Forestry Grant Scheme for Scotland

Review of the current native woodland expansion and management options and recommendations for change

A report for the Scottish Environment LINK Woodland Group

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Summary

The Forestry Grant Scheme (FGS) in Scotland is due to end in its present form in 2024, to be replaced by a new grant scheme which it is anticipated will help to deliver the Forestry Strategy for Scotland, fulfil the Scottish Ministers' duty to deliver sustainable forest management as defined by UKFS, and reflect the aims of the Scottish Government to increase carbon sequestration through woodland expansion and to protect Scotland's rich but threatened reservoir of native woodland biodiversity.

The FGS is a complex collection of grant support measures for forestry, covering both afforestation and the management of existing woodland. A review of the existing grant structure shows that of the approximately £274m of approved grant assistance since the start of the current FGS in 2014, £232m went to woodland creation and of this 50% was allocated to the commercial Woodland Creation Conifer option, which is primarily for planting Sitka spruce.

Commercial conifers can play an important role in meeting carbon reduction targets and providing marketable products. However there is a clear need to rebalance the allocation of grant away from planting a narrow range of conifer species, in order to encourage diversity and ensure that the total percentage of native woodland in Scotland is not further reduced by government financial incentives. Also, either additional funds are needed or funds need to be reallocated in order to secure the management of existing woodlands.

Inadequate deer control remains an issue for diverse forestry operations and there is an urgent need to address the problem at a landscape scale. Grants for fencing conifer planting schemes are a significant drain on the FGS budget, and progressively reducing this grant would go a long way towards rebalancing the budget towards the underfunded options

The Government's target of 18,000 ha of new woodland from 2024/25 will result in significant land use change, with significant economic and social impacts on the rural community. Non-native planting schemes that involve whole-farm afforestation should not be encouraged to the extent they are at present, while farmers should be further encouraged to diversify into woodland creation, agroforestry and the management of their existing woodlands. Environmental NGOs have an important role in advising landholders and helping them with the complexities of grant applications.

The existing models of target area grant supplements to encourage the take-up of grants in specific areas and the Challenge Fund model for supplementing individual grant applications have both proved successful and both could be extended for tailor-made solutions to specific issues. Short-term funding for long-term problems is a recurring feature of some forestry operations and here a separate funding model is needed.

The application process could be simplified without lessening safeguards to protect biodiversity, landscape and community interests. Applications must be compatible with regional land-use plans and evolve to reflect new approaches to land-use planning. Forestry grant priorities need to be decided at national level but individual grant applications are best administered at a local or regional level to reflect local priorities, and for that the present Conservancy model is well suited.

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1. Introduction

This report is a review of the current Forestry Grant Scheme (FGS) in Scotland, with an emphasis on the FGS options for broadleaved woodland management and expansion, and with recommendations for change. It was commissioned by the Scottish Environment LINK woodland group and written by Gordon Gray Stephens, Native Woods Cooperative Scotland (Ltd), and Bob Black, Argyll Woodlanders.

If we are to retain a planet we want to live on, it is becoming obvious that change is needed. There is a growing recognition that the nature and climate emergencies are twin crises that must be adequately addressed now. There is a growing consensus about the destination, a stable planet, but not yet a consensus about how we get there.

But change is coming and one of the critical issues in Scotland is land use. How we use the land now is part of the problem and changes to land use must be part of the solution. This means changes to the two major uses of land, forestry and agriculture. The report focuses on forestry but as locking up carbon through forestry expansion is a key action in the Scottish Government's (the Government's) response to the climate emergency, forestry expansion inevitably impacts on the farming community, and the future of the two are bound together.

Because it is a key land use, Scottish forestry impacts on both the economy and how we see and enjoy the Scottish landscape. Woodlands can be a reservoir of biodiversity, and native woodland restoration especially has a major role to play in reversing biodiversity loss. Forestry is thus central to the need to protect and enhance the country's social, economic and natural capital.

The system of forestry grants is the main incentive used by the Government to drive change in Scottish forestry. The volume of reports produced in recent years and months by the Government, as well as by agencies, NGOs, advocacy groups and industry, are a testament to how much thought is going into this process. The end of the current FGS, scheduled for 2024, the uncertainty over the future political relationship between the UK and Scotland and uncertainty over where future funding is going to come from mean that the form of the post-2024 grant system is unclear and any proposed changes will need to be capable of adaptation, but there is now an opportunity to influence the direction of travel.

The aim of this report is to contribute to the debate and in particular to support the LINK woodland group in two of its current specific aims:

- to analyse the effectiveness of the FGS and recommend specific improvements in the delivery of public benefit through land use payments,
- the introduction of a premium incentive for creating nature-friendly productive broadleaf woodlands.

Sections 1 to 3 of the report are a review of the current FGS, sections 4 onwards are a discussion of the potential for change in the way that forestry grants are delivered in order to maximise their benefit to the public. This discussion is based on consultations with practicing foresters, agency staff and others involved with the future of forestry.

2. The aims and scope of the current FGS

2.1 The regulatory framework

The FGS can be seen as the carrot that encourages and enables land managers to plant and manage forests according to the objectives of the Government but behind the carrot is a stick, a set of standards that managers are expected to comply with if they wish to receive grant aid. This is the UK Forestry Standard (UKFS), which details the UK Governments' approach to sustainable forestry. It is a set of regulations and standards covering all aspects of forestry and it applies to all woodlands that are in receipt of grants or other approvals and consents, such as felling consents. It incorporates international agreements and conventions on climate change, biodiversity and forest management. Conforming to it is a basic requirement of all FGS eligibility. However, with a few exceptions, existing woodlands where active management is not proposed are not covered by UKFS regulations.

The UKFS is under review at the time of writing and there are opportunities to strengthen the document so that managers have to meet a higher minimum standard. In April 2021 LINK commissioned the Forest Policy Group to deliver a workshop to address this matter and a final report has now been supplied to LINK.

2.2 The vision and aims of the Scottish Government

2.2.1 Scotland's Forestry Strategy

Scotland's Forestry Strategy 2019–2029[1] presents the Government's 10 year framework for action and a vision for Scotland's forests and woodlands for the next 50 years: "*In 2070, Scotland will have more forests and woodlands, sustainably managed and better integrated with other land uses. These will provide a more resilient, adaptable resource, with greater natural capital value, that supports a strong economy, a thriving environment, and healthy and flourishing communities*."

The stated priorities within the strategy are

- "Ensuring forests and woodlands are sustainably managed
- Expanding the area of forests and woodlands recognising wider land-use objectives
- Improving efficiency and productivity, and developing markets
- Increasing the adaptability and resilience of forests and woodlands
- Enhancing the environmental benefits provided by forests and woodlands
- Engaging more people, communities and businesses in the creation, management and use of forests and woodlands."

These are wide-ranging objectives based on the principle of sustainable forest management and social inclusion. In March 2020 the Government published Scotland's Forestry Strategy

[1] Scotland's Forestry Strategy https://www.gov.scot/publications/scotlands-forestry-strategy-20192029/

Implementation Plan 2020-2022, reiterating the aims of the strategy and highlighting the second of these priorities "*Expanding the area of forests and woodlands recognising wider land-use objectives*."

Targets for tree planting were included in the strategy and its implementation plan but events have been moving fast, in particular recognition of the growing urgency in addressing the climate emergency. Speeding up the rate of carbon sequestration through tree planting has become one of the main policies that the Government has adopted for meeting its target of zero carbon emissions by 2045 and to some extent this drive overshadows some of the other policies contained within the strategy, certainly in terms of the attention it has received.

2.2.2 The Climate Change Plan

In 2018 the Government published the Climate Change Plan 2018-2032, setting out how it proposed to tackle climate change. An update was published in December 2020[2]. The Forestry Strategy contains a target for woodland creation of 12,000 ha in 2020/21, increasing incrementally to 15,000 ha in 2024/25. The 2020/21 target is likely to be met and the Climate Change Plan update set out stepped targets for expansion reaching 18,000 ha by 2024-25.

This is an ambitious tree planting plan that has implications for other land uses, particularly farming. As the update says "*We must make large scale and rapid changes in the way we use and manage our land to help reach our statutory net-zero targets. This will require us to move appropriate land out of farming as we currently understand it into forestry and peatland, and require those who manage our land for whatever purpose to embrace more sustainable practices"*.

2.2.3 Scotland's Third Land Use Strategy

Scotland's Third Land Use Strategy 2021-2026[3], published by the Government in March 2021, *"sets out our long term vision for sustainable land use in Scotland, our objectives and key policies for delivery ……. Meeting our ambitious targets for addressing climate change needs a fresh approach including the need to rebalance the planning system to ensure that climate change is a guiding principle for all plans and decisions"*. It avoids specific policy proposals but its ambition is to take a holistic approach to land use, employing the concepts of natural capital and ecosystem services. This implies a closer look at the balance between the environment, the various land use activities and land ownership and management. The intention is to feed these ideas into the forthcoming National Planning Framework (NPF4), a long term spatial plan for Scotland setting out where development and infrastructure is needed *"to support sustainable and inclusive growth out to 2050".*

The strategy supports the growth of regional initiatives, in particular Regional Land Use Partnerships (RLUPs) as proposed by the Scottish Land Commission. Five pilot RLUPs are being created *"to engage collaboratively with local communities and stakeholders in their region"*.

[2] Climate Change |Plan 2018-2032 Update https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/

[3] Scotland's Third Land Use Strategy 2021-2026 https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/

2.2.4 Scottish Biodiversity Strategy Post-2020: A Statement of Intent

The Scottish Biodiversity Strategy is in the process of being updated. The Statement of Intent, published in December 2020, promises to update the Biodiversity Strategy within a year of the international Convention on Biodiversity, held in March 2021.

It has few specific proposals but reiterates the Government's policy of regarding the protection of Scotland's biodiversity as a priority, regarding it as *"at the heart of our economy as well as being central to our environmental and social wellbeing……. future farmers and land managers should be rewarded for positive land stewardship that enhances and maintains the natural capital that well-managed land provides in Scotland"*.

In 2015 the Government published Scotland's Biodiversity, a Route Map to 2020[4]. It contained targets to increase the amount of native woodland in good condition and establish *"3,000 to 5,000 ha of new native woodland creation per year"*.

2.2.5 Scottish Government and Green Party Policy Programme

The biodiversity targets were re-confirmed in the Scottish Government and Scottish Green Party: draft shared policy programme[5], which said *"We will increase the annual native woodland creation target from 3000 to 4000 hectares and commit to setting evidence-based targets for both native woodlands and natural regeneration as part of the 2022 Biodiversity Strategy"*. The Government later confirmed that the 4,000ha was the minimum target for native woodland creation.

There is also a commitment to *"further protect Scotland's ancient woodlands through establishing a Register of Ancient Woodlands, and by encouraging owners and managers to maintain them and improve their condition, providing support through the Forestry Grant Scheme."*

2.3 A potted history of grant aid for forestry

State aid for private forestry derives from the Dedication Scheme (1947 to 1981), administered by the Forestry Commission. Initially it made funding available for good forestry management but after 1974 it included grants for new planting, with additional supplements for broadleaves. Other grants were introduced during this period, e.g. for native pinewoods (1978-81), thinning (1949-58) and small woodland planting (1951-77).

From 1981-88 a Forestry Grant Scheme was introduced and Dedication was closed for new applicants, though previously dedicated woodland could remain in receipt of grant aid for some years. From the late 1960s there was a growing recognition of the value of broadleaved, native and multi-purpose woodlands and this was reflected in the expanding scope of grant availability - in the Broadleaved Woodland Grant Scheme (1985-88) and from 1988 in the three versions of the

[4] Scotland's Biodiversity, a Route Map to 2020 https://www.gov.scot/publications/scotlands-biodiversity-route-map-2020/documents/

[5] Scottish Government and Scottish Green Party: draft shared policy programme, August 2021 https://www.gov.scot/publications/scottish-government-and-scottish-green-party-shared-policy-programme/

Woodland Grant Scheme (WGS), each expanding the scope of what was eligible for grant-aid, for both woodland establishment and woodland management. For new woodlands, these UK-wide WGS schemes were supplemented with additional payments from the agricultural departments, through the Farm Woodland Scheme, then the Farm Woodland Premium Scheme.

The WGS iterations were followed by the devolved Scottish Forestry Grant Scheme (SFGS) in 2003 and then by the Rural Development Contracts – Rural Priorities programme in 2008. The latter integrated the agricultural, forestry and rural development grants for Scotland into one system. The current Scottish Rural Development Plan 2014-2020 (SRDP) has been extended until 2024, at which time it should be replaced by a new Scottish grant system.

As well as widening the scope of what is eligible for grant-aid, each successive scheme has increased in complexity, both for applicants and in its administration. With the UK leaving the EU, the basis for funding the future system is currently an unresolved political issue between the UK and Scottish Governments but, whatever the outcome, a rapidly increasing awareness of the necessity to change how society relates to nature creates opportunities to revise and re-prioritise the grant structure to meet the challenges of the future.

2.4 The current Forestry Grant Scheme

2.4.1. Overview

The Government's vision and aims for forestry are admirable but the hard work comes with the implementation. This is primarily the responsibility of Scottish Forestry (SF), an agency directly answerable to the Scottish Government and created in April 2019 to succeed Forestry Commission Scotland following the devolution of forestry. .

The FGS is the vehicle through which SF and thus the Government delivers its forestry policy. Since the end of 2020 all forestry scheme approvals have been 100% funded[6] by the Scottish Government with no funding from either the UK Government or the EU (though there is some co-funding of cross-border services such as the administration of the Woodland Carbon code).

The FGS is wide-ranging in scope, grant-aiding all aspects of forestry including afforestation and the management of existing woodland, with links to agricultural support through options aimed directly at farmers and grants that are a blend of forestry and agriculture. Embedded within the FGS is the requirement to abide by the regulatory framework of the UKFS.

The FGS budget for 2021 is £63.3m[7], a significant sum of public money, though small compared to other sector budgets and small compared to the public good that forestry delivers. Approximately 86% of this money is allocated to Woodland Creation with an additional 4% going to options associated with managing new planting schemes, creating access infrastructure and purchasing forest and nursery machinery. Most of the remainder is allocated to existing woodland

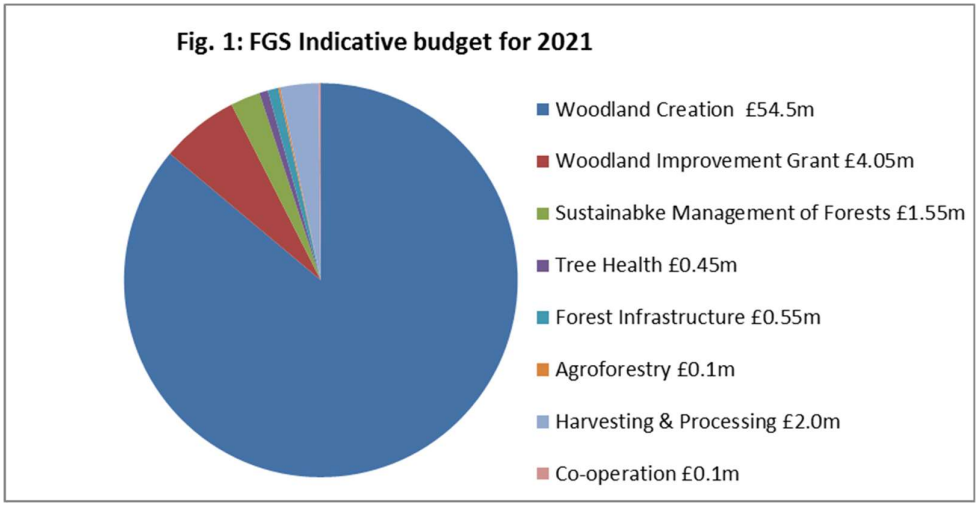
[6] https://forestry.gov.scot/publications/1310-scottish-forestry-business-plan-2021-2022/viewdocument/1310

[7] Figures based on the current allocation of money within the FGS Budget Categories and the amount still available for new applications in 2021/22, May, 2021 https://forestry.gov.scot/publications/1021-sf-briefing-note-may-2021

management, co-operation between forest managers, protecting tree health and grants that connect forestry with farming, such as controlled woodland grazing and agroforestry grants. Grant applications are assessed on a competitive basis according to how well they meet the requirements and aims of the option applied for. In practice applications for some options, particularly new planting options, have not been subject to particularly competitive pressures, while some of the management options have been subject to stiffer competition arising from strong demand in the face of constrained budgets.

2.4.2 Woodland Creation

The 2021 FGS budget breakdown[8] shows that the emphasis of the scheme is on Woodland Creation (i.e. afforestation). Figure 1, based on the budget breakdown statistics, shows the proportion of the 2021 budget allocated to Woodland Creation compared with the allocation for other categories. These other categories are explained in sections 2.4.3 to 2.4.5.



There are several different rates of payment for Woodland Creation, depending on what species are planted and where, and the spacing of the planted trees. There is also an annual maintenance payment for five years for weeding and beating up the planted trees (see fig.2).

[8] https://forestry.gov.scot/publications/1021-sf-briefing-note-may-2021

Fig.2[9]: current grant rates for Woodland Creation						
Woodland creation option	Payment rates in standard areas			Payment rates in target areas		
	Initial planting payment rate (£/ha)	Annual maintenance payment rate (£/ha/year) for five years	Total payment rate (£/ha)	Initial planting payment rate(£/ha)	Annual maintenance payment rate (£/ha/year) for five years	Total payment rate (£/ha
Conifer	1920	208	2960	2160	234	3330
Diverse Conifer	2160	336	3840	2430	378	4320
Broadleaves	2880	528	5520	3240	594	6210
Native Scots Pine	1840	272	3200	2070	306	3600
Native Upland Birch	1840	128	2480	2070	144	2790
Native Broadleaves	1840	272	3200	2070	306	3600
Native Low-density Broadleaves	560	96	1040	630	108	1170
Small or Farm Woodland	2400	400	4400	2700	450	4950
Native Broadleaves in Northern and Western Isles	3600	624	6720	n/a	n/a	n/a

The Conifer option is designed for plantations dominated by Sitka spruce, which must make up between 65% and 75% of the total number of trees planted. Other conifers must make up from 10 to 15% and native broadleaves between 5 and 10%. At year 5 conifers must be at a minimum spacing of 2 metres. In the Diverse Conifer option the conifer element is not dominated by Sitka spruce, though Sitka spruce can be within the mix as a minor species.

The Broadleaves option is a grant for growing broadleaves for timber. Species suitable for timber production must make up between 75 and 90% of the total and include native species (oak, birch, wild cherry and aspen), and introduced species (beech, sycamore, sweet chestnut and poplar) with a minimum spacing of 1.8 metres for oak and beech and 2 metres for the others.

The native woodland planting options reflect pre-existing habitat characteristics and are divided into native Scots pine and native upland birch, where pine or birch respectively are the main species, and the native woodland option where there is a greater flexibility of species choice. The Native Low-density Broadleaves option is intended for planting native species to create transitional or hybrid habitats such as tree-line woodlands, scrub woodland or wood pasture. Spacing for the latter option

[9]Figs 2, 3 and 4 are reproduced from the relevant FGS website pages:
https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/forestry-grant-scheme/

is at 4.5 metres and up to 50% of the area can be 'designed open ground' (i.e. ground receiving the option grant but not planted). For the other options the maximum amount of allowable designed open ground cannot be more than 10 or 15% of the total, depending on the option.

The Small or Farm Woodland option is designed to grant aid woodlands of up to 5ha, consisting mainly of a mix of conifer and broadleaved timber species.

Grant supplements are available for target areas which include areas identified as priorities for woodland expansion in the Cairngorms National Park and the Loch Lomond and the Trossachs National Park and woodlands likely to provide multiple benefits for natural flood management and water quality. Planting in the Central Scotland Green Network area attracts grants additional to the standard area grants but on a sliding scale according to whether they are in the core or peripheral areas. Tree species may be either conifer or broadleaf. However native broadleaved woodland planting attracts a supplement in the Northern and Western Isles and for appropriate sites in the Highlands, mostly north of the Great Glen.

For planting schemes over 300 ha and schemes where ground preparation involves ploughing, payment rates are less than those in table 1, e.g. for the Conifer option in non-target areas, the standard initial payment rate is £1920/ha, with ploughing it is reduced to £1680/ha and for schemes over 300 ha. it is £1440/ha. In addition to the initial planting grant and the maintenance grant, there are standard cost payments for 'capital items' such as tree protection and bracken control.

A New Natural Regeneration Establishment grant of £300/ha is available to help with the establishment of new native woodland within or around the woodland edge. Within the FGS structure, this is included under the Woodland Improvement Grant (WIG) rather than Woodland Creation.

SF publishes statistics[10] showing where FGS money has been allocated since the start of the current spending round in 2015. Based on grant approvals up to the end of July 2021, £232m has been spent or approved for spending on afforestation, including natural regeneration, approximately 85% of the total spend on all FGS options. If you add in spend on activities associated with restocking felled areas and machinery grants, the figure is approximately 90%. 50% of Woodland Creation grant allocation and 42% of the total FGS grant allocation has gone to the Woodland Creation Conifer option (i.e. the Sitka spruce dominated option) .A further 9% of the Woodland Creation grant allocation has gone to the Diverse Conifer option. Just 33% has gone to all the native woodland planting options combined, 0.6% to natural regeneration, the remainder going to the Broadleaves and Small Farm Woodlands options.

In terms of area, new planting is dominated by the Woodland Creation Conifer option, 51% of the total, whereas natural regeneration accounts for 5.5%, perhaps indicating that, in terms of area, natural regeneration is relatively inexpensive compared to conifer planting. The split between Woodland Creation options is very geographically uneven with 86% of South Scotland Conservancy approvals being for the Conifer/Diverse Conifer options whereas in Highlands and Islands 83% of

[10] FGS Statistics Summary - Clearing Round 66 (30/07/2021) Scotland Totals

approvals were for the native woodland categories, including Scots pine and natural regeneration. Natural regeneration in the Highland and Islands Conservancy amounts to approximately 65% of all natural regeneration grant areas in Scotland, with Grampian Conservancy at 30% responsible for most of the rest.

2.4.3 Sustainable Management of Forests

Sustainable Management of Forests (SMF) is the section of the FGS that deals with managing existing woodlands, excluding the cost of actual 'capital items' such as fencing or rhododendron control. Table 2 shows the options currently available and the payment rates. The Native Woodland option is payment for site-specific deer control and woodland condition monitoring. The Woodland Grazing option is for seasonal or year-round grazing with livestock for biodiversity reasons in native woodland or Plantation on Native Woodland Sites. The payment is for grazing according to a Woodland Grazing Plan and for regular herbivore impact assessments.

The budget for SMF options in 2021 is £1.55m., approximately 2.5% of the total FGS budget allocation for the year.

Fig.3: current grant rates for Sustainable Management of Forests

Sustainable Management of Forests option	Grant payment rate
Low Impact Silvicultural Systems (LISS)	£30/hectare/year
Native Woodland	£25/hectare/year
Livestock Exclusion	£43/hectare/year
Woodland Grazing	£100/hectare/year
Public Access – Rural Woods	£100/hectare/year
Public Access – Woods In and Around Towns (WIAT)	£100/hectare/year for first 10 ha. £10/hectare/year for any additional areas
Species Conservation – Grey Squirrel Control	£200 per trap/annum
Species Conservation – Predator Control for Capercaillie and Black Grouse	£6.60/hectare/year
Species Conservation – Reducing Deer Impact	£6.00/hectare/year

2.4.4 Woodland Improvement Grant (WIG)

There are three elements to WIG. The first is fixed cost payments for a wide range of woodland management capital items. Those under the Habitats and Species option include activities designed to benefit priority habitats such as native woodland, and include rhododendron control and fencing. Where items are also applicable to Woodland Creation, such as fencing, the rates are higher under Habitats and Species. Deer fencing, for example, is paid at £9.50/metre under Habitats and Species, £7.60 under Woodland Creation WIG. Stock fencing is paid at £5.50 under Habitats and Species (the same as the agri-environment rate for farmland), £4.40 under Woodland Creation. The natural regeneration grant is included under the Habitats and Species option and is thus eligible for these higher unit costs. For woodland with designated status, such as SSSI, it is possible to apply for actual costs rather than fixed standard costs. This involves securing three firm quotes from contractors and choosing the cheapest.

The second element of WIG is payment at a standard rate for plans required as part of the eligibility requirements for other options. This includes the Deer Management Plan option, which is different to the site-specific deer management option under SMF. The WIG plan is aimed at assessing and controlling deer populations on a landscape-scale. The third element, Restructuring Regeneration, contains grants payable when restructuring woodland after harvesting and aimed at encouraging more biodiversity when replanting.

Fig.4: current grant rates for Woodland Improvement Grant

Woodland Improvement Grant option	Grant payment
Habitats and Species	Standard costs for capital works and items from a set list. Also, actual costs are available for work in woodland Sites of Special Scientific Interest and Natura sites where you can demonstrate that the actual costs of the eligible capital items will be higher than the set standard costs list for this option.
Low Impact Silvicultural Systems (LISS)	Standard costs for capital works and items from a set list.
Woods In and Around Towns (WIAT)	Standard costs for capital works and items from a set list.
Planning	
Long-term Forest Plan	£25 per hectare for first 200 hectares. £5 per hectare thereafter. Minimum £500; maximum £15,000.
Forest Plan Renewal	£10 per hectare for first 200 hectares. £5 per hectare thereafter Minimum £500; maximum £10,000
Woodland Grazing Management Plan	£1200 per plan
Woods In and Around Towns (WIAT) – Urban Woodland Management Plan	£1000 for any area up to 10 hectares £25 per hectare thereafter
Deer Management Plan	£12 per hectare for first 500 hectares £1 per hectare thereafter Minimum £5,000; maximum £15,000
Restructuring Regeneration	
Delivering UKFS Woodland	£300 per hectare
Delivering Diversity and Resilience Woodland	£550 per hectare
Improved Vegetative Stock for Sitka Spruce	£60 per hectare

The budget for WIG options in 2021 is £4 million, approximately 6% of the total FGS budget allocation for the year. Most of this was allocated to the Restructuring Regeneration grants for restocking felled woodland. By May 2021 funds were no longer available for new Habitats and Species, LISS or Restructuring Regeneration applications claimable in 2021, though funds were still available for grant payment in 2022[11].

[11] https://forestry.gov.scot/publications/1021-sf-briefing-note-may-2021

2.4.5 Other FGS options

Five FGS grant options and one loan scheme lie outside the main framework of the scheme.

Agroforestry. This option is designed to blend low density planting of broadleaved trees for timber with either sheep farming or growing arable crops. Payment rates are £3,600.00/ha for planting at 5metre spacing or £1860.00/ha at 7metre spacing. There is also an annual maintenance payment of £84 or £48 for five years.

Forest infrastructure. This is a grant for constructing road access to small or inaccessible woods in order to manage them for timber production. For upland farms, grant applications can be combined with Woodland Creation applications for new conifer woodland of up to 50 ha in the "Sheep and Trees" package, intended to encourage farm diversification.

Forestry Cooperation. This grant offers a maximum of £10,000 to pay for a project coordinator to drive forward landscape-scale collaborative projects between two or more landowners for farm/croft afforestation and restoration, riparian afforestation, landscape scale woodland deer and rhododendron control projects, tree health projects, strengthening of woodland habitat networks and schemes that might bring economic benefits to a local community.

Harvesting and processing. 40% grant payments of up to £50,000 as a contribution to the cost of purchasing small-scale equipment for harvesting, growing or processing trees.

Tree health. This grant contributes to the cost of preventing the spread of *Phytophthora ramorum* by supporting the costs of removing infected plants and any subsequent replanting. It only applies where a Statutory Plant Health Notice has been issued.

The Small Woodlands Loan Scheme[12]. This is a new scheme *"aimed at small farmers, crofters and other small landowners to assist with the costs of implementing new Woodland Creation schemes*" (SF). For Woodland Creation schemes less than 50 ha, it is available as a bridging loan until the Woodland Creation grant is paid. It covers 50% of the cost of capital items for up to 20 ha of the scheme.

The combined budget for the five grant options in 2021 is just over £3m[13]. The budget allocation for Agroforestry and Forestry Cooperation is £0.1m. each, that for Harvesting and Processing is £2m. As of May 2021 none of the budgets for the five options were fully allocated.

2.4.6 Locational premiums and localised grant availability

For some Woodland Creation options there are add-on grants for schemes located in specific areas. The grant for planting Native Broadleaves in the Northern and Western Isles is a grant with its own payment rates (see fig.2) and permissible species mix. It applies to Orkney, Shetland and the Western Isles and may also apply elsewhere in the crofting counties where exposure is high.

[12] Small Woodlands Loan Scheme https://forestry.gov.scot/support-regulations/forestry-grants/small-woodland-loan-scheme

[13] https://forestry.gov.scot/publications/1021-sf-briefing-note-may-2021

Target area supplements[14] to the standard grant rates are available for:

- New conifer or broadleaved woodland in areas identified as being preferred or potential in the relevant Local Authority Woodland Strategy (or equivalent), excluding National Park Areas.
- New Diverse Conifer or native woodland in areas identified by the Cairngorms and the Loch Lomond & The Trossachs National Park Authorities as a priority for woodland expansion. Broadleaved woodland can also qualify in the latter Park.
- New Diverse Conifer, broadleaved or native woodland woodlands in areas which are likely to provide multiple benefits for natural flood management and water quality,
- New native woodland within the area identified as the 'Highland Native Woodland target area'.
- New conifer, broadleaved and native woodland in the Central Scotland Green Network Contribution area.

The Woods In and Around Towns grant (WIAT) grant is one of the options within Sustainable Management of Forests. It is a hectarage grant for public access management of woods within 1km, of settlements with a population of over 2000 people. Under the Woodland Improvement Grant, additional funding is available for specified operations.

Grants to control rhododendron are only available in Rhododendron Control Target Areas, areas limited to parts of coastal Argyll and the West Highlands.

3. Sources of forestry funding and support other than FGS

3.1 Advisory bodies, additional sources of funding and forestry standards

3.1.1 The Woodland Trust

The Woodland Trust (WT) run either on their own account, or through partnership with other organisations, a number of projects that provide advice to landholders and help them to prepare FGS applications. In the north and west of Scotland, WT run the Croft Woodland Project[15], which is currently funded until 2025, and elsewhere it is working with Borders Forest Trust, Trees for Life and the Native Woods Cooperative. WT may also contribute to the cost of trees and protection for small schemes and community projects.

3.1.2 Farm Advisory Service

Scotland's Farm Advisory Service (FAS) is part of the Scottish Rural Development Programme (SRDP) and is now funded by the Government. It provides information and resources aimed at increasing the profitability and sustainability of farms and crofts. Funding of up to £1000 is available for specialist advice on woodland management and conservation, including afforestation.

[14] https://www.ruralpayments.org/topics/all-schemes/forestry-grant-scheme/woodland-creation/

[15] Croft Woodlands Project https://www.woodlandtrust.org.uk/about-us/where-we-work/scotland/croft-woodlands/

3.1.3 Future Woodlands Fund [16]

The Future Woodlands Fund is run by Future Woodlands Scotland and funded by BP. The fund aims to help landowners to plant or regenerate native woodland by providing advice and financial help. It helps owners apply for both the FGS and the Woodland Carbon Code and offers area payments of £100/ha for 20 years. In return it will take ownership of the carbon sequestered by the woodland. Currently, the fund is due to close in 2022.

3.1.4 Woodland Carbon Code [17]

The Woodland Carbon Code (WCC) is the UK quality assurance standard for afforestation projects which seek to generate independently verified carbon units. It is backed by the Government, the forest industry and carbon market experts, and internationally recognised. The rules are complicated but basically the total carbon sequestration that the woodland should achieve over its lifetime are calculated and verified and then can be sold to a third party for carbon offsetting purposes. There is growing interest in the scope to trade carbon units, and their role in assisting with the funding of afforestation.

3.1.5 UK Woodland Assurance Standard (UKWAS)

The UK Woodland Assurance Standard (UKWAS) is a certification standard for verifying sustainable woodland management in the UK. It is owned and managed by a broad partnership and is independent of government. UKWAS is based on the requirements of international forest certification schemes as well as UKFS, and goes beyond the latter in terms of some of its requirements. Its principal purpose is to act as an audit protocol for the voluntary certification schemes, which are paid for by the forest or woodland owner. It covers both native woodlands managed for conservation and forest managed for timber. Though not a grant in itself it does enhance access to market for certified timber products and often attracts a better price.3.2 Tax incentives

Tax incentives are a significant driver of forestry activity, especially for large-scale commercial forestry. However, the tax environment for forestry is determined at the UK level and not by the Scottish Government. Addressing this complex issue is a requirement for a just transition, and requires strategic partnership working with a range of stakeholders.

Income realised through the sale of timber and payments received under the FGS are exempt from income tax. Further, following two years of ownership, commercially managed woodlands will normally attract 100% inheritance tax business property relief. There is no capital gains tax liability on the increase in the value of commercial tree crops, only the value of the underlying land. These incentives significantly enhance the attractiveness of investing in forestry for both individual landowners and corporations.

[16] Future Woodlands Fund https://www.futurewoodlands.org.uk/future-woodlands-fund/

[17] The Woodland carbon code https://woodlandcarboncode.org.uk/

4. The drive to plant more trees

4.1 Incentives to plant

4.1.1 FGS budget allocation since 2015

Looking at the SF Clearing House statistics for July 2021, £116m has been allocated to the Woodland Creation Conifer option since 2015 and £20m to the Diverse Conifer option. The Conifer option approvals amount to 27,998 ha and the Diverse Conifer option approvals to 3741 ha. Together they comprise 58% of the total Woodland Creation hectarage allocation.

If the expansion in afforestation continues at its current rapid rate in order to meet the Government's target of 18,000 ha of new planting a year by 2025 and if the current structure of grant incentives remains in place, the amount of conifer planting in Scotland is likely to increase massively over the coming years.

4.1.2 The Government's drive to reduce carbon emissions

The Government has multiple goals for forestry, reflected in the wide scope of the FGS. But its drive for greater afforestation has been motivated mainly by the need to encourage future economic prosperity and by its desire to meet the target of net zero carbon emissions by 2045. It has seen carbon sequestration as one of the ways for Scotland to reach net zero and, until large-scale carbon capture and storage becomes a commercially viable technology, the main way it feels it can do this is through changes to land use, by encouraging tree planting and by protecting soils.

Fast-growing trees can be very efficient at locking up carbon in their stems within a short period of time, which is, perhaps, the main reason why the emphasis in the grant system favours the planting of such trees. Unless there is a change in policy direction, the planting of conifers, and Sitka spruce in particular, is likely to dominate the allocation of public money to forestry, at least in the short-term.

4.1.3 The commercial drive for conifer planting

Where site conditions are suitable, Sitka spruce is hard to beat for its fast growing, low maintenance and relatively undemanding characteristics, making it ideally suited for growing on upland sites in areas of Scotland with a wet, mild climate. It could be argued that it is 'the right tree in the right place' in areas where few biodiversity, landscape or community issues mitigate against it and when both the need to sequester carbon rapidly and the need to ensure a future stock of timber-producing trees. are priorities. Much tighter regulations and some awareness of mistakes made in the planting schemes of the 1960s and 1970s mean that contemporary new conifer plantings or the restocking of old plantations are carried out with greater attention to their potential negative effects and, at least in theory, these mistakes can then be avoided.

Sitka spruce produces a marketable timber crop in a relatively short time-frame and though timber prices are notoriously volatile, they are currently high and recent geopolitical decisions suggest that prices may remain high for the foreseeable future, with only minor variations, though expert

opinions differ on the extent to which they may fluctuate. This mature timber market makes growing Sitka spruce a safe financial prospect for landowners and organisations, including financial companies looking for an assured future return on their investment. This attraction is turbo-charged by the prospect of income from saleable carbon credits, by potentially substantial tax benefits, and by stable investment returns on UK industrial forestry that have exceeded those of any other mainstream investment market in the world from at least 2007[18].

Conifer schemes tend to be large, which is good for boosting the national hectarage targets for afforestation. Size is driven by economies of scale and these economies can more than compensate for the lower per hectare rate for schemes over 300 ha, despite the substantial up-front costs. Unconfirmed stories suggest that large schemes over 20ha have made a net profit just out of the grants that they attract.

4.2 Tree planting, carbon sequestration and soils

4.2.1 Soils

There has been much research in recent years on the variables affecting carbon sequestration under different models of forest establishment and management. Trees lock up carbon in their stems, though up to 50% of the biomass is contained in branches, roots and foliage[19], the decomposition of which will release previously stored carbon. Broadleaved trees, such as oak and beech, have a greater proportion of biomass in their branches and roots than conifers grown for timber and are usually more slow-growing[20], though in some circumstances they can rival conifers for their speed of growth. Commercial conifers are usually harvested sooner than broadleaved species, and the harvested land will be replanted. The relative efficiency of the different silvicultural models in locking away carbon depends on the crop species, its rate of growth, the soil type, how the ground is prepared for planting and restocking and what the timber is used for. These represent a complex set of variables that do not make it easy to generalise about the merits of specific approaches.

Ground preparation is known to be a significant factor in determining the net carbon sequestration of a planting scheme. Ground preparation disturbs the soil and releases some of the carbon stored there. Even if soil disturbance is minimised, there is still a net loss of carbon when trees are planted and on organic soils this loss exceeds the gain from carbon sequestration for the first few years of tree growth. With Sitka spruce plantations, by far the most common woodland type to be planted on peaty soils, this net loss continues till the trees reach peak growth, i.e. in the period after canopy closure[21]. For most woodland sites, the stock of carbon in the soil exceeds that in the trees, so what happens to the soil is critical to how effectively the trees act as net contributors to carbon sequestration.

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[18] https://greshamhouse.com/wp-content/uploads/2019/10/Forestry-Fundamentals-final-310519.pdf

[19] https://www.forestresearch.gov.uk/research/understanding-the-carbon-and-greenhouse-gas-balance-of-forests-in-britain/

[20] Dewar and Cannell, 1992 https://www.researchgate.net/publication/8144089_Carbon_sequestration_in_the_trees_products_and_soils_of_forest_plantations_An_analysis_using_UK_examples

[21] Morison et al, 2012 https://www.researchgate.net/publication/237049101_Understanding_the_carbon_and_greenhouse_gas_balance_of_forests_in_Britain

"Plantable" peat (ie peat currently less than 50cm.deep) and peaty gleys will have the most carbon to lose. Recent research[22] into carbon sequestration in experimental birch and Scots pine plots at one site created in heathland with podzolic and peaty podzolic soils suggests that after 39 years there was no net gain in carbon sequestration, the gain from tree growth being offset by losses in the soil. Other recent studies[23] have noted that where there had been intensive site preparation on peaty soils, it can take up to two rotations to recover and balance out the soil carbon deficit resulting from intensive ground preparation and conifer planting. If these results are replicable on a larger scale, especially where climatic and edaphic conditions differ from those in the experimental areas, or even if net carbon capture only begins sometime after trees close canopy, it throws into question planting on organic soils for short-term carbon sequestration purposes.

New guidance on planting and ground preparation (see section 5.1) should greatly reduce the negative effects of planting on organic soils but the full impact of the guidance has yet to be determined. However it may open opportunities to advocate for a different approach to afforestation. If planting were to move "down the hill", to more productive land on mineral soils, a broader approach to species selection becomes easier to adopt. Conifers other than Sitka spruce and broadleaved trees can grow well given the right conditions and, though some carbon will be lost when mineral soils are disturbed, it will be far less than disturbance on heavily cultivated organic soils. There may even be an increase in soil carbon soon after planting. However encouraging planting on relatively fertile soils would have a major impact on land use and there would need to be far greater emphasis on encouraging farmers to plant and manage trees (see section 4.5).

4.2.2 End use

The sequestration that timber-producing trees achieve in their lifetime is not the end of the story. Net sequestration also depends on what the timber is used for. If it is turned into long-lasting material such as timber for building, the carbon is locked away for a long time. However, at present most of Scotland's timber harvest has a short life span in products such as biomass, paper, fencing or pallets, and the locked up carbon is quickly lost. In this case the carbon gain is short-lived and the contribution to net zero is lost. The 2021 SNP manifesto sets a target of increasing the percentage of Scotland's timber used in UK construction to 3 million tonnes per year by 2031.[24] If achieved, this will alter the long-term balance between end-use that locks up carbon and end-use that does not. However a low carbon future will require work beyond this target. Changing a culture that is wary of wooden buildings would be a major step with, for example, some communities in Scandinavia[25] showing both what can be achieved and how far we are from achieving that in Scotland.

The end use from quality broadleaved and durable softwood timber is usually long-lived and so the contribution to net zero is also long-lived. However, broadleaved timber trees such as oak have a

[22] Friggens et al, 2020 https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.15229

[23] Morison et al, 2012 https://www.researchgate.net/publication/237049101_Understanding_the_carbon_and_greenhouse_gas_balance_of_forests_in_Britain

[24] https://www.confor.org.uk/news/latest-news/snp-backing-for-confors-forestry-and-wood-manifesto/

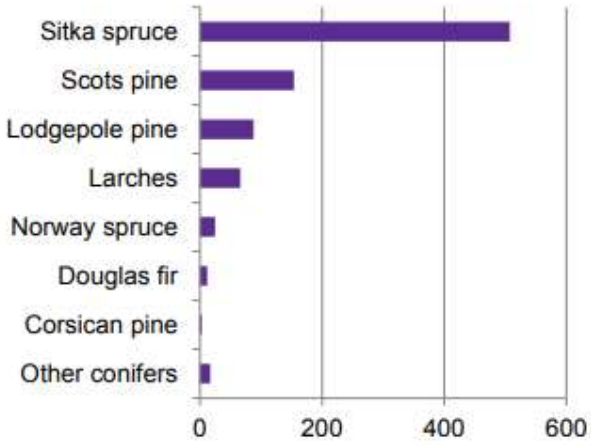
[25] https://www.theguardian.com/artanddesign/2021/oct/14/skelleftea-swedish-plywood-eco-town-20-storey-wooden-skyscraper-worlds-tallest

greater volume of branch material than Sitka spruce. This wood will release its carbon if turned into firewood. If left to decompose it may contribute organic matter to mineral soil, so adding to carbon sequestration, though the decomposition process also releases carbon. The net contribution to sequestration may be hard to predict.

4.2.3 Alternative timber trees to broaden the basis of Scottish forestry

A case can be made that Scotland is already over-dependent on a single species for timber production, and that public support should be directed towards increasing the range of timber trees, rather than driving ever more of Scotland's forestry eggs into an already overflowing basket. Table 4 illustrates this point, the situation made more extreme when one considers that most of the Scots pine is confined to eastern Scotland where the climate is less favourable to growing Sitka spruce, which is vulnerable to drought and bud damage in late-season frosts.

Fig.5 Breakdown of conifer species by area in Scotland[26]



With the need to adapt to climate change, species other than Sitka spruce may become increasingly attractive for the industrial sector. Apart from the suitability of Scots pine for drier eastern Scotland and colder northern Scotland, Douglas fir and several broadleaved species can grow very rapidly on favourable sites with fertile soils. There is a suite of conifer species that will perform well in Scotland, but which have not found much favour. A recent Welsh paper highlights the risks inherent in the sector's reliance on a single species (51% of Great Britain's coniferous plantations are Sitka spruce), and investigates and ranks the properties of a range of other species. The top five alternatives are given as coast redwood, Japanese cedar, western red cedar, giant redwood and European silver fir. Another 11 species are worthy of further investigation as they may suit site types that the top five do not.

4.2.4 Resilience

The FGS requires new planting schemes to have a proportion of designed open ground and a proportion of species other than the main species in the planting plan. For commercial schemes, especially the Woodland Creation Conifer option, the main species dominates the mix. Very often for commercial reasons the allowable maximum is what is planted.

[26] http://www.forestryscotland.com/media/327646/spice%20briefing%20scottish%20forestry.pdf

Apart from its adverse effect on biodiversity this approach stores potential problems for the future. More frequent storms would increase the danger of windblow, whilst severe drought may also have negative effects, especially in young plantations. A warming and more unstable climate, especially warmer winter temperatures, increases the danger of insect attack, e.g. from the Green Spruce Aphid which thrives in a mild, wet climate. And the Larger Eight-toothed European Spruce Bark Beetle is potentially a major threat to spruce plantations, with an outbreak already occurring in south-eastern England. If that beetle reaches Scotland the effects will be devastating. If the current outbreak is contained, we will have a fortunate opportunity to prepare for the next one.

4.2.5 Biodiversity

The extent of the biodiversity crisis has been underlined by a recent paper from the UK Natural History Museum whose research has "*revealed that the UK, with an average of only 53% of its biodiversity left - is in the bottom 10% of the world's countries, last in the G7 and a long way behind China".* This dire state of affairs is recognised by the Scottish Government. For example, in response to a parliamentary question on the 2019 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Report, The First Minister said that "*The challenges facing biodiversity are as important as the challenge of climate change, and I want Scotland to be leading the way in our response*"[27].

The FGS requires a minimum 2 metre spacing for conifers planted for timber, and for broadleaves the spacing requirement is 1.8 to 2 metres. Even when or if thinned, this spacing leaves little room for a diverse epiphytic or field layer in the early years.

Arguments for the biodiversity benefits of conifer plantations generally rely on the associated bird populations, woodland mammal specialists or on the plant communities and invertebrate species of rides and open ground. Scarce species or diverse habitats may indeed thrive in the sheltered conditions provided by the trees in such woodland[28] but, with the exception of a very few conifer specialists such as crossbill, it is not the particular characteristics of the tree species in a conifer woodland that is good for biodiversity, it is the habitats within the woodland matrix that provide the niches that allow the biodiversity to thrive.

A timber production model that relies on fast growth and short rotations is not conducive to rich biodiversity. Only if allowed to grow towards maturity and progressively thinned will diversity develop and, especially in the case of Sitka spruce, this rarely happens. The same lack of diversity applies to broadleaves for timber plantations in their early years, though as these are usually progressively thinned and often have a longer rotation cycle, biodiversity is more likely to increase as the stand ages.

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[27] https://www.parliament.scot/chamber-and-committees/what-was-said-and-official-reports/official-reports/meeting-of-parliament-09-05-2019?meeting=12083&iob=109348&qry=The%20challenges%20facing%20biodiversity%20are%20as%20important%20as%20the%20challenge%20of%20climate%20change,%20and%20I%20want%20Scotland%20to%20be%20leading%20the%20way%20in%20our%20response%E2%80%9D#109348

[28] For example see https://www.confor.org.uk/media/247794/confor-biodiversity-forestry-report.pdf, and the rebuttal by Bill Mason https://www.ccfg.org.uk/2020/09/15/ccfg-comments-on-confor-biodiversity-forestry-and-wood/

In some cases the clear-fell and restock approach is the result of site limitations that preclude other silvicultural models, however there are many sites where an alternative to clear fell could be adopted. There is support for Low Impact Silvicultural Systems under FGS, but uptake of the grant has been extremely low.

4.3 Creating new native woodland

The options for creating new native woodland under FGS are intended to promote biodiversity and not timber production. They are unlikely to be attractive options for land managers wishing to plant primarily for commercial reasons.

The FGS native woodland grant rates per hectare are lower than those for planting trees for timber but local supplements may increase the rates significantly, making them more of a viable proposition for those interested in conservation and biodiversity, especially on difficult-to-access sites and sites at some distance from market. These drawbacks to creating woodlands for timber and compensating regional incentives are probably the main reasons why native woodland planting is concentrated in relatively inaccessible regions of Scotland.

Native woodland planting is actively encouraged by environmental NGOs who offer assistance with grant applications and, in some circumstances, financial assistance. This assistance is particularly significant in encouraging managers of small areas, such as crofters and small farmers, to navigate through the complexities of the FGS application process.

Planting native woodland has long-term carbon sequestration benefits. Short-term benefits may be less than for plantations of fast growing species (see section 4.2.1) but native woodland is designed to be permanent, allowing the woodland to become biodiverse over time. This also means that the trees will be able to develop their full carbon sequestration potential, locking away carbon for centuries, not just in the timber itself but also in the roots, deadwood, leaves, understorey shrubs and soil.

4.4 Woodland Colonisation or Natural Regeneration[29]

Woodland colonisation by self-seeding trees is a valued part of the forester's toolkit in many countries, and in Scotland it was a widely accepted approach to woodland expansion, featuring prominently in the grant schemes from WGS2 until the introduction of SRDP. Unfortunately problems arose from the introduction of an approach that was unfamiliar to many, and both regulator and applicants made mistakes along the way. Often there were issues with unrealistic expectations about seed dispersal, herbivore impacts and competition from other vegetation.

Under the FGS, regeneration has been marginalised as a means of woodland expansion, with only 3,056 ha approved to date, about 5% of the total approved area of woodland creation. Agents consider it to be a less rewarding approach and report additional barriers around the application

[29] See the glossary for definitions of woodland colonisation and natural regeneration

process; for example, the requirement to permanently mark the extent of area included within the regeneration and an inflexible approach to stocking densities and stem spacing.

4.5 Forestry and farming

By July 2021, nearly 55,000 ha of afforestation had been approved under the current round of the FGS and the Government's target is to increase the rate of planting to 18,000 ha a year by 2024/5. This amount of new planting will be having an impact on the farming community, especially in upland areas where much of the Sitka spruce is being planted and where livestock farming is the main agricultural land use. The demand for land for planting trees pushes up the value of land, making it harder for local people to compete with outside investors, raising questions of social justice and issues around the concept of a Just Transition[30] to a net zero economy.

When whole farms are bought for forestry by external investors, the impact on the local community and way of life is especially severe, and the loss of a business has an impact on both suppliers and customers, with a cumulative negative impact on the local rural economy as more and more farms go out of business.

There is a recognition by the NFUS and by most farmers that the current farming models are unsustainable if we are to achieve net zero by 2045. The recent NFUS and Nourish Scotland report 'Farming for 1.5 Degrees'[31] "*maps out a pathway for transformation built around sustainable food production, reducing emissions and tackling biodiversity loss*". They recommend that "*land use change should be planned rather than left to the market"* and that *"the expansion of commercial forestry is consistent both with the Scottish Government's biodiversity statement of intent and with the principles of Just Transition*".

The report does not mention the potentially fraught issue of changing consumer habits and the reduction in the demand for meat [32]. This has been highlighted in reports such as the UK National Food Strategy that concludes that significant further reductions in meat consumption will be necessary to meet the net zero target. For Scottish hill farmers an additional uncertainty is the future of trade tariffs that have the potential to make Scottish meat, especially from sheep, increasingly uncompetitive. Scottish hill farming specialises in high quality meat but even so the future level of demand is uncertain.

The Farming for 1.5° report recommends that farmer-led woodland expansion should be encouraged and should include "*silvopasture, hedges, open woodland pasture and open scrub pasture*".

[30] Just Transition Commission: https://www.gov.scot/publications/transition-commission-national-mission-fairer-greener-scotland/

[31] Farming for 1.5° https://www.farming1point5.org/

[32] The per capita consumption of lamb has halved in the last 20 years, and Scotland is now over 560% self sufficient in sheep. The Scottish Red Meat Profile https://www.qmscotland.co.uk/sites/default/files/qms5274_rmip_report_2020_a4_40pp_web1.pdf

5. Opportunities for change in FGS woodland creation grant support

5.1 Planting on peat

Deep peat (peat over 50cm. in depth) can no longer be planted under FGS, and peat surveys are now a requirement of grant approval. Very recent changes to the guidance for ground preparation on organic soils[33] has removed future funding for ploughing and linear trenching where there is a depth of peat greater than 10cm.These are the operations causing the greatest damage to soil structure and avoiding them will go some way towards reducing the net loss of carbon when planting on organic soils. Mounding and similar operations will still be permitted on peats up to 50cm. in depth and though relatively less damaging these operations still have a negative impact, as will any sort of ploughing on organic soils up to 10cm.

The guidance does not apply to restock sites, and SF have indicated that this will be addressed during the current review of UKFS. Progress on the review will be required to ensure that this actually happens.

In practice, peat surveys are only an approximation of what lies under the surface and on typical land planted under the Woodland Creation Conifer option in western Scotland the amount and depth of the peat can be very variable over short distances, and difficult to quantify. Reducing the maximum depth of plantable peat will make it easier to assess and plot accurately what land is suitable for planting but even then the accuracy of a planting plan on ground with variable peat depths is likely to remain problematic.

All of this raises the question of how urgent is the need to lock up carbon. If the priority is to bring carbon levels down to zero by 2045, 24 years away, any activities that can have a net negative effect on carbon capture in the short-term are not a good idea. More focus on the issue of carbon release from organic soil disturbance is needed.

Recommendations

1. Monitor implementation of the new FGS ground preparation guidance for woodland creation.
2. Ensure that the new FGS ground preparation guidance is adopted for restock sites.
3. In the context of an integrated land use strategy, consider the re-introduction of a Better Land Supplement to encourage afforestation on mineral (non-peaty) soils.

5.2 Encouraging alternatives to the Woodland Creation Conifer option

A combination of factors account for the Conifer option being the preferred option for commercial planting over much of Scotland, and large sums of public money are invested in encouraging it. A different establishment model which better reflects the blend of woodland creation that a climate emergency calls for would bring biodiversity, amenity, landscape and community benefits to the fore in the areas of Scotland where adopting the Conifer option model is currently widespread. It would

[33] Cultivation for Upland Productive Woodland Sites, July 2021 https://forestry.gov.scot/publications/1032-cultivation-for-upland-productive-woodland-creation-sites-applicant-s-guidance/viewdocument/1032

also make the forestry industry less reliant on a single species, adding resilience to the future of the sector.

A change in the balance of financial incentives would be a key area of change. The UK tax regime underlies much of the attraction of large scale forestry as an investment opportunity and fast-growing conifers offer the most dependable return on this investment. Considerations of the tax regime are outside the scope of this report but the FGS could tilt the balance somewhat by one or more of the following:

- changing the financial incentive to large scale planting by reducing the 'capital item' (fencing) grant for the Woodland Creation Conifer option. This needs to be delivered in a way that tapers the grant rather than abruptly stops it.
- turning the reduced hectarage grant for schemes over 300 ha. into a sliding scale of hectarage payments according to the size of the scheme,
- lowering the 300ha threshold to 200ha.,
- reducing the percentage paid on the current basket of "standard costs" on which the grant is paid.

Relatively minor additions to the grant rates can have a significant impact. Supplementary target area grants for the native woodland establishment options have been successful in encouraging the take-up of these options, especially in Highland Conservancy. Extending these premiums to, for example, Argyll, could help to reduce the current dominance of the Conifer option in that area.

The Diverse Conifer option is nowhere near as popular as the Conifer option but it has biodiversity and resilience benefits and it has the potential to be up to 85% native where Scots pine is selected as the major species and the full allowance of native broadleaves is planted. Tilting the balance slightly in favour of this option might again be all that is required to make a significant difference.

Recommendations

4. Seek to progressively reduce all capital item grants for fencing from the Woodland Creation Conifer option.
5. Turn the reduced hectarage grant for schemes over 300 ha. into a sliding scale of hectarage payments according to the size of the scheme.
6. Increase the hectarage payment for the Woodland Creation Diverse Conifer option, particularly where Scots pine is selected as the major species.
7. On bracken, investigate increasing financial and management support for farmers for planting broadleaves for timber, primarily, but also for planting diverse conifers.

5.3 Diversifying tree species selection through changes in the UKFS

In their response to the current UKFS review,[34] Scottish Environment LINK say that the review makes extensive reference to forest resilience and climate change but there is a need to translate these references into requirements They continue: "*The UKFS does need to give much stronger*

[34] https://www.scotlink.org/wp-content/uploads/2021/08/LINK-Consultation-Response_UKFS-August-2021.pdf

consideration to ensuring that forest planning and management deliver action on the ground to increase forest resilience and climate change adaptation. There seems to be a gap between rhetoric and reality when it comes to the references to climate change adaptation and what is happening on the ground. This also highlights the UKFS implementation needs to be monitored on the ground. A clear example is the UKFS stating 'Introducing diversity in tree species and origins will ensure some thrive should others decline' and yet in Scotland, the forestry sector is dominated by one tree species, which puts the sector at high risk because of the lack of diversity and long-term planning to diversify the sector. LINK would like to see consideration given to the requirement that a maximum of 75% may be allocated to a single species and if this is still appropriate for forest resilience and diversity and in line with national forest strategies, including the Forestry Strategy for Scotland."

5.4 More new broadleaved woodland for timber production

Between 5 and 10% of planted trees within the Woodland Creation Conifer or Diverse Conifer option woodlands must consist of native broadleaves. With the 30,000 ha of woodland planted under these two options in recent years, that amounts to a lot of broadleaf planting. However there is scope to play around with this requirement, e.g. by increasing the required minimum percentage.

Carbon trading may influence species selection. It may be that investment companies looking to diversify their income streams in the short term will look to increase the component of native planting in their conifer blocks to take advantage of the increased carbon units that would result.

The Woodland Creation Broadleaves option is for planting species suitable for timber production. It has the potential to take a far larger share of the afforestation grant budget than it does. Additional target area grant supplements are available for native woodland in the Northern and Western Isles and in the Highland Native Woodland Target Area but these supplements are not aimed at schemes where timber production is a priority. There is scope for additional target area funding to encourage broadleaf planting. This could take the form of a Challenge Fund to top up the FGS hectarage rate, on the lines of the Cairngorms National Park Woodland Challenge Fund[35] top up for the native woodland options, and for the Diverse Conifer option with Scots pine as the major species.

The selection of tree species appropriate to site conditions is important. Birch can grow on land of marginal agricultural use though the timber that results is likely to be of use mostly as firewood, which means that any carbon sequestration gains are lost when the timber is burnt. Larger-scale biomass production also has no potential for net carbon reduction without Carbon Storage and Capture. All species grow fastest on better soils and sites with a good micro-climate. Birch, aspen, alder and cherry can be fast growing and oak surprisingly fast growing on the most favourable sites. Ash would be ideal if it were not for disease. Sycamore is a good timber substitute for ash; however it is reported to be the most widely used non-native hardwood timber species and may be forming too much of the mix on sites where native species selection is not a priority, especially where it is planted near to existing native woodland. As we face climate uncertainty, we should look to a broader range of trees including, for example, hornbeam, sweet chestnut and lime. Any grant

[35] Cairngorms National Park Woodland Challenge Fund https://cairngorms.co.uk/working-together/land-management/support/woodland-creation/

supplement for growing broadleaves for timber would need to take into account the site limitations on growing quality timber for long-term end-uses and this is likely to mitigate against supplements on poor soils.

A relatively unexplored planting model in this country, though not in Scandinavia, is a combination planting of conifer and fast-growing broadleaved timber species, for example aspen and Scots pine or aspen and Norway spruce. It would be worth exploring the potential of a new grant option to encourage this approach.

It is no good growing broadleaves for timber if you cannot sell the timber. The sawmill sector is a highly mechanised industry tailored to process Sitka spruce, and most mills have been reluctant to take other timber species and timber outwith a narrow range of size specifications. This applies to conifers other than Sitka spruce as well as to broadleaves. Sawmills set up to take broadleaves are either very small-scale or far away from Scottish forests and only interested in exceptional quality stems. Highland Birchwoods investigated at depth the potential for kick-starting a thriving broadleaved timber market in Scotland, concluding that mills were regularly re-equipped and would adapt to the material that became available. This has to a degree proved correct, for example there is now more "oversize log" capacity, and there has been a healthy increase in micro sawmills, especially in rural Scotland[36]. One estate forester consulted during this work saw firewood as the most attractive option for the 2,000 tonnes per year that the estate produced. But some of these micro sawmills should grow, with the potential to turn timber like his into higher-value produce. Despite these promising signs of change, the scale is not yet there to create an effective market for quality broadleaved timber. Continued support directed towards nurturing a long-term broadleaved timber market would go a long way towards encouraging landholders to plant and grow these species.

Recommendations

8. In line with the LINK response to the UKFS review, ensure that the references to forest resilience, climate change and species diversity are translated into requirements.
9. Review UKFS percentages for the minimum acceptable percentage of native broadleaves, and reflect LINK's position on this for the Woodland Creation Conifer and Diverse Conifer options
10. Reduce the maximum of any single species from 70% to 50%.
11. Establish target area supplements for growing broadleaves for timber in areas suitable for quality timber production.
12. Create a funding option for growing conifer/broadleaved mixes for timber production.
13. Investigate options for nurturing a long-term build-up of the market for quality broadleaved timber produce.
14. Increase actual cost contribution for small scale wood-processors under the FGS Harvesting and Processing grant from 40% to 50%.

[36] For example http://www.forestpolicygroup.org/wp-content/uploads/2018/09/Economic-Contribution-of-Small-Scale-Woodland-Related-Businesses-FPG-Paper.pdf

5.5 Woodland and farmland

5.5.1 Whole-farm conversion to forestry

Whole-farm conversion to forestry was identified as a problem by the Woodland Expansion Advisory Group (WEAG) in a submission to the Government in 2013[37] but it remains a problem. When whole farms are bought for forestry they are lost to agriculture and that usually includes the best land on the farm. The loss of a farming business also has an immediate and negative impact on the local community. The WEAG recommended that "*As a condition of public support, those (including Forest Enterprise Scotland[38]) proposing to create woodlands on whole farms should be required to consider opportunities for integration with other land uses, for example by retaining better grades of land in agricultural use, and by designing unplanted areas and fencing in ways that accommodate neighbouring farming systems, moorland management and environmental considerations*".

5.5.2 Agroforestry

Agroforestry represents an integrated approach to land management, a mix of farming and trees on the same piece of land. It is potentially an ideal way of contributing to the forestry expansion target whilst helping to diversify farming activities and skills, and in some cases raising the productivity level of the farm.

There have been several experimental agroforestry trials in the UK, including the Glensaugh Trial, established in 1981, and more recently one partly funded by the Loch Lomond and Trossachs National Park Authority (LLTNPA) at the SRUC experimental farm at Kirkton near Crianlarich. A project in southern Scotland is at an advanced stage of planning and will be funded through a windfarm community benefits fund.

But so far, the agroforestry option in FGS has had a poor response, only three schemes approved since the start of the option and no claims have yet been received. Despite general enthusiasm for the concept of agroforestry, there are many reasons why the FGS option has not caught on. These include a poor grant rate[39] and a lack of appropriate skills and confidence amongst farmers. Also it is only appropriate for, and the grant is only available for, better land, the loss of which may adversely affect a farm's viability. The grant spacing requirement of 5 metres or 7 metres is considered too wide to produce quality timber and good only for firewood. The reason for the poor take-up of the grant and why those interested in agroforestry are looking elsewhere for funding is, according to someone in the farming community, "because it's rubbish". The Farming for 1.5° report considers that the option is "not delivering" and recommends a ring-fenced budget within the agricultural budget, "*with a dedicated long-term programme to drive it and a target of 6,000 hectares a year*."

However, agroforestry has excellent potential for growing quality broadleaves for timber on moderately productive agricultural land and the Farming for 1.5° report panel is supportive, saying "*the development of agroforestry as central to future agricultural and forestry policy; as an*

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[37] https://scotland.forestry.gov.uk/images/corporate/pdf/GuidanceAboutWoodlandCreationOnAgriculturalLand.pdf

[38] Now called Forestry and Land Scotland

[39] At an experimental 0.5 ha site at Kirkton near Crianlarich, the cost of planting and protecting each tree was just over £26.00, using FGS specification tree protection, but the grant would have paid only £9.00/tree https://www.youtube.com/watch?v=x6IPRU8vga8

important integration tool to be used in delivering biodiversity gains and greater carbon sequestration on farms whilst protecting agricultural productive potential".

The Rural Innovation Support Scheme [40] (RISS) Scottish Agroforestry Group is active in promoting agroforestry and has suggested piloting a more flexible grant scheme that leaves room for experimentation but contains a set of criteria for grant approval aimed at ensuring that only well thought through schemes are approved. The Scottish Agricultural Organisation Society (SAOS) are proposing a farmer led review of the option to feed into the FGS Future Support for Forestry[41] (FSFF), the evolving new programme to replace FGS.

Perhaps these initiatives illustrate the need to coordinate an approach between the agricultural and forestry arms of the Government, with one or the other, probably agriculture, championing it, driving through the initiatives to make it work. To make it work, the two cultures, farming and forestry, need to come together. This implies training and support to farmers, with the involvement of voluntary and advisory organisation, such the Farm Advisory Service, the SRUC, the Woodland Trust and RISS .

A long-term funding commitment, longer than the five year maintenance grant currently available, will be needed. Additional pilot schemes and further research would be beneficial, investigating variables such as species mixes, tree spacing, scheme size (fundable maximum is currently 15 ha.) and how these relate to site conditions, timber objectives and farm productivity.

Case study: Glensaugh Agroforestry Demonstration Site

Glensaugh is an upland research farm in the Grampian foothills, run by the James Hutton Institute. The experimental agroforestry plots were established in 1988 and intensively monitored until 2001. They are sited on well-drained permanent grassland, where sycamore, hybrid larch and Scots pine were planted at three different planting densities on a grid pattern and protected by tree tubes. The grassland is grazed in summer by sheep.

Some of the larch plots were felled in 1995. Monitoring of the remaining plots ceased in 2001, with the key observations that:

- agroforestry is a long-term commitment,
- good preparation and regular management inputs, including tree pruning, are important,
- tree selection based on site suitability is crucial.
- it is possible to produce good quality timber, whilst raising the biodiversity and amenity value of the farm and the value of the farm for the future,
- there was no reduction in agricultural production over the 12 year study period and even an increase in pasture productivity during periods of drought.

[40] The Rural Innovation Support Scheme https://www.innovativefarmers.org/welcometoriss

[41] Fergus Younger, *pers comm*.

Future plans include exploring the performance of different native hardwood species, all planted at a minimum 400 trees/ha (the highest planting density in the original plots) and experimenting with different planting patterns and the effect of grazing with cows rather than sheep.

Though some benefits of agroforestry are clear from the Glensaugh experiment, the benefits for carbon sequestration are more complicated and revolve around the short-term and long-term impacts on soil carbon. Based on work at Glensaugh[42], the James Hutton Institute and Forest Research have modelled the carbon sequestration effect of agroforestry over a 55 year period, assuming a base-line of unimproved grassland on organo--mineral soil. Based on a planting mix of sycamore, ash and birch, there is a relatively small initial loss of carbon of 16 tonnes of carbon per hectare (16 t C ha^{-1}) , diminishing as the trees begin locking up carbon to net zero between 12 and 20 years after planting, the difference depending on the yield class of the trees. After 55 years, the projected net carbon gain would be about 55 t C ha^{-1} for trees of YC4 and 107 t C ha^{-1} for trees of YC10.

These conclusions reflect the observed initial impacts of establishing conifer plantations on organo-mineral soils and suggest that agroforestry on productive mineral soils would be preferable if the priority is to minimise short-term carbon loss, though planting on upland organo-mineral soils would over time yield significant carbon benefits.

5.5.3 Small farm woodland creation

The FGS Small or Farm Woodland option is for mixed species woodland up to 5 ha. It has proved reasonably popular (168 approved schemes by April 2021) but it requires 20-60% diverse conifers in the species mix so is not applicable for small native woodlands. Though the grant rate per ha is good, the small size of the wood means that the total grant is small and is unlikely to cover the cost of a complicated application process or a paid advisor. There is scope for a small native woodland grant and a simplified application process.

The Sheep and Trees grant package combining Woodland Creation grants and new access infrastructure allows for the creation of new woodland between 10ha and 50 ha and includes the Woodland Creation Conifer and Diverse Conifer options. Landscape impacts need to be given suitable weight, as otherwise there is a risk of creating blocks of conifers that sit in the countryside with no connection to the surrounding landscape, like too many of the small Sitka spruce plantations of the past but with the added impact of new road access.

The Small Woodland Loan Scheme is a new facility, aimed at overcoming the problem that small landowners and crofters often have in finding the bridging finance between capital expenditure and grant payment, especially when operations carried out in one financial year are not due for grant support until the following year. It offers a 50% loan on the cost of capital items identified in the scheme application. It is a very new grant aimed at filling a real need but it is too early to judge its

[42] https://www.climatexchange.org.uk/research/projects/can-silvo-pastoral-agroforestry-systems-contribute-to-scotland-s-emission-reduction-targets/

success, however there is a belief among agents that it will be of value for encouraging farm based schemes.

5.5.4 Managing small existing native woodland within larger planting schemes

Very often, large planting schemes enclose within their borders small fragments of farm woodland, either native remnants in ravines or other hard-to-access sites, or planted mix-species amenity woodland. In either case they are likely to be under-managed and often post-mature. The native woodland may have very high biodiversity value.

These small woodlands will be retained within the scheme but effective management for them is unlikely to be put in place because of the constraints of the current system. Stock will be excluded, an unplanted buffer created around the wood and deer will be controlled, but probably only sufficiently to safeguard the planted conifers. There is an opportunity during the planning and grant application processes for measures to be included that safeguard and enhance the structure and condition of the remnant woodland. Measures would include reducing deer numbers to allow the browse-sensitive tree species to regenerate and ensuring the buffer zone is sufficiently wide to leave room for this regeneration to develop without being suppressed by the conifers. Invasive species such as rhododendron should be controlled.

Recommendations

15. Seek out opportunities to align LINK messages with the voice of farmers as represented in the Farming for 1.5° report
16. Revise the FGS Agroforestry grant following thorough consultation with the farming community and responding to knowledge learnt in past and present pilot studies.
17. Promote the principle of "bringing forestry down the hill".
18. Consider whether agroforestry should be included in the FGS or in a future agri-environment scheme.
19. Devise a Challenge Fund for agroforestry, setting broad criteria but avoiding over-prescription.
20. Introduce a new small native woodland afforestation grant with a simplified application process and an attractive grant rate.
21. Revise the 'Sheep and Trees' FGS package to favour the Woodland Creation Diverse Conifer option over the Conifer option and to include the Broadleaves option.
22. Implement the findings of the WEAG on whole farm conversion to forestry.
23. Ensure existing native woodland fragments within larger Woodland Creation Conifer or Diverse Conifer option schemes are adequately managed and that a whole-holding approach is taken.

5.6 New native woodland

Grant aid is key to making schemes that are not designed to produce marketable timber financially viable. The relatively modest take-up of the native woodland options away from Highland and Islands and Perth and Argyll Conservancies may be partly due to topography and climate (the Native Upland Birch option is not relevant to much of Central Scotland and the Native Scots Pine option is not relevant to central and southern Scotland) and partly due to historical management and attitudes. Broadleaved woodlands in the central belt are rarely truly native, beech and sycamore are ubiquitous and this is what people are used to seeing in a managed woodland.

Though the target area supplements are significant in encouraging the take up of the native woodland options in the north and north-west, it is likely that changing perceptions have a role. In the Cairngorms, for example, the 'Cairngorms Connect' association of conservation-driven estates is reported to be influencing the attitude of neighbouring estates and making them more open to the idea of native woodland planting and management.

Providing land managers with access to specialist advice on creating new native woodland can be a key step in enabling them to take advantage of existing grants, particularly where take-up is low. Conservation NGOs currently play a key role here. Greater use of target area supplements would enable schemes to proceed that may not be viable otherwise. The existing Central Scotland Green Network supplement currently provides higher rates of grant for the timber producing options than for the native woodland options. Increasing the native woodland rates would send a signal that this option has at least as much a priority as timber production.

Recommendations

24. Extend the target area premiums for native woodland afforestation schemes to Argyll and the Southern Uplands (note: this deliberately duplicates recommendation 11).
25. Create partnership initiatives with conservation bodies, agencies and interested landowners to initiate an intensive drive for native woodland afforestation schemes in selected areas on the lines of Cairngorms Connect.

5.7 Woodland expansion through natural regeneration

Within the FGS, natural regeneration is a poorly served option, buried within the WIG options rather than the Woodland Creation options. The grant rate at £300/ha is miserly and can only be claimed on areas where stocking density has reached an evenly spaced density of 400 stems/ha (5 metre spacing). Except in exceptional circumstances the area eligible for grant must be no more than 50 metres from a seed source and, in the absence of existing boundary markers, the perimeter of the regeneration area must be clearly marked on the ground.

NatureScot, in a forthcoming report, estimates that there is 233,000ha of suitable ground within 50m of an appropriate seed source in Scotland, and a further 117,000ha where native woodland could spread into other woodland types (for example after conifer clearfell). Action to allow this to happen could be a cost- effective way of delivering a considerable quantity of our woodland expansion target. NatureScot's report also looks at the ability of natural regeneration to restore and increase the resilience of existing native woodlands, as well as noting that this sort of expansion is likely to help the dispersal of woodland specialist species. A grant supplement could be available for these areas, for native woodland only. This might help address some of the issues with conifer being planted in sites adjacent to ancient woodland or on previously native woodland sites.

Taking a broader view of the land beyond the edge of a native wood, including ghost woods, the last remnants of semi natural woods which are right on the brink, and paying grant for its management

has the potential to bring together the possibility of multiple benefits for biodiversity and carbon sequestration, including carbon-efficient natural regeneration of native tree and shrub species, effective deer control, peat conservation and, where necessary, control of invasive species, especially rhododendron.

Where landscape scale collaborative action is taken to restore and expand native woodlands, including deer number reduction and a reliance on natural regeneration, then the regeneration grant rate should be increased to reflect both the potential challenges of delivering large-scale projects and the range of public benefits being delivered. In this case, a natural regeneration grant of up to £2,000/ha would be appropriate.

Recommendations

26. Increase the hectarage grant rate for natural regeneration to reflect the scale and public benefits that are to be delivered.
27. Increase the duration of grant payments for deer control to at least 10 years.
28. Include a greater focus on natural regeneration provision within FGS Long Term Forest Plans and Woodland Plans.
29. Increase the buffer around native woodland fragments within Conifer and Diverse Conifer planting schemes to a minimum 50m. and ensure all of this is eligible for grant payment.
30. Introduce a new FGS/agri-environmental option for grant-aiding natural regeneration beyond the edge of existing native woodland and combining a range of operations aimed at habitat improvement.

5.8 Missed opportunities

Evidence from NatureScot suggests that there are many cases where land managers are bringing forward new planting proposals which miss the opportunity to improve the management of declining ancient woodlands on their property. Data for the whole of Scotland is not available, however NatureScot has carried out analysis for that part of Scotland where there is data and has concluded that there is over 40,000ha of ancient woodland where FGS has missed this opportunity for "cross compliance[43]", a principle used for agricultural support payments.

Recommendations

31. Ensure that landowners seeking to plant new trees are required to assess the condition of all ancient woodland, including PAWS, within their ownership as a condition of planting approval and required to submit measures to improve woodland condition where necessary.
32. Require landowners to justify their choice when proposing to plant new native woodland detached from existing woodland whilst not proposing to expand existing woodland.
33. Strengthen the Good Agricultural and Environmental Conditions (GAECs) that must be adhered to in order to receive agricultural support payments.

[43] Cross compliance is a set of basic rules made up of 'Statutory Management Requirements' (SMRs) and 'Good Agricultural and Environmental Conditions' (GAECs) that must be adhered to in order to receive Common Agricultural Policy (CAP) support payments

6. Woodland management

6.1 FGS grants for woodland management

As at April 2021, only 15% of the total approved FGS grant budget has gone to woodland management options rather than the Woodland Creation options. These options are divided into a comprehensive range of WIG and SMF grants with a few grant options, such as Harvesting and Processing and Tree Health outside either group. Some management grants, such as those for managing productive woodland are well resourced, with the Restructuring Regeneration and the Harvesting and Processing options taking over 45% of the management grant budget for 2021.

6.2 Grant aid for managing commercial plantations

6.2.1 Managing commercial plantations under the clear-fell model

Planting new conifer woodland is proving extremely popular, not least by financial institutions. Clearly there is profit to be made. Does this suggest that managing profitable commercial woodland does not need so much public money going into its management through the Restructuring Regeneration grant? In theory all grant-aided schemes are required to adhere to the UKFS which fairly comprehensively define management standards for biodiversity, pollution and so on. Should forestry managers be paid for what they are already supposed to be doing?

Markets are the vehicle for allocating scarce resources but where there is no market, such as for managing woodlands for biodiversity, amenity and/or community benefit there needs to be a means of putting value on them by other means, which for forestry is primarily though the allocation of grant. This suggests a re-balancing of scarce resources away from that part of forestry activity for which there is a market and into that for which there is not. But any reduction in the size of the grant support for commercial forestry is likely to be controversial and would need to proceed after consultation and with care and probably in incremental stages.

6.2.2 Low impact silviculture

The Low Impact Silvicultural Systems (LISS) grant is intended to help in the transition from single-aged stands to a form of a woodland management that includes small-coupe felling and natural regeneration. It has many advantages over the clear-felling model, helping to increase species and structural diversity, reducing the impact of felling and restocking on the landscape, potentially reducing soil disturbance, promoting biodiversity and amenity and increasing resilience to disease and extreme weather events.

Currently there appears to be only one LISS scheme under FGS and as an FGS option it is barely promoted. There is scope for promotional material such as that available in Wales[44] and for initiatives aimed at transferring skills from other countries where it LISS is widely practised. LISS requires considerably more management inputs, but also has the potential to deliver considerably more public benefits than clear-fell regimes. This needs to be reflected in the grant rates. Adoption of LISS could be further encouraged by a better hectarage grant rate under SMF, available for longer than the current five years, and higher rates for appropriate operations under WIG, including

[44] Improving the structural diversity of Welsh woodlands https://cdn.cyfoethnaturiol.cymru/media/681945/gpg6_forest-resilience-1_structural-diversity.pdf?mode=pad&rnd=132094749330000000

payments for necessary infrastructure works. There could be a target area premium for eastern and southern Scotland where climate change may make these areas less suitable for growing Sitka spruce.

6.3. Native woodland management

6.3.1 Overview

Safeguarding biodiversity is one of the primary objectives of Government forestry policy and native woodlands are a reservoir of biodiversity, but native woodland management options are the poor relation in the allocation of funds in the FGS budget.

The Government's monitoring of climate change[45] includes an assessment of the ecological condition of existing woodlands. It shows that the condition of most woods was intermediate between favourable and unfavourable with only a very small proportion considered to be in favourable condition, and it concludes that it is "too early to tell" whether progress is being made.

The political acknowledgement of the need for greater protection of native woodland is evident in both the SNP manifesto and in the recent cooperation agreement between the SNP and the Scottish Greens, which says "*further protect Scotland's ancient woods through establishing a National Register of Ancient Woodlands, and by encouraging owners and managers to maintain them and improve their condition, providing support through the Forestry Grant Scheme*"[46].

Several grant options are included in the FGS for native woodland management and there is a wide range of capital items that are eligible within those options. Navigating the possibilities of the various grant opportunities can be intimidating, as can the application process, especially if seeking 100% actual cost funding for a designated site. There may be scope for a new Natural Capital grant, possibly a Challenge fund, where a grant is made available for an agreed set of operations tailor-made for that site and funded closer to 100% actual costs.

Issues around re-prioritising native woodland management grants and issues around afforestation relative to woodland management are complex and interlinked. These are dealt with in the remainder of this report under the general headings of deer and the landscape approach to land use planning, invasive species control and considerations of grant administration.

6.3.2 Using farm animals as a management tool in woodlands

Excluding livestock from woodland is a long-established grant option. It is a valuable short-term option for over-grazed woodlands, allowing a window of opportunity for trees to regenerate and the field and shrub layer to recover. But excluding livestock for too long in biodiverse woods with a mosaic of woodland and open ground habitats risks losing some of the biodiversity if more vulnerable plant species become out-competed by more aggressive ones.

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[45] https://www.gov.scot/publications/climate-change-plan-monitoring-reports-2021-compendium/pages/7/

[46] https://www.gov.scot/binaries/content/documents/govscot/publications/agreement/2021/08/scottish-government-and-scottish-green-party-shared-policy-programme/documents/scottish-government-and-scottish-green-party-draft-shared-policy-programme/scottish-government-and-scottish-green-party-draft-shared-policy-programme/govscot%3Adocument/SG%2BSGP%2BTalks%2B-%2BDraft%2BPolicy%2BProgramme%2B-%2BFINAL%2B-%2BOFFSEN.pdf

The woodland grazing grant pays for developing and carrying out a conservation woodland grazing plan which sets a grazing regime that suppresses aggressive field layer species, protects biodiverse open ground whilst allowing localised tree regeneration. Anecdotal evidence suggests that controlled woodland grazing works best over large areas (c. 150 ha or more) that include woodland and open ground, allowing the livestock (usually cattle) to roam and graze different areas at different intensities, like their wild ancestors probably did. In small woodland enclosures, they are less able to do this. Further investigation would be desirable into the effectiveness of woodland grazing in different sized woodland enclosures and into the grazing/browsing impacts of different breeds of cattle.

Though a woodland grazing plan must take account of deer impacts, the current woodland grazing option is distinct from the deer management options. Deer and livestock impacts are of equal importance and a closer integration of the two grants is advisable.

6.4 Management for other public benefits

Other public benefits are delivered by forestry, and these have been supported by grant assistance whilst damaging activities have been regulated. This section applies to both woodland creation and management.

"*Engaging more people, communities and businesses in the creation, management and use of forests and woodlands*"[47] is one of the six priorities of the Scottish Forestry Strategy, however grant aid for delivering this priority has been limited, especially so when one moves beyond support for WIAT and public access.

The wider public interest in forestry and cultural heritage should be better recognised and supported within the FGS. Our "*woodlands are recognised internationally for their contribution to Scotland's scenic beauty, and many of this country's highly regarded natural and cultural landscapes are a key reason why people visit and explore Scotland. They are also the location for a range of important historic monuments and features. In the coming years we need to ensure that the stewardship and steady expansion of forests and woodlands continues to positively contribute to the quality of Scotland's landscapes, and that these practices protect and conserve important historic monuments and features*".[48] Our forests and woodlands are used for educational and cultural purposes and for community activities. These uses should be supported both for their own sake and for the health, social and economic benefits these activities bring.

In the case of public access, there is already grant support in the FGS for path maintenance, including support for path safety inspections, keeping access routes free of litter and tree debris and keeping paths, signs and recreational facilities up to an acceptable standard. Under the WIG-WIAT option, there is also support for creating new paths and path networks in order to promote public access. However, this only applies to woodlands eligible for WIAT funding and not to new woodlands or existing woodlands not eligible for WIAT funding.

[47] https://forestry.gov.scot/forestry-strategy
[48] ibid

Recommendations

34. Remove the WIG Restructuring Regeneration grant (Delivering UKFS woodland) grant.
35. Develop a mechanism for ensuring UKFS guidelines are followed during restocking operations.
36. Improve the hectarage grant rate for LISS, and increase the longevity of the grant from 5 years.
37. Introduce a LISS target area premium for selected areas in eastern and southern Scotland.
38. Establish a National Register of Ancient Woodlands in line with the SNP/Greens cooperation agreement.
39. Significantly increase the budget for WIG Habitats and Species from the 2021 allocation of £0.80m.
40. Introduce a new Natural Capital grant for agreed native woodland management operations.
41. On individual landholdings, relate grant availability and rates for deer control, rhododendron control and other invasive species control to regional land use priorities.
42. Make the woodland grazing option under SMF conditional on implementing a linked deer management plan for the same area.
43. Commission further research into farm animal breeds best suited for the objectives of woodland grazing.
44. Expand the funding for creating new access and interpretation that is currently available for WIAT woodlands to all new and existing woodland where such provision would be appropriate.
45. Improve FGS support for actions which engage more people, communities and businesses in forestry matters.

7. Deer

7.1. The issue

"*The Scottish Government's planned climate change mitigation measures in rural Scotland include creating more woodland and improving the ecological condition of existing woodlands and other habitats. The Group considers that successful implementation of such measures has important implications for the present standards of deer management in Scotland*" (Report of the Deer Working Group 2020[49]).

There are too many deer in Scotland for the sustainable management of woodland, especially native woodland. Depending on a number of variables, the optimum number of deer in a native woodland is considered to be 2 or 3 animals per square Km. Currently the average is much higher and only in a few areas such as the Cairngorms Connect area, is the optimum achieved over a large, landscape-scale area.

Even when we look at "protected" designated sites, we can see that there are severe failings. The UKFS requires that "*appropriate protection and conservation be afforded where sites, habitats and species are subject to the legal provisions of EU Directives and UK and country legislation*." NatureScot estimates that less than half of protected woodland areas are in 'favourable' condition. Further, woodlands in the category of 'unfavourable recovering' condition are being regularly re-

[49] The management of Wild Deer in Scotland final report, 2020 https://www.gov.scot/publications/management-wild-deer-scotland/

assessed as 'unfavourable', largely because deer fences are deteriorating and the recovery process consequently stops or goes into reverse. NatureScot also estimate that it will cost £40m to replace the necessary deer fences around designated sites.

The reasons for the large population of deer, especially of red deer, are well known and include lack of natural predators, shooting estates that value high deer numbers, the ability of red deer to roam across multiple ownership boundaries (deer are 'owned' by no-one until killed), under-appreciation of the value of native woodland , the expense of a sustained deer-culling regime, controversy over heavy deer culls and the availability of fencing grants to exclude deer from an individual woodland area whilst leaving deer free to roam elsewhere.

7.2. Fencing as a partial solution

Deer fencing is the default solution for the exclusion of deer from a defined woodland area, though occasionally fencing is built on a "strategic" or landscape scale to exclude deer from a large area that includes multiple woodlands, farms and other habitats. But fencing is only a partial solution. Fenced enclosures can never permanently exclude deer, it is difficult to remove all deer from anything but a very small enclosure and deer have a knack of getting back in and multiplying, especially roe deer. Once in, deer will target the most palatable regenerating tree species, which are almost by definition the species that the fence is designed to protect.

Fences need periodic maintenance and eventual replacement. Most deer fences have a life of about 20 years, which might be sufficient to enable a conifer plantation to become established but is unlikely to be enough for native woodland establishment and certainly it is not long enough for long-term native woodland management. The maintenance costs of keeping fences deer-proof and removing incursions are hidden, significant and not covered by grant, though there will be a clause in the scheme contract requiring deer control and the maintenance of new fences for a set number of years. However the absence of a maintenance grant often results in maintenance being neglected or the land manager bearing the costs, and thus encouraging a 'job done' and 'fence and forget' approach to managing fenced enclosures.

Fenced enclosures are an expensive as well as a partial and temporary solution, creating a significant drain on the FGS budget for Woodland Creation and especially on the much smaller budget for long-term woodland management. £2.6m has been committed or spent this year on fencing for Woodland Creation options and £2.4m on fencing for the native woodland creation options.[50] NatureScot have used evidence on the historical amount of deer fencing associated with new planting grant applications to estimate that the 18,000ha annual new planting target will require over 1,260ha of deer fencing per year[51]. This is the equivalent of erecting a fence from Unst to the Scilly Isles every year, and takes no account of the fencing required for the management of existing woodlands. The current FGS Habitats and Species option rate for deer fencing is £9.50/metre, a rate that does not cover the cost of fencing anywhere. Roadside fencing costs can be over £14 per metre and costs are rising rapidly. This is a substantial disincentive for owners and managers to deer fence

[50] Doug Howieson, SF *pers. comm.*

[51] Duncan Stone, NS *pers. comm.*

woodlands. For designated sites 100% of actual costs may be eligible for grant though this just strains the FGS budget further and applying for 100% grant can be an arduous process that can put off all but the most determined applicant. A better way of managing deer is urgently required.

A short-term way of pushing the emphasis away from fencing and towards reducing deer numbers might be to retain the differential between the grant rate per metre and the actual cost per metre, then combine the Woodland Creation establishment grant with the grants for tree protection and leave it to foresters to decide how to control the deer. However, there would need to be a requirement that deer numbers were kept sufficiently low that the most browse-sensitive species within the woodland were protected. In this regard it may also be worth noting that whereas managers will specify grant-aided fencing for new planting, they will be far less likely to specify fencing for an adjacent restock where no grant aid is available for fencing. This can push managers of restock towards the use of the least palatable tree species, particularly Sitka spruce, thus reducing diversity in more long-established plantations and shelter belts.

7.3 The regulatory framework for deer control

Deer management is regulated primarily through the Deer (Scotland) Act 1996 and the Wildlife and Natural Environment (Scotland) Act 2011 (WANE Act). Responsibility for the implementation of deer control policy lies with NatureScot, including an ability to enforce deer control measures in the public interest. Despite deer culling figures rising slightly in recent years, these regulations and their implementation appear to be insufficient to ensure that deer numbers are adequately controlled.

7.4 Sporting Rates

Whilst consulting for this review, it was pointed out that it is a discouragement for owners to have to bear the burden of sporting rates when their deer shooting is carried out for the purposes of forestry. They are paying tax on something that is already a loss-making activity.

7.5 The Deer Working Group

Current regulations and grant incentives are not working over most of Scotland. The Government appointed a working group to come up with some answers, which it did in its final report in December 2019. They focus on the statutory and non-statutory responsibilities of NatureScot (SNH at the time the report was written). The recommendations have been accepted by the Government and are now in need of implementation. If that happens, there will be major changes in the way that deer populations are regulated.

Some of the recommendations most relevant to the issue of woodland management and deer are:

- Changes to the current statutory and non-statutory system for deer management need to change if the Scottish Forestry Strategy 2019-29 is to be implemented successfully.
- The challenge is to have a statutory framework and associated non-statutory arrangements that actually deliver deer management that adequately protects public interests.
- The use of voluntary control agreements (section 7 agreements) for deer control has declined. No new ones have been put in place since SNH took responsibility for them in 2010. Only one (Glen Feshie) has been successfully concluded. Landowners are reluctant to enter new agreements in case they turn into control orders. NatureScot should be more

willing to enter new or replacement section7 agreements but only when it has already decided that it has sufficient evidence to be able to proceed straight to a control order (section 8 scheme) if an agreement is not agreed within the six month time limit or if it is not successfully implemented. NatureScot needs to be able and willing to use its regulatory powers.

- NatureScot should be systematically building up its knowledge of deer impacts and deer culls in different localities across Scotland outwith open hill red deer range.
- The Deer (Scotland) Act 1996 should be replaced with a new Deer (Scotland) Act.

7.6 Grant availability

SF do not enforce deer control, they can only encourage it by offsetting some or all of the costs of deer management, enabling land managers to plan and implement their deer control measures within the framework set by the Government and NatureScot. SF can insist that deer management plans are written into grant applications where they think that is appropriate and in the last resort they can in theory reclaim grant if the plan prescriptions are not met. Financial encouragement is channelled through three deer management grants, one for monitoring deer and setting cull targets for individual management grant schemes, the other two for developing landscape-scale deer management plans and implanting them across multiple ownerships.

There are reports of poor take-up of the landscape-scale grants, primarily because of the difficulty of bringing together land managers who have different management objectives and because of the time and expense that coordination work implies. A fourth grant related to landscape-scale projects is intended to address this problem. The forest cooperation grant is not specifically aimed at deer control costs but it is an attempt to compensate for some of the cost of bringing multiple land managers together for a co-ordinated approach to tackling a management issue, and as a contribution to the cost of advisors.

7.7 Encouraging the landscape scale approach to deer control

7.7.1 The need for a new approach

As a solution to deer control, fencing, especially where long fence-lines are involved, is like looking through the wrong end of a telescope. The large sums of money involved could be redirected towards paying for deer control and especially for landscape-scale deer control. The landscape-scale approach involves integrated management over the whole range of a deer population and primarily applies to red deer. It is not an easy option, it presents serious problems of organisation and co-ordination and relies on agreement between more than one land manger.

7.7.2 Deer Management Groups

Deer Management Groups cover most of highland Scotland. The aim of these groups is a voluntary collaboration between local landowners in order to agree on a Deer Management Plan for their area and to reconcile any differences in their deer management objectives. They have had very limited success in reducing deer numbers to the levels needed in the woodlands within their areas. However they have also been party to encouraging considerable areas of deer fenced new planting, often detached from existing native woodland remnants.

7.7.3 The catchment area approach and riparian woodland

A catchment is often, but not always, synonymous with a landscape. Where the former is the case it has the benefit of being an easily defined area with clear boundaries and, for smaller catchments, a more manageable area with relatively few owners. A big advantage of this approach for small catchments is an ability to focus on riparian woodland, a woodland type that is important for biodiversity, especially aquatic biodiversity, and for flood control. Deer-fencing the long, narrow shape of the typical riparian woodland is a very costly exercise and an alternative approach is needed. This is likely to gain the interest and hopefully the support of District Salmon Fishery Boards, Rivers and Fisheries Trusts and the River Tweed Commission, which all contain landowners amongst their members. The best solution would be to reduce deer numbers over the whole catchment, with farm stock fencing protecting the riparian zone from livestock under revised cross-compliance regulations for agricultural riparian zones.

Currently, there are defined 'Woodlands for Water' target areas that attract a supplement to the standard Woodland Creation grant (see fig.2) where new woodland is likely to provide multiple benefits and it is available for all but the Woodland Creation Conifer option. But only very limited areas are eligible for the supplement. Given the expense of creating riparian woodland and the multiple benefits it can bring, it would be beneficial to extend the areas eligible for the supplement to all riparian zones where such benefits can be demonstrated. A new riparian woodland grant for deer control that includes a supplement for multi-ownership co-operation should also be considered.

7.7.4 Landscape scale deer control

Deer control sufficient to allow tree regeneration without fencing on a scale larger than a small catchment is more difficult to achieve. It has been achieved in some areas, such as Creag Meagaidh and the collection of estates in the Mar Lodge, Abernethy and Glen Feshie area. All these estates prioritise conservation management. It has also been achieved for example on the Queensberry Estate, where a reduction in roe deer numbers has allowed a diverse range of planted trees and regeneration to become established. These estates have achieved a level of deer control compatible with tree regeneration over several years of consistent and often controversial heavy culling. This intensity of culling is expensive and it is an ongoing commitment.

To achieve this success in areas not dominated by conservation estates or large estates without an interest in controlling deer is going to need a revised regulatory approach from NatureScot on the lines proposed by the Deer Working group. It is suggested that this should be developed on a regional basis, rather than at a national level. This would allow for activity to focus on priority areas, and might be more palatable for some organisations. It will also require a substantial overhaul of the FGS deer management grants with significantly more generous and longer-term funding. Furthermore it implies the fostering of a local or regional woodland and hunting 'culture', and this will require investment in training and lardering facilities to ensure that the welfare of animals is respected, and that venison that is fit for human consumption is produced.

There are signs of attitudes to deer control changing in some of the more traditional sporting estates, for economic reasons as well as from a growing appreciation of the biodiversity crisis and

the climate emergency. But a major change in approach would still be controversial. A carefully handled programme of encouragement from Government agencies and voluntary bodies would be necessary and key bodies such as CONFOR would need to be on-side. Regulatory changes coupled with refocussed grant structure should then be sufficient to turn around the present need to deer fence before you can successfully manage a wood. The eventual goal would be a countryside where the sizes of deer populations are in balance with tree establishment and regeneration.

However, there are many small, undesignated native woodlands with high biodiversity value that are unmanaged and in decline. Many of them are isolated from neighbouring woods. Substantial changes in the balance of deer and woods may not happen soon enough for these woods to benefit and in this case fencing will be needed in the short to medium term. The role of NGOs would be important in identifying woods most in need of protection and then facilitating their effective management.

Recommendations

46. Increase the hectarage rate for deer management on individual landholdings.
47. On individual landholdings, make woodland management grant approval conditional on a deer management plan.
48. Implement in full the Deer Working Group's recommendations for change in the regulations for deer management.
49. Combine the tree protection and establishment grants for the Woodland Creation options.
50. Develop a regional approach to deer control, in parallel with the implementation of the Deer Working Group's recommendations.
51. Pilot a new target area grant package for catchment-scale deer control. Involve NGOs, agencies community groups and sympathetic landowners in promoting the package locally.
52. Create a new long-term fund for deer control on the lines of the Peatland Action Project and link the funding with support for rhododendron control (where appropriate) and natural regeneration of native woodland.
53. Through a Challenge Fund, increase the short-term management payments for deer control and fencing for small native woodlands in urgent need of management. Invite NGOs with local knowledge to help in identifying and prioritising such woods and assisting with grant applications.
54. Significantly increase the area of riparian woodland eligible for the Woodland Creation 'Woodlands for Water' supplement.

8. Land use change

8.1. The challenge

The pressure on land is growing and coming from many directions. The current approach to land use is unsustainable if we are to meet future demands for food, timber, settlements, the protection of biodiversity and the changes needed in order to meet the challenges of the climate emergency. Major changes will be needed.

The area of woodland in Scotland is estimated[52] to be 1.5 million ha, of which 74% is conifers, and this area is rising by over 10,000 ha a year, with most of the expansion happening on agricultural land. The RSPB has pointed out that "*Agriculture and forestry are the primary productive land uses, covering 60% and 17% of Scotland, respectively……. Sectoral, single-purpose land use policies that zone land primarily on suitability for development, food and timber production, for example, have largely failed to optimise the delivery of goods and services. Ensuring the continued provision of these ecosystem services and the economic, social and environmental benefits they provide to society is a key challenge*."[53]

8.2 Recognition of the need for change

The Government's revised land use plan, Scotland's Third Land Use Strategy 2021-2026[54], sets out its *"long term vision for sustainable land use in Scotland….[taking] a holistic systems approach to our use and management of land…. [recognising that] all aspects of the environment, including humans, are interrelated and should not be viewed in isolation"*. Though necessary, this is an ambitious vision and the hard work comes in translating it into practice.

For forestry, the Government commits to woodland expansion *"but we recognise that this must be taken forward in the context of wider land use objectives*".

The UK Climate Change Committee in 2018 observed [55] that land use policies up till now have rewarded food production over the other services that land can provide, whilst other eco services provided by the natural environment have been degraded *"resulting in reduced functioning of semi-natural habitats; loss of peatlands; and forests that have become unproductive through lack of management."*

The observations in these official reports have been echoed in a number of recent reports on land use produced by other organisations such as the John Muir Trust and the RSPB.

8.3 Proposals for change at a national level

The proposals for a transition to a sustainable, high-level land use policy can be summarised from recent reports as:

- Ensuring sufficiently developed roadmaps exist for the net-zero transition and that these roadmaps encode Just Transition principles of fairness, with benefits and opportunities for all people in Scotland.
- Developing an ambitious strategy that directs sectoral policies in line with Government objectives.

[52] Forestry Statistics 2020, Forest Research https://www.forestresearch.gov.uk/documents/7806/CompleteFS2020.pdf

[53] Scotland's Land Use Future, RSPB https://www.rspb.org.uk/globalassets/downloads/documents/positions/agriculture/scotlands-land-use-future.pdf

[54] Scotland's Third Land Use Strategy 2021-26
https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/

[55] Land use: Reducing emissions and preparing for climate change Committee on Climate Change November 2018
https://www.theccc.org.uk/publication/land-use-reducing-emissions-and-preparing-for-climate-change/

- Addressing barriers to transitioning to different patterns of land use and management, tackling inertia to new ways of doing things and increasing investment in research and training.
- Re-examining the subsidies given for sheep and cattle farming and transferring some of this subsidy from uneconomic activity towards woodland management and expansion.
- Ensuring agricultural subsidies and forestry grants are directed towards rewarding landowners for services that contribute to the conservation and renewal of natural capital, reflecting the value of the goods and services that land provides, adopting measures that have clear, multiple benefits. These measures should be rewarded if they go beyond a minimum standard that land-owners should already be delivering.
- Ensuring that the forthcoming National Planning Framework 4[56] addresses biodiversity interests and adopts the landscape-scale approach to planning.

8.4 Change at a regional and local level

There are long-established and spatially specific regional plans covering the whole of Scotland. These include the land use strategies and forest or woodland strategies developed by local authorities, usually regularly updated and the result of extensive local consultation. The two National Parks have their own strategies that trump the local authority strategies within their park boundaries but are usually though not always compatible with them. In addition, there are sectoral plans, such as the Scottish Forestry Strategy and 'A Future Strategy for Scottish Agriculture'[57].

Through the Scottish Rural Development Programme (SRDP), of which the FGS is a part, grants are directed at encouraging local and regional agricultural and forestry spatial priorities. These include the agricultural Less Favoured Area Support Scheme, regional forestry grant supplements such as the native woodland creation supplement for schemes in the Northern and Western Isles target area, restrictions on grants to specific local areas, such as the target areas for rhododendron control, or preferential treatment to grant applications benefiting local priorities such as forest habitat networks.

These plans and strategies may reflect national priorities but they tend to sit in isolation from neighbouring plans; the grants and spatially-based incentives have grown up on an ad hoc basis in response to existing national priorities, local priorities, pressure from sectoral interests and at least in part from past Government and EU priorities. There is a need now to revisit this collection of plans and incentives in light of high-level changing priorities and circumstances.

As a link between national and regional policies, the Government is encouraging the establishment of Regional Land Use Partnerships (RLUPs) to develop Regional Land Use Frameworks by 2023. The task of these bodies is to take a strategic approach to regional land use issues, relating them to national interests, resolving potentially incompatible issues such as local ecological versus economic

[56] NPF4 is intended to be "*a long term spatial plan for Scotland that sets out where development and infrastructure is needed to support sustainable and inclusive growth out to 2050*" (Scotland's Third Land Use Strategy 2021-2026)

[57] A Future Strategy for Scottish Agriculture https://www.gov.scot/publications/future-strategy-scottish-agriculture-final-report-scottish-governments-agriculture-champions/

£

issues, talking to representatives of sectoral interests and developing regional policies for maximising the land's potential to fight the climate emergency and biodiversity loss. Drawing lines on maps is of secondary importance though at some point lines on maps do become necessary, allowing future support measures to target the areas where they can have the most impact. Five pilot RLUPs have been established, including two covering the National Parks, but evidence suggests that they are not yet up and running.

8.5 Implications of the emerging land use strategy for the FGS

8.5.1 Connecting afforestation with national and regional strategies

The current structure of the FGS has weak connections with regional and local priorities. As strategies defining these priorities become more focussed, it will be necessary for the grant structure to respond.

The most obvious problem lies with afforestation grants, as these have a highly significant impact on other local land use interests. The application process does acknowledge the need to respond to the climate emergency and biodiversity loss; applicants are required to justify their proposal by examining their impact on biodiversity, particularly birds, soils and existing habitats. But unless a particular problem is identified by consultees, it is only on large schemes (over 20 ha. or where any part of the scheme is on sensitive land) that an Environmental Impact Assessment (EIA) is likely to be required. EIAs are lengthy and expensive processes, requiring considerable input from applicants, SF and other statutory consultees. In theory they require the applicant to fully consider and assess the cumulative effects of their proposal on local and, if appropriate, regional interests and to come up with mitigation proposals where possible. However, there is a question whether this ideal is ever fully achieved.

The EIA model is a template for reconciling afforestation proposals, whether for conifers, broadleaves or native woodland, with regional and local land use strategies, e.g. if there is a lot of new conifer planting in the region, the applicant has to justify why more is compatible with regional interests. It would be impractical to expect every proposal for afforestation to have an EIA, indeed the trend is for the application process to be simplified rather than made more exhaustive, partly in response to frequent complaints about the complexity of the application process and the excessive amount of time it takes to bring a proposal through to the contract stage.

This problem is being directly addressed by SF through its Improvement Programme 2019-2024[58], which aims to streamline and digitise the *"grant application and regulatory processes, ensuring that they are as efficient and simple as possible"*. However this simplification cannot be at the expense of a thorough assessment of whether the scheme is compatible with land use planning strategies.

So, there needs to be an increasing reliance on readily accessible information, digital databases linked to the appropriate land use strategies. Such systems are in use by Forestry and Land Scotland and the lager forestry companies but as land use strategies become more connected and responsive

[58] Scottish Forestry Improvement Programme 2019-2024 https://forestry.gov.scot/about/reports-and-plans/improvement-programme-2019-2024

to climate and biodiversity priorities, these systems will need ongoing development. This poses immediate problems for smaller applicants and advisors who are unlikely to have the means to access the information needed.

Generally, SF no longer gives advice on how to navigate the existing complexities of grant applications. A way of allowing easy access to new technology would be required to help applicants through the application process, as well as more guidance on how to make applications that are compatible with emerging land use strategies. This implies additional money to employ public-facing SF staff and more support for the NGOs who already offer advice, support, training and sometimes financial assistance.

8.5.2 Revisiting the target area approach

Target area supplements appear to be effective in attracting desired outcomes in target areas. They have grown up as an ad hoc form of regional planning. As national and regional strategies develop, there is an opportunity to extend this approach to the whole of Scotland, perhaps by freezing or reducing the standard grant rate for activities that are not strategic priorities and offering supplements for activities that are.

8.5.3 Addressing the problem of short-term funding

The normal funding life for FGS management options is five years, sometimes with a contractual obligation to extend management unfunded for a further five years. The difficulties of SF forward budgetary planning and changes in landowner personnel and management objectives over time make this an understandable constraint but it is frequently too short a time-frame to achieve the objectives of the scheme.

Long-term operations particularly vulnerable to short-term funding include agroforestry, LISS, rhododendron control, deer control and natural regeneration. Projects under these headings have strong biodiversity benefits and are likely to be of increasing importance within land use strategies but they are vulnerable to failure if funding is cut off prematurely. This risks wasting public money. Rhododendron control funding is already subject to regional strategic priorities, restricted to a narrow and intermittent zone on the far west of Scotland. Currently deer control has only a weak relationship to strategic priorities.

Long-term projects need ‘patient’ funding with flexible funding time-frames. A follow-up grant for a further set time period may be made available and it may be possible to retune appropriate FGS options to include ‘patient’ funding provisions but this would require commitment in time and money from SF to ensure schemes are value-for-money and not an open-ended drain on resources.

A better funding model could be the Peatland Action Fund, an initiative directly established by the Government to provide funding over a 10 year period to meet the costs of practical peat restoration. Features of the fund include a simplified application process and a dedicated project officer able to work with landowners to develop schemes that work for both the Fund and the landowner. This model would allow the dedicated project team to take a fresh look at strategic priorities and fine-tune where funding should go. This would be a more flexible version of the current model for allocating rhododendron control funding.

The Peatland Action Fund now looks at the impacts of deer on peatland condition as a condition of support. This principle could be applied to other options, bundling two or more together, e.g. deer control and natural regeneration or rhododendron control, natural regeneration and deer control.

Compatibility with regional priorities is especially important for Woodland Creation options that need better agricultural land, such as growing broadleaved trees for timber, which includes agroforestry. These options also need long-term input from foresters with specialised skills. Here, funding could be retained within the current FGS with the addition of long-term funding for skill transfer, possibly channelled through other organisations such as the Woodland Trust or the Farm Advisory Service.

8.6 Land use and the future structure of Scottish Forestry

The Conservancy model of SF has remained unchanged since the early days of the Forestry Commission although the geographical areas of the Conservancies have changed on numerous occasions. Productive forestry and other operations on the National Forest Estate is now the responsibility of the entirely separate Forest and Land Scotland, though both are agencies of the Government and directly answerable to it. Research functions are now largely the responsibility of Forest Research and forestry training is delivered by external providers. This leaves SF with its policy and regulatory powers and responsibility for administering the FGS through the umbrella structure of the SRDP.

The Conservancy model can work well in that Conservancies have a high degree of autonomy. Day-to-day decision making is devolved to a regional level, and this can make Conservancies responsive to regional and local needs. How well they respond depends on the internal dynamics of each Conservancy and anecdotal evidence suggests that some Conservancies are more responsive than others.

There is talk of decision making within SF becoming more centralised; the recruitment of more grant administration staff to work from the centre may be evidence of that. Ideally there needs to be a balance, with headquarter staff making broad policy decisions that reflect Government strategic land use policy and Conservancy staff administering the FGS on a regional level, using their knowledge of regional community and land-use needs, ensuring that their decisions are compatible with regional land use strategies.

To be effective on a regional and local level, Conservancies need to be adequately staffed. Currently key public-facing staff, particularly woodland officers, have a very heavy work-load and a high turnover in some Conservancies, impairing their ability to build up knowledge of local communities or develop relationships with external forestry professionals. Better funding for Conservancies, enabling them to employ adequate numbers of front-facing staff would go a long way to reducing turnover and improving relationships with the forestry community.

The advice function of Conservancies has declined. Advising and guiding applicants through the grant application process was a much appreciated role of woodland officers that has not been,

perhaps cannot be, fully replaced by advice from NGO advisors. It would be very helpful to many applicants if this role was re-instated, especially for native woodland schemes where the financial viability of the scheme depends on taking full advantage of available grants. Such a measure may also reduce staff turnover, by providing an element of diversity to the woodland officer job description.

There is a marked contrast between Conservancies in the proportion of funding approved for Woodland Creation compared to woodland management and in the funding approved for the Woodland Creation Conifer and Diverse Conifer options compared to the broadleaved and native woodland options. This may be largely to do with regional characteristics, e.g. in the Highland and Islands Conservancy relative distance from markets, landowner attitudes and target area supplements may be causing the high uptake of native woodland options, but it is possible that other factors may also be at play to enable some Conservancies to reflect some national strategic priorities better than others. This suggests an opportunity at a national level for Conservancy best practice to be sought out and then nurtured at a regional level.

Recommendations

55. Seek to influence the UKFS review, so that minimum standards reflect the aspirations of LINK members.
56. Work with the Government to implement the SNP/Green partnership commitment.
57. Ensure future changes to the FGS are compatible with and enhance local and regional strategies and plans, including the outcomes of the RLUPs.
58. Review the existing patchwork of local and regional target area supplements and revise in line with national, regional and local land-use priorities.
59. Ensure the woodland creation options in FGS adequately reflect the interests of other sectors of society, especially those of the farming community.
60. Ensure the streamlining of the grant application process is not at the expense of an adequate assessment of the impacts of larger schemes, including the cumulative impacts. Any mitigation must be of real compensatory value.
61. Ensure that the streamlining of the application process is accompanied by readily accessible and detailed data on land use priorities.
62. Subject applications for whole-farm conversions to forestry to a detailed EIA examination of their cumulative effects on the local community and local rural economy.
63. Extend the Challenge Fund and Peat Action Fund models to enable adequate long-term focussed but flexible funding for priority issues.
64. Retain the regional autonomy of the SF Conservancy model but within the framework of national priorities.
65. Identify individual Conservancy best-practise and disseminate it to all Conservancies.
66. Increase SF funding for front-line SF staff to ensure a responsive approach to FGS applicants.
67. Re-instate the Woodland Officer advisory role for applicants, in association with the existing advisory role of NGOs and agencies.

9. Summary of recommendations

9.1 Alternative scenarios

The recommendations below are presented in the order they appear in the report, without any ranking in order of importance. The future form of the grant system for both Scottish forestry and Scottish agriculture are uncertain at the moment, it is a rather fluid situation that is impossible to predict.

What is clear is that a more diverse woodland model is needed in order to meet the Government's aims for the positive stewardship of our natural capital and a just transition to a net zero future. To achieve this, more money needs to be found for creating and managing broadleaved woodland, especially native woodland, and for promoting the integration of forestry and farming in a way that addresses inequalities and depopulation in rural Scotland.

The scenario with the best outcome would be one where significant additional money is made available in order to fully meet manifesto pledges. Implementing the following measures would radically change land use in Scotland:

- A more generous budget provision to meet the needs for creating and managing woodland consisting of diverse species, especially broadleaved woodland and native woodland.
- Prioritising effective deer management throughout Scotland. This would have a knock-on effect on many aspects of woodland management, whilst saving significant sums of grant money through the reduced need for fencing.
- Increasing just transition support for farming, including a boost to farm woodland creation and management, coupled with a reduced reliance on single species farming of sheep.

A second scenario assumes no extra funding but a willingness to address the current imbalance between the generous funding model for commercial forestry and the less-than-generous funding model for other aspects of forestry. A reduction and in the long-term phasing out of the fencing grants for woodland creation would liberate a large amount of the present FGS budget in order to boost funding for broadleaved and native woodland creation and management. Some of this could be used to focus on priority policy commitments such as restoring and expanding Scotland's rainforest.

A third scenario involves little change in the current funding models and, basically, business as usual. The emphasis of forestry support will continue to be focussed on planting and restructuring commercial plantations, primarily Sitka spruce plantations. Farmers will continue to receive subsidies as now. Conservationists will continue seeking small, hard-to-get funding packets for specific fire-fighting projects.

9.2 The recommendations

H	1. Monitor implementation of the new FGS ground preparation guidance for woodland creation.
H	2. Ensure that the new FGS ground preparation guidance is adopted for restock sites.
M	3. In the context of an integrated land use strategy, consider the re-introduction of a Better Land Supplement to encourage afforestation on mineral (non-peaty) soils.

H	4. Seek to progressively reduce all capital item grants for fencing from the Woodland Creation Conifer option.
H	5. Turn the reduced hectarage grant for schemes over 300 ha. into a sliding scale of hectarage payments according to the size of the scheme.
M	6. Increase the hectarage payment for the Woodland Creation Diverse Conifer option, particularly where Scots pine is selected as the major species.
H	7. On bracken, investigate increasing financial and management support for farmers for planting broadleaves for timber, primarily, but also for planting diverse conifers.
H	8. In line with the LINK response to the UKFS review, ensure that the references to forest resilience, climate change and species diversity are translated into requirements.
M	9. Increase the minimum amount of native broadleaves in the Woodland Creation Conifer and Diverse Conifer options from the current 5% of the total species mix.
M	10. Reduce the maximum of any single species from 70% to 50%.
M	11. Establish target area supplements for growing broadleaves for timber in areas suitable for quality timber production.
M	12. Create a funding option for growing conifer/broadleaved mixes for timber production.
M	13. Investigate options for nurturing a long-term build-up of the market for quality broadleaved timber produce.
L	14. Increase actual cost contribution for small scale wood-processors under the FGS Harvesting and Processing grant from 40% to 50%.
H	15. Seek out opportunities to align LINK messages with the voice of farmers as represented in the Farming for 1.5° report.
H	16. Revise the FGS Agroforestry grant following thorough consultation with the farming community and responding to knowledge learnt in past and present pilot studies.
H	17. Promote the principle of “bringing forestry down the hill”.
L	18. Consider whether agroforestry should be included in the FGS or in a future agri-environment scheme.
M	19. Devise a Challenge Fund for agroforestry, setting broad criteria but avoiding over-prescription.
H	20. Introduce a new small native woodland afforestation grant with a simplified application process and an attractive grant rate.
M	21. Revise the ‘Sheep and Trees’ FGS package to favour the Woodland Creation Diverse Conifer option over the Conifer option and to include the Broadleaves option.
M	22. Implement the findings of the WEAG on whole farm conversion to forestry.
H	23. Ensure existing native woodland fragments within larger Woodland Creation Conifer or Diverse Conifer option schemes are adequately managed and that a whole-holding approach is taken.
M	24. Extend the target area premiums for native woodland creation to Argyll and the Southern Uplands.
H	25. Create partnership initiatives with conservation bodies, agencies and interested landowners to initiate an intensive drive for native woodland afforestation schemes in selected areas on the lines of Cairngorms Connect.

H	26. Increase the hectarage grant rate for natural regeneration to reflect the scale and public benefits that are to be delivered.
H	27. Increase the duration of grant payments for deer control to at least 10 years.
H	28. Include a greater focus on natural regeneration provision within FGS Long Term Forest Plans and Woodland Plans.
H	29. Increase the buffer around native woodland fragments within Conifer and Diverse Conifer planting schemes to a minimum 50m. and ensure all of this is eligible for grant payment.
H	30. Introduce a new FGS/agri-environmental option for grant-aiding natural regeneration beyond the edge of existing native woodland and combining a range of operations aimed at habitat improvement.
H	31. Ensure that landowners seeking to plant new trees are required to assess the condition of all ancient woodland, including PAWS, within their ownership as a condition of planting approval and required to submit measures to improve woodland condition where necessary.
H	32. Require landowners to justify their choice when proposing to plant new native woodland detached from existing woodland whilst not proposing to expand existing woodland.
H	33. Strengthen the Good Agricultural and Environmental Conditions (GAECs) that must be adhered to in order to receive agricultural support payments.
M	34. Remove the WIG Restructuring Regeneration grant (Delivering UKFS woodland) grant.
H	35. Develop a mechanism for ensuring UKFS guidelines are followed during restocking operations.
H	36. Improve the hectarage grant rate for LISS, and increase the longevity of the grant from 5 years.
M	37. Introduce a LISS target area premium for selected areas in eastern and southern Scotland.
H	38. Establish a National Register of Ancient Woodlands in line with the SNP/Greens cooperation agreement.
H	39. Significantly increase the budget for WIG Habitats and Species from the 2021 allocation of £0.80m.
H	40. Introduce a new Natural Capital grant for agreed native woodland management operations.
M	41. On individual landholdings, relate grant availability and rates for deer control, rhododendron control and other invasive species control to regional land use priorities.
H	42. Make the woodland grazing option under SMF conditional on implementing a linked deer management plan for the same area.
L	43. Commission further research into farm animal breeds best suited for the objectives of woodland grazing.
M	44. Expand the funding for creating new access and interpretation that is currently available for WIAT woodlands to all new and existing woodland, where such provision would be appropriate.
M	45. Improve FGS support for actions which engage more people, communities and businesses in forestry matters.
H	46. Increase the hectarage rate for deer management on individual landholdings.
H	47. On individual landholdings, make woodland management grant approval conditional on a deer management plan.

H	48. Implement in full the Deer Working Group's recommendations for change in the regulations for deer management.
M	49. Combine the tree protection and establishment grants for the Woodland Creation options.
H	50. Develop a regional approach to deer control, in parallel with the implementation of the Deer Working Group's recommendations.
H	51. Pilot a new target area grant package for catchment-scale deer control. Involve NGOs, agencies community groups and sympathetic landowners in promoting the package locally.
H	52. Create a new long-term fund for deer control on the lines of the Peatland Action Project and link the funding with support for rhododendron control (where appropriate) and natural regeneration of native woodland.
H	53. Through a Challenge Fund, increase the short-term management payments for deer control and fencing for small native woodlands in urgent need of management. Invite NGOs with local knowledge to help in identifying and prioritising such woods and assisting with grant applications.
M	54. Significantly increase the area of riparian woodland eligible for the Woodland Creation 'Woodlands for Water' supplement.
H	55. Seek to influence the UKFS review, so that minimum standards reflect the aspirations of LINK members.
H	56. Work with the Government to implement the SNP/Green partnership commitment.
H	57. Ensure future changes to the FGS are compatible with and enhance local and regional strategies and plans, including the outcomes of the RLUPs.
M	58. Review the existing patchwork of local and regional target area supplements and revise in line with national, regional and local land-use priorities.
H	59. Ensure the woodland creation options in FGS adequately reflect the interests of other sectors of society, especially those of the farming community.
M	60. Ensure the streamlining of the grant application process is not at the expense of an adequate assessment of the impacts of larger schemes, including the cumulative impacts. Any mitigation must be of real compensatory value.
M	61. Ensure that the streamlining of the application process is accompanied by readily accessible and detailed data on land use priorities.
H	62. Subject applications for whole-farm conversions to forestry to a detailed EIA examination of their cumulative effects on the local community and local rural economy.
H	63. Extend the Challenge Fund and Peat Action Fund models to enable adequate long-term focussed but flexible funding for priority issues.
M	64. Retain the regional autonomy of the SF Conservancy model but within the framework of national priorities.
M	65. Identify individual Conservancy best-practise and disseminate it to all Conservancies.
H	66. Increase SF funding for front-line SF staff to ensure a responsive approach to FGS applicants.
H	67. Re-instate the Woodland Officer advisory role for applicants, in association with the existing advisory role of NGOs and agencies.

10. Glossary

Afforestation	Intentionally creating new woodland or plantation areas by means of tree planting
Agroforestry	A system of land management where the objective is to grow trees and agricultural or horticultural crops on the same piece of land
Ancient woodlands	In Scotland, ancient woodland is defined as land that is currently wooded and has been continuously wooded since at least 1750
Capital items	A phrase used in the FGS for defined forestry operations whose costs are eligible for grant assistance
CONFOR	The Confederation of Forest Industries (UK) Ltd
EIA	Environmental Impact Assessment
FGS	Currently, the main vehicle for delivering grant assistance for forestry operations in Scotland
FSFF	Future Support for Forestry, the evolving new programme to replace FGS
Ghost Woods	The last remnants of semi natural woods which are right on the brink, isolated trees and small groups of trees, often on upland sites
Invasive Non Native Species	Non Native Species which colonise native habitats to the detriment of those habitats
LISS	Low-Impact Silvicultural Systems
Mineral soil	Soil derived from minerals and rocks, containing little organic matter
Native Trees	Trees which arrived in Scotland unaided by people in the prehistoric period
Native Woodland	The Native Woodland Survey for Scotland defined native woodland as woodland where native trees form more than 50% of the canopy
Natural regeneration	General foresters' term for woodland colonisation. The term may include all naturally regenerated woodland including woodland regeneration under an existing canopy. N.B. in the old Woodland Grant Schemes, grant for woodland regeneration within canopy gaps was treated separately from woodland colonisation beyond the woodland edge. In the FGS, the New Natural Regeneration Establishment grant is for "natural regeneration of native tree species on open ground within or around the woodland edge", i.e. for woodland colonisation.
NatureScot	The new name for Scottish Natural Heritage (SNH).
NGO	Non-Governmental Organisation. An organisation that is not part of Government and is generally not- for-profit.
Non Native Species	Animals or plants that have been introduced into Scotland by people during the historic era.
NVC	National Vegetation Classification.
Organic soils	Soils containing a significant amount of organic material.

PAWS	Plantation on Ancient Woodland Site. A woodland where native trees have been replaced by non native trees, frequently coniferous trees.
Peat	Soil formed from an accumulation of partially decayed organic material.
Peaty gley	Waterlogged peaty soil.
Riparian woodland	Woodland bordering watercourses.
RLUP	Regional Land Use Partnership.
Semi Natural Woodland	Ancient woodland that has been influenced by humans to some extent. In Scotland there is no ancient woodland that is truly 'natural'.
SF	Scottish Forestry, the Scottish Government's agency for delivering its forestry strategy, including the administration of the Forestry Grant Scheme.
SF Clearing House	A system for assessing and approving FGS applications.
SMF	Sustainable Management of Forests
SNP	Scottish National Party.
Standard costs	A term in the FGS for a fixed payment rate for a specified forestry operation. In some situations, e.g. work in SSSIs, operations may be eligible for 100% 'actual costs'.
The Government	Refers to the Scottish Government, unless there might be a confusion with the UK Government, in which case it is referenced as the Scottish Government.
UKFS	United Kingdom Forestry Standard. A set of standards that land managers need to adhere to in order to receive grant funding.
WIG	Woodland Improvement Grant
Woodland colonisation	Woodland expansion by self-seeding trees beyond the woodland edge, traditionally called natural regeneration.
Woodland Creation	The phrase used in the FGS and by many foresters for creating new woodland or plantation areas by means of tree planting.
Woodland Creation Broadleaves Option	Current woodland creation grant available to managers who want to plant areas dominated by selected native and non native trees with the specific aim of producing timber. The grant rate reflects the extra costs associated with this process.
Woodland Creation Conifer Option	Current woodland creation grant available to managers who want to plant areas dominated by Sitka spruce.
Woodland Creation Diverse Conifer Option	Current woodland creation grant available to managers who want to plant areas with a conifers other than Sitka spruce. Grant is paid at a higher rate than for the Conifer Option.
Woodland Creation Native Low Density Option	Current woodland creation grant available to managers who want to create other woodland types including wood pasture, montane woods, treeline woods, juniper woods and scrub habitats
Woodland Creation Native Woodland Option	Current woodland creation grant available to managers who want to create new native woodlands conforming with NVC woodland types other than NVC W4 - upland birch. A higher rate of grant applies to this option than the Upland Birch option.
Woodland Creation Upland Birch Option	Current woodland creation grant available to managers who want to create new native woodlands conforming with NVC woodland types other than NVC W4 - upland birch. A higher rate of grant applies to this option than the Upland Birch option.
Woodland regeneration	New trees seeding under existing canopy.

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