

DISCUSSION PAPER ON WOODLAND EXPANSION IN SCOTLAND

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Discussion Paper on Woodland Expansion in Scotland

Purpose

This document explores how woodland expansion can best increase the delivery of public benefits from Scotland's land.

It takes forward the framework developed under the Scottish Forestry Strategy and highlights the key areas in which woodland expansion can deliver benefits for Scotland.

It sets out Forestry Commission Scotland's thinking, as the forestry directorate of the Scottish Government, on the issues and potential delivery mechanisms to achieve the Government's aims.

The consultation provides respondents with the opportunity to comment on the Scottish Government's strategic approach to delivering the woodland expansion aspect of the Scottish Forestry Strategy.

The consultation process

Forestry Commission Scotland would welcome your comments on this paper by 30 September 2008.

Please send your comments to: Liz Rennie, Forestry Commission Scotland, 231 Corstorphine Road, Edinburgh, EH12 7AT or liz.rennie@forestry.gsi.gov.uk

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Further copies can be found at: www.forestry.gov.uk/woodlandexpansion

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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 an 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 significantly less than the native woodlands that once covered over 80% 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.

A valuable debate is emerging on wider land use and Ministers are keen to move towards a land use summit where the full range of land use policy drivers can be explored. The launch of Rural Development Contracts and acceleration of the National Forest Estate repositioning programme signal a new phase of active delivery.

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 counteracting climate change and to stimulate economic development.

This document sets out in more detail the benefits of woodland expansion and potential delivery mechanisms.

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Why do we need more woodland?

The Scottish Forestry Strategy¹, 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

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

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

These are explored in more detail in the following sections.

Helping to tackle greenhouse gas emissions

Deforestation is a significant global issue. Some 13M 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 a major carbon sink and play a significant role in the global carbon cycle but deforestation releases the carbon stored in forest ecosystems and is responsible for almost one fifth of the annual emissions of greenhouse gases into the atmosphere. Forests and deforestation are therefore very important elements in the process of climate change.

Key international actions

Preventing deforestation and encouraging reforestation are internationally recognised as being key actions which 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,

¹ <http://www.forestry.gov.uk/forestry/inf-d-6aggzw>

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Scotland is a signatory to international agreements designed to combat climate change and is a founder member of the Global Partnership on Forest Landscape Restoration².

A significant carbon sink

Forestry is a significant carbon sink for Scotland, with carbon accumulated in growing trees, deadwood and organic matter, and by incorporation into forest soils. Annual removals of CO₂ from the atmosphere by Scotland's existing forests equate to around 10% of Scotland's annual greenhouse gas emissions. Woodland creation offers a practical and readily achievable way to improve Scotland's greenhouse gas balance. Whilst mature woodlands eventually reach a steady state of carbon accumulation and emission, this takes many decades and may provide vital 'breathing space' for the development of low carbon and carbon capture technologies.

A sustainable alternative

Woods also provide a sustainable source of near carbon-neutral raw materials. Substituting one tonne of concrete or brick with one tonne of timber saves around one tonne of CO₂ emissions. The figures 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, 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 Taskforce³ explored the opportunities to increase wood fuel supply in Scotland. Increasing Scotland's woodland area will increase the potential long-term supply base. However, there are also shorter-term opportunities through the use of short rotation coppice, which yields in around three years but requires high quality agricultural ground, and short rotation forestry, which has potential to yield wood fuel in around 10 years from more marginal terrain.

Restoring lost habitats and adapting to climate change

Native woodlands are among 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 biodiversity as a whole 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.

Forest habitat networks

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

² <http://www.unep-wcmc.org/forest/restoration/globalpartnership/>

³ <http://www.forestry.gov.uk/forestry/INFD-7APFXA>

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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.

Local biodiversity benefits

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 strong 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.

Underpinning a sustainable forest products industry

The UK is a major market for wood based products with annual consumption running at around 65M m³ of wood raw material equivalent (excluding recycled wood and recovered paper). With wood production from the UK's forests at around 11M m³ 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. It also means that we are very reliant on production from other country's forests with some products having to be transported sometimes thousands of miles to reach the UK. While every effort is made to ensure that these products come from sustainably managed forests this cannot always be guaranteed.

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The growth and development of Scotland's forest products industry is a major success story. The Scottish wood-chain now sustains some 20,000 jobs and adds around £500M/yr to the Scottish economy.

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 timber producing forests over the next 10 years would have a significant positive impact in sustaining timber production and providing long-term confidence for continued investment in the timber processing sector.

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 raw material availability both from conventional forests, potentially from specifically designed energy forests, and from recycled and waste 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 sport in sustainably developing the rural environment, the rural economy and rural communities.

44% of forestry and timber processing related businesses are rurally-based, with 15% based in areas categorised as remote rural or very remote rural⁴. There is long-term potential to further increase the local economic contribution of forestry in remote 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 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 activities, on-farm processing of forest products or provision of forestry contracting services.

⁴ <http://www.scotland.gov.uk/Publications/2006/07/31114822/4>

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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 seeing 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. Woods provide an inspiring environment for those who find the formal education difficult, and are robust places for outdoor play.

There is 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 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 improve the feel and look of urban areas, to enhance biodiversity, provide local opportunities for countryside access and recreational pursuits and act as a valuable educational resource. They can also provide a focus for community involvement and community projects.

Integrating woodland creation into urban regeneration master-plans can therefore provide a meaningful 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 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. Forest creation up to the 1970s left a legacy in some areas of poorly designed blocks that were out of sympathy with 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 tool in transforming and enhancing degraded landscapes and landscapes that lack diversity.

What could woodland expansion deliver?

The Scottish Forestry Strategy reaffirmed the Government's expectation that an increase in woodland cover in Scotland would be needed to deliver the vision from the current 17% to around 25% by the second half of the century. This would involve the creation of some 650,000 ha of new woodland to add to the current resource of 1,300,000 ha.

A move to 25% woodland cover in Scotland could specifically enable:

Delivery of climate change mitigation benefits

- Achieving an additional 0.2 Million tonnes/yr (Mt/yr) of carbon sequestration by 2020 and an additional 1.2Mt/yr by 2050 over and above the current levels of sequestration by existing woodlands.
- These new woodlands could generate around 0.5M green tonnes/yr of wood fuel by 2050, saving at least an additional 0.1Mt/yr of carbon 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 9M m³/yr of timber.
- Sustaining the 20,000 jobs in the production, processing and related industries, and growing the number of jobs associated with biomass energy production.

Delivery of biodiversity and environmental benefits

- Achieving the 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 Accessible Woodland Standard, 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 resource for health and outdoor education.
- These benefits would be progressively delivered through a sustained woodland creation programme of around 10,000ha/yr.

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This is a higher rate of woodland creation than recent years, but is significantly lower than historic rates of afforestation (Figure 4). The projections of what can be delivered by new woodland creation are based on the annual creation of around 4,000ha of semi-natural and mixed woods and around 6,000ha of softwood production and energy 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 a mix of economic, social and environmental benefits.

Whilst every wood is unique, delivering the Scottish Government's aspirations for forestry will involve four main types of woodland:

Semi-natural woodlands

These woods are composed of native species, matched to local site conditions, making use of natural colonisation where evident, managed by minimum intervention or using small-scale selection systems with an emphasis on developing the structural and species diversity appropriate to the woodland type.

Mixed woodlands

The desired function of many urban, community and farm woodlands leads to mixed species woodlands often including native broadleaves, traditional broadleaves (such as beech and sycamore) and conifers designed to provide shelter, landscape enhancement, screening or enclosure, as well as the potential to provide products for local use. These woods may be primarily for recreation and amenity, stock shelter or sporting uses. In a traditional estate setting, they are often known as 'policy woods'.

Softwood production 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 whilst also providing a backdrop for outdoor access and recreation. Modern softwood production forests have substantial areas of open space, areas of native species and a growing emphasis on use of mixed species and different silvicultural systems, where feasible, to increase diversity and robustness 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, but interest is growing in short rotation forestry or coppicing systems on lower quality ground.

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Wider land use issues

This section explores the wider land use issues of woodland expansion and illustrates the challenges and issues within key areas.

Better quality 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 steeply. 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 a historic high.

Within this context, it is likely that the main focus of woodland creation will be lower quality agricultural 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 community or amenity benefits or supports very high yielding energy forests close to biomass energy plants.

Peats and high carbon soils

Development of establishment techniques in the 1960s allowed deep peats to be drained and ploughed for afforestation, leading to a phase of afforestation 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 apparent and new afforestation on these site types ceased, with attention turning instead to restoration.

Climate change adds a further dimension in relation to afforestation of peats and high carbon soils. Tree establishment tends to result in some release of carbon from soils due to 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 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.

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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 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 2.5M 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 priority habitat, the established consultation processes and environmental impact assessments 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 best practice can offer protection of high quality open habitats and the creation of valuable new woodland habitats.

Similar processes are used in relation to Habitat and Birds Directives listed species and those listed in the UK BAP.

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 respects cultural heritage 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 spectrum 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

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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 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 opportunities to achieve gains in holding 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 within an active agricultural holding or sporting estate can secure high levels of biodiversity and water environment benefits, whilst not jeopardising the economic viability of the holding.

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

Is the Scottish Forestry Strategy aspiration feasible?

In this section, the issues likely to have an impact on the outcomes of the Scottish Forestry Strategy are explored in more detail.

Land suitability

Spatial research undertaken by the Macaulay Land Use Research Institute (MLURI) and Forest Research during the preparation of the Scottish Forestry Strategy⁵ showed that the Scottish Forestry Strategy vision is achievable. 16% (1.3M ha) of Scotland was identified as being potentially suitable for woodland, taking into account biological and land use constraints (non-woodland designated sites, blanket bogs, priority areas for heathlands, landscape sensitive areas, archaeologically sensitive areas, highly forested catchments). A further 28% (2.2M ha) was found to be potentially suitable but with possible constraints in relation to better quality agricultural land (Land Classification for Agriculture (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

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 updated 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.

For example, the Scottish Borders Woodland Strategy⁶ 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 Strategy⁷ 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 Strategy⁸ identifies four land categories:

- suitable for all types of woodland;

⁵ <http://www.forestry.gov.uk/forestry/INFD-6MGFKY>

⁶ <http://www.scotborders.gov.uk/life/planningandbuilding/plansandresearch/5660.html>

⁷ <http://www.ayrshire-jsu.gov.uk/aawsp.html>

⁸ <http://www.highland.gov.uk/yourenvironment/agriculturefisheriesandforestry/treesandforestry/highland-forest-and-woodland-strategy.htm>

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- 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.

Will land come forward for woodland expansion?

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? There are key factors that will mitigate against woodland expansion, including:

- High land prices.
- High cereal prices.
- Uncertainty over future CAP support regimes.
- Complexity of options for bioenergy production.
- Changes to grant regimes.
- Complexities of land ownership and tenure.
- Cultural barriers against considering forestry opportunities.

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

- Rapidly growing interest in biomass energy.
- Uncertainties in financial markets increasing demand for low risk investments.
- Recovering timber prices.
- 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.
- Very high demand and prices for established woodlands.

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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 likely to further reduce agricultural subsidies and increase the focus on wider rural development. This will provide a more conducive context for 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 will 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 will work towards a land use summit in 2009. This will provide an important opportunity to explore how Scotland might make the most of its land resources and land-based industries.

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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 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	Possible woodland creation scenario	
	K/ha	K/ha	% land cover type
Built up	150	10	7%
Arable and temporary grassland	900	50	5%
Permanent improved grassland	900	170	19%
Semi-natural grassland/ bracken	1500	290	19%
Shrub heath	2100	130	6%
Deep peat	400	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 production forests	Energy forests
Built up	✓	✓✓		
Arable and temporary grassland	✓	✓		✓✓
Permanent improved grassland	✓	✓	✓✓	✓
Semi-natural grassland/ bracken	✓		✓✓	
Shrub heath	✓✓			

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The 'built up' land type represents the core urban area of Scotland. For the purposes of focusing urban and community forestry, FCS defines a zone of 2km around settlements of >500 people. This encompasses around 1M 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.

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Delivery mechanisms

This section describes different delivery mechanisms that are available to achieve the woodland expansion benefits described in this paper. A question for respondents to consider is how they might be best used to assist the woodland expansion process?

Natural regeneration

At its core, woodland expansion is a natural process and will happen unaided if there are seed sources and browsing pressure is low. However, this can take a very long time, be vulnerable and may not always result in the desired woodland type. It may result in woodland where it is not wanted.

Where there is a genuine likelihood of success, natural regeneration is a favoured method of woodland creation. Provision is made in grant incentives for woodland creation by encouragement and management of natural regeneration.

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 process offers an important opportunity for woodland expansion, particularly of upland native woodland types, but it requires positive, sensitive and sustained management to secure the full benefits. Natural woodland expansion is an explicit objective for deer management policies in some upland areas.

Standards for Good Agricultural and Environmental Condition provide a regulatory context for curtailing undesirable regeneration, and 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 in pursuit of personal environmental objectives, sometimes through environmental organisations. These woods often make a very positive contribution to the local environment.

FCS will encourage more small-scale woodland creation with easy to access grant support through Rural Development Contracts Land Managers Options. Some Local Authorities also offer support for amenity tree planting.

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Carbon trading and offsetting

As 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.

Forestry Commission Scotland is assisting the development of the voluntary offsetting sector in a way that provides transparency and confidence for individuals and companies interested in the carbon sequestration potential of UK woodlands. We are working with a range of stakeholders to produce a woodland offsetting code of practice, to draft standards for woodland carbon management, to agree carbon monitoring protocols and to encourage development of a woodland carbon assurance scheme.

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 Standard⁹. The statutory Environmental Impact Assessment (EIA) process provides a formal mechanism for identifying and managing environmental impacts associated with all 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.

The current Scottish Rural Development Programme has made provision for up to 8,000ha/year of woodland creation, but actual achievement will depend on the level of applications.

Uptake of grants for woodland creation has been low in recent years for reasons described in this paper. The use of Locational Premiums allowed woodland creation to be focused into particularly high priority situations but recent changes to the EU Rural Development Regulation reduced the maximum level of support available to around 70% of costs.

⁹ <http://www.forestry.gov.uk/website/publications.nsf/pubsbycategorynew?Openview&restricttocategory=UK+Forestry+Standard>

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Rural Development Contracts offer tailored support for different woodland types, along with a supplement for woodland creation in and around towns. Uptake will be monitored and the need to finesse incentives to increase uptake will be explored.

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.

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, with £15M/year of land sale receipts being used to invest 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 and Perthshire 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 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.

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.

This process is managed through the development control system in the light of Scottish Planning Policy guidance. Forestry Commission Scotland works closely with Scottish Government's planners to provide a positive context for woodland creation through Scottish Planning Policies. The same process will be used to update guidance on the production of local Indicative Forestry Strategies.

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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.

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 Scottish 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 Inventory of Woodland and Trees captures the overall situation for established and new woodlands, including unplanned woodland creation by natural regeneration. 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 also 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 CO₂ monitoring protocols for 'land use, land use change and forestry' 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 set¹⁰. This in turn feeds into the wider evaluation associated with the Scottish Rural Development Plan and the Scottish Government's National Performance Framework¹¹.

¹⁰ <http://www.forestry.gov.uk/forestry/infd-6aggzw>

¹¹ <http://www.scotland.gov.uk/Publications/2007/11/13092240/9>

Conclusions

The Scottish Forestry Strategy sets out a strategic framework for the long-term development of forestry in Scotland. It integrates with wider land use policies and the broader aims of the Scottish Government.

As stated in section 1, the Strategy identifies a number of woodland creation priorities for Scotland and this document has pulled together the rationale for woodland expansion, the wider land use issues and aspirations for the future. It also offers up some thoughts on appropriate delivery mechanisms to achieve the woodland expansion targets.

Forestry Commission Scotland would welcome your comments on the issues raised in this document.

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Figure 1: Woodland cover in Scotland 1870 to 2000

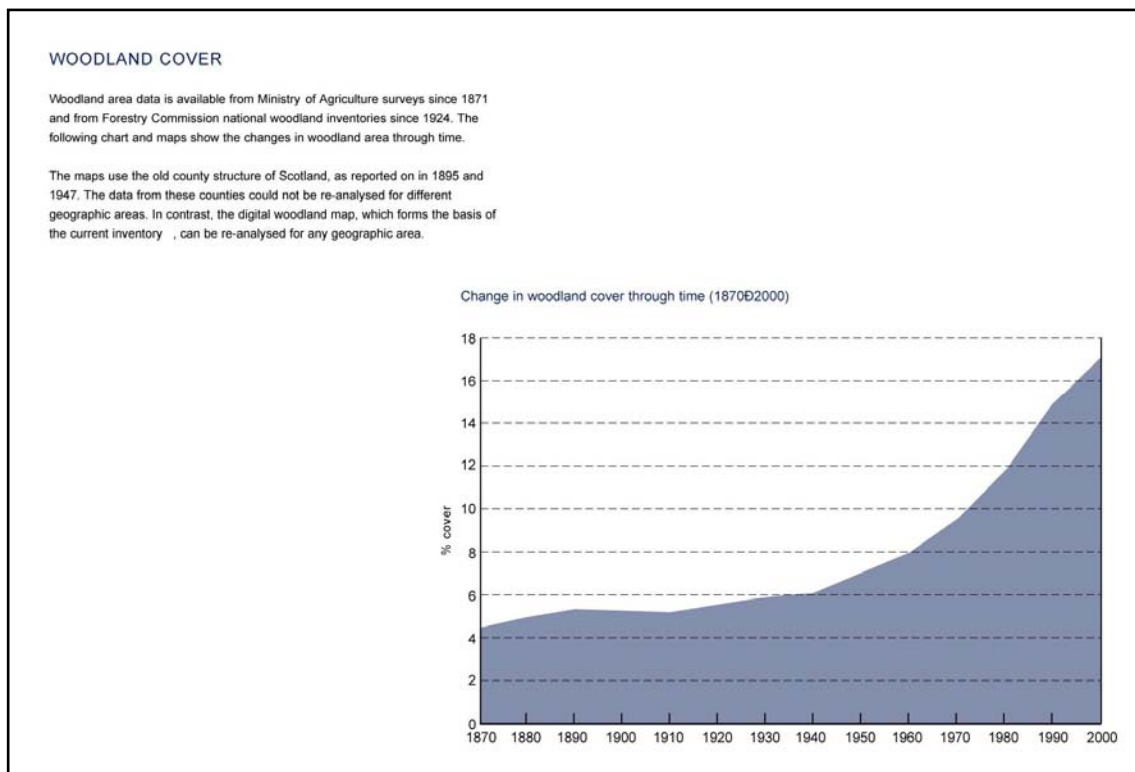
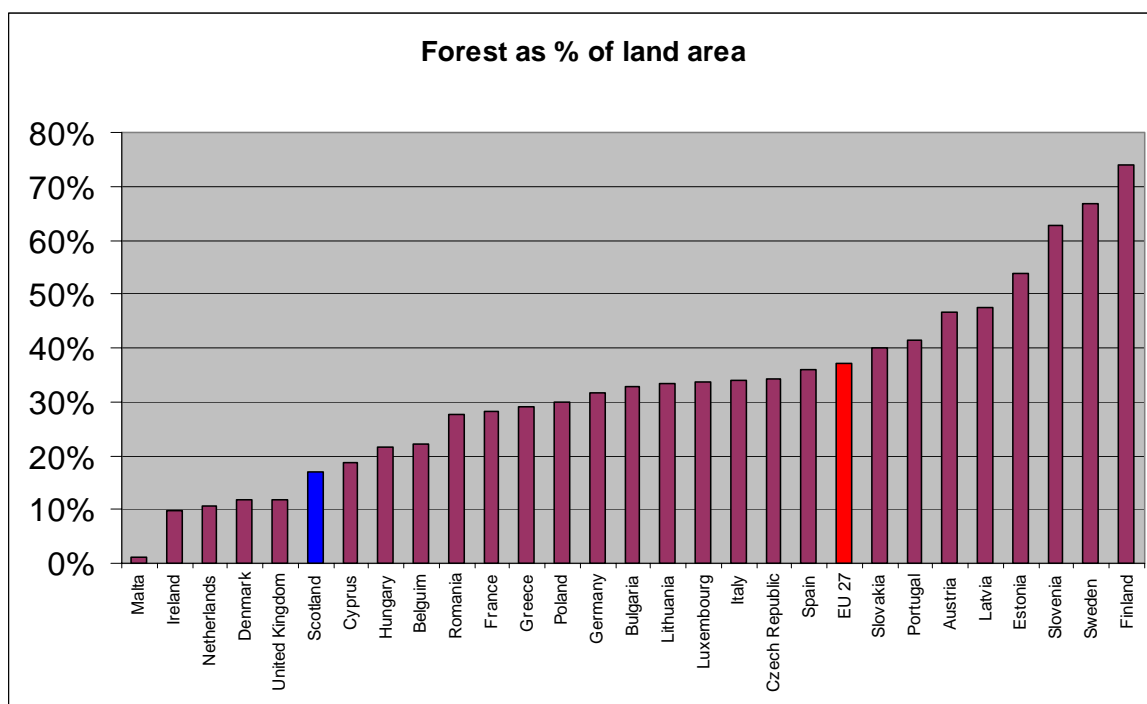


Figure 2: Woodland cover across the EU



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Figure 3: Links between woodlands and Scottish Government Strategic Objectives

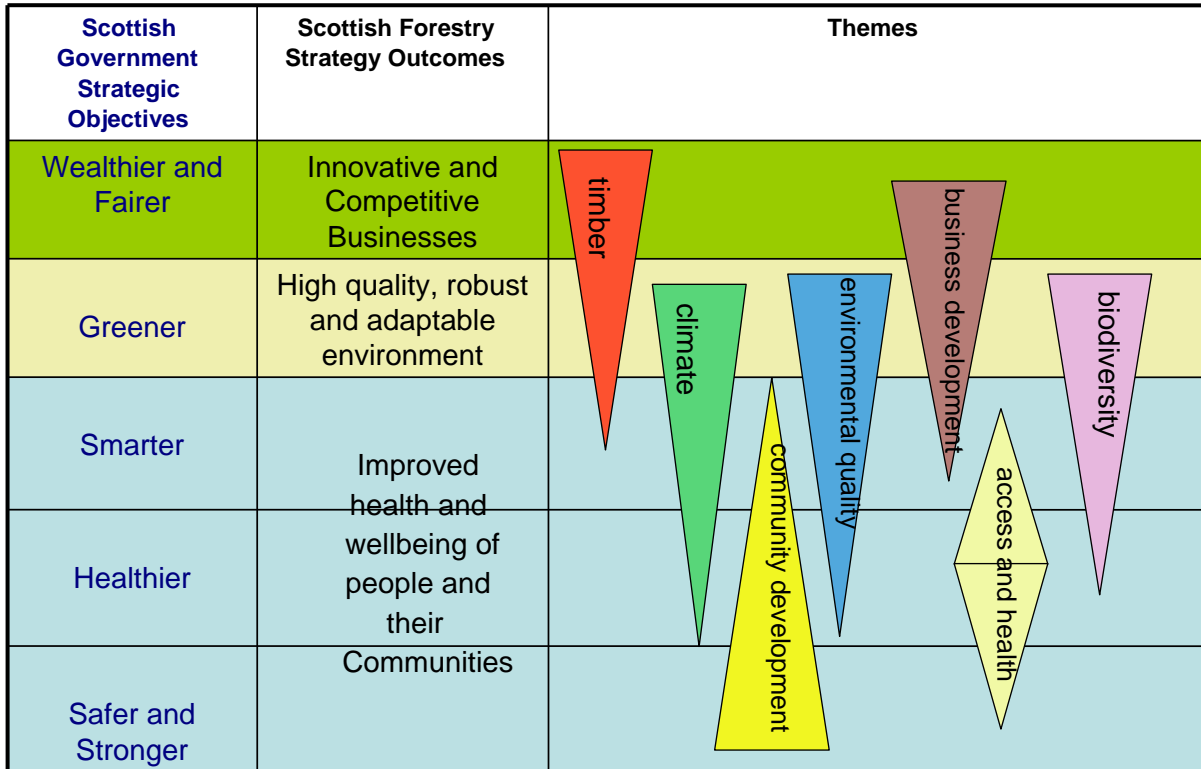
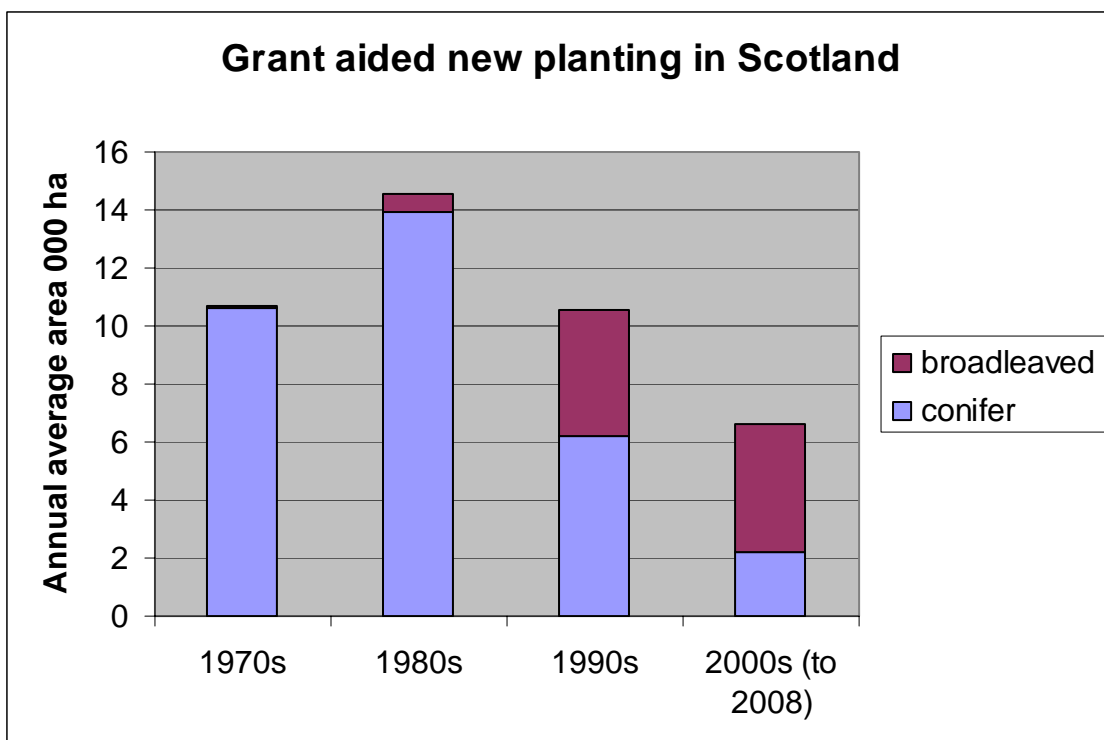
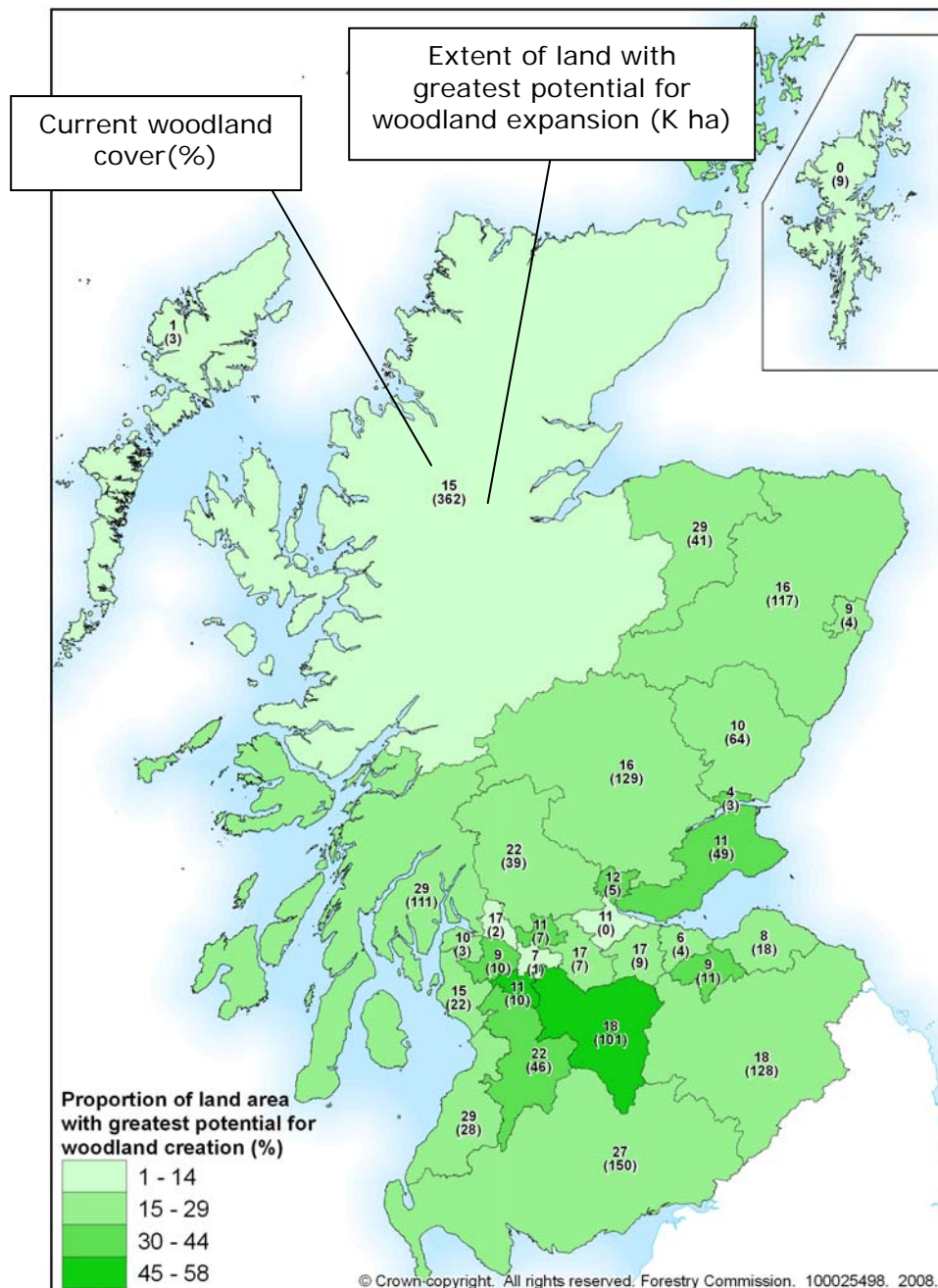


Figure 4: Grant aided woodland creation over the last 40 years



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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 Strategy¹²)



¹² <http://www.forestry.gov.uk/forestry/INFD-6MGFKY>