Forestry Commission Scotland

Strategy

# THE SCOTTISH GOVERNMENT'S RATIONALE FOR WOODLAND EXPANSION

Published 2009

The Scottish Government

# Contents

# Purpose

The Scottish Forestry Strategy sets out an ambition to increase Scotland's woodland cover. This document lays out the Scottish Government's thinking on how woodland expansion can best increase the delivery of public benefits from Scotland's land. It has been finalised following public consultation[1].

# Background

Scotland is a relatively lightly wooded country. It was not always so and the current situation is the result of centuries of deforestation, largely as a result of man's activities. At the beginning of the last century woodland cover in Scotland had declined to about 5% (Figure 1). The introduction of a state afforestation programme in 1919 led to a steady increase in the woodland area, mainly through creation of coniferous plantations, and today Scotland's woodland cover is about 17% of the land area. This is about half of the average of other EU countries (Figure 2) and less than one quarter of the woodland area that once covered much of Scotland's land surface. Expansion of forest area is one of the 40 UK indicators of sustainable forestry.

Woodland has a distinct role to play in helping to deliver the Scottish Government's vision of a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth. Links with the Scottish Government's strategic objectives are shown at Figure 3.

The time is right to consider how we will increase public benefit delivery through woodland expansion. Scottish Ministers have affirmed their desire to increase the amount of woodland in Scotland to help meet Scottish Government strategic objectives, particularly in relation to tackling climate change and to stimulate economic development. A valuable debate is emerging on wider land use and Ministers have initiated a land use project in which the full range of land use policy drivers can be explored. The launch of Rural Development Contracts and work to increase the contribution of the National Forest Estate signal a new phase of active delivery.

# The current woodland resource

There is currently estimated to be 1,342,000ha of woodland in Scotland, of which 1,045,000ha is coniferous and 297,000ha is broadleaved[2]. Rates of woodland creation have generally declined from the high levels achieved up to 1990, skewing

[1] See http://www.forestry.gov.uk/forestry/INFD-7FWEQ5
[2] Source: Forestry facts and figures 2008

the age class distribution of Scotland's woodlands. Coniferous plantations created before the 1970s are now being actively restructured, and associated opportunities taken to diversify age-class structure, increase species diversity, strengthen habitat networks and improve landscape design. In 2006, an estimated 4.3% of woodland was managed under lower impact silvicultural systems rather than clear-felling.

The tree species composition of the Scottish forest resource (from the 2002 National Inventory of Woodland and Trees in Scotland) is shown below.

| | Area (000's ha) |
|---|---|
| Sitka spruce | 523 |
| Scots pine | 126 |
| Lodgepole pine | 121 |
| Birch | 76 |
| Other and mixed broadleaves | 71 |
| Larches | 64 |
| Norway spruce | 35 |
| Oak | 20 |
| Other and mixed conifer | 16 |
| Douglas fir | 10 |
| Sycamore | 10 |
| Beech | 9 |
| Ash | 5 |

| | % |
|---|---|
| Conifer | 81.6 |
| Broadleaf | 18.4 |

There is an estimated 398,000ha of native woodland in Scotland, with around 4,000ha of additional native woodland being created annually. There is a commitment to restoration towards native woodland for 34,000ha of plantations on ancient woodland sites (PAWS). Three-quarters of UK Biodiversity Action Plan woodland habitats and species are stable or improving. Over 13,000 ancient monuments are protected under forest management plans or agreements.

The Scottish forestry sector currently sustains 13,200 full-time equivalent jobs, plus around 17,900 full-time equivalent jobs in the tourism and recreation sectors attributable to woodland. Forestry currently makes up about 0.5% of the total gross value added for the Scottish economy, with a proportionally more significant contribution in rural areas. As well as the £460 million gross value added (GVA)

(2007/08 prices) directly attributable to forestry, £209 million GVA of tourism and recreation spend is attributable to woodlands[3].

Scottish wood's value share of the UK market was estimated to be 5.5% in 2006. Scottish timber production was 6.6 million $m^3$ in 2006. This is expected to peak at up to 10 million $m^3$ by 2020, although industry efforts are being made to smooth the production profile. Without further planting, production will decline to around 6 million $m^3$ by 2045.

In the last ten years the ability of woodlands to deliver social benefits has been increasingly recognised. In 2007, 569 schools were involved in woodland-based learning activities and an estimated 63% of Scottish children, and around half of adults, made around 50 million visits to Scottish woodlands. An estimated 138 community woodland groups are active in Scotland with a total membership of around 13,500[2]. Increasing the amount of accessible woodlands in urban areas has been a focus of the Woods In and Around Towns Initiative[4]. In 2006, 25% of Scotland's people had accessible woodland greater than 2ha within 500m of home, and 68% had accessible woodland greater than 20ha within 4km of home[5].

The Scottish Government recognises the importance of sustainable management of the existing woodland resource and the benefits that can accrue from forest restructuring and bringing neglected woodlands into active management. Through the Scottish Rural Development Programme, support is available to promote sustainable woodland management based on long-term forest plans.

Woodland removal is recognised as an important issue, impacting on net woodland expansion and potentially resulting in permanent woodland loss. Scottish Government policy is to minimise the amount of woodland loss[6].

# Why do we want more woodland?

The Scottish Forestry Strategy[7], published in 2006, sets a vision for Scottish forestry in the second half of the 21st century. It lays out the range of economic, social and environmental benefits forestry can deliver within the context of sustainable forest management.

[3] Research note FCRN102 The economic and social contribution of forestry for people in Scotland
[4] see http://www.forestry.gov.uk/forestry/infd-5w2nfz
[5] see Scottish Forestry Strategy progress report at http://www.forestry.gov.uk/forestry/infd-6aggzw
[6] This policy is described at http://www.forestry.gov.uk/forestry/INFD-7HYHWE
[7] http://www.forestry.gov.uk/forestry/infd-6aggzw

The Strategy identifies a number of woodland creation priorities for Scotland:

- **Helping to tackle greenhouse gas emissions.** Carbon sequestration, timber and fuel production.
- **Restoring lost habitats and adapting to climate change**. Forest habitat networks and new native woodlands.
- **Helping to manage ecosystem services**. Sustainable flood management, and protection of soil and water resources.
- **Underpinning a sustainable forest products industry**. Consistent and reliable timber supply for timber processing and wood fuel investments.
- **Supporting rural development**. Supporting local businesses and farm diversification.
- **Providing community benefits**. Provision of welcoming and well-managed woodlands in and around communities and where health and community need is greatest.
- **Enhancing urban areas and improving landscapes**. Improving derelict, underused and neglected land, improving degraded or unsightly environments and diversifying farmed landscapes.

## Helping to tackle greenhouse gas emissions

Deforestation is a significant global issue. Some 13 million ha of forest are destroyed annually throughout the world, resulting in significant loss of biodiversity and in some cases leading to soil erosion problems. The world's forests are also a major carbon sink and play a significant role in the global carbon cycle. Deforestation releases the carbon stored in forest ecosystems and is responsible for almost one fifth of the world's annual emissions of greenhouse gases into the atmosphere. Forests and deforestation are therefore very important elements in the process of climate change.

Preventing deforestation and encouraging reforestation are internationally recognised as being key actions that will help to stabilise greenhouse gas levels and, in turn, help to reduce, or reverse, the process of global warming. Along with the other UK countries, Scotland is a signatory to international agreements designed to combat climate change and is a founder member of the Global Partnership on Forest Landscape Restoration[8].

In Scotland, efforts to reduce emissions are the highest priority. Nonetheless, forestry is a significant carbon sink for Scotland, with the equivalent of 10 million tonnes of $CO_2$ accumulated annually as carbon in growing trees, deadwood and organic matter, and by incorporation into forest soils. Annual removals of $CO_2$ from

[8] http://www.unep-wcmc.org/forest/restoration/globalpartnership/

the atmosphere by Scotland's existing forests equate to around 15% of Scotland's annual greenhouse gas emissions.

Woodland creation offers a practical and readily achievable way to improve Scotland's greenhouse gas balance, whilst also delivering other economic, environmental and social benefits. A recent study on *Mitigating against Climate Change in Scotland* identified woodland creation as a high priority policy[9] Research and life cycle analysis is underway to better understand the effect of different forestry practices on the carbon balance in soils, biomass and forest products. Whilst mature woodlands eventually approach a steady state of carbon accumulation and emission, this takes may take centuries and may provide vital 'breathing space' for the development of low carbon and carbon capture technologies.

Woodland also provides a sustainable source of 'low embedded energy' raw materials. Substituting one tonne of concrete or brick with one tonne of timber saves about one tonne of $CO_2$ emissions. The savings for steel and aluminium are much higher. The use of timber frame methods of house building are widespread in Scotland, but there are opportunities to increase this still further, to increase the use of timber-based building systems for commercial buildings, and to use timber for other building components such as exterior cladding.

The use of wood fuel for energy is a practical way to reduce fossil fuel usage. The potential is great and a recent Wood Fuel Taskforce[10] explored the opportunities to increase wood fuel supply in Scotland. Increasing Scotland's woodland area will increase the potential long-term supply base of this resource. However, there are also shorter-term opportunities through the use of short rotation forestry, which has potential to yield wood fuel in 15 years or less.

## Restoring lost habitats and adapting to climate change

Native woodlands are the most diverse natural ecosystems in Scotland, and many species are reliant on the existence of significant areas of native woodland of differing types. The historical fragmentation and reduction in area of Scotland's native woodlands has adversely affected overall biodiversity and the resilience of many species that depend on these ecosystems. It is a core aim of the UK and Scottish biodiversity action planning processes to significantly increase the area of all native woodland types.

[9] http://www.scotland.gov.uk/Publications/2008/11/19142102/0
[10] http://www.forestry.gov.uk/forestry/INFD-7APFXA

Expansion of woodland cover in Scotland over the last century has brought biodiversity benefits, particularly as even-aged plantations have reached maturity and opportunities have been taken to increase species and structural diversity. In some areas, functional forest habitat networks are emerging in places specifically managed to meet the needs of priority species. This process needs to continue, increasingly guided by decision support tools to identify where the gains from strengthening forest habitat networks are likely to be greatest.

In some parts of Scotland, woodland cover is still very low. Creating native and other woodlands in these areas, particularly in the lowlands, can bring important local biodiversity benefits, and can provide opportunities for more people to see, enjoy and learn about wildlife.

Climate change adds a further threat to woodland biodiversity and increases the importance of developing robust habitat networks that will provide large-scale areas of core woodland habitat, and allow woodland species and assemblages to adjust and adapt to changing conditions.

## Delivering ecosystem services

The importance and vulnerability of water, soil and air resources is being increasingly recognised, as is the need to develop more sustainable ways of managing them. Woodlands have a role to play, often as part of a broader landscape/catchment approach to natural resource management in relation to sustainable flood management, watercourse and water quality management, slope stabilisation, and even possibly to help manage point-source ammonia emissions. Research into natural resource management is being developed to provide a stronger evidence base, and practical implementation will be explored through catchment-scale trials.

The opportunity to develop integrated and collaborative approaches is increasing through the co-ordinated mechanisms of the Scottish Rural Development Plan, Rural Development Contracts, and as rural government bodies work increasingly closely through the SEARS (Scottish Environment and Rural Service) initiative.

## Underpinning a sustainable forest products industry

Scotland is an integral part of the UK market for wood based products, a market which has an annual consumption of around 65 million $m^3$ of wood raw material equivalent (excluding recycled wood and recovered paper). With wood production from the UK's forests at around 11 million $m^3$ (of which nearly 7 million $m^3$ is from Scotland) this means that the UK is currently only 17% self sufficient in wood-based products with our remaining needs being met from imported products.

This level of reliance on imports means that the UK faces an annual import cost for wood based products of some £6.1 billion and means that we are very reliant on production from other countries forests with products sometimes having to be transported thousands of miles to reach the UK. While there are processes in place to encourage use of products from sustainably managed forests, this cannot always be guaranteed.

The growth and development of Scotland's forest products industry is a major success story. The Scottish wood-chain now sustains over 13,000 jobs and adds around £460 million/year to the Scottish economy, excluding the contribution of forest tourism and recreation.

This sector is reliant on a sustained supply of suitable quality raw material. Current production forecasts show a rise in timber availability over the next 25 years, with a subsequent sharp and sustained dip resulting from the particular age structure of Scotland's larger-scale timber producing forests. Creation of new forests producing good quality timber over the next 10 years would have a significant, positive impact on sustaining timber production and providing long-term confidence for continued investment in both the softwood and hardwood timber processing and value-adding sectors.

The emergence of the wood fuel sector offers a further opportunity to use forestry to help grow the Scottish economy, create green jobs in fragile rural areas, and mitigate the impacts of climate change. This sector is also long-term in nature due to the capital investments required in wood burning capacity. It is seeking evidence of long-term and reliable raw material availability both from conventional forests, potentially from specifically designed energy forests, and from recycled and waste wood streams.

## Supporting rural development

Much of Scotland is rural and much of the rural area has significant climatic constraints that limit land use options. Woodland creation is possible on most land types and can complement the roles of agriculture and sporting in sustainably developing the rural environment, the rural economy and rural communities.

Forty-four percent of forestry and timber processing related businesses are rural-based, with 15% based in areas categorised as remote rural or very remote rural[11]. There is long-term potential to further increase the local economic contribution of forestry in rural areas. Focus is increasing on the benefits of processing and using wood resources near to source, for example for local biomass heating schemes. The use of woods to deliver tourism and recreation services continues to grow, for

[11] http://www.scotland.gov.uk/Publications/2006/07/31114822/4

example through provision of wildlife viewing and mountain biking facilities. Woodland establishment and management provide an underpinning basis for local economic activity.

There is also good potential for woodlands to support farm diversification. Woodlands can offer direct benefits to the farming enterprise like shelter for stock and fencing materials, and underpin the development of new income streams, for example through sporting and tourism, on-farm processing of forest products, or provision of forestry contracting services.

## Providing community benefits

In rural areas, the local economic activity arising from woodlands has a direct benefit on the sustainability of fragile rural communities. Many of the 100 or more community woodland groups around Scotland are actively seeking to increase these direct community benefits. But community involvement with local woodlands also builds community cohesion and capacity, which in some cases has led community groups into additional activities like affordable housing or social enterprises.

Woodlands are a natural focal point for outdoor education activity. The Forest Education Initiative is supporting a continued rise in interest in using woods as a basis for outdoor learning, not just about the environment but also around other parts of the curriculum like maths, science and citizenship. Through the growing number of 'forest schools', woods provide an inspiring environment for those who find difficulties wit the classroom environment, and are robust places for outdoor play. We are seeing increasing interest in using woods for volunteering projects, and in forestry as a focus for projects on practical skills acquisition for the long-term unemployed.

The health potential of woodland is becoming recognised. Woods are beginning to be used for organised health walks, GP referral schemes, and for projects supporting those recovering from mental illness. The opportunities for woodlands to contribute these benefits will grow as new woods are created in and around Scotland's villages, towns and cities.

## Enhancing urban areas and improving landscapes

Woodlands have a significant part to play in improving the quality of the urban environment. When integrated with development and other forms of green space they have the potential to moderate urban micro-climates, improve the feel and look of urban areas, to enhance biodiversity, provide local opportunities for countryside access and recreational pursuits, and to act as a valuable educational resource. They can also provide a focus for community involvement and community projects.

Integrating woodland creation into urban regeneration development plans can therefore provide a cost-effective contribution to the development of urban environments and to improving the health and well being of urban communities. Woods form a key part of emerging urban green space networks, and with continued investment in high quality management are being successfully used to help transform and regenerate areas blighted by past mineral workings and industrial activity.

Forests have not always made a positive contribution to wider landscape quality. Some forest creation up to the 1980s left a legacy of poorly designed 'blocks' that detracted from, rather than complemented, the landform. Since then, forest landscape design has ensured that modern forests harmonise with, and enhance, the landscape. Indeed, the UK is now seen as an international leader in forest landscape design. Furthermore, woodlands can be a powerful and cost-effective tool in transforming and enhancing degraded landscapes, and landscapes that lack identity or diversity.

# What could woodland expansion deliver?

The Scottish Forestry Strategy reaffirmed the Government's expectation that an increase in woodland cover in Scotland from the current 17% to around 25% in the second half of the century would be needed to deliver the vision. This would involve the creation of some 650,000ha of new woodland to add to the current resource of 1,334,000ha.

The focus of the Scottish Forestry Strategy is on economic, social and environmental outcomes. The outputs that will help deliver these outcomes include:

**Delivery of climate change mitigation benefits:**

- The equivalent of an additional 0.7Mt/year of $CO_2$ sequestration by 2020 and an additional 4.4Mt/yr by 2050 over and above the sequestration by existing woodlands.
- These new woodlands could be producing over 1M oven dry tonnes/year of wood fuel by 2050, saving an additional 1.1Mt/yr of $CO_2$/yr by substituting for fossil fuels, over and above wood fuel production from existing forests.

**Delivery of economic and rural development benefits:**

- Achieving and sustaining production of around 9 million $m^3$/yr of timber.
- Sustaining the existing 30,000 jobs in forestry, processing, forest tourism and recreation, and growing the number of jobs associated with biomass energy production.

**Delivery of biodiversity and environmental benefits:**

- Achievement of the Biodiversity Action Plan native woodland expansion targets and contributing towards the Scottish Forestry Strategy vision that 'native tree species comprise about 35% of the total forest area, in a network of functioning woodland and non-woodland habitats'.
- New woodlands forming an integral part of an ecosystem-scale approach to sustainable management of water, air and soil resources.

**Delivery of community and urban regeneration benefits:**

- Meeting the Woodland Access Standard[12] with all communities having access to at least 2ha of woodland within 500m and 20ha within 4km.
- Woodlands playing a key role in urban green networks, including the Central Scotland Green Network envisioned in the second National Planning Framework.
- Increased opportunity for communities to be involved with managing and enjoying the benefits of local woods, and more woodlands being used as a mainstream and cost-effective resource for health and outdoor education.

These benefits would be delivered progressively through a sustained annual planting programme of around 10,000–15,000ha. This is a higher rate of woodland creation than recent years, but is significantly lower than historic rates (Figure 4). The projections of what can be delivered by new woodland creation are based on the annual creation of around 40% native and mixed woods and around 60% softwood production forests.

# What sort of woodlands do we need?

One of the great benefits of woodlands is that they can be truly multi-purpose with individual woods capable of delivering, simultaneously, a mix of economic, social and environmental benefits. While every wood is unique, delivering the Scottish Government's aspirations for forestry will involve four main types of woodland:

**Native woodlands.** Woods composed of native species, matched to local site conditions, making use of natural colonisation where evident. They are managed mostly using low intensity or minimum intervention systems with an emphasis on developing the structural and species diversity appropriate to the woodland type. As well as providing biodiversity benefits, native woods are usually well fitted for water management and soil conservation, recreation and amenity, stock shelter, fishery enhancement and sporting uses. Some are also capable of producing high quality timber or wood fuel at low intensity.

[12] http://www.woodland-trust.org.uk/woodsforpeople/finalreport/was.htm

**Mixed woodlands**. Mixed species woodlands often including native broadleaves, traditional broadleaves (such as beech and sycamore) and conifers designed to provide year-round shelter, landscape enhancement, screening or enclosure, as well as the potential to provide products for local use. In a traditional estate setting they are often known as 'policy woods'.

**Softwood forests**. These woods are designed to provide a sufficient quantity and consistency of predominantly softwood timber for economically viable timber production. Careful design uses opportunities to protect and enhance biodiversity while also providing a backdrop for outdoor access and recreation. Modern softwood forests have substantial areas of open space, areas of native species and a growing emphasis on the use of mixed species and different silvicultural systems (where feasible) to increase diversity and resilience in the face of climate change.

**Energy forests**. All woodland types are capable of producing fuel wood, but in the future we might see the emergence of woodlands where fuel wood production is the principal objective. Short rotation coppice using willows is already being practised on a limited scale, but interest is growing in short rotation forestry or coppicing systems that have greater potential on lower quality ground.

# Wider land use issues

## Prime agricultural land

Forestry development in Scotland has traditionally been on poorer quality land. During the years of agricultural surpluses and relatively low land prices a prevailing view was that afforestation should move 'down the hill' to improve the diversity of lowland landscapes and avoid further land use change in the uplands.

This situation has changed over the last several years. Prices for grain and other arable crops have risen. Concerns over global food affordability and supply are being compounded by poor harvests in some major arable cropping regions, and the emergence of biofuels as a competing market for arable crops. Analysts conjecture that this is a medium to long-term trend rather than a short-term situation. Prices for high quality farmland in Scotland are at an historic high.

Within this context it is likely that the main focus of woodland creation will be away from prime agricultural land and on land where the benefits offered by forests are likely to outweigh the potential for agricultural production. However, some better land will be appropriate for woodland creation, for example where it forms part of a habitat network, contributes to water and soil resource management, provides farm,

community or amenity benefits or supports very high yielding energy forests close to biomass energy plants.

## Peats and high carbon soils

Development of woodland establishment techniques in the 1960s allowed deep peats to be drained and ploughed for afforestation, leading to a phase of planting on blanket bogs, notably in the Flow Country, and on lowland raised mires. By the 1980s, the value and international importance of these habitats was becoming more apparent and new afforestation on these site types ceased, with attention turning instead to restoration of the bogs.

Climate change adds a further dimension in relation to afforestation of deep peats and other soils with particularly high carbon content. Tree establishment tends to result in initial release of carbon from soils due to the associated cultivation and aeration. This is offset by the carbon accumulated in the growing trees and associated deadwood and organic matter. To harness the benefits of trees for carbon sequestration, woodland creation is best focused away from the deeper peat soils. Low carbon agricultural soils offer the best carbon gains, but these are increasingly unlikely to become available for woodland creation given their importance for food production. Hence, woodland creation is likely to be focused on lower quality agricultural land that still offers a significant net carbon sequestration potential from woodland. Research is underway to better understand the carbon dynamics of soils and woodland creation.

## Habitats, species and historic environment

Scotland has a relatively high proportion of semi-natural habitats, particularly those associated with the uplands. Many of the EU and UK priority habitats, for example a range of coastal, calcareous and montane open habitats, are limited in extent. The upland heath priority habitat is much more extensive, with the action plan indicating up to 2.5 million ha in Scotland (some 30% of Scotland's land area). Of that, an unknown proportion comprises habitats listed in the European Habitats Directive.

Where woodland planting proposals involve areas of biodiversity importance, the established consultation processes and environmental impact assessment are used to inform decisions on whether the scheme should be consented and/or supported with grant aid. The decision process involves provision of advice from Scottish Natural Heritage on the quality and significance of the area, and the likely impact of the proposed woodland on the habitat. The design and type of the proposed woodland is taken into account, and in some cases careful woodland design, in accordance with current good practice, can offer protection of high quality open habitats and the creation of valuable new woodland habitats.

Similar processes are used in relation to species listed in the EU Habitat and Birds Directives and those listed in the UK Biodiversity Action Plan.

Deer management is a key landscape-scale issue and an important consideration for woodland creation proposals both in relation to establishing and protecting woodlands and linking woodland creation aspirations to wider deer management strategies.

Scotland's historic environment is increasingly recognised and valued. It extends beyond individual archaeological features and includes historic and designed landscapes, and the connections and stories held by local communities. The environmental assessment and consultation processes ensure that woodland expansion is achieved in a way that recognises cultural heritage and scenic values.

Techniques and tools are now emerging to allow an increasingly strategic consideration of habitat networks and cultural features at a landscape scale. This is improving planning and prioritisation of efforts to protect historic features and to create functional habitat mosaics and networks in relation to woodland, open habitats and priority species.

## Land use balance

Considering the amount of forestry appropriate to any area involves a whole complex of issues, both objective and subjective. This consideration may change over time and will be influenced by woodland distribution, careful landscape design and the balance of woodland types, as well as overall woodland cover. The more recent indicative forestry strategies seek to take these issues into account when identifying opportunities for woodland creation.

The issue of land use balance is also relevant to the regional viability of agricultural and forestry sectors, particularly where raw material production is closely tied to market or processing infrastructure - such as specialist contractors, auction marts, creameries or sawmills. The concept of regional clustering is being recognised as a model for the development of the bioenergy sector in Scotland, with land being used to supply biomass for local heat and electricity production. In a high transport cost future it is a model that is likely to become more widely applicable. Work is being planned to examine some of these wider issues of land use balance, along with the associated carbon and energy balance aspects.

Another aspect of land use balance is the land use mix at a holding level. There are many opportunity to achieve gains in a holding's productivity and viability, and delivery of public benefits by careful planning of land use and habitat mosaics at the holding level. For example, creating native woodlands along riparian corridors can secure high levels of biodiversity and water environment benefits without jeopardising

the economic viability of the holding or sporting estate. These areas also present opportunities for production of high quality timber or wood fuel, and for increasing value from sporting and other leisure enterprises.

# Achieving the Scottish Forestry Strategy aspiration

## Land suitability

Spatial research undertaken by MLURI and Forest Research during the preparation of the Scottish Forestry Strategy[13] showed that the Strategy's vision of 25% forest cover in Scotland is achievable. In addition to the current woodland extent, a further 16% (1.3 million ha) of Scotland was identified as being potentially suitable for woodland taking into account biological and land use constraints (such as non-woodland designated sites, blanket bogs, priority areas for heathlands, landscape sensitive areas, archaeologically sensitive areas, highly forested catchments). A further 28% (2.2 million ha) was found to be potentially suitable but with possible constraints in relation to prime agricultural land (LCA classes 1, 2 and 3.1), important hill grazing land and 'wild and remote' bare land.

Data from the analysis have been used in Figure 5 to give an indication of the distribution of land with the greatest potential for woodland creation. At a more detailed level, indicative forestry strategies are used to inform decisions about individual planting schemes.

## Indicative forestry strategies and EIA

Scottish Planning Circular 9/1999 encourages local authorities to prepare indicative forestry strategies to identify preferred and potential areas for woodland creation, linked to Development Plans for the local area. Early strategies focused on suitability for softwood production forests. The Planning Circular is being reviewed to recognise a wider range of woodland and forestry benefits, and the more recent strategies explicitly recognise a range of woodland types and opportunities to achieve a wide range of social, economic and environmental benefits. There is an increasing emphasis on woodland quality to meet specific objectives, rather than just quantity.

For example, the Scottish Borders Woodland Strategy[14] lays out opportunities for expansion of lowland/upland fringe woodlands, upland forests, native and riparian woodlands and urban fringe/community woodlands. The Ayrshire and Arran Woodland

[13] http://www.forestry.gov.uk/forestry/INFD-6MGFKY
[14] http://www.scotborders.gov.uk/life/planningandbuilding/plansandresearch/5660.html

Strategy[15] identifies preferred areas for woodland expansion and also focal points for native woodland, woods for environmental enhancement and urban woodlands. The Highland Forest and Woodland Strategy[16] identifies four land categories: suitable for all types of woodland, preference for mixed woodland mosaic, planting primarily for nature conservation, and limited potential for sensitive woodland development. The Glasgow and Clyde Valley Forestry and Woodland Framework links opportunities for creation of different woodland types to the green network envisioned in the Glasgow Clyde Valley Structure Plan.

The opportunities presented in the current coverage of indicative forest strategies are more than sufficient to accommodate achievement of 25% woodland cover and will guide the local evaluation of woodland creation proposals.

The Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 cover woodland creation. They provide a structured approach to evaluating the environmental impact of planting proposals and identifying design options that increase the delivery of environmental benefits. We are working with the forestry sector to integrate the ethos of environmental assessment into the forest planning process. We are also working with statutory consultees to help ensure the EIA process is focused on environmental aspects that will be affected by proposed planting, and to minimise the bureaucratic and time burden of the process. Carbon balance and other aspects of climate change are environmental factors that need to be fully integrated into the EIA process.

## An integrated approach to land use

Meeting the Scottish Forestry Strategy aspiration is clearly achievable in terms of potentially suitable land. But, will Scotland's land managers bring forward sufficient land in the right places to achieve the vision? Some factors have reduced land coming forward for woodland creation, including:

- High land prices
- 'Hope value' for development on the urban fringe
- High cereal prices
- Uncertainty over future EU Common Agricultural Policy (CAP) support regimes
- A wait-and-see approach to the emergence of bioenergy markets
- Changing grant regimes
- Complexities of land ownership and tenure
- Cultural barriers against considering forestry opportunities

[15] http://www.ayrshire-jsu.gov.uk/aawsp.html
[16] http://www.highland.gov.uk/yourenvironment/agriculturefisheriesandforestry/treesandforestry/highland-forest-and-woodland-strategy.htm

However, there are also some factors increasing the focus on woodland creation:

- Rapidly growing interest in biomass energy.
- Increasing interest in carbon sequestration and offsetting.
- Uncertainties in financial markets, this increasing demand for 'safe' forestry investments.
- High demand and prices for established woodlands.
- Farmers considering diversification, extensification or retirement options.
- Restructuring of some traditional estates.
- Sustained interest in creating woodlands for biodiversity, environmental and social benefits.
- Increasing recognition of woodland benefits in local authority structure plans.

CAP subsidy regimes have long exerted a major influence over land availability for forestry and on the level of grant support required to achieve land use change. The recent decoupling of subsidies from production is changing this dynamic, although the link between land and the Single Farm Payment is still evident. Further CAP reform over the next 10 years is expected to further reduce direct agricultural subsidies and increase the focus on wider rural development. This could provide a basis for more landowners to consider woodland creation.

As CAP support reduces, the relative profitability of land-based products and services will have a growing influence on land use decisions. Government spending is likely to be increasingly linked to delivery of specific public benefits in the places where they are most needed. This will help focus forestry on places where it has the greatest relative productive potential and where it has most to offer in terms of public benefit delivery.

These challenges and opportunities emphasise that forestry cannot be considered in isolation from other land uses and issues like food and energy security. The Scottish Government is developing its thinking on wider land use policy in Scotland and this is to be presented at a land use summit in late 2009. This will provide an important opportunity to explore how Scotland might make the most of its land resources and land-based industries. One of the aims is to explore a more holistic approach to issues like climate change, natural flood management, development of economic clusters and creation of integrated habitat networks. It will also show where mixed land use systems can increase synergies between agricultural, forestry and recreational activities, and provide a basis for supplying a range of products for local consumption.

# Land use types for woodland creation

The strategic issues around woodland creation can be usefully considered in relation to land use types. The table below draws data from the 2000 Countryside Survey[17] and aims to give a broad indication of how the Scottish Forestry Strategy aspiration might be achieved by land use type. It is not intended to be prescriptive, as decisions on individual woodland creation proposals will be made in the light of the local indicative forestry strategy, environmental assessment and consultation processes.

| Land type | Indicative total area of land type in Scotland | A possible woodland creation scenario | |
|---|---|---|---|
| | 000's ha | 000's ha | % of land cover type |
| Woodland | 1110 | - | - |
| Built up | 150 | 10 | 7% |
| Arable | 730 | 40 | 5% |
| Improved grassland | 1030 | 180 | 18% |
| Unimproved grassland/ bracken | 1510 | 270 | 17% |
| Shrub heath | 2200 | 150 | 7% |
| Bog | 400 | 0 | 0% |
| Montane/littoral/water | 650 | 0 | 0% |
| | | **650** | |

It is possible to make some very indicative links between land use and woodland types:

| Land type | Woodland type | | | |
|---|---|---|---|---|
| | Native woodlands | Mixed woodlands | Softwood forests | Energy forests |
| Built up | ✓✓ | ✓✓ | | ✓ |
| Arable | ✓✓ | ✓ | ✓ | ✓✓ |
| Improved grassland | ✓✓ | ✓ | ✓✓ | ✓✓ |
| Unimproved grassland/ bracken | ✓✓ | | ✓✓ | |
| Shrub heath | ✓✓ | | | |

[17] http://www.countrysidesurvey.org.uk/archiveCS2000/Final_reports/M07_final_report.htm (The table will be updated with the 2008 Countryside Survey data when it is published).

The 'built up' land type represents the core urban area of Scotland. For the purposes of focusing urban and community forestry, Forestry Commission Scotland defines a zone of 2km around settlements of >500 people. This encompasses around 1 million ha of land which would be the focus for woodland creation to deliver social benefits, but which is included in the other land type categories.

Woodland creation on shrub heath is likely to be predominantly native woodland expansion either by natural colonisation or planting. The lower biodiversity value grassland and bracken types are highly suitable for softwood production forests as well as mixed and native woodlands to deliver social and environmental benefits. A small proportion of better land may be appropriate for production of fast growing energy crops, as well as small-scale mixed and native woodland as part of the agricultural landscape.

# Delivery mechanisms

What delivery mechanisms are available to achieve the woodland expansion benefits described in this paper and how might they be best used to assist the process? The Scottish Government will seek to achieve woodland expansion by the most cost effective means. Given the complexity of drivers and the variety of desired outcomes, this is likely to require use of a full suite of mechanisms from facilitation, through grant incentives, to direct activity. The role of different delivery mechanisms is considered below, with first consideration always being given to the role of mechanisms that require least government involvement.

## Natural regeneration

Woodland expansion can be a natural process and will happen unaided if there are seed sources and browsing pressure is low.

At various times in history, pulses of woodland creation by natural regeneration have occurred during periods of reduced livestock and deer numbers. This may be beginning to occur again on hill land that is experiencing reduced livestock numbers without a commensurate increase in deer numbers. This natural process offers an important opportunity for woodland expansion, particularly of upland native woodland types, but it needs positive recognition and protection to secure the full benefits.

Where there is a genuine likelihood of success and it meets the objectives of management, natural regeneration is a favoured method of woodland creation.

Reductions in livestock numbers is currently a concern in Scotland because of its impact on the viability of the livestock sector, and in some circumstances because of

negative impacts on biodiversity and landscape. However, the Scottish Government recognises that, in appropriate circumstances, woodland expansion by natural regeneration can be a positive consequence of reductions in livestock numbers.

The Scottish Government will encourage the adoption of woodland expansion by natural regeneration. Rural Development Contract options are available to encourage and positively manage the process where there is a reasonable likelihood of success. Where appropriate, woodland expansion by natural regeneration should be made an explicit objective for deer management plans.

Where it is not welcome, standards for Good Agricultural and Environmental Condition provide a regulatory context for curtailing undesirable natural regeneration. Furthermore, Rural Development Contracts offer support for woodland removal where this is important for protecting open habitats.

## Un-aided tree planting

There are many situations where individuals and organisations choose to plant woodlands without government support. They are usually small areas associated with landscaping around properties or pursuit of personal environmental objectives, sometimes through environmental organisations. These woods often make a very positive contribution to the local environment. The Scottish Government welcomes such activity. The forestry environmental impact regulations provide a mechanism to avoid environmentally inappropriate planting.

## Carbon trading and offsetting

As the focus grows on the need to manage greenhouse gases, there is increasing interest in using woodland creation as a carbon capture mechanism. In some countries, forestry is being formally incorporated into carbon trading mechanisms, with credits being issued for carbon captured by woodland creation. This seems unlikely in the UK, at least in the short term, but there is increasing interest in the use of woodlands for voluntary offsetting of greenhouse gas emissions, as well as to secure other 'corporate social responsibility' benefits. It is as yet unclear whether carbon offsetting will become a major funding source for woodland creation in Scotland, but this is increasingly likely with the continued growth of 'carbon consciousness' and the predicted rise in the international price of traded carbon.

The Scottish Government is positive about the potential of the domestic forestry offsetting sector but recognises the need for quality assurance mechanisms. Forestry Commission Scotland is assisting the development of the UK voluntary offsetting sector to provides transparency and confidence for individuals and companies interested in the carbon sequestration potential of UK woodlands. A forestry

offsetting code of good practice is being developed for public consultation in 2009, along with standards for woodland carbon management, carbon monitoring protocols, carbon registry arrangements; and packaged to form a forestry carbon assurance scheme.

## Woodland creation as a condition of planning permission

As the benefits of urban and community woodlands are increasingly recognised, woodland creation is becoming a key part of new urban developments, with developers encouraged to make provision for woodland creation and maintenance as an integral part of the development. In more rural situations, for example in relation to renewable energy developments, woodland creation can form part of the environmental mitigation package. Where developments will involve woodland removal, compensatory planting is now an expectation.

This process is managed through the development control system in the light of Scottish Planning Policy guidance. Forestry Commission Scotland works closely with the Scottish Government's planners to provide a positive Scottish planning policy context for woodland creation. The same process will be used to update guidance on the production of local indicative forestry strategies. Forestry Commission Scotland is working with local authorities in areas where older indicative forestry strategies would benefit from review and further development to set out a local forestry vision.

## Woodland creation grants

Grant incentives have been the principal mechanism for stimulating woodland creation over recent years. The grant offer process has an associated consultation mechanism, and pre-consultation is becoming a common practice as applicants prepare planting proposals. Grant aided woodland creation must adhere to the UK Forestry Standard[18]. The statutory EIA process provides a formal mechanism for identifying and managing environmental impacts associated with woodland creation schemes.

Grants are expected to remain the Scottish Government's principal means of promoting woodland creation. Stand-alone forestry grants have now been integrated into the Rural Development Contract system that will allow applicants to bid for packages of grant support to deliver a wide range of public benefits.

Uptake of grants for woodland creation has been low in recent years for reasons described in this paper. Rural Development Contracts offer tailored support for

18 http://www.forestry.gov.uk/website/publications.nsf/pubsbycategorynew?Openview&restricttocategory=UK+Forestry+Standard

different woodland types, along with a supplement for woodland creation in and around towns. We will be promoting and monitoring uptake, and exploring opportunities to stimulate additional activity. We have the opportunity to use a 'challenge fund' approach in the future, although this will still be subject to limits on intervention rates. Standard cost assumptions will be regularly reviewed. We will explore the potential for partnership projects to actively promote woodland creation in priority locations.

## Other forms of incentive

Forestry Commission Scotland is actively exploring how resources might be released from better utilising the capital value of the National Forest Estate[19], for example through offering leases for the more productive forests. Resources raised could be used in a number of ways to promote woodland creation, including increasing woodland creation grant budgets, a woodland creation tender scheme and funding further woodland creation on the National Forest Estate. An associated options review is exploring other possibilities such as use a trust set up specifically to achieve woodland creation. Tax regimes affect forestry and woodland creation in a number of ways and we will review these impacts in the light of current forestry policy priorities.

## Woodland creation on the National Forest Estate

The Forestry Commission has had little direct involvement with new woodland creation in recent years. However, direct intervention does provide an opportunity for targeted woodland creation in priority situations where access to the land can be secured.

In the 2007 Scottish Budget the Scottish Government announced an accelerated three-year programme of 'repositioning' for the National Forest Estate to increase investment in new woodlands in high priority locations. In this way it is intended to create around 6,000ha of woodland over the next three years.

Recent acquisitions towards this goal include land on the outskirts of Glasgow, Port Glasgow, Lesmahagow, Stranraer and Fauldhouse, where delivery of benefits to local communities will be a priority, and land in Fife, Perthshire and Caithness where creation of exemplar biomass energy and hardwood production forests will be a priority. In addition to acquisition, Forestry Commission Scotland is working with Glasgow City Council on the management of some its key urban woodlands.

The effectiveness of the repositioning process will be reviewed to inform decisions at the next spending review as to whether, and how, the programme might be continued either through acquisition, or using more innovative partnerships and agreements.

[19] http://www.forestry.gov.uk/forestry/INFD-7KUMVM

Leasing of land for direct woodland creation may offer a further opportunity, particularly in relation to publicly owned land held by other bodies such as local authorities and the Ministry of Defence.

Some consultees raised the use of compulsory purchase powers to achieve woodland creation on derelict urban and mining land, with local authorities undertaking compulsory purchase and Forestry Commission Scotland taking on the site and creating woodland. While this would remain an exceptional process, the viability of the model for very high public benefit situations will be explored.

# Monitoring and evaluation

Scotland has several well-established mechanisms for monitoring woodland creation. All woodland supported by grant aid is subject to the monitoring and evaluation procedures laid out in the Scotland Rural Development Plan. Woodland created in this way, and on the National Forest Estate is captured on Forestry Commission GIS systems. More widely, the periodic National Forest Inventory will capture the overall situation for established and new woodlands, including unplanned woodland creation by natural regeneration, as well as deforestation. Spatial capture of woodland creation data by these two methods will allow an ongoing analysis of where woodland is being created, on what land types, and what woodland types.

The National Inventory of Woodland and Trees, and the Native Woodland Survey for Scotland will provide periodic, qualitative data on woodland condition and public benefit delivery.

An established production forecasting system provides regularly updated predictions of potential wood availability in Scotland, and annual production surveys provide data on actual wood production and the uses to which this wood is put. Work is underway to build on the production forecasting process as a tool for monitoring woodland biomass, and hence carbon capture, and links with national $CO_2$ monitoring protocols for 'land use, land use change and forestry' (LULUCF) are being explored. Consideration is already being given to more sophisticated mechanisms for monitoring land use carbon balance and management, including the enormously important, but complex, issue of soil carbon.

Monitoring of the outcomes desired from woodland expansion is principally through the Scottish Forestry Strategy indicator set[20]. This in turn feeds into the wider

[20] http://www.forestry.gov.uk/forestry/infd-6aggzw

evaluation associated with the Scottish Rural Development Plan and the Scottish Government's National Performance Framework[21]

# Impact assessment

This paper has not been subject to Strategic Environmental Assessment (SEA). An SEA has been undertaken for the Scottish Forestry Strategy, and this paper explores the delivery of the Strategy's main aspiration. At a more detailed level, it is likely that the next generation of Indicative Forestry Strategies, will be subject to SEA.

This paper has undergone Equality Impact Assessment screening and was found not to require a full Equality Impact Assessment.

[21] http://www.scotland.gov.uk/Publications/2007/11/13092240/9

Figure 1: Woodland cover in Scotland 1870 to 2000

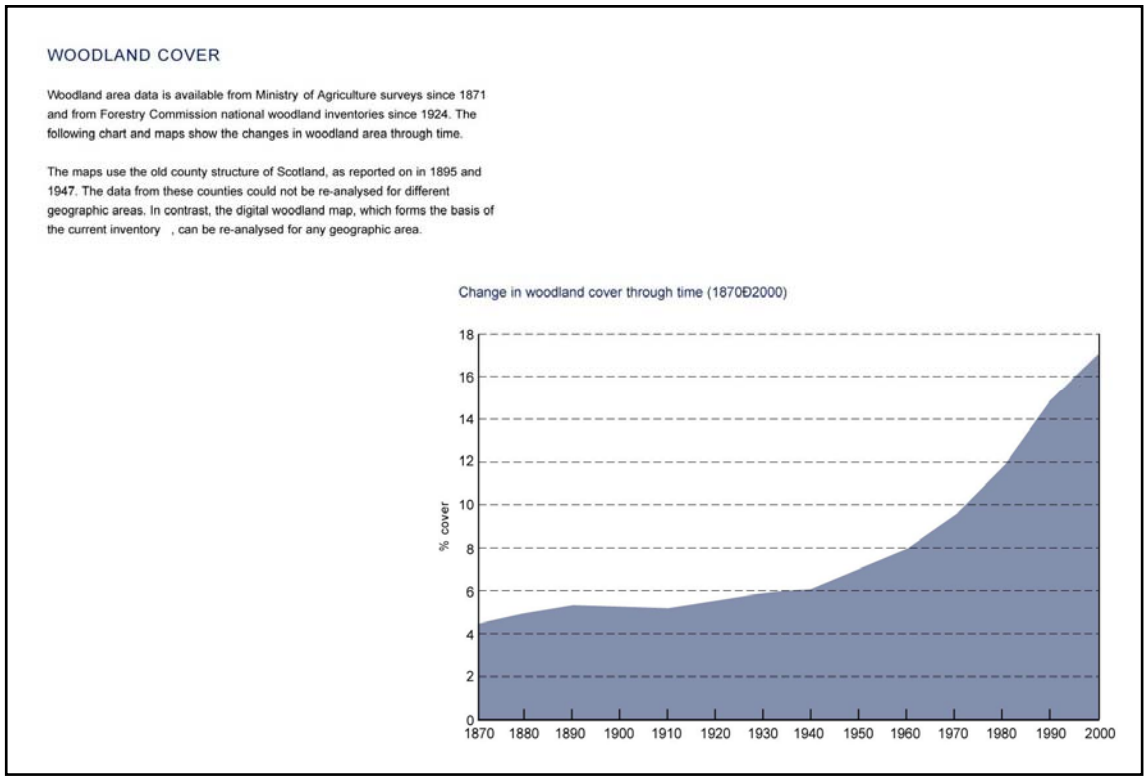



Figure 2: Woodland cover across the EU

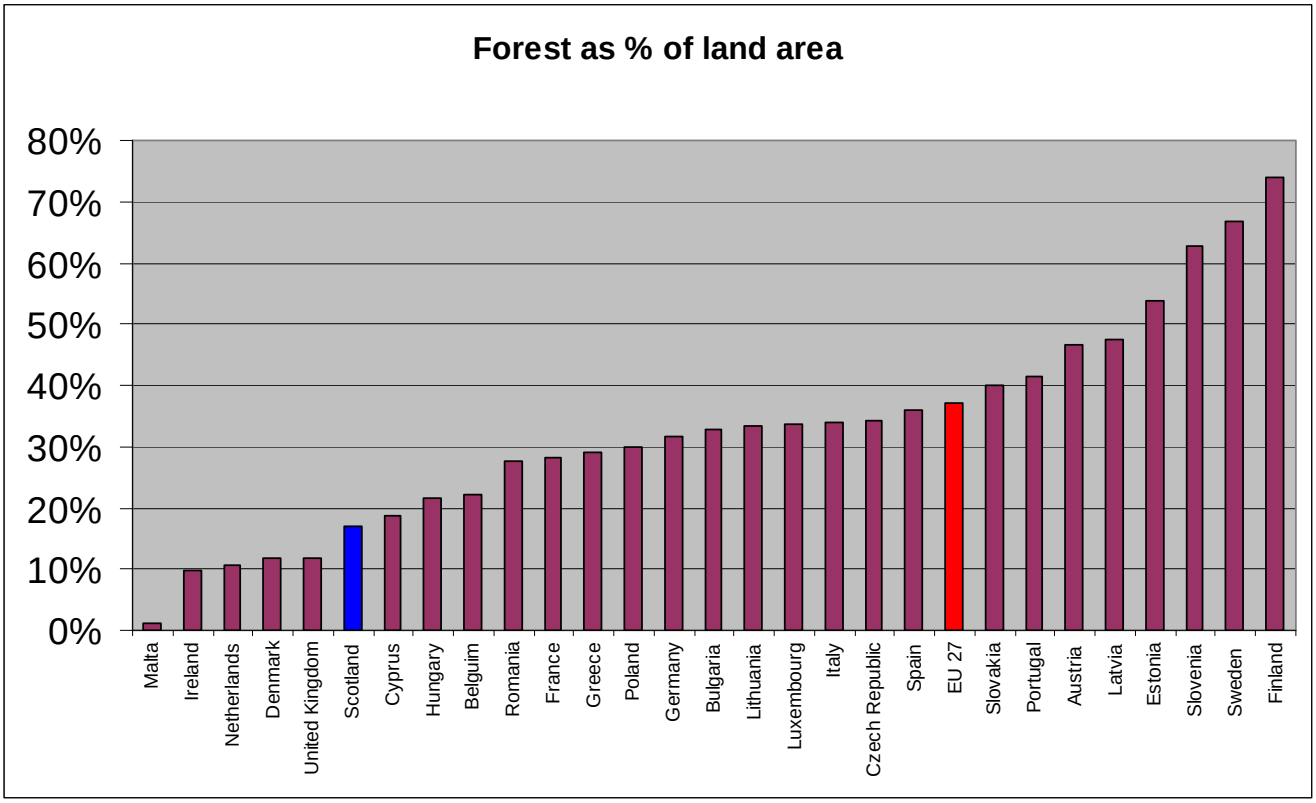


Figure 3: Links between woodlands and Scottish Government Strategic Objectives

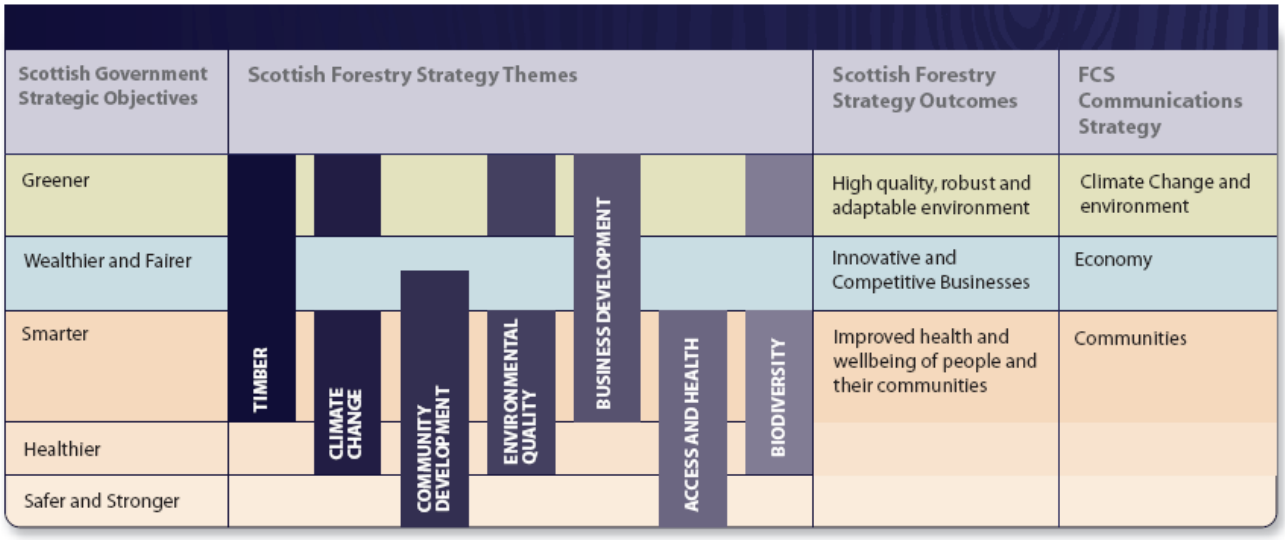



Figure 4: Grant aided woodland creation over the last 40 years

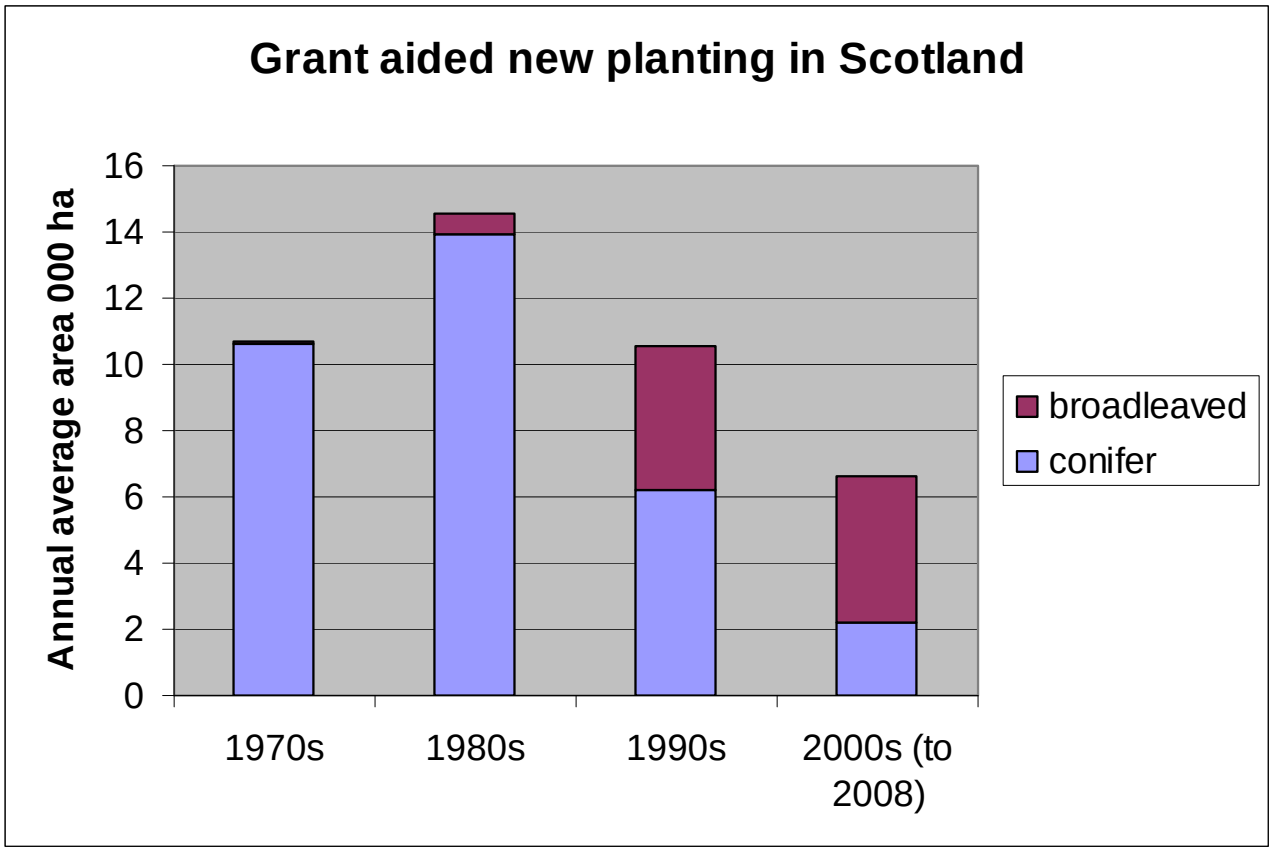
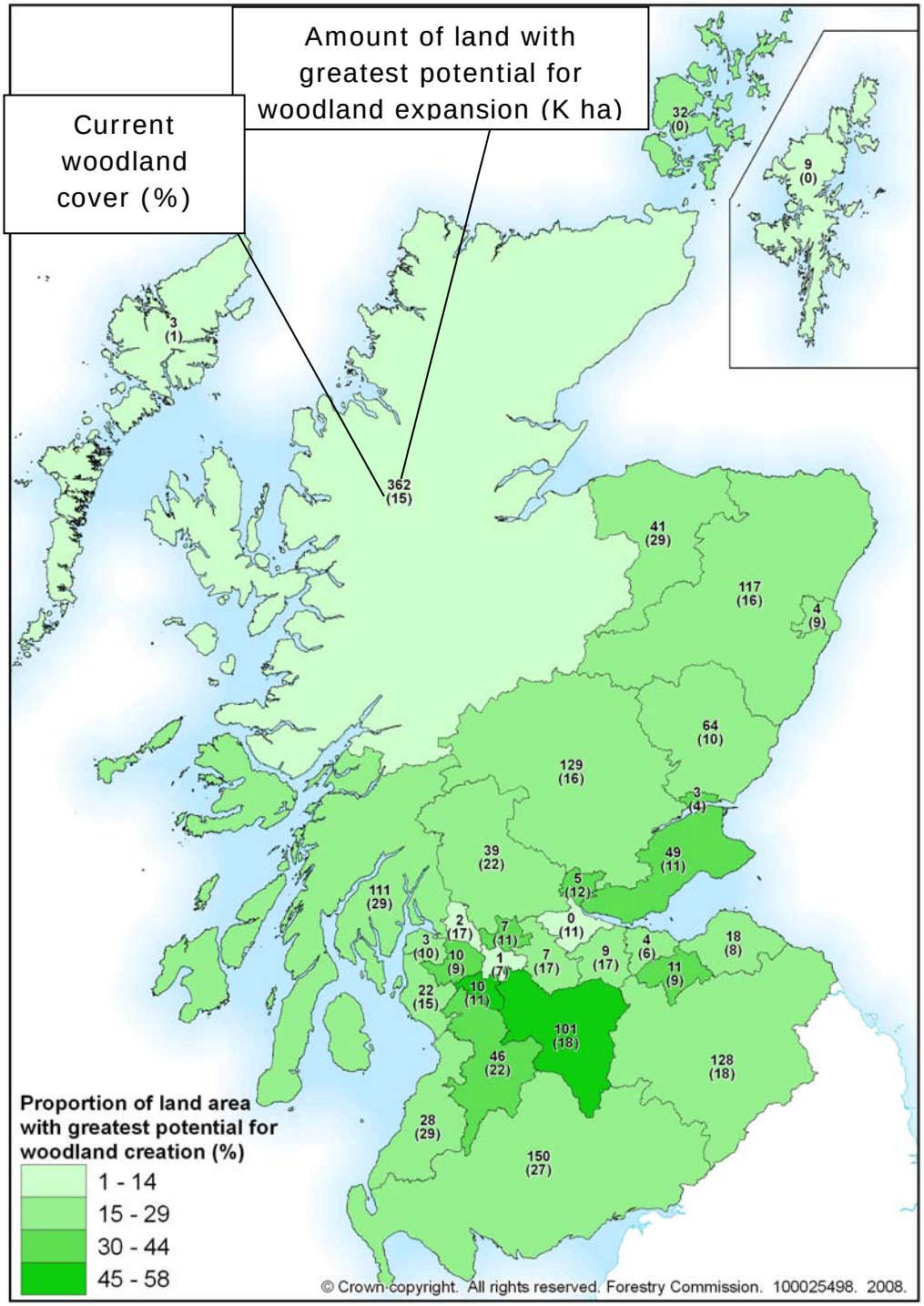


Figure 5: Distribution of land with the greatest potential for woodland creation

(derived from a MLURI/Forest Research report prepared to support revision of the Scottish Forestry Strategy [22])




[22] http://www.forestry.gov.uk/forestry/INFD-6MGFKY