years should be considered in planning future training initiatives. It is estimated that up to 60 new drivers may be required to develop haulage capacity in line with potential increases in timber harvesting activity over this period. There is an on-going training requirement for the up-skilling and certification of the existing workforce, particularly if new levels of lorry driver skills certification are adopted by Coillte.

The following training initiatives are considered priority areas:

- Coillte is currently reviewing its policy regarding minimum levels of skills training (and associated certification) for timber lorry drivers operating within their forests (see Section 3.1.4). If proposed changes are implemented there will be an immediate need for training and

\(^{63}\) See [www.itga.ie/docs/MTSSApril2010.pdf](http://www.itga.ie/docs/MTSSApril2010.pdf) for details.
certification of between 200 and 400 existing operators through short (one day) courses. Funded training initiatives should be focused on timber truck drivers who have a track record of active participation within the sector. The criterion for assessing sector participation levels should be based on records of recent volumes hauled. The training of about 200 drivers would account for about 90% of timber haulage activities.

- Training initiatives within the timber haulage sector should also be focused on up-skilling timber haulage contractors and timber supply managers in more efficient haulage practice (possibly as part of Coillte’s initiative to develop a more centralised approach to timber haulage logistics).

3.7 Timber Processing Sector

To date, FTEI has not provided funding for education and skills training initiatives specifically targeted at the timber processing sector. However, the following brief analysis has been presented to provide some background information for assessing the priority of any future training initiatives within this sector:

3.7.1 Conventional Timber Processing Sector (Sawmills & Boardmills)

- As noted in Section 3.1.4, demand for roundwood timber from the conventional timber processing sector on the island of Ireland is forecast to increase by about 10% during the next 10 years, indicating a modest growth forecast in processing activity.

- During a significant period of development in the 1990s, skills training initiatives funded by the Forest Service were targeted at the timber processing sector through Enterprise Ireland. Training initiatives were primarily focused on the adoption of new developments in timber drying and grading. Since then the Irish sawmilling sector has developed significant in-house expertise in these areas, with additional expertise being sourced from specialist technology & machinery suppliers.

- The majority of workers operate under relatively high levels of supervision and a lot of training activity relating to the manufacturing process is conducted in-house. There are on-going training requirements in areas such as occupational health & safety, machinery operation, manufacturing processes, product specification testing and quality control systems. Also, many companies within the processing sector play an active role in the procurement of their annual log requirements. They are actively involved in the timber harvesting and haulage sectors with associated training needs (see Sections 3.5 and 3.6).

- While there are no significant changes forecast in the conventional timber processing sector manpower requirements over the next 10 years, there will be an on-going training requirement for the maintenance of the existing skills base and the training of new entrants resulting from staff turnover.

- Training initiatives should prioritise the introduction of more efficient and environmentally friendly manufacturing processes in line with international best practice and market trends. Priority should also be given to training initiatives relating to the manufacture of new, value added products.

3.7.2 Emerging Wood Energy Sector

- As noted in Section 3.1.4, demand for forest based biomass to meet renewable energy targets is forecast to increase by over 75% during the next 10 years. While it is uncertain whether forecasts of energy policy target related demand will result in similar increases in activity levels within the wood energy supply chain sector, significant growth in this sector is forecast.
As well as training requirements noted in 3.7.1 above, there are some specific training needs associated with this sector. These include:

- Alternative timber supply chain systems involving whole tree harvesting & chipping;
- Approaches to timber drying and the attainment of target moisture contents;
- Pellet production;
- Wood chip production;
- Firewood production;
- Wood fuel quality control and the attainment of quality standards within the wood fuel products sector.

There are many small scale enterprises emerging within this sector, particularly within the woodchip and firewood sub-sectors. These enterprises are utilising relatively dangerous equipment and some observers note that there has been a shortage of formal machine operator training initiatives within the sector.

The wood energy sector has the potential to provide a substantial market for timber harvested from the developing farm forestry sector, while generating local employment. Training initiatives that combine education and skills training within the farm forestry harvesting sector and the local wood fuel production sector should be prioritised.

3.8 Forestry Student Sector

The education and skills training requirements of forestry students in Ireland are largely accommodated by the expert in-house teaching resources provided by UCD, WIT, UL and Ballyhaise (see Section 2). However, there are some specialist operational skills training requirements that must be outsourced to Coillte and private sector skills training providers, and which are funded by FTEI64. The following brief analysis has been presented to provide some background information for assessing the priority of any future training initiatives within this sector:

- Outsourced skills courses for 3rd level students primarily relate to chainsaw use and pesticide application, but also including courses on planting, forestry fencing, timber measurement and occupational health & safety.
- There is currently strong demand for forestry courses both at FETAC and HETAC levels and this demand is expected to continue for the foreseeable future as employment opportunities within the forestry sector continue to grow and demand for land based studies among Irish students increases. While outsourced skills training courses are not compulsory elements of these forestry courses, they are strongly encouraged, particularly in the context of ensuring practical work experience placement for students.
- There are between 60 and 65 forestry students entering college annually. While there is some cross over between colleges65, this number gives a good indication of future demand for outsourced skills training within the forestry student sector. A modest allocation of two skills courses during a student’s education equates to an annual demand of between 120 and 130 courses.
- There is strong consensus that basic operational skills training should be prioritised for forestry students. They form an important part of forester training programmes and are seen as a strategic investment in people who are committed to the industry and who will play an active role in its development. The attainment of practical forestry operational skills provides students with the required skill sets (and associated certification) to seek productive work within various sectors during their education and upon graduating. Practical skills such as chainsaw operation and pesticide application compliment forestry knowledge and provide self employment / entrepreneurial opportunities for graduates. However, if training budgets are limited, funded skills training initiatives should be prioritised for students attending more vocational forestry courses such as Ballyhaise and WIT. Also, further priority should be given to students who show a definite aptitude for / interest in a more vocational career path.

64 Depending on annual budget allocations. 
65 For example, about four Ballyhaise students progress to WIT annually.
Section 4
Identification of Education & Skills Training Priorities

4.1 Introduction

This section outlines a list of priority education and skills training needs facing the Irish forestry sector over the next 5 years. It is based on findings from an assessment of likely future trends within the industry that will affect future training needs (outlined in Section 3). The overriding trends are summarised below:

- The management cycle of a significant area of the private sector forest resource is now moving from the establishment phase to the timber production phase, bringing with it a significant increase in potential timber harvesting activity, the majority of which will be focused in first and second thinnings. Activity levels may be affected by a shortage of knowledgeable foresters & owners and skilled operatives. There is a limited timeframe for first thinning operations to be carried out. If first thinning operations are not carried out on time a non-thinning regime will be prescribed by default and timber harvesting activity (and associated timber production) will be delayed for many years. For potential harvesting activity to be fully realised over the next 5 years the following will be required:
  - Private sector forestry owners (primarily within the farm forestry sector) will have to be informed and motivated to begin to place their potential timber harvests on the market;
  - Existing private sector foresters will have to begin to prescribe and manage forestry harvesting operations;
  - An increase in mechanised timber harvesting capacity will be required, specific to thinning machine operators. Some additional skills may be required to operate within the private sector;
  - An increase in motor manual timber harvesting capacity will be required, specific to broadleaf thinning / re-spacing operations and thinning of small plantations considered too small for harvesting with conventional mechanised systems.

- Potential increases in private sector timber harvesting activity and associated timber sales to the processing sector will eventually bring about a requirement for certification of private sector timber. Currently, quotas for non-certified timber (controlled wood) means that demand for private sector certification may not reach a critical point within the next 5 years. However, controlled wood quotas will not be sufficient to absorb all of the potential private sector timber supply in future. Given that there will be a lead in time for certification initiatives to yield certified timber supply, there may be a requirement for the initiation of private sector certification schemes within the next 5 years.

- There will be a significant increase in thinning operations within Coillte’s timber harvesting activities. As with the private sector, Coillte are facing an increase in mechanised timber harvesting capacity requirements specific to thinning machine operators.

4.2 Maintaining Existing Workforce Skills

As noted in Section 3, there is an on-going “background” level of training required to maintain the forestry workforce across all sectors in terms of skills levels and training certification status. This need is extremely difficult to quantify due to the lack of any comprehensive database of the current workforce within each sector and their current status regarding education & skills training uptake and skills certification / accreditation within the industry. Much of this need will be driven by the requirement for refresher training which is an integral part of current skills training and certification systems. This need must be accommodated by future training activities. However, whether or not it is a funding priority is a matter for the funding bodies including FTEI and the Forest Service.

Refresher training is a major element of annual training needs. This is particularly relevant to the higher risk operations including chainsaw use and pesticide application. It is suggested that any
future refresher training should only be funded under the proviso that a new national skills training register / database is developed and maintained in cooperation with all interested parties (see Section 6 for further details).

4.3 Prioritising Education & Skills Training Needs

The identification of priority training needs can be a subjective matter and the various interested parties will present compelling reasons for the prioritisation of training activities within their sector. In the current context of reduced funding for forestry education and training activities a clear system of needs prioritisation is required to ensure that training initiatives essential to the development of the industry are provided and that funding for less-essential training is postponed. Section 4.4 outlines a summary of priority areas for education and skills training within the Irish forestry sector over the next 5 years. The underlying criteria for these prioritised needs is that existing or developing knowledge and skills gaps relating to these areas may hinder the optimal development of the industry.

The presence of a well established forestry sector training resource within both Coillte and the private sector means that many of the on-going training needs identified in this analysis can and may well proceed in the absence of funded training initiatives. Industry members will simply have to pay for their training requirements. However, some structural developments, unlikely to proceed without some form of government support and funding, are considered necessary to ensure a more strategic and sustainable approach to the development and maintenance of the industry’s knowledge and skills base. Important proposals in this regard have been outlined in Section 6. For example, the development of a more structured and modularised certified skills training programme with up-to-date contents is proposed for full time forestry operatives, along with the development of some form of apprenticeship system. The funding of initiatives to develop new structures such as this should be considered an absolute priority.

Aside from more strategic training resource development initiatives, the following funding prioritisation criteria should be considered:

- Priority should be given to training initiatives that address skills development in areas where there is a forecast increase in activity, employment and output. For example, the analysis documented in Section 3 forecasts a significant increase in timber harvesting activity within the private sector forestry resource.
- Priority should be given to training initiatives that combine both “hard” operational skills and complimentary silvicultural skills. For example, a forestry thinning course that includes both chainsaw training and thinning control training. Operators should learn how to fell a tree effectively and safely, but they should also learn about which trees to fell and why.
- Priority should be given to training initiatives that cater for the development of skills unique to the forestry sector. Some training requirements such as first aid are common to other industries and can be sourced from non-forestry sector training providers. While this may involve requiers paying for non-forestry sector courses, at a time of limited funding for training it is important that funding is directed towards the maintenance of training resources that are largely specific to the forestry sector.
4.3.1 Prioritising Candidates

While Section 4.4 outlines prioritised training needs specific to industry sectors and groups, it does not specifically address the prioritisation of individual candidates which can also be a highly subjective matter. The following points should be considered in the context of prioritising candidates:

- Candidates should be prioritised based on their ability to demonstrate a definite volume of productive work within their sector. This might mean that they are already employed within the sector, that they have a verifiable commitment of work within the sector or that they have a well presented business plan in preparation for entry to the sector. They should not simply be "trying out" the sector. Also, training initiatives should prioritise forestry sector contracting companies that are attempting to develop stable employment with relatively low levels of staff turnover.

- Prioritisation of candidates should also take into consideration proposals for a more structured approach to skills training delivery and certification outlined in Section 6. Candidates who are registered with and actively engaged in a nationally standardised and modularised skills training programme should be given priority when allocating fully funded or subsidised training (see Section 6 for proposals relating to a new nationally accredited forestry skills learning syllabus and the development of a new apprenticeship / traineeship programme). This criterion should also include registered students undertaking a FETAC or HETAC forestry education programme (UCD, WIT & Ballyhaise).

- Candidates should be prioritised based on their supervisory level within forestry operations and their potential ability to pass on learned skills to other operatives within their sector. For example, training initiatives aimed at up-skilling managers, supervisors and foremen should be prioritised. Initiatives relating to the training of trainers to increase a company’s in-house training capacity should also be prioritised.

- Prioritisation of candidates should also take into consideration their ability to pay, or their employers' ability to pay. This is discussed further in Section 7.

4.4 Education & Skills Training Priorities

Education and skills training priorities have been listed for each sector in Tables 10 to 15 below. Training initiatives marked with ** are considered to be of greatest short to medium term priority.
### Sector: Silviculture / Forest Management

#### Capacity Gaps Identified:
- No significant requirement for additional manpower within this sector as foresters previously active in the forest establishment sector are now beginning to work in the forest management and timber harvesting sectors.
- Requirement to up-skill existing foresters in the area of forest management throughout the timber production phase.

#### Training Priorities Identified:
- Training initiatives to develop knowledge and skills in the identification and management of *Phytophthora ramorum* outbreaks**.
- Training initiatives relating to deer management including culling practices**.
- Training initiatives relating to fire fighting & fire management planning.
- Training initiatives relating to good practice in inspection path cutting**.
- Training initiatives relating to timber production stage forest inventory procedures, crop assessment for thinning suitability and prescription of thinning operations (including broadleaves)**.
- Training initiatives relating to the introduction of forest certification systems within the private forestry sector.
- Training initiatives to support the introduction of revised Forest Service environmental guidelines, scheduled for publication during 2012**.
- Training & promotional initiatives to support an on-going level of forest management activity within the farm forestry sector**.

**Table 12:** Education and Skills Training Priorities within the Silviculture / Forest Management Sector
### Sector: Timber Harvesting

#### Capacity Gaps Identified:
- Developing / forecast under capacity in this sector.
- Potential gap of up to 60 harvesting machine operator FTEs over next 10 years.
- Requirement for up-skilling existing operators for forecast increase in thinning workload.
- Training initiatives focused on private sector timber harvesting operations will help to optimise activity levels within the sector, thus releasing potential timber volumes to the processing sector and helping to stimulate employment growth. A delay in training initiatives within this sector may result in reduced activity and postponed harvesting operations until time of clearfell.

#### Training Priorities Identified:
- Training initiatives that will specifically result in the release of potential timber volumes from the private sector forestry resource**.
- Training initiatives to increase mechanised timber harvesting capacity (within thinning operations)**.
- Training initiatives to increase silvicultural skills among existing timber harvesting machine operators, focused on best practice within thinning operations**.
- Training (up-skilling) of a number of specialist harvesting contractors for operations on more sensitive sites. Specialist skills training with a focus on environmental issues and minimising environmental risk**.
- Training initiatives that support the development of more efficient harvesting systems, focused on cost minimisation and resource optimisation.
- Training initiatives targeted at private sector foresters to up-skill in timber harvesting management skills**.
- Training initiatives to increase the capacity of specialist chainsaw thinning operators with high levels of silvicultural skills**.
- Training initiatives to support the introduction of revised Forest Service environmental guidelines, scheduled for publication during 2012**.
- Training & promotional initiatives to encourage and support timber harvesting activity within the farm forestry sector, with priority given to initiatives that have the potential to yield significant timber volumes**.

Table 13: Education and Skills Training Priorities within the Timber Harvesting Sector

### Sector: Timber Haulage

#### Capacity Gaps Identified:
- Potential gap of up to 60 lorry driver FTEs over next 10 years.
- Will evolve organically due to wider haulage sector capacity.
- Opportunity to develop more structured systems to train and certify new entrants.

#### Training Priorities Identified:
- Consider a new training initiative specific to log lorry drivers aimed at improving safety, legislative compliance and efficiencies.
- If training resources are limited, the initiative should focus on a cohort of most active lorry drivers.
- Training initiatives aimed at up-skilling haulage contractors / managers in more efficient systems of workload and route management should be supported if possible.

Table 14: Education and Skills Training Priorities within the Timber Haulage Sector
<table>
<thead>
<tr>
<th>Sector:</th>
<th>Timber Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Gaps Identified:</td>
<td>~ No significant gaps identified within the conventional timber processing sector (sawmills &amp; boardmills).</td>
</tr>
</tbody>
</table>
| Training Priorities Identified:     | ~ Training initiatives should prioritise the introduction of more efficient and environmentally friendly manufacturing processes in line with international best practice and market trends. Priority should also be given to training initiatives relating to the manufacture of new, value added products. ~ Training initiatives to support the development of the wood energy sector including**:  
  - Alternative timber supply chain systems for wood energy production  
  - Approaches to timber drying and the attainment of target moisture contents  
  - Pellet production  
  - Wood chip production  
  - Firewood production  
  - Wood fuel quality control and the attainment of quality standards within the wood fuel products sector |

*Table 15: Education and Skills Training Priorities within the Timber Processing Sector*
Section 5
Review of Forestry Education & Skills Training Systems in Europe

5.1 Introduction
A review of forestry education and skills training systems in Europe has been carried out in order to identify potential models for implementation in Ireland. This has included a comprehensive desk based review, focusing on the UK, Finland, Sweden, Germany, Denmark and Switzerland. While Ireland’s forestry education and skills training structure is currently based on largely similar models to those operating across Europe, there are some initiatives that should be considered in the context of planning for future structural arrangements. These must be considered in the context of Ireland’s relatively small scale forestry sector and in the context of prevailing national budgetary constraints.

The following general observations can be made regarding the range of education and skills training systems operating in other European countries:

- In general, formalised forestry education and training systems across Europe follow a similar structure. Foresters are trained in forestry departments within colleges and universities, primarily to work in forestry management roles across industry sectors. Forestry workers or operatives are trained in forestry schools, typically under the vocational education & training (VET) model. “Work life”, on-the-job training is also common across Europe.

- The 3rd level forestry education systems across Europe do not differ significantly from those currently operating in Ireland.

- The Irish forestry sector currently benefits from educational resources across Europe and most notably the UK. Many Irish foresters have trained in UK forestry colleges including the University of Aberdeen, the University of Wales (Bangor) and the University of Cumbria (Newton Rigg).

- There is a strong focus on formal and structured systems to train new entrants to forestry operations at a vocational level. This is particularly evident in countries with large forest industries such as Finland.

- The VET model is widespread and is employed in various ways across Europe, depending somewhat on the school education systems in operation.

- In Finland, most VET programmes for forestry operatives are incorporated into a vocational upper secondary level school system, primarily focused on relatively young (16 year old) school leavers, incorporating large elements of formal teaching, including elements of schooling that would typically be included within the Irish secondary school system. Courses are typically 3 years in duration, although a considerably shorter 9 month programme is provided for adults. While students are not linked to a single employer as per the apprenticeship model (see below), work placement is a compulsory element of the training system.

- In Germany a “dual system” of vocational training is responsible for the education of two-thirds of Germany’s youth, including many entrants into the forestry sector. This system places a strong emphasis on employer sponsorship and on-the-job training. Training is provided in the workplace and in a vocational school and training programmes are 2 to 3 years in duration, depending on the level of skill required for the occupation. Trainees are employed during their programme, typically under a training contract between the employer and the trainee. The “dual” VET system of vocational training widely practiced in Germany is also common in Denmark and Switzerland.

- The dual system of vocational training is essentially an apprenticeship model, with the structured skills training modules provided by state funded forestry schools. Many European countries have recognised the benefits of the apprenticeship system within the forestry sector. The curriculum for an apprenticeship programme is based on uniform, pre-specified standards which are agreed and determined by industry.

- A recent initiative in the UK has seen the reintroduction of the apprenticeship model into the forestry sector. Forestry Commission Scotland (FCS) is currently running a two year Trees &
Timber Modern Apprenticeship programme focused on either the forest establishment or timber harvesting sector. This is partly funded by the European Social Fund. There is significant demand for this programme. A recent offering of three apprenticeship posts resulted in about 250 applications. The majority of training resources are provided in-house by FCS, including trainers and timber harvesting machinery.

- In relation to mechanical harvesting training initiatives, machinery costs can be prohibitively expensive. Vocational training models operating across Europe such as those within the Finnish forestry machine operator schools system require significant resources, unlikely to be available in Ireland in the short to medium term given the relatively small scale of our industry.
- The model of private sector provision of short courses in forestry related skills, and in particular chain saw operation, is common across Europe. Some courses are subsidised or fully funded under government grant schemes, many relating to back-to-work initiatives and private sector woodland management initiatives.
- In some European countries with larger forest industries, timber harvesting machinery manufacturers have developed comprehensive in-house training resources. Given the scale of the Irish forestry sector, it is unlikely that such resources will be developed in Ireland.
- Regarding vocational qualifications, full time forestry operator training in Europe typically leads to levels of certification under a country’s national qualification framework, similar to Ireland’s NFQ FETAC levels.
- Regarding skills certification, there are many national skills certification systems in operation, for the purpose of certifying a specific skill or skills set. For example, the UK City & Guilds National Proficiency Test Council (NPTC) has developed an extensive system of skills certification specific to the forest industry. Given that UK forestry management activities are largely similar to Ireland, NPTC has been a suitable model for Ireland to adopt in the past. Similarly, LANTRA Awards is a nationally recognised awarding body approved to develop and accredit qualifications specific to the land based and environmental sectors in the UK.
- There is currently no Europe wide system of certifying forestry skills. However, important developments are being made in the area of chainsaw skills certification through the European Chainsaw Certificate, due to be introduced in 2011. FTEI board members should be aware of a forthcoming European event specifically relating to current and future developments in the forestry skills training sector, with a particular focus on European forestry sector skills certification initiatives (3rd International Conference of Forestry Training Centres: 6-8 June 2011 in Ossiach, Austria66). This event will launch the pan-European association of forestry training centres and the European Forestry and Environmental Skills Council (EFESC), the organisation charged with the management and maintenance of skills and competence certificates within the European forestry sector.
- Many vocational forestry training schools across Europe accept foreign students and there may be some potential to develop systems of cooperative sharing of forestry training resources through training exchange programmes (see Section 7). For example, a number of Irish students from Ballyhaise College partake in an annual exchange programme with Kuru Institute of Forestry in Tampere, Finland. However, while it is highly beneficial for candidates to receive training modules within other international forest industries, particularly within specialist areas which may not be available in Ireland, the Irish forestry sector cannot rely on external education and skills training capacity to serve the majority of its own needs.
- There is a small number of UK based private sector forestry skills training providers currently offering services within the Irish market.

66 Details of this conference are available at www.eduforest.eu/doc/conf3_announcement1_en.pdf.
5.2 Potential Models for Implementation in Ireland

The dual system of vocational training or the apprenticeship model, incorporating a structured programme of training provided both in the workplace and in a vocational school should be considered for use in Ireland. There is a notable presence of such systems in many European countries and a notable absence in Ireland. It differs from the current vocational training model operating at Ballyhaise in that it requires an employment and training contract between an employer and a trainee. In particular, this model could be developed to create a more structured system of training new operatives for work within the timber harvesting sector (see Section 3.5). Currently there is no vocational training programme within the forestry sector that involves a full time formal link between employers and trainees. However, such a system could be developed in conjunction with the current Ballyhaise offering. This system would foster a higher standard of practical on-the-job learning as employers develop a vested interest in their trainees. It would also provide a means of incorporating a broader educational approach to machine operator training which is currently very focused on operational skills.

67 It should be noted that apprenticeship programmes are common across other employment sectors in Ireland under the Statutory Apprenticeship system, currently operated by FAS.
Section 6
A Strategy for the Provision of Forestry Education & Skills Training

6.1 Introduction
Priority education & skills training needs for the forestry sector have been broadly identified in Sections 3 and 4 of this report. In order to address these and other on-going needs, the Irish forest industry and its supporting government departments must develop a plan to ensure the delivery of education and skills training in a strategic manner over the coming years. This section outlines possible modifications to the systems of education and skills training currently operating in Ireland (outlined in Section 2), with the objective of developing a more strategic approach to the delivery of education and skills training initiatives. Proposals are based on a wide consultative process with industry representatives.

6.2 Maintenance & Development of 3rd Level Forestry Education Programmes
As noted in Section 2, third level forestry education in Ireland has been a strong and consistent force in Irish forestry and must be maintained in order to sustain the ongoing development of the sector.

- The current 3rd level forestry training programmes operating at UCD, WIT and UL should be maintained and developed in line with changing industry needs over time.
- The Irish forestry sector and government departments must support the continuation of a strong and focused 3rd Level forestry education resource with relevant content to prepare foresters for work in the sector.
- Teaching programmes should endeavour to strengthen links with industry across state, semi-state and private sectors.
- Teaching programmes should continue to incorporate content provided by industry members and industry members must be encouraged to participate.
- A more formal system of student placement for practical work experience with strong learning opportunities should be developed, in conjunction with Coillte and the private sector. FTEI and the Society of Irish Foresters could play a role in promoting and supporting a formal student placement initiative. Receipt of funding by forestry sector companies for training could possibly carry with it an obligation to participate in student placement initiatives.
- A programme of practical “hard” skills training courses that are considered important in the education of foresters should be formalised within forestry education syllabi. This can only be made possible if a more long term, strategic funding budget is allocated for this purpose (see Section 6.5). This also applies to Ballyhaise College (see Section 6.4).

6.3 Maintenance & Development of Teagasc Farm Forestry Training Capacity
Strategically funded training initiatives delivered by Teagasc are assisting in the on-going development of the farm forestry sector, supporting its continued expansion and, more recently, guiding its transition into the timber production phase.

- The current training resources within the Teagasc Farm Forestry Development Department should be maintained and developed in line with the changing needs of the farm forestry sector.
- Careful consideration must be given to the cohort of farm forestry owners engaging in DIY timber harvesting initiatives. Strong demand for chainsaw skills training may not yield significant thinning activity. Robust prioritisation criteria should be used to select possible candidates for any funded chainsaw skills training initiatives. Focus should be on the
development of skills that compliment timber harvesting activities and that will facilitate the release of crops to the timber harvesting sector.

6.4 Expansion of the VET Capacity at Ballyhaise and Broadening of its Scope

As noted in Section 2.4.2, there is a relatively low VET capacity within the Irish forestry sector and current student demand is high. Ballyhaise currently accommodates 18 FETAC Level 5 students. The limiting factor to enrolment is a lack of resources. Strategic investment in Ballyhaise would provide improved capacity for training skilled forestry operatives and would help to address forecast capacity gaps in trained harvesting machine operators (see Section 3.5).

- The current training resources within Ballyhaise should be developed to accommodate a specific timber harvesting course with emphasis on the development of a range of forestry skills, with particular emphasis on those that compliment mechanical timber harvesting operations. Specific recommendations relating to the development of a new structured system for training new harvesting machine operators have been presented in the 2009 FTEI Timber Harvesting Operators Training Needs Analysis.

- Strong consideration should be given to the development of a harvesting machine simulator facility at Ballyhaise as part of a new timber harvesting course. This can only be made possible if a more long term, strategic funding budget is allocated for this purpose (see Section 6.5).

- Development of modularised teaching components that accommodate a new traineeship / apprenticeship system (see Section 6.9) for both the establishment and timber harvesting sectors.

- A programme of practical “hard” skills training courses that are considered important in the training of forestry operatives should be formalised within the VET syllabus at Ballyhaise. To facilitate this, a permanent skills training and assessment resource should be developed within Ballyhaise College for the delivery of specific skills training initiatives that are currently being outsourced (including specialist training courses in chainsaw operation). A qualified trainer within Teagasc could deliver the “hard” skills training requirements within the Ballyhaise FETAC course while also catering for some of the prioritised “hard” skills training needs within the developing farm forestry producer group sector (see Section 6.3).

- An adapted version of the Coillte harvesting machine training course could be used to provide formal machine training resources within the new timber harvesting course. The inclusion of this into the course and / or traineeship programme, along with the inclusion of a harvesting machine simulator facility, would gain significant support from timber harvesting contractors who are reluctant to assign machine time to complete novices. Again, more long term, strategic funding budget allocations would be required for this purpose (see Section 6.5).68

- A more formal system of student placement for practical work experience with strong learning opportunities should be developed, in conjunction with Coillte and the private sector. FTEI and the Society of Irish Foresters could play a role in promoting and supporting a formal student placement initiative. Receipt of funding by forestry sector companies for training could possibly carry with it an obligation to participate in student placement initiatives.

---

68 FTEI have funded a number of harvesting machine operator courses run by Coillte. However, these have not been part of a strategic forestry training course or traineeship.
6.5 Development of an Adapted FTEI Funding Strategy

The majority of training needs are currently being identified on an annual basis and are being addressed, if funding is available, through the provision of short term, highly specific skills training courses. This is necessary to deal with the day-to-day training needs of the industry. However, a more strategic approach to funding and delivery of education & skills training initiatives is required. While some initiatives have been introduced to strategise the delivery of training needs within the industry\(^6\), further developments are required. The current system of funding allocation for skills training is short term, with very limited scope for the accommodation of longer term training needs. The following developments are proposed:

- **Development of a multi-annual funding allocation and budget, based on a longer term strategic plan for training delivery (see below).** This would allow the development and delivery of a more strategic training programme and would support the sustainable development of training resources within the private sector and Coillte.

- **Division of training budgets into short term and longer term allocations:**
  - **Short term budget:**
    - To cater for the ongoing background demand across all sectors for immediate skills training and certification. The system would continue to operate in its current format with a clearly pre-defined prioritisation system, but would, over time, be based on a new nationally accredited forestry skills learning syllabus (see Section 6.6).
  - **Longer term budget:**
    - A specific education sector allocation to cater for the formal incorporation of practical “hard” skills training courses into forestry college syllabi. If necessary, prioritisation should be given to more vocational courses;
    - Strategic allocations for training initiatives to address forecast gaps in workforce capacity and associated education & skills training needs. For example, this analysis has identified potential gaps within the timber harvesting sector. Specific budget allocations should be made to provide training for a number of new harvesting machine operators, possibly in conjunction with proposed developments within the VET sector (see Section 6.4). Such allocations should be advertised and promoted widely in order to attract strong interest from suitable candidates. Similarly, specific budget allocations should be made to address the training needs of foresters crossing over from the establishment sector to the timber harvesting sector;
    - Strategic allocations to deliver a more comprehensive suite of skills training courses aimed at a group of new entrants and existing workers outside of the formal education / training system (see Section 6.6). This would allow the development of FTEI traineeships or apprenticeships whereby registered candidates working in the industry and meeting pre-defined criteria, would be allocated a range of skills training courses to be taken over a pre-defined period (see Section 6.9);
    - Strategic allocation for some structural developments proposed in this report, unlikely to proceed without some form of government support and funding. For example, the development of a new nationally accredited forestry skills learning syllabus, the development of a national forestry skills database and the development of a new apprenticeship / traineeship programme. FTEI is seen as a suitable vehicle for co-ordinating (and funding) important strategic developments such as these and such activities are within its remit.

- **Implement a system of training needs definition for all applications for training funding, irrespective of requirer.** Some developments have already been made in this area in relation to the farm forestry sector where applications for chainsaw skills training courses from producer groups now require a statement of need along with a demonstration of planned / secured work programmes. A similar system should be implemented for all applications.

\(^6\) A more strategic analysis of the training needs specific to thinning machine operators over the next 10 years was conducted by FTEI in 2009; FTEI is currently implementing a robust system of needs definition / analysis prior to the funding of certain skills training initiatives.
Currently training needs from some requirers are simply a listing of course titles with proposed numbers attending. These should be expanded to clearly outline the basis for the requirement and a more detailed description of the specific training required. Applications for candidate training should be accompanied by available records of all prior certified training outcomes (to facilitate proposals to develop and maintain a national forestry skills register outlined in Section 6.8).

- At a time of limited training funding FTEI should develop and publish clear systems of prioritising funded training initiatives, incorporating recommendations presented in Section 4.3.
- With a more strategic, longer term training delivery programme, FTEI would be in a position to develop a longer term tendering system for the provision of required training services. This would help to foster the development of a more sustainable training resource, particularly within the private sector.

6.6 Development of a Nationally Accredited Forestry Skills Learning Syllabus

Currently, the majority of skills training initiatives funded by FTEI are stand alone courses which cannot be combined to form a recognised qualification for forestry workers within the Irish forestry sector. There is strong consensus among training providers and requirers that there is a need for a nationally accredited forestry skills learning syllabus to facilitate more structured and strategic delivery of training initiatives for both existing operatives and new entrants. This should be combined with a standardised and progressive accreditation system linked to the NFQ FETAC structure.

Teagasc are currently undertaking a review and revision of their NFQ Level 5 and Level 6 forestry certificate courses in order to comply with new FETAC awards requirements. This process includes the revision of existing course modules, the development of new modules and the structuring of modules (termed Minor Awards) and their associated credit values that combine towards Major Awards at NFQ Levels 5 and 6. While this initiative is being undertaken by Teagasc Ballyhaise on behalf of the Teagasc Curriculum Development Unit in order to facilitate the migration of their existing courses to new FETAC awards structures, it presents an opportunity for the Irish forest industry to develop a nationally accredited syllabus covering a broader spectrum of education and training modules.

This development will not take place unless it is strategically planned and managed by a single body with support and input from all sectors of the Irish forest industry. FTEI is seen as a suitable vehicle for co-ordinating (and funding) this necessary development and strategic funding provision should be allocated for this purpose (see Section 6.5).

- While the system would be administered by FTEI, it must have industry “ownership” and must be designed by the industry, promoted by the industry and fully supported by the industry.
- The design of the syllabus should incorporate a more holistic approach to training course content to ensure that both knowledge and hard skills are included. This is a very important element in the development of a well trained workforce, particularly at a time when supervision levels are reducing and operator self-management is becoming the norm. Rather than simply providing skills training to carry out a particular task (e.g. “how to fell a small or medium sized tree”), training initiatives should also focus on impairing important elements of knowledge to candidates allowing them make informed decisions relating to the forest operations in which they are involved. For example, a course in chainsaw operation should include elements of silviculture including the planning, cutting and mapping of inspection paths, thinning intensity, thinning systems, thinning control, urea application etc..
- Funding for new syllabus development work should be considered, as this can be time consuming and it may not be practical to expect sufficient voluntary input from training requirers and providers. Also, consideration should be given to the development of e-learning material as part of the new syllabus, to facilitate easier access to syllabus content.
- Strategic funding allocations would be necessary to deliver the syllabus, depending on candidate demand. To qualify for funded training courses within the syllabus, candidates would register with FTEI with a view to completing a number of modules over time. While modularised accreditation would be within the structures of the FETAC awarding body, all
candidates would be registered and monitored under a new national forestry skills register (outlined in Section 6.8).

- The syllabus would promote continuous learning in a format that is recognised by the industry and could facilitate the development of new grades for progressive forestry workers, making entry into the forestry sector more attractive and helping to retain more progressive workers. For example:
  - Forestry Technician (General)
  - Forestry Technician (Establishment & Management)
  - Forestry Technician (Inventory & Harvesting)
  - Forestry Technician & Machine Operator (Forwarder)
  - Forestry Technician & Machine Operator (Harvester)
  - Forestry Technician & Machine Operator (Harvester) – Master (Sensitive Sites)

- FTEI should consider adopting a policy of funding allocation that prioritises the delivery of learning / training modules which can be combined to result in an industry recognised award or accreditation. Training would be prioritised for those who are actively engaged in progressive, accredited learning.

- A nationally accredited forestry skills learning syllabus would facilitate the development of FTEI traineeships or apprenticeships whereby registered candidates working in the industry and meeting pre-defined criteria would be allocated a range of skills training courses to be taken over a pre-defined period (see Section 6.9).

- Design and delivery of certain modules could be undertaken by the Forest Service. For example, training modules relating to the revised Forest Service environmental guidelines, scheduled for publication during 2012.

- Once adopted, participation in accredited training could be incentivised by linking accreditations with Forest Service regulatory controls associated with grant funded operations and felling regulation, similar to the current system applying to Forest Service Approved Foresters.

- Specific occupational health & safety training requirements could be combined into a single training programme that specifically prepares forestry workers for safe work practice within a forestry environment, similar to the “Greenpass” system70 recently introduced into the golf course management sector. This would involve elements such as risk assessment, solo working practices, manual handling, basic first aid and accident response procedures. It would provide employers with a standardised, accredited means of assessing a forest worker’s health and safety training status.

6.7 Develop a Nationally Standardised System of Skills Certification / Accreditation

There is currently no single national certifying system / body for forestry skills certification in Ireland. While there are a number of certifying systems currently in use (FETAC, NPTC, “Coillte”, Lantra Awards), there is a clear requirement for a national industry standard. Similarly, there is no nationally recognised system of certifying and monitoring training competency within the forestry sector. There is also a lack of available information about skills training certification options within Ireland and about what levels of certification employers and companies awarding forestry work contracts currently require. An initiative to address these gaps is required in order to capitalise on future training programmes. This is particularly important in the context of developing a new nationally accredited forestry skills learning syllabus which would require associated systems of assessment and certification.

---

70 Details of this land based occupational health and safety initiative are available at www.thegreenpass.ie/.
6.8 Development of a National Forestry Skills Register

While Coillte maintain a record of formal training activities conducted within their own sphere of operations, and FTEI have developed a training database relating to Forest Service funded skills training activities since 2007, there is currently no centrally compiled national database of forestry sector skills training activity and skills certification. This makes the on-going analysis of training needs and the strategic planning for the provision of skills training initiatives very difficult.

- It is understood that Coillte are currently developing a skills & certification database for all employees and contract workers operating within their forest properties. FTEI and the Forest Service should seize this opportunity to cooperate with Coillte in developing this initiative into a national, industry wide resource. A long term, strategic funding budget allocation would be required for this purpose.
- The development of a national forestry skills register would compliment other strategic initiatives aimed at improving forestry education and skills training structures in Ireland, including the establishment of a nationally accredited forestry skills learning syllabus (see Section 6.6) and a nationally standardised system of skills certification / accreditation (see Section 6.7).
- Such a register would support the ongoing analysis of specific training needs within the industry, allowing a more strategic approach to the planning of future training initiatives. It would prove very useful in monitoring the re-training / re-certification requirements relating to more dangerous forestry operations such as chainsaw use.
- A national forestry skills register could be combined with a national register of timber harvesting machinery operating in Ireland, providing a useful resource for monitoring current mechanical harvesting capacity and forecasting gaps in future capacity.
- Such a register could be developed in conjunction with proposed initiatives relating to continuous professional development (CPD) within the Society of Irish Foresters and the Forest Service register of Approved Foresters operating within their systems of forestry grants and felling licence regulation.

6.9 Development of a Traineeship / Apprenticeship Programme for Forestry Operatives

As noted in Sections 2 and 5, there is a notable lack of any structured, formalised and nationally accredited system of workplace training for forestry workers employed within the Irish forestry sector. Such systems are widespread across Europe and are a recognised, effective and respected way for new workers to begin a career path within the forestry sector or for existing workers to formalise their status within the industry.

- It is proposed that a traineeship / apprenticeship programme is established for forestry workers within the forest establishment / management sector and the timber harvesting sector.
- This could be developed in conjunction with the current Ballyhaise offering, and eventually accommodated under a nationally accredited forestry skills learning syllabus proposed in Section 6.6.
- This initiative would require the support of the forestry contracting sector as this is currently the primary direct employer of forestry workers. Government funding from FÁS could be sourced to provide Course Participant Training Allowances or Apprentice Training Allowances (see Section 7).
- A pilot project involving a number of progressive contracting companies within the forest establishment / management sector and the timber harvesting sector should be initiated.
- This could accommodate existing workers who wish to build on their learning experience to date or new employees, specifically recruited to follow the new apprenticeship scheme.
- Strategic funding allocations would be necessary to develop and manage the traineeship / apprenticeship programme and provide for specific training resource allocation for candidates throughout their scheduled periods of formal training outside of the workplace.
6.10 Other Proposed Strategies for the Delivery of Education & Skills Training Needs

- **Formal Training Initiatives Run by the Forest Service**
  The Forest Service could become more active in the education and training of foresters and industry operatives in areas of policy, regulation, legislation and grant schemes. Structured training courses could be provided periodically on a range of highly relevant topics including forestry grant scheme silvicultural & administrative procedures and environmental guidelines. This form of training could also be extended into forestry colleges with up-to-date course modules on grant schemes and regulation being provided by practicing Forest Service inspectors.

- **Private and Semi-State Sector Involvement in Forestry Education**
  Forestry colleges incorporate some elements of teaching from Coillte and private sector foresters into their courses, sometimes paid and sometimes voluntary. This is seen as a very useful component of forestry teaching programmes. At a time of limited funding for education and training, an initiative to encourage practicing foresters to provide some voluntary teaching/training time should be considered. Such an initiative would strengthen links between forestry training and industry. A campaign to develop this initiative could be run by FTEI.
Section 7
Education & Training Support Requirements and Potential Funding Sources

7.1 Introduction

For many years and particularly during the 1990s the majority of training activities undertaken within the Irish forestry sector were provided free of charge, funded by the Irish government and the EU. In 1997, the Liaison Group on Education & Training in the Forestry Industry\(^7\) reported that "training and education must be linked to some form of inducement / reward scheme as appropriate. This may take the form of payment for attendance, refusal of grants or certification leading to career advancement". As noted in Section 1, forestry skills training initiatives have always been highly dependent on government funding. Periods of reduced funding have resulted in a significant decline in training activity. Levels of training activity may decline if sufficient funding is not made available to fully or partially cover the cost of current training requirements.

The development of proposed initiatives outlined in Section 6 will require a more long term, strategic approach to education and skills training funding within the forestry sector. However, in the current climate of government department budgetary constraints, funding is uncertain and long term budgets may be difficult to secure. This section identifies some initiatives to encourage entry into the forestry workforce and active participation in formal training initiatives. It also identifies a range of potential funding sources outside of existing conventional sources.

7.2 Supports and Incentives to Encourage Participation in Forestry Education and Skills Training Initiatives

Training providers in Ireland and internationally have noted that the level of uptake for forestry education and skills training initiatives is considerably higher if they are provided free of charge. However, other supports and incentives can result in improved rates of training uptake. These include:

- The existence of a clearly defined career path which forestry workers can progress through, attaining certified recognition of their relative status within the industry and benefiting from increased pay rates over time.
  The development of a nationally accredited forestry skills learning syllabus along with a traineeship / apprenticeship programme with associated training structures would help to encourage participation in formal training. As noted in Section 5, the recent reintroduction of a structured apprenticeship programme by Forestry Commission Scotland has met with very high demand from prospective candidates, allowing the selection of a very high calibre of trainee with a high industry retention rate following the completion of their formal training programme\(^7\).
- Delivery of training initiatives that will help candidates develop improved skills to do their job more efficiently (in less time, using less chemicals, using less fuel).
  The financial benefits of improved efficiencies must accrue to the forestry operative to some degree, not just to their employer or the company awarding their work contracts. Well planned training courses that provide a balance between health & safety focused training modules and efficiency related skills modules will help to make training initiatives more attractive and help to justify the payment of training fees in the absence of funding. Training initiatives need to be promoted in a better light, clearly outlining their multiple benefits.

\(^{72}\) Personal communication with Forestry Commission Scotland Learning & Development Section.
• The setting of certified training requirements within the industry that incentivise training uptake.
For example, a change in Coillte’s policy regarding minimum standards of skills training certification for operations within their forests will result in compulsory uptake of forestry training courses, irrespective of funding availability. Similarly, minimum educational qualifications criteria for listing on the Forest Service register of Approved Foresters results in compulsory uptake of forestry education courses.

• The development of a higher public profile for forestry careers options and associated education and training requirements.
The forest industry in Ireland has a relatively low profile, and information concerning careers opportunities and associated education and training requirements is limited and somewhat disjointed. Greater effort is required to convey the importance of high standards in the skills base of our forestry workforce and to inform existing workers and new entrants of the range of training initiatives that are taking place within the sector. Given the appropriate resources, FTEI could provide a centralised web based portal for accessing information relating to all aspects of forestry education and skills training in Ireland, including information on accreditation and certification schemes, career path training options, current policy on minimum levels of skills certification for working in different forestry sectors, college courses, training providers, current training initiatives and funding options. Such an activity would fall within FTEI’s official remit and would raise the profile of forestry education and training and encourage people to engage in formal training initiatives.

7.3 Potential Funding Sources for Forestry Education & Skills Training Initiatives
In addition to existing funding structures outlined in Section 2, the following range of possible sources of funding should be considered in the development of future plans for the delivery of a forestry education and training programme:

• FÁS
FÁS administers the national budget for both training people in employment and training people for employment. With an estimated national training fund of €362 million this year, there are over 100,000 training places being provided for in 2011. FÁS funding should be considered to support training initiatives within the forestry sector and in particular the proposed development of a traineeship or apprenticeship programme for forestry operatives outlined in Section 6.

• LEADER
LEADER funding provided under the Rural Development Programme for Ireland 2007-2013 supports 100% funding for certain training and skills development initiatives. Training initiatives must address “enterprise and community development needs”. LEADER is currently providing funding opportunities for some of the developing farm forestry producer groups around Ireland.

• Skillnets
Skillnets, funded through the Department of Education & Skills, funds and facilitates training through over 60 networks of private sector companies, in a range of sectors and regions. Each network delivers training that is relevant to specific industry and member company needs. The cost of some forestry skills courses have been subsidised through this initiative in the past. Companies availing of subsidised training initiatives within the Skillnets network must become members.

• Proposed Introduction of a Coillte Training Fund
As noted in Section 2, some observers have questioned whether Coillte should qualify for funding to service their in-house training requirements, particularly when they have a well developed in-house training resource. It may be prudent for the Irish Government to consider a training levee to be placed on Coillte profits to help fund existing training initiatives such as FTEI, or the development of new initiatives such as the formation of a forestry traineeship or

---

73 Source: Department of Education & Skills website: [www.education.ie](http://www.education.ie).
apprenticeship programme proposed in Section 6, allowing a reinvestment of profits from state owned forestry enterprise into the development of an educated and skilled workforce. It could be argued that such an initiative would benefit Coillte through the maintenance and improvement of knowledge and skill levels within the Irish forestry workforce, a large percentage of which are engaged in some form of operations within Coillte’s timber growing and supply chain.

- **Leonardo da Vinci - Mobility**
  Leonardo da Vinci - Mobility is a European Union-sponsored action that aims to improve the quality of vocational education and training (VET) by supporting a range of partnership projects across Europe. This potential funding source should be considered as a practical means of initiating new skills development programmes within the Irish forestry sector. For example, it could be availed of to facilitate some of the specialist skills training requirements of the proposed traineeship or apprenticeship programme for forestry operatives (especially in relation to harvesting machine operator training) until such time as suitable training resources can be developed nationally.

- **Leonardo da Vinci - Multilateral Transfer of Innovation**
  The aim of Leonardo da Vinci Multilateral Transfer of Innovation (TOI) Projects is to improve the quality and attractiveness of the European vocational education and training (VET) system by adapting and integrating innovative content or results to new settings through working with transnational partners. This potential funding source should be considered as a means of funding the development of new training initiatives proposed in Section 6, tapping into the vast range of experience and expertise in forestry skills training within European forestry training centres.

- **Sponsorship from Forestry Machinery Manufacturers and Distributors**
  Some forestry machinery manufacturers and distributors operating in countries with large scale forestry sectors have developed their own in-house machine operator training resources. State of the art training facilities with simulators have been set up and dedicated trainers have been employed. While such resources cannot be justified within Ireland’s relatively small scale forestry sector, there is potential to develop links with machinery manufacturers and distributors with a view to availing of reduced cost training equipment (simulators) and machinery time for trainees. This funding model has been used in the UK where the UK Forest Products Association (UKFPA) forest machine operators skills development course is sponsored by both John Deere and Ponsse.

- **Course Fees**
  Attendance at some training initiatives may require the payment of a course fee by the trainee, to either partially or fully cover the costs associated with providing the course. Currently, some training initiatives within the industry are funded in this manner, with possible concessions for students or the unemployed. An example would be the recently held COFORD Timber Supply FORECAST GIS Application workshops.