

Sustainability of Irish forestry – current status and future prospects

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Abstract

Irish forestry is currently undergoing rapid expansion and it is government policy to increase the forest area to 1.2 million ha by 2030. This is intended to enable the forestry sector to achieve ‘critical mass’ in terms of timber production and to have an internationally competitive processing sector. However it is also recognised that forestry should maximise national wellbeing and be compatible with protection of the environment. Growing public awareness of, and concerns about, the non-timber benefits and impacts of forestry have led to the concept of sustainable forest management. Criteria and indicators of sustainable forest management have been developed and these can be used to measure progress. This paper reviews the recent economic, social and environmental performance of Irish forestry. It considers future sustainability under a business-as-usual scenario and identifies possible opportunities and threats. It concludes by identifying policies and measures that could lead to a more sustainable future for the forestry sector.

Background

The notion and theory of sustainable development has entered into common parlance since it was defined in the Brundtland Commission’s *Our Common Future* as “development that meets the needs of the present without compromising the needs of the future generations to meet their own needs” (Brundtland 1987). Since then it has been the subject of considerable research and debate and, even though it is subject to varying and even contradictory interpretations, it is now recognised as a desirable objective by individuals, societies, economic sectors and the global community.

Forestry is based on the management of biological resources and it is appropriate that it be managed on a sustainable basis. Indeed this has long been recognised by foresters through the concept of sustained yield. However, recent decades have seen growing societal awareness of the non-timber benefits of forests such as biodiversity, water quality, carbon sequestration and recreation (Farrell and Byrne 2002). Forestry has also been associated with negative environmental impacts such as concerns about biodiversity, water quality, landscape quality and cultural heritage. In addition, there are increasing concerns about the negative impacts of tropical deforestation.

It is against this background that the concept of sustainable forest management (SFM) has emerged. In Europe, the concept was developed through a series of Ministerial Conferences and was concluded at the Third Ministerial Conference on the Protection of Forests in Europe in Lisbon in 1998. The process defined SFM and developed criteria for it. Each criterion has a series of indicators against which progress can be measured over time. In Ireland a national framework for SFM was

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realised with the publication of the Irish National Forest Standard (Forest Service 2000a) which outlines the criteria and indicators for the implementation of SFM. This is supported by the Code of Best Forest Practice (Forest Service 2000b), which describes all forest operations and the manner in which they should be carried out in order to be consistent with SFM. Further support is provided by environmental guidelines in relation to water quality (Forest Service 2000c), archaeology (Forest Service 2000d), landscape (Forest Service 2000e), biodiversity (Forest Service 2000f), harvesting (Forest Service 2000g), aerial fertilisation (Forest Service 2001), and forest protection (Forest Service 2002).

This paper aims to review the current economic, social and environmental performance of the Irish forestry sector, identify the challenges and opportunities facing the sector, and consider what policy mixes, including investment, would improve the future sustainability of the future.

Forestry and forest policy

Forests cover 697,730 ha or 10% of the land area of Ireland (Nieuwenhuis et al. 2007). The majority of forests are coniferous plantations, with the principal species being Sitka spruce (*Picea sitchensis*). Coniferous forests account for some 80-85% of the forest estate with the balance comprised of broadleaved and mixed woodland (Nieuwenhuis et al. 2007). Since the mid 1980s government incentive schemes have led to increasing private sector afforestation and currently 30.4% of all forests are in private (mostly grant aided) ownership (Nieuwenhuis et al. 2007).

The Irish Government's forest policy was most recently defined in its 1996 strategy, *Growing for the Future* (Department of Agriculture, Food and Forestry 1996). The objective of the strategy was to expand forestry so as to maximise its contribution to national and social wellbeing, compatible with protection of the environment. The strategy adopted the target of afforesting 25,000 ha per annum up to 2000 and 20,000 per annum thereafter, up to the year 2030. This would increase the forest area to 1.2 million ha by 2030 (or 17% of the country's land area). This rate of afforestation was designed to lead to a 'critical mass' of wood production of 10 million m³ per annum, which would provide economies of scale to allow Ireland to develop an internationally competitive wood-processing industry.

Current economic performance of the forest sector

In a recently completed study, Ní Dhubháin et al. (2006) estimated that in 2003 direct output in the forestry sector was €255.4 million. Of this, €134.5 million represented gross value added (GVA), which was 0.12% of Gross National Product (GNP). For every €1 million in expenditure a further expenditure of €0.85 million is generated in the rest of the economy. Therefore the overall value of forestry to the Irish economy in 2003 was €472.4 million. Ní Dhubháin et al. (2006) further estimated that direct output in the wood products sectors (i.e. panelboard mills, sawmills and other wood products excluding furniture) was €975 million. Of this €312.3 million was gross value-added (GVA) representing 0.27% of GNP. When the indirect and induced impact of the three wood products sectors were taken into account the total

value to the economy of the three sectors was €1.65 billion, nearly 3.5 times the forestry sector figure of €472.4 million.

The afforestation targets of the 1996 strategy have not been realised, with afforestation during 1996-2003 being 71,669 ha below the target (Bacon and Associates 2004). Moreover, afforestation is now almost completely carried out by the private sector. Afforestation has been dominated by coniferous species – principally Sitka spruce. Although Government policy has set a target of 30% for the mix of broadleaf species in planting, during 1996-2003 only 15.6% of planting was broadleaf.

Environmental economists often assign approximate values to non-marketed goods by inferred values or other means that attempt to describe the value that a society derives from an environmental good. Bacon and Associates (2004) calculated the value provided by Irish forests in terms of recreation; carbon sequestration; biodiversity and conservation; landscape; water supply, quality and flood control; health; and heritage and found that the non-marketed value of forestry could amount to €88.4 million per annum.

Although the forestry sector is excluded from the European Union greenhouse gas Emissions Trading Scheme, the economic value of the contribution of carbon sequestration by forests to meeting Ireland's Kyoto commitments can be estimated by comparison with the market price for carbon credits. For example, Byrne and Milne (2006) estimated that afforestation since 1990 would create a net carbon sink of 0.8 million tonnes of carbon per year during 2008-2012. At a carbon value of €15 per tonne this would have a value of €12 million per annum.

Using a model developed in the UK, Bacon and Associates (2004) estimated that there were a total of 11 million forest visits in 2004 and valued this at €37.6 million per annum using 2004 prices.

The impact of forestry on biodiversity depends not just on the species planted and the habitats it provides, but also the use to which the land would have been put if it had not been afforested. Bacon and Associates (2004) provided a “conservative” estimate for the value of the increase in biodiversity of €1.6 million per annum for every 20,000 ha planted, assuming that 10% of the forest estate meets certain minimum standards in biodiversity enhancement. Bacon and Associates (2004) concluded that forestry in Ireland had failed to realise its potential to enhance the landscape, whereas it has a small but negative impact on the value of water supply and quality.

Current social performance of the forest sector

Ní Dhubháin et al. (2006) estimated that in 2003 direct employment in forestry was 3,780 jobs, with every 100 jobs providing an additional 90 full-time equivalent jobs in other sectors of the economy. When indirect and induced effects were taken into account the total employment supported by the forestry sector was estimated to be 7,182 jobs. Direct employment in the wood products sectors was 6,870 jobs and this increased to 12,246 jobs when the indirect and induced employment impacts were taken into account.

The total market for sawn wood in Ireland is estimated at 1.65 million m³ per annum. However, Irish-produced timber does not cover all categories of use demanded by the market. For this reason, the market that is accessible to Irish timber is smaller, approximately 1.14 million m³ per annum. Irish timber has a 65% share of the accessible market and dominates the pallet and fencing markets (Bacon and Associates 2004). There has been significant investment in the sector in recent years, with over €100 million being invested in technology and additional capacity since 1999. In the past four years sawn output to the Irish market has increased by 37% and at 361,000 m³ per annum; exports to the United Kingdom (including Northern Ireland) have doubled.

Xenopolou (2004) found that there are over 250 full-time businesses in Ireland that use homegrown hardwood, employing about 800 people on a full-time basis. There are also over 1,000 people who work with homegrown hardwoods on a part-time basis. Even still, demand for homegrown hardwoods exceeds supply, suggesting that the potential of Irish-grown hardwood has not been realised.

Current environmental performance of the forest sector

Since the early 1990s there has been considerable improvement in the environmental performance of the Irish forestry sector. Results from studies in the United Kingdom showed that forestry may have adverse effects on water quality. Subsequent studies in Irish forests found that forestry could have adverse effects on water quality in regions with low acid buffering capacity (e.g. Galway-Mayo and Wicklow), although this was not evident in Munster (see Giller and O'Halloran 2004 and references therein). Clearfelling and reforestation has been associated with increased levels of phosphorus in blanket peatland streams (Cummins and Farrell 2003). The introduction of guidelines in relation to water quality, harvesting and aerial fertilization will have helped to ameliorate these impacts. In addition, criteria and measures relating to water protection are set down in the Irish National Forest Standard (Forest Service 2000a).

Ireland is a signatory to the United Nations Convention on Biological Diversity (CBD) and is committed under Article 6B to “integrate as far as possible and as appropriate, the conservation and sustainable use of biological diversity in relevant sectoral or cross-sectoral plans, programmes and policies.” Criteria and measures relating to biodiversity are set out in the Irish National Forest Standard (Forest Service 2000a). Prior to 2001 there was little direct investigation of the implications of afforestation and forest management for Ireland's flora and fauna. Research to collect relevant information has been ongoing since 2001 (Wilson et al. 2005). Management and planning guidelines in relation to forestry and bird diversity have been published (O'Halloran et al. 2002).

Ireland is also a party to the United Nations Framework Convention on Climate Change and its Kyoto Protocol. Under the terms of the Kyoto Protocol, carbon stock changes which occur during 2008-2012 as a result of afforestation, reforestation and deforestation since 1990 can be used to offset greenhouse gas emissions at the national level, including carbon dioxide (CO₂) (Byrne and Green 2004). As part of

its Kyoto obligations, Ireland is committed to limiting its greenhouse gas emissions to 13% above 1990 levels by 2008-2012. Forestry has the potential to make a significant contribution to the achievement of this target and this has been recognised in the National Climate Change Strategy (Department of the Environment and Local Government 2000). Achieving this requires the development of a greenhouse gas inventory for Irish forests that meets international reporting requirements (Penman et al. 2004). Since the first assessment by Kilbride et al. (1999) there have been large advances regarding our understanding of carbon stocks and fluxes in Irish forests (e.g. Gallagher et al. 2004; Black and Farrell 2006; Byrne and Milne 2006). However, considerable information gaps remain, particularly in relation to soil carbon stocks and turnover rates, the carbon sequestration status of peatland forests, broadleaf plantations and non-CO₂ greenhouse gases.

All stages of the forest cycle, from afforestation to clearfelling and subsequent replanting, have an impact on the visual character of the landscape. The perception that coniferous plantations are monotonous, visually intrusive and detrimental to the traditional character of the landscape has arisen. This is particularly so in areas where forests are young (Kearney and O'Connor 1993, Ni Dhubháin et al. 2006). Given the current and expected future rate of afforestation there is a need to ensure that forestry will complement Ireland's landscape heritage. The Forest Service Landscape Guidelines (Forest Service 2000e) seek to ensure that planning and establishment of forest in the landscape is addressed adequately. Adherence to the guidelines is mandatory. Afforestation is prohibited in protected areas of landscape listed in the 1977 Inventory of Outstanding Landscapes (An Foras Forbartha 1977). All landscape aspects of forestry development must be compatible with County Development Plans. Furthermore, all afforestation projects covering areas over 70 ha require an Environmental Impact Assessment and are subject to planning permission. Projects covering more than 25 ha are referred to local authorities.

Ireland has a rich archaeological heritage that is an important source of historical information and an important educational and recreational resource. Careless or unplanned forestry development can have a negative impact on over-ground and underground archaeology. The Forest Service Forestry and Archaeology Guidelines (Forest Service 2002d) assist non-archaeologists involved in forestry development to identify archaeological sites and sets out procedures which should be followed in order to avoid site disturbance.

Future issues and challenges

The current rate of afforestation is about 13,000 ha per annum. If this trend continues, about 1 million ha, or 14-15% of Ireland's land area, will have been converted to forest by 2025. Even though this rate of afforestation is below the government target of 20,000 ha per annum, afforestation represents the single biggest land-use change over the past decade.

The challenges facing Irish forestry can be divided into two broad areas, economic and societal. First, the low rate of planting, which has fallen below the government targets every year since 1996, may mean that the national forest estate

will not have the economies of scale to compete internationally (Bacon and Associates 2004). Second, the Irish forestry sector is not yet fulfilling its potential to provide environmental and other goods to society. The importance of the environmental and social dimension of forestry has grown, mainly as a result of instruments such as the Kyoto Protocol, support for the principles of SFM and changing societal views on forests and the practice of forestry. Unfortunately, the emphasis of the 1996 government strategy (Department of Agriculture, Food and Forestry 1996) on timber production has led to a concentration on fast-growing conifer species and an under-realisation of the contribution of forestry to sustainable development more generally.

Bacon and Associates (2004) identified several reasons for the low rates of afforestation over the period since 1996, including competition for land use, lack of skills and reluctance among farmers to commit agricultural land irreversibly to a single crop. In general, forestry is challenged by uncertainties, for example regarding the availability of markets for thinnings from the private sector. If markets are not developed, then crops will go unthinned, which will in turn act as a disincentive to plant, leading to further reductions in afforestation. Government support will be necessary to compensate for such uncertainties. Under the new Rural Development Regulation, however, government subsidies for afforestation are scheduled to decline from 100% to 70% of the cost of afforestation in designated 'advantaged' areas and to 80% in designated 'disadvantaged' areas, and the payment period for annual premiums will be reduced from 20 to 15 years (Fennessy 2005). These changes will reduce planting levels substantially in the absence of any additional government funding.

The forestry sector is exposed to increasing competition from wood supply from new European Union member states, which generally have lower costs and prices. Ireland's competitive advantages are being eroded by increased costs across the sector, although costs could be reduced through reform of the timber sales area and in the areas of harvesting and transport (Fennessy 2005). A further challenge is the relatively small size of many private sector plantations, which are on average 8 ha in area but include many forests of 2-3 ha.

The ability of the private sector to achieve certification that their forests are managed and harvested according to sustainability criteria is also important, since many panel-board mills and sawmills now require roundwood to be sourced from independently certified forests (Anon. 2005).

Direct employment in forestry in 2003 was 10,650 (Ni Dhubháin et al. 2006) but difficulties are being encountered in attracting and retaining new forest workers. Fennessy (2005) cited the lack of nationally accredited forestry training courses allied to proper career structures, similar to those in other countries, which could attract and retain the young people needed to raise productivity and international competitiveness of the forestry sector.

Forests can provide vital public goods and services, but in the Irish forestry sector there is a risk that these services will be lost or underprovided because they are

undervalued. Incentives need to be put in place so that the non-market benefits of forests will be realised.

A major uncertainty into the future is the effect of climate change on Irish forests (Purser et al. 2005). This has the potential to create new threats – such as new kinds of pests and unfavourable growing conditions. National research in this area is needed to investigate these potential effects.

Future trajectory under business-as-usual

It is projected that the amount of forested land will double by 2025 but that the value of forestry and wood output will increase at a slower rate (Fennessy 2005). Both Bacon and Associates (2004) and Fennessy (2005) emphasise that the Irish forestry sector will fail to realise its full potential to contribute to sustainable development in the absence of new financial incentives and other policies to reward private foresters for the non-marketed goods like carbon sequestration, biodiversity conservation and recreation that forests provide.

Afforestation

Bacon and Associates (2004) predict that annual afforestation will rise to the Government target of 20,000 ha due to the reform of the European Union Common Agricultural Policy (CAP) and other factors. Common Agricultural Policy reforms have attempted to simplify the system of farm supports and increase the incomes resulting from payments to farmers while reducing the costs of the farm budget and reducing distortions in product markets. The most significant effect is to ‘decouple’ payments and production, allowing farmers to choose the productive output of their land while still receiving CAP payments. Depending on the level of payment to farmers, CAP reforms are expected to lead to increased afforestation as payments are no longer directed at specific production like livestock and as land leased for production is released for alternative uses (Bacon and Associates 2004).

Nevertheless, afforestation has consistently fallen short of government targets under the 1996 strategy (Department of Agriculture, Food and Forestry 1996). If afforestation continues at the current rate of about 13,000 ha per year, by 2025 up to one million ha of land, amounting to some 15% of the total land area of the country is likely to be converted to forests. Approximately two thirds will be privately owned forest, mainly owned by farmers, with the balance in public ownership. Private forests are expected to be small and scattered and have an average size of just 8 ha (Fennessy 2005). By 2025 grants for afforestation and annual premiums may have been substantially reduced or even discontinued (Fennessy 2005).

Economic trends

According to Fennessy (2005), the Irish forestry sector is expected to harvest 6 million m³ of roundwood annually by 2025, with roughly equal amounts being produced by the private and public sectors. Output in 2025 is expected to be about 75% sawlog and 25% pulpwood. The real price of roundwood in 2025 may be lower than current prices, and the forest contracting and other support infrastructural

services may be operating at marginal profitability. The residential construction industry might expand its use of timber frame to 50% of new construction (in 2005 it was 27%), but the share of the construction market supplied by domestic sawnwood is likely to be limited. According to the Foresight 2025 report (Anon. 2005), the forestry sector has the potential to provide sustainable employment for up to 20,000 rural dwellers and also contribute to farm incomes. This depends on training for those engaged in forest management, harvesting and transport, and processing (including farmers as well as those employed in the sector), as well as a mix of state and private funding and investment and sustained funding for a strategic research programme.

Projected environmental trends

The Irish forestry sector can expect a continued emphasis on the environmental benefits of forestry and their integration with forestry's socio-economic functions. The development of the Irish National Forest Standard (Forest Service 2000a), the Code of Best Forest Practice (Forest Service 2000b) and the suite of supporting guidelines has helped to strengthen the environmental performance of forestry and this will continue in the future. However, given the current and projected future rate of afforestation it is necessary that these guidelines, as well as current legislation and forest practices, be reviewed and enforced in order to ensure successful implementation of SFM. Ongoing research will enable assessment of guidelines and identify changes which will improve the environmental performance of Irish forestry. Increasing emphasis on environmental issues at national and European Union level will further stimulate the need for sustainable development. Certification will remain an important issue and will become increasingly important for the private sector as timber output from these forests grows.

A number of current initiatives will assist the implementation and delivery of SFM. The National Forest Inventory will provide an up-to-date assessment of the national forest estate and will be a vital resource in planning future management. In addition, the forthcoming Indicative Forest Strategy will assist in the assessment of the potential for forestry development in a particular area, taking into account environmental and other constraints. Potential changes in forest management will have positive environmental benefits. These include continuous cover forestry, which, in contrast to clearfelling, involves the use of silvicultural systems whereby the forest canopy is maintained at one or more levels without clearfelling (Forestry Commission 1998). This practice is already being set up at demonstration level by Coillte (Ni Dhubháin et al. 2005) and will deliver potential benefits in terms of biodiversity, water quality, landscape and amenity. If the rate of broadleaf afforestation stays at current levels, there may continue to be an overdependence on exotic conifers. Continued population growth and increasing affluence is likely to create greater demands for amenity services from forests. However, the ability of the forestry sector to provide these services will depend on continued and increased financial support from government as well as on the willingness of the public to pay

for these services. Financial support will also be required to maintain and expand the current rate of broadleaf planting.

Carbon sequestration in forests will make a significant contribution towards the meeting of Ireland's commitments under the Kyoto Protocol. The maintenance of the carbon sink in the medium to long term requires an ongoing programme of afforestation, however. For this reason, the current rate of afforestation should be maintained until at least 2035. Research will continue to inform our understanding of carbon sequestration in Irish forests and to underpin international reporting commitments.

Forestry is likely to play an increasing role in bioenergy production. This will involve utilisation of forest residues and recovered wood. If properly supported through financial incentives this will assist in the reduction of greenhouse gas emissions and reduce dependence on fossil fuels. Furthermore, the replacement of fossil fuel intensive products, such as concrete, with timber products can assist in the reduction of greenhouse gas emissions.

Policy changes likely to make trajectory more sustainable

Irish forestry is well placed to become more sustainable in the future, but this depends on changes and developments in policy. A fundamental requirement is that the value of public goods provided by forestry (as well as other sectors) be quantified and priced and that their full value to society be included in the process of policy formulation (Fennessy 2005). The National Forest Inventory (Nieuwenhuis et al. 2007) will provide an essential resource in planning and executing SFM, but it is essential that this be repeated at 5-10 year intervals in order to provide up-to-date information for management and planning and to assist in charting progress towards more sustainable forestry. The main national contributions of the forestry sector will be in public goods provision, for instance recreational uses, carbon sequestration and biodiversity conservation. This will require financial incentives for the public goods provided by forestry, as well as increased and sustained investment in nationally accredited forestry training courses, technology research and development (Fennessy 2005).

Bacon and Associates (2004) presented three sets of projections for the long-term sustainability of the Irish forestry sector. If the current rate of afforestation of about 13,000 ha per annum continues, the period 2030-2040 would see a major increase in output of timber for processing followed by a sharp contraction in output by over 25% after 2040. Increasing the rate of afforestation to 20,000 ha per annum would provide a much more stable level of timber output into the future. For this reason, Bacon and Associates (2004) concluded that afforestation at a rate of 20,000 ha per annum is the most appropriate minimum target to secure a sustainable commercial processing sector.

Such a rate of afforestation might secure the economic sustainability of the forest sector, but it is equally important that afforestation and forest operations in general have due regard for the natural and cultural environment, in particular biodiversity and archaeological features. Although Forest Service guidelines have been

developed for a range of areas, including archaeological protection, biodiversity conservation and water quality, there is a need to check whether the guidelines are achieving their objectives. Where necessary this should be carried out by establishing monitoring mechanisms and targeted research projects. Furthermore guidelines may need to be tailored to specific needs such as regional differences in geology, soils and climate, as in the case of the water quality guidelines.

Given the long-term nature of forestry there is a need for studies on the impact of projected climate change on the productivity and viability of Irish forests. Forestry has a central role in the achievement of national compliance with the Kyoto Protocol. The potential role of forests in any post-Kyoto international agreements on climate change will be closely linked to the continued achievement of afforestation targets. Continued research will be required to meet international reporting requirements and to advance understanding of carbon cycling in Irish forests.

Forestry can also play a significant role in renewable energy and financial support for this is likely to increase. With the growing interest in green energy, many of the 30,000 part-time farmers that Ireland is expected to have in 2025 as well as a number of the projected 10,000 full-time commercial farmers, will be producing wood biomass as an important component of their farming enterprises.

The environmental contribution of forests will require further government support. For example, forests could be supported under the EU Natura 2000 programme, which provides funding for areas that have been designated as special areas of conservation. Fifty percent of proposed Natura 2000 sites have forest areas. Traditional commercial agriculture and forestry is not possible on Natura 2000 sites, but economic activities such as leisure, tourism and hunting are possible. The aim is to achieve multi-functional forestry on these sites. This means that the non-timber benefits of forestry are emphasised and landowners are compensated for the loss of timber or other land use related revenue. According to Bacon and Associates (2004), Ireland could gain additional support from the European Union for forests that place more emphasis on the management of plantations and the environmental impact and non-market benefits of forests, along the lines of the Native Woodland Scheme but such an approach would be at odds with the current focus on increased timber production. Changes in silvicultural practices, such as the adoption of continuous cover forestry, could play a significant role in promoting SFM.

Certification of Irish timber will be essential for the future competitiveness of the Irish wood-processing industry. Although Coillte forests are certified under the Forest Stewardship Council standard, attention will also focus on private sectors forests, as these plantations approach maturity and are harvested. The ability of the private sector to achieve forest certification is important since many of the panel board mills and sawmills now require roundwood to be sourced from forests that have been independently certified as well managed (Fennessy 2005).

The future competitiveness of the forestry sector will require greater cost efficiencies throughout all segments of the wood supply chain, as well as significant investment in research and development. With regard to the farm forestry sector in particular, the development of cost-effective harvesting and transportation systems is essential.

A further possible source of value from the forestry sector lies in non-wood forest products. Such products include foliage and forest tourism. Support for the development of this sector could help to compensate investors during the long period before forestry generates returns from harvesting wood.

Overall a number of initiatives are required to make the forestry sector more sustainable in the future. Among these are the following:

- commitment from Government to longer term multi-annual budgeting for the sector and continued investment in afforestation;
- comprehensive designation of forest land-use at a national level;
- management planning in all forests supported by regularly updated Forest Service inventory and area related databases;
- financial incentives designed to ensure that forestry continues to provide public goods, notably carbon sequestration, biodiversity conservation and recreational uses – promotion of public goods – should be integrated with nationally accredited forestry training courses and technology research and development;
- continued development of training and education programmes for forestry professionals, farm foresters, forest operatives and contractors;
- government support for more sustainable silvicultural practices such as continuous cover forestry;
- support for the development of markets for non-wood forest products;
- support for continued upgrading of the sawmill sector and small scale hardwood based industries;
- encouragement of investment in forestry by private sector companies and pension funds;
- integrated support for wood energy by government agencies and departments;
- management informed and led by research and development findings and continued investment in research and development.

Conclusions

Irish forests currently cover some 10% of the national land area and it is government policy to increase this to 17% by 2030, to provide a critical mass that will support the development of an indigenous wood-processing industry. Based on current trends the target for afforestation will not be met without additional policies and measures. The contribution of the forestry sector to sustainable development will also require explicit and financial government support for the social and environmental benefits provided by forestry.

Irish forests are managed in accordance with the principles of SFM as described in the Irish National Forest Standard. This is supported by the Code of Best Forest Practice and a suite of environmental guidelines. There is a need for ongoing review and enforcement of these guidelines in order to ensure that the implementation of SFM is improved. Management planning should be supported by regularly updated forest inventory data and ongoing research related to all aspects of SFM. Continued growth of the sector, in a manner consistent with SFM, will require financial support from the government. Private sector afforestation will decline if there is a reduction

in current grants and premiums. Linkages with other sectors of the economy, such as bioenergy, tourism and amenity should be encouraged. Although the non-timber benefits of forestry are recognised by SFM there is a need for these to be valued appropriately.

Acknowledgements

This paper is based on a presentation at the conference *Towards Sustainability in the National Development Plan* organised by Comhar, the Sustainable Development Council, in the Davenport Hotel, Dublin, 4-6 October 2006. Funding provided by Comhar is gratefully acknowledged.

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