



Indicator 3.1: Policy, legislation and support measures

While the Forestry Act 1946 regulates tree felling through general and limited felling licences, there are no statutory regulations relating to the non-wood functions of forests. Support measures for forest improvements exist within EU supported schemes and forest industries have been assisted through industrial grants. The overall objective stated in *Growing for the Future* is "to develop forestry to a scale and in a manner which maximises its contribution to national economic and social well-being on a sustainable basis and which is compatible with the protection of the environment."

Measures

- 3.1.1 Existence of policies and review mechanisms which enhance, maintain and encourage the productive functions of forests.
- 3.1.2 Evidence for the existence of adequate research and information systems including periodic forest inventories, which can provide reliable statistics for sustainable forest production.
- 3.1.3 Existence of financial incentives to support and encourage the development of the wood and non-wood productive functions of forests and forest industries.
- 3.1.4 Evidence of the regular issuing of reliable forest statistics.

Indicator 3.2: Productive capacity

Ireland's current timber production is 2.7 million m³ per annum. This will increase to 5 million m³ per annum by the year 2035. However, in order to support true competition, the operation of market forces and a range of processing industries, the critical mass for timber production is estimated as being in the region of 10-15 million m³. This is to be achieved through a programme of additional planting, primarily by the private sector.

Measures

- 3.2.1 At national level, the productive capacity of the forest estate can be determined from statistics relating to:
- national inventory data, including distributions by species and age category, and particularly forecasts of total sustainable output of goods and services;
 - trends in the ability of the forest estate to supply wood-using industries;
 - trends in the ability to meet national forecasts of wood production;
 - trends in the expenditure by industry and government on industrial development in the forestry sector;
 - records of felling licences issued;
 - evidence of appropriate rotation policies and age class structure, which facilitates production;
 - evidence of replacement of imported wood and wood products.
- 3.2.2 The ability of an individual forest area to produce goods and services can be assessed from:
- an assessment of the quality and vigour of forest stands;
 - records of removals, fellings and thinnings;
 - stock;
 - records of the extent of forest usage;
 - trends in forest age structure.

Indicator 3.3: Competitiveness of forest industries

The Strategic Plan foresees the output of timber more than doubling by the year 2030. There are two main outlets for this timber supply. Sawmills produce sawn timber and clean chips, and boardmills produce panelboards such as medium density fibreboard (MDF), oriented strand board (OSB) and chipboard from forest thinnings and sawmill residues. There are currently about 50 sawmills operating in the country. The ten largest of these directly employ 1,100 people. Exports of sawn timber were valued at IR£38 million (£48.3 million) in 1998. The furniture and joinery sector is generally fragmented, with a large number of small firms. As it is difficult to secure continuity of supply from home sources, imported timbers dominate the raw material supply for this sector.

Measures

3.3.1 At national level, the competitiveness of forest industries may be assessed from statistics relating to:



The Irish wood processing industry manufactures a diverse range of products for the home and export markets. Products such as construction sawn wood, flooring, oriented strand board and medium density fibreboard were all used in the Coillte Eastern Region HQ, Co. Wicklow. The raw material was supplied from Irish forests and comprised Sitka and Norway spruce, Douglas fir, lodgepole pine, oak and elm.

- trends in market share by forest industries (home and export markets);
- trends in industrial training needs;
- trends in ability to compete for industrial raw materials;
- trends in ability to meet health and safety standards.

3.3.2 At a local level, forest industry competitiveness can be assessed from:

- ability to maintain employment;
- ability to meet national wage agreements;
- ability to produce and market wood-products to National Standards Authority of Ireland (NSAI) standards.

Indicator 3.4: Contribution to the national and local economy

The contribution to the national Gross Domestic Product (GDP) by the Irish forestry sector was 0.3% in 1995. There has been scope for expansion in recent years with added value linkages to the national timber and furniture manufacturing sector. This contribution is expected to increase significantly over the next 20 years.

Direct employment has decreased over the last few decades, mainly due to the



mechanisation of forest operations. However, direct employment in the private sector has been increasing with the development of private contracting firms and the opening of new processing plants. One study has estimated the appropriate direct, indirect and total forestry employment multipliers as 7.79, 7.66, and 15.45 full-time job equivalents (FTEs) respectively per 1,000 ha. Additional income for forest owners is generated by renting hunting rights to sporting interests.

The Strategic Plan and the associated forestry programmes provide support measures to develop downstream forest industries. It is estimated that 11,000 additional jobs in forest activities, and additional employment in transport and processing, could be generated under the Strategic Plan.

Measures

3.4.1 National level indicators of the contribution of forestry to the economy are measured by:

- contribution of forest related activities to GDP;
- employment in forest related activities;
- jobs/man hours per unit of production;
- economic value of secondary goods and services (hunting and fishing);
- results from market research and statistics.

3.4.2 At a local level, the contribution of forestry to the economy can be measured by:

- extent of local direct and indirect employment;
- existence of forest based industries and businesses;
- wage/salary contribution to local economy and other indirect financial activity.

Indicator 3.5: Non-wood values

The literature on the total economic value of forestry suggests that the externalities associated with forestry are significant and can be of magnitudes greater than the wood benefits. However, despite the substantial investment that has taken place in forestry in Ireland, few attempts have been made to provide a reliable estimate of this total value. Existing research indicates a recreational use value for Irish forests ranging from IR£1.9 million (£2.4 million) to IR£2.9 million (£3.7 million) per annum. The monetary value of a significant number of other benefits must also be added, e.g. hunting, carbon sequestration, the collection of mushrooms, berries and herbs. Many of these values are difficult to calculate.

Measures

3.5.1 At national level, non-wood values may be assessed by recording trends in:

- the demand for the use of forest facilities;
- the inclusion of information on forest facilities in tourist literature;
- support for periodic surveys and studies on attitudes to forest-based activities;

benefits;

- the availability of habitats for important wildlife species;
- the area and percentage of protected forest and the degree of protection;
- the availability of forest-based hunting, fishing and other non-wood benefits;
- the ratio of wood imports/exports to non-wood products.

3.5.2 At local level, the development of non-wood benefits may be assessed from the extent to which:

- employment is generated through non-wood benefits;
- public facilities are provided in forest park areas;
- provision is made for recreational facilities such as carparks, viewing points and general landscape;
- provision is made for hunting and fishing and other non-wood benefits;



CRITERION 4

MAINTENANCE, CONSERVATION AND APPROPRIATE ENHANCEMENT OF BIOLOGICAL DIVERSITY IN FOREST ECOSYSTEMS

Biodiversity describes the variability among living organisms and the ecosystems of which they are part. Three conceptual levels of biodiversity are recognised - ecosystem, species and genetic. Forests are complex ecosystems and important sources of biodiversity. Production forests are undisturbed for phases during their rotation and are host to a wide range of plants and animals. Enhancing biodiversity through improved operational practices, planning guidelines, recommendations and training is a central component of sustainable forest management. Certain species and habitats are protected under EU Directives and national legislation, but there are numerous natural and semi-natural habitats within and associated with forests which will benefit from sustainable management practices. This in turn contributes to the quality and diversity of Irish forests. Forest ecosystems are poorly understood. Continued research will be required to evaluate the processes involved so that the best management practices can be developed. A National Biodiversity Plan, which accommodates forestry, is being drafted.

The indicators for this criterion are:

Indicator 4.1: Policy, legislation and support measures

Indicator 4.2: Area and type of forest

Indicator 4.3: Habitat and species diversity

Indicator 4.4: Forest management

Indicator 4.5: Conservation of species and utilisation of native genetic resources

Ireland's forest estate contributes significantly to national biodiversity. This ranges from measures to enhance the habitat value of commercial forests to the conservation of native and semi-natural woodlands.





Indicator 4.1: Policy, legislation and support measures

The Wildlife Act 1976 was the first major initiative in Ireland to conserve biodiversity. A framework of international commitment to protecting biodiversity has grown from the Rio Convention in 1992. This has been translated into EU and national legislation through the Helsinki and Lisbon processes and is now incorporated into the FOREST BIODIVERSITY GUIDELINES and the CODE OF BEST FOREST PRACTICE. The EU Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, commonly referred to as the Habitats Directive, has set out a framework for the Special Areas of Conservation (SACs) covering special habitats in Europe, thereby conserving their constituent ecosystems and species. The Wildlife (Amendment) Bill 1999 is expected to give formal designation to proposed NHAs. This will require owners to notify Dúchas before proceeding with forest operations.

Measures

4.1.1 Evidence of the implementation of legislation and regulations on conservation.

4.1.2 A financial framework to enable measures on conservation and biodiversity to be undertaken.

4.1.3 Implementation of the Forest Management Planning and Forest Management Practice Guidelines of the Helsinki Accord.

4.1.4 Existence of a policy and support framework to ensure the appropriate management of:

- semi-natural forests where low-intensity management for production of timber and timber products may be appropriate;
- existing and new forests on sensitive sites;
- nature retention areas and open spaces within forests, where appropriate;
- afforested peatlands and old woodland sites where restoration is appropriate.

4.1.5 A legislative mechanism which, in exceptional cases of habitat restoration, permits the waiving of reforestation obligations.

4.1.6 Evidence of the implementation of the CODE OF BEST FOREST PRACTICE and relevant environmental guidelines.

4.1.7 Capacity to develop, update and review the IRISH NATIONAL FOREST STANDARD, the CODE OF BEST FOREST PRACTICE and the relevant environmental guidelines.

4.1.8 Development of a programme for the dissemination of information for the enhancement of ecological diversity in forests, particularly for forest managers and owners.

4.1.9 Numbers of educational and training courses on biodiversity provided for forest managers and owners.

4.1.10 Support for research and research partnerships to fill the gaps in knowledge which currently constrain the maintenance, enhancement and conservation of biological diversity in Irish forests, specifically related to:

- surveys of native and semi-natural woodlands;
- inventories of plants and animal species;

- species-specific studies on ecological and management requirements of broadleaf and conifer forest types;
- assessment of key biological indicators;
- species group interactivity in natural forest ecosystems;
- historical background to continuous cover forest sites;
- increasing biodiversity in plantations;
- site-specific forest guidelines (e.g. harvesting, weed control);
- restoration possibilities for old woodland sites within the forest;
- the economic values of forests managed for conservation and the potential of wood and non-wood products;
- development of stocks of native forest reproductive material of high quality;
- maintenance of sample plots of forest types.

Indicator 4.2: Area and type of forest

The exploitation of Irish forests in historical times, leading to the almost complete removal of forest cover by the beginning of the last century, has resulted in the paucity of areas of native and semi-natural woodlands. The need to pay for and restore forest cover on a relatively short time frame explains the preponderance of plantations of exotic conifers in Ireland. Broadleaf forests now account for about 20% of the national forest estate. This is low by European standards. There are three main categories of native woodlands: acidophilous oak (mainly sessile) forests; mixed pedunculate oak/ash forest with hazel; and wetland/riparian woodland comprising alder, ash, birch and willow.

Ireland's native conifers are juniper and yew. Native species and a variety of naturalised broadleaves (e.g. beech, sycamore), are generally located in older, privately owned estates. State forests established since the early 1900s are predominantly Sitka spruce and lodgepole pine. Areas of Douglas fir, European larch, Japanese larch and Scots pine also exist. Older plantings and recent grant-aided private plantings include broadleaf species such as ash, beech, cherry, oak and sycamore.

Measures

- 4.2.1 At a national level, this indicator is measured by:
- inventories of land under forest compared with other landuses;
 - area of forest categories and trends in relation to native and semi-natural woodlands;
 - area of forest stands by dominant species;
 - area in terms of species mix (one, two or more);
 - remnants of ancient woodlands;
 - area of forest in sensitive or non-sensitive catchment areas;
 - area of protected forest (classified according to IUCN (the World Conservation Union) categories);
 - area of forest type in pNHAs, SACs and Special Protection Areas (SPAs);
 - trends in ownership category of all forests.

- 4.2.2 At local level, the area and type of forest relating to biodiversity is measured by:
- definition of habitats in forest plan;
 - the open space component;
 - the inclusion of maps showing the forest category, the species distribution and the age classification;
 - length of hedgerows in forest units;
 - a list of protected areas and species within the forest unit.

Indicator 4.3: Habitat and species diversity

Most forests in Ireland have been established on lands transferred from



agriculture, including marginal and sub-marginal categories. Due to the fast growth rate of Sitka spruce and its general suitability to such sites, most commercial planting has used this exotic conifer. As a result, the area of forests with a high level of biodiversity is low as a proportion of the national estate. The climate in Ireland is eminently suitable for tree growth. Many soil types permit the growth of a wide range of trees and shrubs.

In recent years, it has been government and EU policy to encourage the planting of high quality land and farms in order to remove land from agricultural production. This has encouraged a wider use of the range of conifer and broadleaf species suitable to Ireland. This policy is supported by a differential grant and premium scheme weighted in favour of the establishment of a greater range of tree species.

As an island and located outside the natural range of many continental European species, Ireland's biodiversity is naturally low. Unique assemblages of native flora and fauna occur in areas such as Killarney, the Burren and on peatlands. Important habitats have been surveyed and mapped and termed proposed Natural Heritage Areas (pNHAs). There are numerous habitats of local importance. In these areas, the main focus of management is on biodiversity conservation. This may mean that forestry development will be discouraged or prohibited within or near pNHAs. Where developments are proposed, consultation with Dúchas The Heritage Service will be necessary to clarify priorities of management and the specific conditions which may apply.

Management for wood production may continue in some areas designated for conservation, but this may be subject to constraints or special practices. Species selection may be restricted to native or otherwise approved species, and operations such as harvesting, chemical usage and clearfelling may be severely restricted. The maintenance of riparian areas, scrub and hedgerows is a feature of sustainable management.

Measures

4.3.1 At national level, measures are:

- records of threatened terrestrial species, aquatic species and birds occurring in Irish forests and their catchments;
- records of mature forests and their distribution;
- evidence for the maintenance of habitats of significant conservation value within afforestation areas;
- area of forest for which at least partial inventories of mammals, birds, invertebrates, other fauna, higher plants (in addition to trees), lower plants (bryophytes, lichens, algae and fungi) are available;
- area of forest for which habitat maps are available;
- area of plantation forest converted or restored (where appropriate) to natural habitat of conservation value, e.g. restoration of old woodland or peatland.

4.3.2 At local level, measures are:

- records of protected habitats within forests;
- information on other protected habitats near forests;
- information on tree species diversity within plantation forests;
- extent of hedgerows, scrub and connecting corridors;
- information on biodiversity trends in plantation forests;
- records of deadwood in mature forests;
- evidence of biodiversity planning;
- evidence of special operational practices in relation to pNHAs, riparian woodlands or other habitats of conservation value.

Indicator 4.4: Forest management

The competition for forest resources is now far more diverse than previously experienced. Everything produced by forest ecosystems, including commodities, scenic beauty, wildlife habitat and even the health and diversity of the systems themselves, are regarded as normal forest outputs. As a result, forest management must evolve rapidly. Up to recently, aesthetic and other values were not accorded priority in the menu of multiple uses. The wood production ethos requires modification towards management of the entire forest ecosystem for multiple uses and outputs.

Grant-aided forestry now requires management plans for new planting in excess of 10 ha and for support measures in established forests. The Planning and Development Bill 1999 refers to measures concerning local conservation areas and broadleaf forests which may impact on management. Measures to ensure environmentally sustainable management are part of all forest plans in the context of continuity of management, informed decision-making, sustainable operations and good records.

Measures

4.4.1 At national level, measures are:

- evidence of a forest planning system at national and regional levels;
- area of forest for which forest plans exist;
- evidence of support for ecological site assessment within the planning process;
- evidence of research results transferring to new silvicultural techniques;
- area of mature forest;
- proportion of open space to total forest area;
- total annual application of fertiliser and subsequent applications (if any);
- area of forest managed for appropriate enhancement of threatened species (Red Data Book species occurring in forests), native and semi-natural habitats, aquatic zones and associated aquatic life, and forest habitat heathland or grassland vegetation associated with the forest.

4.4.2 At local level, measures are:

- proportion of forest managed according to an approved management plan and which incorporates ecological site assessment;
- area of forest allocated for conservation and long-term retention of trees;
- area of open space within forests (glades, rides and aquatic zones);
- total area of forest managed primarily to conserve threatened species, natural and semi-natural habitats, and aquatic zones;
- area of forest managed for continuous cover.

Indicator 4.5: Conservation of species and utilisation of native genetic resources

The planting of the species most ecologically suited to the site is an essential part of good forest practice. The appropriate seed sources for species chosen are critical to successful forest establishment and to ensure good survival, productivity and quality. Ireland is a member and signatory of the FAO Convention on Plant Genetic Resources and of the Convention on Biological Diversity. This commits signatory nations to taking measures to prevent the destruction of genetic resources. While no major new initiatives have been taken to promote conservation and utilisation *in situ* as a component of sustainable forestry, the establishment of the Irish Genetic Resources Conservation Trust, co-operatively with Dúchas The Heritage Service and the National Botanic Gardens, is a direct response to Ireland's commitments to these international conventions.

Two EU Council Directives, 66/404/EEC and 71/161/EEC, are in place to ensure



Particular emphasis is being directed by Irish research organisations towards the improvement of ash, birch (above), oak and sycamore. Species such as beech and yew also warrant further attention.

