- *Over 180,000 ha of private plantations have been established since 1983.*
- *Between now and 2015, private plantations have the potential to produce over 4 million m^3 in thinnings, with a forest-gate value of over €100 million and a significant added-value potential.*
- *Quality timber will always be in demand and thinning and pruning are the two ways that a grower can improve the timber quality in their plantations.*
- *There is the potential to improve the marketability of thinnings and reduce harvesting costs, by amalgamating thinning sites into larger sales packages which would be more attractive to potential purchasers.*
- *There is renewed interest in thinnings as a wood fuel or energy source.*
- *Thinning when undertaken on time and on suitable sites will increase significantly the return to the grower.*

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Realising the potential of private plantations

Henry Phillips[1]

Private plantations

Prior to 1980 there was little private afforestation in Ireland. The introduction of the Western Package Scheme in the mid-1980s provided increased grant aid for afforestation and resulted in an increase in private planting. The most significant change, however, occurred with the introduction of the Forestry Operational Programme (1989-93) which provided both grants and premiums for afforestation. The success of the first Operational Programme led the government to introduce increased grants and premiums under the Operational Programme for Agriculture, Rural Development and Forestry (1994-1997). This resulted in further increases in private planting, with 17,343 ha being planted in 1995.

After the adoption by government of *Growing for the Future – A Strategic Plan for the Development of the Forestry Sector in Ireland* in 1996 there was a change in emphasis away from state to farmer planting, the introduction of targets for broadleaf planting and a greater awareness of the environmental values of forestry. The area of private plantations established since 1982 is now more than 180,000 ha.

By 2010 some 30,000 ha of these private plantations will be due for first thinning, assuming an average yield class of 18 and first thinning age of 18 and making allowance (overall 40% reduction in area) for those plantations deemed unsuitable for thinning due to a variety of reasons including access and stability.

It is estimated that between now and 2015, private plantations will be capable of producing 4.12

Shaping this nine-year old stand of ash has increased the potential quality of and income from the timber which will be realised when the trees are felled.

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million m^3 in thinnings, provided that they are thinned on time and that markets are available (Gallagher and O'Carroll 2001). This potential thinning volume represents (a) an increasing source of raw material for the processing sector, (b) a valuable source of revenues for the private owners and (c) a source of additional employment in the harvesting, transport and downstream processing.

Experience in European countries has shown that the private sector does not always realise its full potential in terms of making available potential timber flows. The reluctance of the private sector to manage their crops to generate maximum timber flows has significant implications for the sustainability of future supplies and in consequence the sustainability and development of the processing sector. This will become increasingly important for Ireland in the years ahead as private sector volume contribution increases relative to state supplies. It is also vital to ensure a relatively smooth and increasing supply of roundwood. Failure to do this will result in cyclical peaks and slumps in future roundwood supplies making it impossible to sustainably develop the sector.

Different countries have attempted to leverage wood flows from the private sector through a variety of means including the provision of financial incentives. Finland is a case in point where the state through the Ministry of Agriculture and Forestry (MAFF) under the Forest Programme 2010 has found it necessary to provide a range of incentives including subsidies and loans to ensure the sustainability of roundwood supply into the future. The Forest Programme 2010 focuses on an increase in forest management in the tending of young stands, first thinnings and ditch cleaning and forest road reconstruction.

Realising the potential

How to realise the potential from private plantations is an important issue for the processing sector as well as for the state in view of its significant investment as well as the potential and expectations in terms of employment generation and rural development.

From a grower and processor perspective, the immediate priority is those plantations established up to 1994 which can be thinned. Over the next ten years (2003-2012), these plantations, if properly managed and tended have the potential to generate some 2.5 million m^3 in thinnings. This is equivalent to about 80% of the current annual harvesting volume of 3.1 million m^3. This resource must be tapped in order to secure the future of the processing sector.

Accessing the private resource

A certain level of forest management will be required to access this potential thinning volume. As a minimum, the following will be required in plantations:

- Provision of inspection paths;
- Basic stand mapping and timber production plan;
- Provision of access (roading and/or loading bay to an acceptable standard) where necessary;
- Measurement of thinnings;
- Thinning and thinning control; and
- Drainage and/or road repairs following harvesting.

There are a number of factors working against achieving this minimum level of management:

- Scattered nature of the resource;
- Diseconomies of scale in the private sector (small average size of plantations - mean of <9 ha);
- Lack of forestry knowledge and tradition among growers; and
- Lack of effective extension services.

What is required?

Apart from the development of additional harvesting capacity for thinnings, a number of basics are required. These include:

- **Design of basic stand mapping and timber production plan:** This would require some software for production forecasting. While software is available in the market, e.g. WoodPlan, it is too expensive for an individual owner. The issue of value for money is also relevant given a small average plantation size. However, given the strong financial case for thinning under certain circumstances, it may be possible to devise a scheme which would defray part of this cost. At a basic level, OS 6" maps showing stand location, access routes, etc. is adequate.

- **Provision of training/extension services:** The owners are not aware of the implications of how they manage their forest crops. Training and simplified guidelines for the following are required: forest management and maintenance; layout and provision of inspection paths; marking and basic forest mensuration; and thinning and thinning control. Personal extension services will be required to reinforce the basic guidelines that will be given.

Even assuming that markets are available, that the harvesting infrastructure has the capacity and that training and extension services are targeted at new owners, it is likely that a significant proportion of the potential volumes will not become available. This is due to the scattered nature and small average size of plantations which makes them unattractive purchasing prospects for processors. Based on experience from other European countries, a combination of owner collaborations and/or incentives will be required.

- **Owner collaboration:** The recent COFORD and ITC funded OptiLog study on efficiency in the timber supply chain identified the size of individual sales' lots and current measurement requirements (pre and post sale) as key cost drivers. Given the number of private owners and their distribution, some form of collaboration to amalgamate and market thinnings will be required if they are to be attractive to the harvesting contractor and the purchaser and avail of economies of scale and advances in measurement practices.

- **Incentives:** First thinning in general terms can be regarded as a break-even operation. Returns are at best marginal and not very attractive for the individual owner. However, taking a national strategic perspective, it is vital that thinnings, site and crop considerations permitting, are undertaken if an increasing and sustainable supply of roundwood to industry is to be ensured, with resulting downstream benefits such as employment and rurally-based economic activity. The figures in *Growing for the Future – A Strategic Plan for the Development of the Forestry Sector in Ireland* assume that private plantations will be thinned to provide the basis for industry development and support national policy objectives. Where this incurs a cost, as is the case in tending and thinning, the state should go some way to underwriting the costs incurred through either subsidising or provision of grant payments to undertake early thinning operations. As a minimum intervention, the state should initiate owners collaborations, as only the state has access to planting statistics, plantation locations and contact details of the growers.

The way forward

Having provisionally identified the priority areas and the basics required, the next step is to devise a phased and prioritised national thinning plan or programme with sufficient resources to ensure that the potential from private plantations is achieved. Leaving matters to market forces will result in little or no progress because the market for small diameter roundwood demands large volumes through longterm contracts. The private sector will not develop the capacity to deliver such needs organically.

As a first step, it is suggested that a pilot thinning programme for the period 2003-2008 should be developed by the Forest Service (or another agency charged with the development of the forest sector in Ireland) in co-operation with representatives of private owners, focusing initially in a number of counties with high levels of pre 1990 private plantations and proximity to traditional markets. Based on the experience and lessons learned from this pilot programme, it should be expanded to include other areas and the timeframe extended to 2012.

The main elements of the national pilot programme should include:

- Identification and validation of pilot area;
- Development of extension services and training needs;
- Development of collaborative and marketing arrangements;
- Field days and case study demonstrations;
- Development and provision of a range of enabling incentives; and
- Monitoring.

Initially the state, through the Forest Service or a forest industry development agency, should act as a catalyst for this process and the development of a national thinning programme. Concurrent with the development of this pilot programme, research is needed on alternative markets for small roundwood. The generation of revenues from thinnings and increased activity in privately owned plantations will increase confidence in the sector and encourage more farmers and land owners to afforest part or all of their holding.

Experience from other countries which have seen a rapid expansion in the number of private owners in recent years, e.g. countries in transition following forest restitution, reinforce the validity of a grower-led approach.

State benefits from a National Thinning Programme

The State would derive many benefits from the implementation of a national thinning programme in privately owned forests. These benefits include:

- **Employment:** Thinnings, especially first and second thinnings require above average harvesting inputs in terms of labour and machinery. Any increase in the level of thinning would result in a direct increase in employment in the harvesting and transport sector. This would result in further additional employment in downstream processing and service suppliers. Further additional employment would be generated through the provision of roading and infrastructure access for the privately owned plantations being thinned. The majority of this additional employment would be in rural areas, thus contributing to rural development.

- **Balance of Trade:** Ireland is a net importer of timber and timber products. An increase in harvesting will lead to an increase in processing and result in non-EU import substitution across a range of timber and timber products. Ireland is a net exporter of wood based panels and the small roundwood from first and second thinnings forms an essential element of their raw material supply. In the absence of a national thinning programme for private forests, further expansion in the panel based sector will be restricted.

- **Quality of raw material:** A national thinning programme will result in increasing quality of logs for primary and secondary processing. This will provide improved opportunities for processors to add value and increase the range and quality of products with consequent impact on imports and import substitution.

- **Environment:** Thinning increases the amount of light and opens up the forest plantations. This will have a positive impact in terms of flora, especially ground flora and on wildlife. Thinned forests support more diversity in terms of plants and animals. While the impact of a single plantation being thinned may be small, nationally the impact is significant and positive.

- **Energy:** One of the potential markets for first and second thinnings is as an energy source either for the generation of electricity, supply of heat or to do both together as combined heat and power (CHP). An essential pre-requisite to the use of wood as a source of energy is security of supply. A national thinning programme will ensure security of supply. The benefit nationally of using renewable sources of energy include:

  - Replacing imported fossil fuels with domestically produced biomass;
  - Reduction of carbon dioxide emissions by 300,000 tonnes per annum (rising to 1 million tonnes per annum by 2015);
  - Amelioration of penalties under Kyoto commitments to the value of €65 million (for first 2 commitment periods 2008-2017; discounted at 5% to 2008; assumed value of €10/tonne CO_2).

All of the above will increase the return to the state on its investment in private forestry.

At a national level, the value of the forest asset, established with significant state aid, would be greatly enhanced by the implementation of a national thinning programme. Using discounted cash flow and assuming only 60% of the private plantations will be thinned results in an increase of €70 million in the net present value of the asset, excluding land, at a discount rate of 5%.