OPTIMISING CARBON SEQUESTRATION IN ARGYLL & BUTE

Implementation Plan
Pilot 2: Landowner Carbon Farming Implementation
for
Highlands and Islands Enterprise

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ekosgen
CONTEXT
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Iomairt na Gàidhealtachd 's nan Eilean

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1 INTRODUCTION

OVERVIEW

1.1 Carbon sequestration is the process of capturing, securing and storing carbon dioxide from the atmosphere. The idea is to stabilise carbon in solid and dissolved forms so that it doesn't contribute further to global warming and climate change. The process shows tremendous promise for reducing the human carbon footprint. Under systems such as the Woodland Carbon Code and Peatland Carbon Code, the carbon sequestered in newly created woodland or in restored peatland, for example, can be traded as carbon units to help offset carbon emissions.

1.2 ekosgen was commissioned by Highlands and Islands Enterprise (HIE) to research and develop an Implementation Plan to engage landowners in carbon farming as part of a local carbon market in Argyll & Bute. This work forms a strand of Work Package 6 (WP6), which aims to develop three pilot projects to progress the carbon sequestration in the area.

1.3 It is a nascent sector, and the anticipated approach in Argyll & Bute is also relatively new and innovative. The aim in Argyll & Bute is to catalyse and support a local market in order to deliver social and economic benefits and deliver against community wealth building (CWB) objectives. Specifically, these are[1]:

- **Spending**: Maximising community benefits through procurement and commissioning, developing good enterprises, fair work and shorter supply chains.
- **Workforce**: Increasing fair work and developing local labour markets that support the wellbeing of communities.
- **Land and Property**: Growing social, ecological, financial and economic value that local communities gain from land and property assets.
- **Inclusive Ownership**: Developing more local and social enterprises which generate community wealth, including social enterprises, employee owned firms and cooperatives.
- **Finance**: Ensuring that flows of investment and financial institutions work for local people, communities and businesses.

1.4 Essentially it is about capturing the value of this potentially transformative industry for local landowners, businesses and communities.[2] Essentially, it is about capturing the value of this potentially transformative industry for local landowners, businesses and communities. Through earlier Work Packages, the decision has been made to focus on land-based sequestration rather than marine.

THE PILOT

1.5 The original scope of work to develop the Implementation Plan for *Pilot 2: Landowner Carbon Farming Implementation* was as follows:

- To focus on the carbon farming implementation requirements of individual farms or farm enterprise(s);
- With the help of the project managers and HIE staff, identify individuals or a cluster of individual landowners in Argyll & Bute interested and able to engage in carbon farming;
- Identify the relevant and applicable parameters of the project, including the nature of the trade, requisite land management (stipulated in the woodland and peatland codes), geographic boundary, number of land holders and associated areas;
- Co-develop an implementation plan with stakeholders for establishing the project; and

[1] https://www.gov.scot/policies/cities-regions/community-wealth-building/

[2] https://www.inclusivegrowth.scot/our-work/community-wealth-building/2019/11/community-wealth-building/

- Develop consensus on adoption of the plan and identify the first steps to initiate the work programme.

1.6 However, during the process of researching and developing the Implementation Plan, the scope has shifted in agreement with HIE to better meet the needs that have been identified through the wider work of the *Optimising Carbon Sequestration* project, and specifically on the Implementation Plans. It has become clear that landowners in Argyll & Bute are at an earlier stage than expected in terms of their thinking about and engaging with the carbon trading market. Also, whilst there are some signs of local demand from businesses, it is at an early stage and is not yet established. It is therefore clear that significant work is required to get to the stage of establishing a local market to deliver local benefits.

1.7 The broad conclusion is that there is some distance between where landowners, communities and some other stakeholders are at now, and the point where they are ready to co-develop an implementation plan and reach consensus on it and the next steps to initiate it. This is particularly in relation to Pilot 2 and Pilot 3.

1.8 As a result of the nascent stage of the local market, this Implementation Plan focuses on the short-term requirement to develop interest and readiness amongst landowners (carbon suppliers).

DEVELOPING THE IMPLEMENTATION PLAN

1.9 Preparing all three Implementation Plans has been an iterative process, working closely and collaboratively with Imani Development and HIE. The development of this Implementation Plan is based on the findings of research and consultations with key informants and landowners. It also draws on the emerging findings and issues for a local carbon market identified at a stakeholder workshop held in Dunbeg, Oban on 4th October 2022. This, combined with the consultations and desk research, were used to develop an evidence-based assessment of the current knowledge, activities, and readiness of actors on both the supply and demand sides of the carbon market.

SCOPE OF THE IMPLEMENTATION PLAN

1.10 There is clear evidence that landowners in Argyll & Bute are not ready and in a position to undertake sequestration and carbon trading activities. There is a lack of understanding of the potential benefits from carbon farming, and a reluctance to engage with carbon sequestration, either based on perceptions (e.g. that it is not “for” typical landowners or farmers in Argyll & Bute, concerns that carbon farming is geared towards larger landowners, and that the Woodland Carbon Code is challenging and difficult to negotiate), or on previous experience of other land-use incentive schemes, such as the Agri-Environment Climate Scheme.

1.11 To arrive at a position where the intended pilot activity can be taken forward, this Implementation Plan covers key considerations for stakeholders and landowners in thinking about carbon sequestration activity. It also provides outline approaches for potential activities.

2 CONTEXT AND OBJECTIVES

INTRODUCTION

2.1 This section of the report outlines the wider context of the development of this Implementation Plan, building on the findings of research conducted as part of the wider Optimising Carbon Sequestration Opportunities in Argyll & Bute project. This section also sets out the aims and objectives of this Implementation Plan.

CONTEXT FOR THE PLAN

The opportunity for carbon sequestration

2.2 The scale of Argyll & Bute's natural carbon assets presents an opportunity for the area with regards to carbon sequestration activity. A significant proportion of Argyll & Bute is covered by existing farmland, forestation and peatland. Around 76,000ha of Argyll & Bute is identified as preferred land for future forestation, and almost 49,500ha of peatland is considered degraded and in need of restoration.

2.3 By engaging in the carbon market, landowners have an opportunity to capitalise on these natural assets through trading carbon credits they can accrue as a result of sequestration activity. Considerable carbon revenue generation is therefore possible in Argyll & Bute. However, this is dependent on sequestration mode and the rate of carbon units per hectare that can be achieved. Market rates for carbon credits are predicted to continue increasing in price, which can in theory lead to significant revenue generation.

2.4 The most feasible approaches to carbon sequestration in Argyll & Bute in the immediate future are terrestrial biological – that is, through forestation (including silvopasture) and peatland restoration. However, it is worth noting that the extent of Argyll & Bute's marine carbon assets mean that marine-based sequestration opportunities may be realised in future, as market mechanisms and regulatory frameworks for this develop.

2.5 Carbon sequestration represents not only an economic opportunity to stimulate the economy, but also an opportunity to secure wider community wealth building and environmental benefits.

2.6 These wider benefits that can also be realised include:

- Improved biodiversity and habitat creation;
- Flood mitigation and water management;
- Improved water and air quality;
- Better soil and nutrient management and reduced erosion;
- Shelter for livestock;
- Creation of skilled jobs and increased demand for workers in forestry and land management;
- Physical and mental health improvements;
- Social well-being and increased community engagement; and
- Community wealth building.

2.7 Achieving these benefits could help to transform the region's economy, and potentially contribute to reversing the trends of a declining, ageing population.

Landowner engagement and readiness

2.8 Consultation and engagement with landowners as part of this research indicates that some are beginning to consider carbon sequestration as a viable revenue source. However, this thinking is at an earlier stage than anticipated. Whilst there is understanding and recognition of the potential for carbon

sequestration activities in Argyll & Bute amongst strategic local and regional stakeholders, engagement by landowners with carbon sequestration as a topic, and as a potential economic activity, is more limited. The reasons for this are summarised below:

- **Perceptions of carbon sequestration**: Broadly, there is a perception amongst landowners and tenant farmers that current frameworks and codes for carbon sequestration are more suited to larger landowners. As such, there is a reluctance to engage with carbon sequestration activities. There is also concern that opportunities for carbon sequestration activity in Argyll & Bute may see large parcels of land purchased by outside interests, which could result in minimal community and environmental benefits.
- **Opportunity cost**: There is concern that pursuing carbon sequestration through forestation in Argyll & Bute would see displacement, and thus loss, of productive agricultural land, particularly on hillside areas. Any framework that is designed for carbon sequestration needs to acknowledge and factor in the various ranges of activity on land, the range of land types available in Argyll & Bute and various other factors that influence the degree of carbon sequestration that is achievable or feasible. This aspect is considered particularly relevant for silvopasture approaches, with regard to ensuring application of the most appropriate model.
- **Carbon credit receipts**: There is a degree of concern around who is actually in receipt of the benefits attached to carbon sequestration. In instances where tenant farmers would deliver the activity, landowners (as proprietors of the land) would potentially receive benefits rather than the farmers. This would potentially minimise the farmers' agricultural yields without the tenancy farmer being in receipt of the benefits of sequestration activity. To counter this, the terminology around carbon credits could be modified to reflect the sale of activity on the land and as such, the "owner" of the credit would be considered whoever completed this activity, whether that be the landowner or the tenant farmer.
- **Perception of public sector role**: In the view of some landowners, there has been concern that carbon sequestration is being forced upon them by the public sector. However, landowners have been reassured that the Scottish Government's role in sequestration is to facilitate sequestration where there was support and desire for sequestration projects, and not to displace any current activity on land where farmers do not wish to engage. Currently, there is a degree of uncertainty around how requirements for future agricultural payments may impact on take-up of carbon sequestration opportunities. However, the New Agriculture Bill[3] consultation will allow farmers and other stakeholders to feed into future arrangements for payments for environmental activities.
- **Cultural drivers**: Another prominent concern within landowners was that the models for carbon sequestration that had been presented to them have only considered the situation from a purely business and financial perspective. As a result, other wider cultural issues (such as long-standing practices, ties to the land, financial necessity, perceived responsibility to the farming and wider community) and individual aspirations that farmers may have for the management of their land are not considered.
- **Insetting versus offsetting**: As a result of new standards, guidance and advice arising from Science Based Targets (SBTi) and the Greenhouse Gas Protocol, it is increasingly likely that landowners will be expected to inset rather than offset their emissions in order to keep the

Wary Farmer: Sheep farmers are wary about the loss of autonomy over their land associated with developing forestry or silvopastural land, and have raised concerns with regards to displacing activity related to food production as a result of having less land for agricultural purposes. However, they also acknowledge and are well-positioned to identify areas that could be more easily purposed for carbon sequestration (trees) and retention (deteriorated peatland) activity.

[3] https://www.gov.scot/publications/delivering-vision-scottish-agriculture-proposals-new-agriculture-bill/

carbon market as localised as possible. Consequently, any carbon credits generated through sequestration activity would not be traded, locally or otherwise, but retained by landowners.

- **Balancing carbon sequestration with other land uses**: Carbon sequestration is only one factor when considering potential land use, and that there are other benefits that can be associated with activity that is intending to sequester carbon. Equally, existing activities may already sequester sizeable amounts of carbon – it is recognised that effective and efficient grazing management systems can achieve this. In any discussion of carbon sequestration, it is vital to articulate other benefits, as these may be of equal or greater value – and may be able to secure a higher carbon price.
- **Food security**: Evidence from consultations indicates that only around 7% of hill farms in Argyll & Bute are viable without public sector intervention, yet make a considerable contribution to the food security of the area. Displacing agricultural activity for the purposes of farming carbon would therefore have the potential to have a detrimental impact on agricultural yields. As such, it may be the case that Argyll & Bute (or, to a wider extent, Scotland) would need to import more food which, in turn, would increase carbon emissions resulting from transporting this food. This is an important opportunity cost to consider with regard to Scotland's Net Zero ambitions.

Small Landowner engaged in sequestration activity: A small landowner whose forestry project is registered on the Carbon Registry stressed the importance of considering the management of land in a holistic nature. When designing their forestation project, they noted it would have been beneficial to have designed other management plans such as biodiversity and deer management plans simultaneously, as ultimately the changes that they have made have had a greater impact on their landscape beyond what was factored into their forestry design plan.

AIMS AND OBJECTIVES

2.9 The Readiness Evaluation that has been delivered under WP7.1 demonstrates there is a considerable gap between the thinking, understanding and readiness of landowners and farmers in Argyll & Bute with regard to carbon sequestration, and the requirements of engaging in carbon trading and meeting market demand. Consequently, there is substantial work required to develop the local supply needed for an Argyll & Bute carbon market that also secures wider community and environmental benefits, and thus delivers community wealth building. However, it is also important that this supply is appropriate, in line with local aspirations and support.

2.10 Based on the readiness assessment and the overall ambitions for carbon sequestration in Argyll & Bute, the aim of this Implementation Plan is to provide a route map and set of activities to support the development of landowner understanding of, willingness to engage in and preparation considerations for carbon sequestration activity in the region.

2.11 As such, the Implementation Plan has the following specific objectives:

- Local landowners and farmers understand the opportunities of delivering carbon sequestration activity;
- The benefits of participating in the carbon market and the specific benefits of this being local to Argyll & Bute are clear to landowners;
- The wider social and environmental benefits that can be realised in Argyll & Bute through landowners engaging in carbon sequestration activity are articulated and understood; and
- Local landowners and farmers are able to make an informed decision with regard to planning and implementing carbon sequestration schemes.

3 CARBON SEQUESTRATION: POTENTIAL ACTIVITIES AND KEY CONSIDERATIONS

INTRODUCTION

3.1 This section of the report sets out the potential for terrestrial carbon sequestration activity that can be established in Argyll & Bute, their respective mechanisms for carbon trading and the key considerations for landowners considering carbon sequestration activities that have arisen from stakeholder engagement and desk research associated with the overall Optimising Carbon Sequestration in Argyll & Bute project.

POTENTIAL ACTIVITIES

3.2 The approaches that were under consideration as part of this project were with regards to forestation for carbon farming, silvopasture approaches (incorporating tree cover into pasture land) and restoration of peatlands. These terrestrial systems form the most significant areas of opportunity for landowners in Argyll & Bute.

3.3 It should be noted that, in the report that served as an output for Work Packages 1 and 3 of the overall project, there was reference to the possibility of extending activity beyond terrestrial systems by considering the carbon sequestration potential of marine systems such as seaweed and phytoplankton. However, the range of outcomes arising from marine systems is more limited, due to insufficient scientific understanding, technical capability for measurement, and a lack of bespoke framework for verification. As a result, marine systems are not considered as part of this Implementation Plan.

Forestation

Overview

3.4 Roughly 25 percent of global carbon emissions are captured by plant-rich landscapes such as forests, grasslands, peatlands and moorlands, and stored as biomass or living material such as leaves, branches and tree trunks.[4] When plants die or when their leaves and branches fall off, the carbon stored is either released back into the atmosphere or is transferred into the soil. Human activities that involve harvesting and deforestation, and natural phenomena such as wildfires, can therefore contribute to the diminishment of forests as a carbon sink.

Community Forestry: There are several community owned Forests/Woodlands in Argyll & Bute. They are quite well networked, for example via the Community Woods Association's A Wood of Our Own Network (AWOOO). Not all the community-owned land would be eligible for carbon sequestration under the Woodland Code as it currently stands, given that the majority is former sitka spruce and replanting is not permitted. However, many community-owned woods are seeking to actively sequester carbon by replacing plantation spruce with native broadleaves - and support for this type of activity would be extremely welcome by community forest landowners, many of whom do not have extensive financial reserves or large delivery capacity.

3.5 By extension, reforestation or the creation of new forestry can contribute significantly to a region's ability to sequester carbon. Given the large scale of forestry cover and activity in the Argyll & Bute catchment area, estimated to cover 15% of Scotland's total woodland resource in the 2011 Argyll & Bute Woodland and Forestry Strategy[5], forestation for the purposes of carbon farming should be considered as a viable and desirable opportunity in carbon sequestration in the region.

3.6 Current forestry open data from Argyll & Bute Council[6] shows that there is approximately 160,500ha of existing planted woodland, with a further 76,600ha identified as preferred (that is, land that offers the

[4] https://clear.ucdavis.edu/explainers/what-carbon-sequestration

[5] https://www.argyll-bute.gov.uk/moderngov/mgConvert2PDF.aspx?ID=55380

[6] https://argyll-bute.maps.arcgis.com/apps/webappviewer/index.html?id=a4ef5fe5bae1479b85f4c2d8fbc63b4a

greatest scope to accommodate future expansion of a range of woodland types), and 146,700ha as having potential to accommodate a range of woodland types, but where at least one significant sensitivity exists.

Delivery Potential

3.7 The number of carbon units per hectare that can be achieved by forestry varies by woodland type, and by age of woodland. Understandably, the more mature a woodland is, the more carbon it will have sequestered: more mature woodland has sequestered more carbon historically than new woodland. Based on available data and ranges of carbon units per hectare, a reasonable average is 350 CO_2e units per hectare over a period of c.30 years.

3.8 It should be noted that, whilst productive conifer woodland is able to attract carbon credits, conifer planting for carbon sequestration has to undergo a separate level of additionality testing. In practice, productive conifer woodland is discouraged.

3.9 Woodland carbon credits can be purchased as a Pending Issuance Unit (PIU), or as a Woodland Carbon Unit (WCU). A WCU is a tonne of CO_2e which has been sequestered in a WCC-verified woodland, whilst a PIU is effectively a promise to deliver a WCU in future.[7]

3.10 It is worth noting that the price of carbon units (both PIU and WCU) have increased considerably in recent years. For example, a native planting scheme in Argyll secured £13.50 per PIU in June 2021, but as at January 2022 was seeking £16-£17. Similarly, a native planting scheme in Northumberland, originally seeking offers above £15 per PIU, realised £18 per unit.[8] An additional factor is the vintage of PIUs, i.e. The date at which when PIUs mature and are validated as WCUs. Longer-term PIU vintages cost less than those that have an imminent maturation/validation date.[9] Since WCUs have necessarily been validated, they typically cost more than PIUs, but are readily available as carbon credits.

3.11 Based on a review of prices for woodland carbon credits, the following prices per unit for both PIU and WCU can typically be expected in Scotland at present (Table 3.1).

[7] https://woodlandcarboncode.org.uk/buy-carbon/what-are-woodland-carbon-units

[8] https://carbonstoreuk.com/publications/woodland-carbon-update-jan-2022/

[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1084680/FC_Fact_Sheet_Carbon_FINAL_14062022.pdf

Table 3.1: Price per carbon unit for different plantation types

Scheme type	£/unit
PIU[10]	
Productive conifer woodland	£15
Native woodland planting scheme	£17
Mixed woodland (conifer and broadleaf)	£12.50
New planted broadleaf	£22
Woodland Carbon Guarantee scheme, fourth round	£18.62
Forestry commission PIU estimates	£10-£30
WCU[11]	
WCU price range estimates	£17.31-£24.41

Source: Forestry Commission, 2022; UK Government, 2022; Carbon Store UK, 2021-22, ekosgen Work Package 4 Report

3.12 Based on data in the Argyll & Bute Woodland and Forestry Strategy[12] and analysis by SAMS Enterprise[13] regarding preferred land area for forestation expansion, a reasonable assumption of land that could theoretically be set aside for carbon farming forestation, is 10% of Argyll & Bute's current total agricultural area[14], i.e. c.50,914ha. This equates to around two-thirds of the total area identified as preferred, and just under one quarter of the total area as either preferred or having potential to accommodate woodland.

3.13 Based on the above income value per unit, land coverage assumptions and sequestration potential, between £63.6 million and £346.2 million could be expected to be generated if 10% of Argyll & Bute's total agricultural area is set aside for carbon farming, dependent on woodland type and carbon units per hectare achieved over a 30-year period.

3.14 The cost of forestation can vary widely, with some estimates ranging from c.£1,000 per hectare[15] to in excess of £7,500 per hectare[16], dependent on tree type and planting requirements. Evidence from the UK[17],[18] and Ireland[19] suggests that average reforestation costs in Scotland may be as follows:

- £3,500 per hectare for forestry plantation; and
- £6,700 per hectare for new woodland.

[10] Based on evidence from Forestry Commission, 2022: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1084680/FC_Fact_Sheet_Carbon_FINAL_14062022.pdf; Forestry Commission/DEFRA, 2022: https://www.gov.uk/government/news/10-million-to-provide-long-term-income-for-woodland-creation-with-fifth-auction-of-woodland-carbon-guarantee; Carbon Store UK, 2021: https://carbonstoreuk.com/publications/woodland-carbon-update-july-2021/; Carbon Store UK, 2022: https://carbonstoreuk.com/publications/woodland-carbon-update-jan-2022/.

[11] Based on evidence from CLA, 2021: https://www.cla.org.uk/news/value-carbon/; Savills, 2021: https://www.savills.co.uk/research_articles/229130/313520-0 ; Townsend Chartered Surveyors, 2021: https://townsendcharteredsurveyors.co.uk/environmental-services/woodland-carbon-code/.

[12] https://argyll-bute.gov.uk/moderngov/mgConvert2PDF.aspx?ID=55380

[13] SAMS Enterprise (2022) Optimising carbon sequestration opportunities in Argyll & Bute

[14] Total agricultural area rather than utilised agricultural area: it is assumed that some currently unutilised agricultural area is (more) suitable for (re)forestation.

[15] https://www.frontiersin.org/articles/10.3389/ffgc.2021.629198/full

[16] https://www.sciencedirect.com/science/article/abs/pii/S0264837714002737

[17] Steve Westbrook/Forestry Commission, Scottish Forestry and the Welsh Government (2022) Impact of investment in forestry on employment in England, Scotland and Wales

[18] Woodland Trust, cited in: https://www.theguardian.com/society/2019/dec/28/replanting-britain-its-about-the-right-tree-in-the-right-place

[19] https://www.teagasc.ie/crops/forestry/advice/establishment/reforestation/

Wider community and environmental benefits

3.15 Forestation projects also have the potential to deliver a wide range of benefits to the community and the environment beyond their carbon sequestration potential.

3.16 By the creation of more woodland area, assuming it's on agricultural land previously utilised for agricultural purposes, forestation provides space for new habitat creation, which in turn can have a modest increase on levels of biodiversity within the area.

3.17 Forestation can also contribute to better hydrological management, with forest cover typically having a high water interception and storage potential than grassland, leading to better flood alleviation in these areas. Water quality is also improved, with a reduction in sediments and trees acting as a filter with regards to pollutants found in the soil.

3.18 Well-managed forestry cover can also lead to a reduction in soil erosion due to improved soil management in the affected area. This, in turn, reduces nutrient losses and can therefore improve soil quality.

3.19 Air quality in the local area can also be improved through trees' ability to absorb harmful gases such as carbon dioxide, nitrogen oxide, ammonia, and sulphur dioxide. Trees also remove particulate pollution from the air by catching particulate matter on their leaf surfaces.

3.20 Another benefit of woodland creation is providing livestock shelter by increasing woodland cover on the boundary of forested areas. This also has an impact on the temperature of the habitat, acting as a natural coolant given the ability to shade the land the trees are planted on. If an animal has to expend less energy maintaining their core body temperature, that energy goes into weight gain, ensuring better welfare of the animal and ultimately resulting in higher profits.

3.21 Typically, when compared with urban environments, natural environments such as forests and woodlands improve human mood states, concentration and performance. By increasing woodland cover, there is therefore also the potential for increased outdoor leisure in the region, contributing to physical and mental health and social well-being opportunities.

3.22 Woodland projects also have the potential to contribute to increased community engagement, with a higher degree of public consultation on land use. Community groups can advise on certain aspects of woodland creation, and can become even closer involved through volunteering opportunities.

3.23 Akin to the community engagement and volunteering benefit, increasing access to forestry can increase the region's environmental educational resources. Schools, community groups and businesses could learn about forestation activity, biodiversity and the wider Net Zero agenda.

3.24 The creation and maintenance of woodlands generates the need for skilled jobs, for example specialist skills required when managing ancient and veteran trees.[20] Successful woodland creation is therefore necessarily paired with the growing and upskilling of the forestry sector workforce.

3.25 Woodland creation can also contribute to community wealth building, the concept of redirecting wealth back into the local economy through placing control and benefits of assets and resources into the hands of local people. If community benefit funding is incorporated into the carbon unit price received, this could then be donated to a local community trust or similar body to deliver on desired community outcomes.

[20] https://www.gov.uk/government/news/woodland-projects-across-england-to-receive-funding-for-jobs-training-and-increasing-tree-cover

Additional revenue streams

3.26 As well as the wider community benefits associated with forestation for the purposes of carbon farming, additional revenue streams can be garnered from this activity.

3.27 Wider woodland creation presents an opportunity for the creation or further development of the ecotourism offer available in Argyll & Bute. As such, there is an opportunity for landowners to offer tourism products such as forest walks (including forest canopy walkways), forest lodges, wildlife and botanical walking tours. This would then provide the opportunity for additional revenue streams from the ecotourism market.

3.28 There is the potential to develop the forest management supply chain through increased plant hire, demand for woodland management expertise and through a greater demand for skilled workers in the sector.

3.29 There is also the potential to generate revenue by thinning trees during a growing rotation, or by felling them at the end of a rotation. However, it should be noted that there is more stringent additionality testing attributed to projects looking to secure carbon financing if they are also engaging in thinning and felling for the purposes of supplying timber.

3.30 Through the increase in timber stocks, it is possible for landowners to generate further revenue by supplying companies within the timber supply chain (for example construction companies, furniture makers and paper manufacturers) with timber created on the landowner's site. Again, if this is the route to market that landowners are considering, it should be noted that carbon financing requires more stringent additionality testing.

Silvopasture

Overview

3.31 Silvopasture refers to the explicit integration of tree growing, foraging and grazing of domesticated livestock on the same land. This differs from agroforestry, which refers to the growing of both trees and agricultural/horticultural crops, or livestock cultivation. These systems are intensively managed for both forest products and forage, providing both short and long term income sources.

3.32 Rotational grazing is a key management activity when using silvopasture in order to minimize damage to trees. Special considerations and planning must also be taken into account for long-term tree regeneration. It is also important to note that not every pasture in a livestock enterprise needs to be a silvopasture to take advantage of the benefits of this integrated system.

3.33 Based on analysis by SAMS Enterprise[21] regarding current areas of grassland/pasture in Argyll & Bute, there is 173,950ha of grassland and pasture on either organic soils or organo-mineral soils.

Delivery Potential

3.34 Dependent on the density and configuration of planting in silvopasture approaches, the number of stems (trees) per hectare in silvopasture can be anywhere from 5% to 25% of the density of conifer plantation, and between 6% and 38% of broadleaf forest.[22] It should be acknowledged that the carbon credit rate will be dependent on the tree density per hectare. However, a minimum density of 400 trees per hectare is required to qualify for carbon credits through the Woodland Code. This is 16% of typical conifer plantation density (2,500 per hectare) and 25% of mixed woodland or broadleaf (1,600 per hectare). A density of 400 trees per hectare can also attract FGS agroforestry support.

[21] SAMS Enterprise (2022) Optimising carbon sequestration opportunities in Argyll & Bute

[22] DEFRA, 2022; Galbraith Group, 2022; Nadia El-Hage Scialabba (Ed.) (2022) Managing Health Livestock Production and Consumption; Campanhola, C. and Pandey, S. (Eds.) (2019) Sustainable Food and Agriculture: An Integrated Approach

3.35 There is also evidence to support that silvopasture planting up to a tree density of 400 trees per hectare has little or no impact on grazing/livestock capacity, and therefore allows existing livestock capacity/herd size to be maintained.[23]

3.36 When considering the estimated income values that can be achieved, the following models have been designed to reflect the different potential levels of appetite for silvopasture amongst existing pastoral/livestock farmers, as well as recognition that silvopasture has to be conducted in conjunction with open grazing on rotation, to allow sufficient time for the recovery of grass, shrub and or trees. As such, Table 3.2 illustrates the estimated income values from carbon credits arising from conversion of 10% of existing grassland/pasture, as well as the conversion of 50% of existing grassland/pasture to explore the potential revenue streams available in Argyll & Bute.

Table 3.2: Estimated income values from carbon credits, silvopasture, Argyll & Bute

	£ per unit	Carbon units per hectare	Carbon credit revenue
Based on 10% of existing grassland/pasture			
Mixed woodland	£12.50	125	£27,179,688
New native woodland	£17	100	£29,571,500
Commercially managed forestry	£15	32	£8,349,600
Based on 50% of existing grassland/pasture			
Mixed woodland	£12.50	125	£135,898,438
New native woodland	£17	100	£147,857,500
Commercially managed forestry	£15	32	£41,748,000

Source: Consultant estimates, ekosgen Work Package 4 Report

3.37 Cost per hectare silvopasture forestry establishment are somewhat lower than for forestry plantation. Whilst there will be a price differential due to the lower density of tree planting, these costs include necessary protection from livestock for planted trees. Planting costs may range from £1,000 or £2,000 per hectare[24,25,26] to around £3,800 per hectare,[27] again dependent on tree selection and livestock requirement.

Wider community and environmental benefits

3.38 The adoption of silvopasture practices can lead to wider community and environmental benefits being realised. Many of the same benefits that arise from forestation practices apply, although this is to a relatively smaller extent considering the lesser extent to which tree and woodland cover is developed on silvopastural land.

3.39 The benefits of improving biodiversity are still realised on silvopasture, by creating tree cover and therefore provides species with habitat. With regards to water quality, silvopasture can deliver benefits in the form of water interception, storage and filtration of pollutants in soil. There is a reduction in nutrient losses and soil erosion due to the better soil management practices associated with silvopasture. The trees that are planted also improve air quality through the absorption of harmful gases such as carbon dioxide, nitrogen oxide, ammonia, and sulphur dioxide, and can catch particulate matter in the air on their leaves. By creating additional woodland, there is also an increased demand for skilled jobs in woodland management as a result of silvopasture practice. Silvopasture also contributes to local climate cooling through the biophysical process of evapotranspiration (the movement of water from soil

[23] https://www.agroforestry.ac.uk/agroforestry-systems/pastoral

[24] https://drawdown.org/solutions/silvopasture

[25] https://www.fwi.co.uk/business/silvopasture-what-it-is-and-how-it-benefits-livestock-farming

[26] https://macaulay.webarchive.hutton.ac.uk/agfor_toolbox/try_it.html

[27] Steve Westbrook/Forestry Commission, Scottish Forestry and the Welsh Government (2022) Impact of investment in forestry on employment in England, Scotland and Wales

to leaves, then into the air). If community benefit funding is incorporated into the carbon unit price received in the same manner as discussed in the forestation, this could then be donated to a local community trust or similar body to deliver on desired community outcomes.

3.40 It should be emphasised again, however, that the realisation of these benefits will be relatively smaller than the benefits received from forestation due to the lower density of trees found on the land, however the benefits are still comparatively larger than what would be realised on grasslands for the above benefits.

3.41 Some of the benefits received from forestation will also be delivered to the same level with a silvopasture approach. There is the opportunity for landowners to deliver community engagement to seek advice on certain aspects of woodland creation, to offer volunteering opportunities to communities, business and individuals, and the opportunity for the community to engage in environmental education holds to the same level as with forestation.

3.42 Importantly, however, silvopasture can bring additional benefits than taking a pure forestry approach. Assuming that the silvopasture approach could be implemented in a configuration that did not impact on the effectiveness of herding or animal husbandry, etc., this scenario would deliver carbon and wider environmental and societal benefits (including the provision of a higher degree of shelter for livestock on the land) without the loss of agricultural output. As stated above, research suggests that planting up to a tree density of 400 trees per hectare has little or no impact on grazing/livestock capacity.[28]

3.43 Further, as well as biodiversity and environmental benefits, silvopasture brings with it benefits for the livestock themselves, such as increased foraging opportunity, the potential to self-medicate through foraging, and increased shelter (known as *Zoopharmacognosy*). These are all delivered to a much greater extent in a silvopastural system than in a forestry system with pastural land on the boundary.

Additional revenue streams

3.44 There is the potential for additional revenue streams beyond the carbon unit price received for trees on silvopastural land. The largest of these is the maintenance of pastural activity, meaning that landowners can continue their agricultural activity with little or no impact as a result of trees planted. As stated above, livestock may also benefit from the addition of trees to their system. If an animal has to expend less energy maintaining their core body temperature as a result of greater shelter, that energy goes into weight gain, ensuring better welfare of the animal and ultimately resulting in higher profits. It has been estimated that sheep with adequate shelter and shade demonstrate a 10 – 15% greater weight gain than those without.[29]

3.45 There is also some potential to develop the silvopasture supply chain through demand for (combined) woodland and livestock management expertise, possible agroforestry services, demand for skilled workers and additional farm labourers.

Peatland restoration

Overview

3.46 Peatlands are wetlands which occupy 3% of the global land surface and 12% of UK land area. In the UK these peatlands take the form of blanket bogs, raised bogs, fens and bog woodland. Healthy peatlands capture carbon dioxide from the atmosphere through photosynthesis. Because the plants that grow on peatlands do not fully decompose under wet conditions, they do not release carbon which would otherwise be returned to the atmosphere as CO_2.

[28] https://www.agroforestry.ac.uk/agroforestry-systems/pastoral

[29] https://www.farmingfornature.ie/resources/groundtips/agroforestry-silvopasture/

3.47 However, it is estimated that 78% of UK peatland no longer remains in near-natural condition, having been degraded as a result of drainage in order to make the land more suitable for crops and tree growth.[30] Drainage releases carbon stored within the peatlands into the air and is thereby a source of carbon dioxide emissions into the atmosphere.

3.48 Restoration of these peatlands is therefore required in order to return the habitats to carbon sinks. This can be achieved through a variety of methods, including: covering bare peat areas with vegetation; blocking drains to raise the water table and return the peatlands to waterlogged conditions; and re-introducing Sphagnum mosses into areas they have been lost.

3.49 The Scottish Government's Climate Change Plan has set a target to restore 250,000 ha of degraded peatlands by 2030. Scottish Natural Heritage (SNH) has kick-started the restoration challenge with the 'Peatland ACTION' project. In total, there is almost 49,500 hectares of degraded peatland in Argyll & Bute.[31] These areas have the potential to bring emission reduction through avoided losses.

Delivery potential

3.50 Recent evidence indicates that the price per unit for a tonne of upland peat carbon is £12 (as PIU), assuming 75% public subsidy to address cashflow challenges for landowners and help finance peatland restoration.[32] This suggests a subsidy-free PIU price of c.£48 per unit. This is in line with evidence from a recent Interreg NW Europe-funded project, *Care Peat*, which identified a target price of €70 per tonne of peatland carbon.[33]

3.51 Assuming a potential c.200 carbon units per hectare of upland peat[34], this equates to a carbon credit income of: £2,400 per hectare alongside a further £7,200 grant funding.

Wider community and environmental benefits

3.52 Aside from the carbon price received for sequestration activity, peatland restoration has the potential to bring wider benefits to the environment and to the wider community.

3.53 Peatland restoration has a positive impact on the site's ability to prevent flooding and increases the capacity to store water and maintain flows in periods of drought. Increased water interception and storage can slow water loss/run-off from hills which can, in turn, reduce flood peaks. Further to this, peatland restoration can also improve water quality through filtration of pollutants in soil. As such, peatland restoration is a highly effective activity for managing a peatland site's hydrology.

3.54 Peatland restoration can also lead to a reduction in soil erosion and, as a result, improvements in soil management. There is a reduction of nutrient losses associated with peatland restoration, and therefore land and soil quality is improved.

3.55 Given that some of the species found in areas of peatland are rare and/or declining, some of these species are priorities for conservation action. Vegetation found in bogs is dominated by Sphagnum mosses and low shrubs supporting species of open ground. Restoration of peatland, therefore, plays a key role in making biodiversity gains.

[30] https://www.ceh.ac.uk/sites/default/files/Peatland%20factsheet.pdf

[31] SAMS Enterprise (2022) Optimising carbon sequestration opportunities in Argyll & Bute

[32] http://publications.naturalengland.org.uk/publication/5101422143340544

[33] https://www.nweurope.eu/projects/project-search/care-peat-carbon-loss-reduction-from-peatlands-an-integrated-approach/news/netherlands-first-carbon-credit-sale-from-peatland-rewetting/

[34] Conservative estimates based on: http://publications.naturalengland.org.uk/publication/5101422143340544; and https://www.gov.scot/publications/national-development-plan-crofting/pages/11/

3.56 By engaging in peatland restoration activity, landowners also provide restoration volunteering opportunities, which can contribute to physical and mental health and wellbeing. These activities can also contribute to increased community engagement.

3.57 Peatland restoration also provides the opportunity to deliver environmental education for local schools or community organisations, both in terms of the practices being adopted, and the wider considerations to biodiversity, hydrology and soil management detailed above.

3.58 Peatland management is an important component of upland landscaping, and as such requires skilled labour in order to be effective. Peatland restoration activity, therefore, can lead to increased demand for these skilled jobs as well as the volunteering opportunities that are presented.

3.59 Further, there is also the possibility to integrate community benefit funding as part of the carbon unit price received, which could then be donated to a local community trust or similar body to deliver on desired community outcomes.

Additional revenue streams

3.60 Additional revenue could be garnered with regards to peatland restoration through its potential to develop the peatland management supply chain through increased plant hire, land management expertise and demand for skilled workers.

3.61 There is also the potential for revenue to be generated through tourism and leisure, with the potential for botanical and or/wildlife tours to explore the site's wildlife and natural beauty. In order to maintain access for hill-walkers, there is also the possibility of creating boardwalks through peatland areas.

CARBON CODES AND SEQUESTRATION FRAMEWORKS

Woodland Carbon Code

3.62 The Woodland Carbon Code (WCC) is a government-led scheme that regulates, verifies, and validates how landowners can participate in projects that use part of their woodland for carbon sequestration and credit trading. The carbon sequestration from these projects is translated into carbon units which can be used only once. The carbon units can be either be used against the buyer's own emissions, or can be sold to a third party to compensate for their emissions.[35]

3.63 A detailed schedule of WCC requirements can be found in Appendix A.

Peatland Carbon Code

3.64 The Peatland Code[36] is the certification standard for peatland restoration in the UK, offering the assurance that greenhouse gas mitigation claims are validated and verified by an independent body. The code safeguards the integrity of its project's carbon credits and, through the generation and sale of these units, provides land managers undertaking peatland restoration with a source of revenue.

3.65 The Peatland Code was set-up to help facilitate restoration of the UK's extensive peatlands, 80% of which are estimated to be in a degraded state.[37] Degraded peatlands are a significant source of

[35] https://www.woodlandcarboncode.org.uk

[36] https://www.forestcarbon.co.uk/certification/the-peatland-code

[37] IUCN, UK Peatlands: Peatland Programme. Available at: https://www.iucn-uk-peatlandprogramme.org/about-peatlands/uk-peatlands

GHG emissions, and in the UK alone are contributing 23 million tonnes of CO_2e emissions each year,[38] almost 3.5% of the country's total carbon footprint.[39]

3.66 A detailed schedule of Peatland Code requirements can be found in Appendix A.

Peatland ACTION

3.67 Peatland ACTION is a national programme to restore peatlands across Scotland, led by the Scottish Government, who pledged in 2020 to deliver £250 million in investment towards peatland restoration up to 2030.[40] The programme provides project-based funding for on-the-ground restoration activities, including the installation of peat dams to raise water levels or revegetating peat hag to stabilise eroding peat. Since 2012, Peatland ACTION has helped to restore over 25,000 hectares of previously damaged peatland.

Emerging codes

3.68 It should also be noted that there are other emerging Codes that are being designed for carbon trading, for example the Hedgerow Carbon Code that is currently being piloted across three farms in England[41] and a UK Farm Soil Carbon Code that is currently under development by Sustainable Soils Alliance.[42] As a result of these developments, landowners may decide to postpone any decision-making on carbon sequestration activity until there is greater clarity as to the returns that are available from a wider range of Codes being accessible.

KEY CONSIDERATIONS

3.69 The following section summarises the key considerations arising from consultation across WP6, as well as in other work packages, notably WP4 and WP7.1.

- **Information asymmetry and understanding of carbon sequestration**: There currently appears to be a degree of information asymmetry in carbon sequestration in Argyll & Bute, with many landowners and farmers being unsighted on the principles, requirements or benefits of carbon sequestration activity. Overcoming this and influencing decision-making of landowners will be important to implementation of any carbon sequestration activity.
- **The extent of public sector support, and how this influences behaviour**: Whilst there may be a recognition of the value of sequestration in response to the climate emergency, without additional public sector support, either for set-up costs or to support ongoing verification and monitoring, local landowners will potentially choose sub-optimal sequestration options, or sell to outside parties. This brings with it the risk of investors looking to acquire land to achieve their own carbon offsetting ambitions, but potentially without any consideration of or appetite for achieving local environmental and societal/community benefits.
- **Behaviour change and community obligations**: There is evidence of a 'moral obligation' amongst landowners to maintain current modes of farming and land management in support of the farming and wider community, and not to shift away from current practices. Further, the (negative) experience of some landowners of other support programmes e.g. the Agri-Environment Climate Scheme (AECS), means there is a greater degree of reluctance to engage with new schemes such as the WCC.
- **Supporting local supply chains**: Farmers and landowners are acutely aware of their spend in the local agricultural supply chain. There needs to be wider consideration as to how

[38] Smyth, M. et al. (2017). Implementation of an Emissions Inventory for UK Peatlands. Available at: https://www.researchgate.net/publication/333056609_Implementation_of_an_Emissions_Inventory_for_UK_Peatlands

[39] IUCN (2021), Peatland addition to the UK GHG inventory adds 3.5% to national emissions. Available at: https://www.iucn-uk-peatlandprogramme.org/news/peatland-addition-uk-ghg-inventory-adds-35-national-emissions

[40] https://blogs.gov.scot/rural-environment/2020/07/20/peatland-action-fund-open-for-new-applications/

[41] https://www.gwct.org.uk/news/news/2022/september/hedgerow-carbon-code-good-news-for-uk-agriculture-climate-change-and-british-wildlife/

[42] https://icasp.org.uk/projects-2-2/uk-farm-and-soil-carbon-code-a-feasibility-study/

farmers/landowners engage with local supply chain for agricultural services, and whether there is a possibility for this supply chain to be replicated under a forestation/carbon sequestration model.

- **Balancing carbon sequestration and other land uses**: Finding a common ground for farmers and the ambition for forest sequestration will be important to avoid the sale of large portions of land to outside interests (e.g. large corporations) looking to quickly secure their own carbon credit needs without necessarily considering the local impacts that they could achieve. Further, additional consideration must be given to the existing carbon sequestration and biodiversity impacts already achieved through existing good agricultural practice in grazing and livestock management, for example. Thus, when considered in tandem with their agricultural output there may already be sufficient sequestration activity being delivered.

Local linkages: As the Pilot 3 Implementation Plan indicates, Argyll and the Isles Coast and Communities Trust has secured funding to work with small landowners to undertake peatland restoration. This is a good example of local landowners coming together, although this would be very difficult to achieve without the external facilitation style support provided by ACT. Similarly, the work of the Oban Net Zero farming group (working with hill farmers with similar issues) is bringing together tenant farmers/landowners to work collectively to sequester more carbon (e.g. by planting along burns and better grassland management).

- **Configuration of sequestration activity**: The ability to minimise (or even negate) any potential impact on existing land use activities will be important, particularly for farms. There may be a significant difference between valley, ravine or gully planting (or planting on other marginal, peripheral land), or planting of shelter strips, and open planting, and even the configuration of silvopasture planting, in the ability to minimise the impact of sequestration approaches on existing agricultural and land management practices.
- **Clustering**: Where available land only allows small pockets of carbon sequestration activity, landowners may wish to consider clustering of projects to build critical mass of activity. This may increase the viability of schemes, and allow landowners/farmers to make more productive use of sub-optimal or unused/underused agricultural land.
- **Climate change and risk**: Currently, landowners seeking to sequester carbon under the Woodland and Peatland Codes are required to contribute to a buffer as part of the approach to the management of risks and permanence, and to cover any unanticipated losses from individual project failures. However, the impact of climate change and extreme weather events may influence the perceived risk associated with carbon farming, and forestation in particular, given recent high-profile storm damage on woodland and forest plantations in Scotland.

Intermediary views on wider benefits: Intermediaries that are involved in delivering projects for the Land Carbon Registry noted the importance of considering the wider ecological value and natural capital (such as increased biodiversity and better flood managements) of projects when articulating the full value of projects beyond its capacity to sequester carbon. At present, these wider benefits are not factored into the carbon price offered on Woodland Carbon Code projects, however work is currently being completed by an intermediary to quantify these benefits to justify higher prices for carbon credits.

- **Accounting for the philanthropic market**: There is understood to be a growing market for philanthropic ambitions over and above the Carbon Codes, and there is merit in recognising the value of the Scottish ‘premium’ or ‘kudos’ attached to securing carbon credits in Scotland. This is particularly important to bear in mind where and when stacking benefits becomes possible.
- **The impact of stacking benefits to secure a premium**: Effectively articulating the wider benefits being realised through sequestration will help to command a higher price for carbon units. It is therefore important for landowners to be mindful of the holistic impact that their sequestration activity can deliver, such as other ecosystem and environmental services, increasing biodiversity, community benefits, etc. – things that can be considered a positive in their own right.
- **Impact of carbon values on scheme viability**: Consideration should be given to the exact carbon values that should be applied to projects. There is significant variation between existing market rates, estimates from the Bank of England and the World Bank and BEIS valuations. Current guidance for Scottish City and Regional Growth Deals includes carbon

value estimates to inform managing carbon emissions associated with City Region and Growth Deal projects. The central estimate price for carbon units in 2022 is £248 (low £124; high £373).

3.70 Land holdings in Argyll are typically small, and most Argyll tenures don't incorporate woodland, so there is a risk to land tenancy in pursuing carbon sequestration activity without any subsequent change in tenure agreements or legislation.

3.71 Anecdotal evidence suggests that current agricultural output in Argyll & Bute is decreasing such that it is approaching a tipping point in terms of critical mass. For example, there may be potential for situation where if one farm in a cluster (e.g. dairy) switches to carbon farming forestation, it may make it economically unviable for the remaining number to be served by a tanker, and so they lose their access to markets. Alternatively, a reduction in livestock in one area may impact on the viability of livestock markets in the area (currently Dalmally, Oban, Tiree, and Islay).

3.72 Greater consideration should be given to the role of and possibilities for clustering and combining projects under the Woodland Carbon Code (and Peatland Code). As stated above, it is possible for landowners to group projects, up to 50 hectares and no more than 15 "standard" projects. As such, group validation benefits smaller woodland owners as a result of economies of scale- namely, a lower validation cost per individual project. It may also be possible for an area/project to deliver both Woodland Carbon Code credits and Peatland Carbon Code credits.

Considerations arising from existing projects

3.73 Consultation with existing project deliverers (mainly of WCC projects) have identified additional factors to be considered:

- **Biodiversity planning**: Wider biodiversity planning plays an important role in projects. In particular, establishing a deer management plan or ensuring any current wildlife management plans are working is critical, especially in instances where trees are being planted on large landscapes.
- **Prioritisation of ecological and environmental factors**: Designing woodlands with high ecological input to consider the wider environmental and social impacts of the project can positively impact the value of carbon sequestered. If a project is designed to realise more benefits beyond carbon sequestration, a higher carbon price can be justified to buyers.
- **Impact of macro-economic factors**: Landowners need to exercise caution when considering their project's value. Ultimately, price is decided between the buyers and sellers of units, and therefore price can vary considerably. While prices in carbon are typically trending upwards, market conditions may alter dramatically (for example, if for some reason carbon credits are no longer considered valuable in terms of pursuing net zero ambitions) and therefore it is important to be mindful prices may also go down.
- **WCC processes**: WCC timescales and processes for project set-up are considered positive. Ultimately, better projects arise as a result of the consultation process and taking the time to plan accordingly. Landowners should be mindful not to rush any part of the process.
- **Supply chain constraints**: Whilst the importance of attracting high quality, reliable forestry contractors for projects is acknowledged, this may be more problematic for smaller landowners and smaller projects. It was suggested that there was a shortage of supply in labour willing to (and having experience of) working on smaller projects.

Native Woodland Landowners: There are a small number of landowners who are expressly interested in rewilding and in afforestation with natural woodland. One such landowner couple have received funding from NatureScot for this purpose and the landowners are part of the Northwoods Rewilding Network, launched by the charity Scotland: The Big Picture, which now has 50 sites across Scotland since the Network launch in 2021. Such landowners are very interested in carbon sequestration and wider biodiversity improvements. They are likely to extremely receptive to carbon trading and related support.

4 THE IMPLEMENTATION PLAN

INTRODUCTION

4.1 This chapter builds on the discussion of the carbon sequestration context in Argyll & Bute, the current state of play regarding landowner engagement and readiness, and the key considerations for from a landowner perspective in the preceding chapters. It considers the main priorities for approaching carbon sequestration for landowners and stakeholders.

PRIORITY AREAS

4.2 As set out in Chapter 2, the implementation plan has the following objectives:

- To ensure that local landowners and farmers understand the opportunities of delivering carbon sequestration activity;
- To make clear the benefits of participating in the carbon market and the specific benefits of this being local to Argyll & Bute;
- To ensure that the wider social and environmental benefits that can be realised in Argyll & Bute through landowners engaging in carbon sequestration activity are articulated and understood; and
- To help local landowners and farmers make an informed decision with regard to planning and implementing carbon sequestration schemes.

4.3 Based on the discussion of issues presented in Chapters 2 and 3, there are a number of priority areas that must be addressed in order to bring landowners/farmers closer to market, where there is a willingness and support to do so through suitable opportunities.

Awareness raising to stimulate supply

4.4 A key priority area for ensuring that landowners understand carbon sequestration opportunities, and for developing the supply side of a carbon market in Argyll & Bute is raising awareness to drive greater levels of engagement. This will involve a suite of materials including and building on the prospectus being developed as part of WP4.2. It may also involve (formal or informal) knowledge exchange activities, which can be driven by the project's External Stakeholder Group.

Structured and ongoing facilitation with Argyll & Bute landowners

4.5 Alongside the initial awareness-raising activity, it will be necessary to secure ongoing active participation of landowners. This can be achieved through the creation of a landowners' group to continue discussion of carbon sequestration issues and opportunities, and explore ways of realising opportunities in practice. Such a group will be central to building a critical mass of landowners interested in pursuing carbon sequestration as an activity and additional income stream. It will also be a useful tool to identify ways to build a critical mass of activity in due course – for example through grouping or clustering of (potential) projects at various scales, e.g. by catchment area, landscape, sub-local authority geography, etc.

Creation of a supportive environment

4.6 Given some of the set-up and ongoing costs involved, as well as the likely payback periods involved in the absence of public sector intervention, public sector partners need to ensure that landowners are supported to engage with carbon sequestration where there is a willingness to do so. Intervention will also be required to overcome the potential barrier of long payback periods, in the interests of bringing forward potential carbon offsetting and other benefits. Part of this may be achieved through the delivery of WP7.2 and any subsequent activity of a resulting facilitation agency or special purpose vehicle.

Understanding codes and science

4.7 As discussed above and elsewhere in other project reporting outputs, existing buffers and risk factors built into existing Carbon Codes may present a barrier to engagement. Public sector partners and academia should explore ways in which the science underpinning carbon sequestration under the WCC and Peatland Code, and any subsequent Carbon Codes, can be enhanced or augmented. This may help to reduce the size of buffer and risk insurance discounting required.

4.8 Additionally, with additional Carbon Codes being developed, there may be other, more appropriate, opportunities to engage with carbon sequestration activity in future. The Hedgerow Carbon Code and Farm Soil Carbon Code are two such codes under development, and there may be more. This may increase the opportunity to engage in carbon sequestration for landowners, and in complementary ways to forestation and peatland restoration.

Balancing carbon sequestration against other activities and benefits

4.9 The final priority area is balancing carbon sequestration against other activities and benefits. This will help to arrive at a sound understanding of the comparative benefits that can be achieved through carbon sequestration, and ways in which these can be accounted for in carbon pricing.

4.10 At present, there is limited information on the monetary value of the additional ecosystem/environmental services provided through sequestration activity, though some evidence exists. For example, research has also been undertaken by Scottish Forestry in relation to the application of the Natural Capital Protocol to a forest creation project at Larriston in the Scottish Borders, which demonstrated values for natural hazard regulation, recreation, aesthetics and biodiversity alongside carbon benefits.[43] Whilst this research is specific to the site, developing a standardised approach in line with this may help to unbundle and stack wider benefits with carbon sequestration projects.

IMPLEMENTATION PLAN AND INDICATIVE TIMESCALES

4.11 Table 4.1 sets out the implementation plan with tasks and actions, and initial consideration of the roles and responsibilities of stakeholders. Some tasks and outcomes will contribute to more than one priority area; there is also some overlap with actions and priorities in other implementation plans. Where functions might potentially lie with specific partners (i.e. HIE, Argyll & Bute Council, NatureScot, Scottish Forestry, Scottish Government), this might have resource implications that require dedicated staff and teams within structured initiatives. At this stage, it is not assumed these are deliverable under current capacity arrangements.

4.12 The activities undertaken will result in a range of tools and activities that can form an information and awareness package that can be used in other parts of the Highlands and Islands, and potentially more widely.

4.13 Timescales at this stage are indicative. At present, the timeframe for the plan is approximately 24 months, but this is subject to change. The indicative timeframes for actions are: (Short-term (S) = 6-9 months; medium-term (M) = 10-18 months; long-term (L) = 19-24 months. At this stage, no observations are provided on resourcing, with this to be determined by HIE and partners at a later date.

4.14 Whilst the initial ambitions for the implementation plan were to effectively engage landowners in carbon trading, in practice this implementation plan will focus on securing engagement amongst landowners, and actions needed to begin bringing them closer to market.

[43] https://forestry.gov.scot/publications/988-forest-sector-final-report/download

Table 4.1: High-level implementation plan

Objective and rationale	Proposed actions	What needs to happen	Timeframe	Stakeholders
Priority 1: Awareness raising to stimulate supply				
Raising awareness of carbon sequestration and its opportunities amongst Argyll & Bute landowners	Development of carbon sequestration prospectus	As part of WP4.2 and any actions flowing from this, prepare and develop a prospectus for carbon sequestration activity in Argyll & Bute	S	HIE
	Preparation of case study examples from local carbon market(s)	Develop a suite of case studies showcasing current examples of carbon sequestration activity, to help inform landowners of potential opportunity, requirements, etc.	S	HIE
	Facilitate knowledge exchange	In conjunction with actions under Priority 2, facilitate knowledge exchange amongst Argyll & Bute landowners to directly address evident information asymmetry	S/M	HIE, A&B Council, Scottish Forestry, NatureScot
Priority 2: Structured and ongoing facilitation with Argyll & Bute landowners				
Facilitating an active group of landowners to drive discussion and identification of opportunities, and ways in which these can be realised	Establish facilitated landowners' group	Establish a facilitated group of landowners in Argyll & Bute, potentially to sit alongside the existing project External Stakeholder group	S/M	HIE, A&B Council, Scottish Forestry, NatureScot
	Build critical mass of landowners	Through the activity of the proposed facilitated group and through actions under Priority 1, build a critical mass of landowners with an interest in pursuing carbon sequestration activity	S/M	HIE, A&B Council
	Identification of potential project clusters	Working with landowners, identify potential clusters of activity across farms or landholdings, either on the basis of geographical proximity, or on the basis of shared characteristics	M	HIE, A&B Council
	Identification of catchment or landscape areas in which projects can be clustered	Working with landowners, identify ways in which geographical characteristics can determine the most effective ways to cluster projects and achieve a critical mass of activity	M	HIE, A&B Council
Priority 3: Creation of a supportive environment				
Creating an environment in which the development of the supply side of a carbon market in Argyll & Bute can be supported	Creation of a facilitation agency	Through the work of WP7.2, establish a facilitation agency to further develop landowners' practical and technical understanding of carbon sequestration, and contribute to the aggregation of supply to meet increasing market demand	M/L	HIE, Scottish Government

Objective and rationale	Proposed actions	What needs to happen	Timeframe	Stakeholders
	Identification of potential support mechanisms	Exploration and/or development of a range of support mechanisms designed to encourage landowners to engage, and to remove barriers to doing so, including mechanisms to support platforms with a mandate to aggregate and mobilise (e.g. Argyll and the Isles Coast and Countryside Trust) and potentially commercial buyers who may benefit from public interest considerations in their deals.	M	HIE, Scottish Government
Priority 4: Understanding codes and science				
Better understand the science underpinning carbon sequestration, to contribute to its improvement, and develop understanding of emerging Carbon Codes as potential additional streams of activity and revenue generation for landowners	Critical appraisal of science underpinning validation and verification approaches, and discounting methods for buffer/insurance	Public sector partners and academia to collaborate on exploration of scientific methods underpinning carbon verification systems, to improve accuracy and potentially reduce requirement for buffer/insurance allocations, and thus increase the attractiveness of carbon sequestration schemes	L	HIE, NatureScot, Scottish Forestry, ERI
	Develop understanding of emerging Carbon codes	Engagement with the development of emerging Carbon codes, and the agencies tasked with developing them, to better understand their application in the Argyll & Bute context	S/M	HIE, NatureScot, Scottish Forestry, ERI, SAC Consulting
	Promote emerging codes with Argyll & Bute landowners	As part of engagement with landowners under Priority 1 and Priority 2, showcase the potential of new Carbon codes such as the Hedgerow Carbon Code and Farm Soil Carbon Code	M	HIE, NFU Scotland
Priority 5: Balancing carbon sequestration against other activities and benefits				
Develop understanding of all benefits delivered by carbon sequestration, so that they can be accounted for more accurately in carbon pricing	Develop understanding of the value of wider environmental and community benefits arising from carbon sequestration activity	Building on existing research and evidence, undertake and/or commission additional research into the value of wider environmental benefits, to identify monetary and other benefits	M/L	HIE, Scottish Government, Scottish Forestry, NatureScot
	Better understand sequestration of carbon under existing land-based activities and land management	Engage with landowners and researchers (e.g. SAC Consulting) to more fully understand the sequestration potential of existing land management practices such as livestock grazing, to better inform landowner decisions regarding carbon sequestration activity (e.g. forestation)	M/L	HIE, NatureScot, Scottish Forestry, ERI, SAC Consulting
	Explore ways in which wider benefits can be unbundled and stacked	Building on research commissioned as part of this priority, identify ways in which benefits can be unbundled to secure additional benefit for deliverers of carbon sequestration schemes.	M/L	HIE, NatureScot, Scottish Forestry

APPENDIX A: WOODLAND CARBON CODE REQUIREMENTS

WOODLAND CARBON CODE PROJECTS

WCC projects produce verified[44] and validated[45] units. Verified carbon units can be used against current year's emissions, while validated ones are available for sale for future vintages and can be used for future Net Zero plans. In both cases 1 unit corresponds to 1 tonne of carbon dioxide sequestered, either currently or in the future.

UK Land Carbon Registry registration

To register a project for the Woodland Carbon Code, landowners are required to create an account on the UK Land Carbon Registry. This registry is maintained by IHS Markit, a company that is now part of the wider S&P Global group. To register, landowners must provide the following information:

- Details of the landowner's company (if they have one) or the landowner's own details (if not), including trading name, registered name, address, email, tax number, website, a copy of the company's certificate of incorporation or other company registration data;
- Contact details for billing (name, phone, email);
- Contact details of the account holder (name, phone, email); and
- Contact details of the account manager (name, phone, email and address, if different to main company address).

Landowners are then required to submit identification for their organisation and also for the account manager. Once these details have been checked, S&P Global will send the landowner login details, assistance with using the registry account, and an invoice for their account opening (account opening at a cost of £400, £0 for project developers and £200 for Charitable NGOs) and annual maintenance fees (£0.03 per unit for PIU listings and £0.03 per unit for PIU conversion to WCU).[46] Landowners are required to upload a copy of any personal photo ID before their login is activated.

Project registration and validation

Prior to 1st July 2021, landowners had two years to register a project to the Woodland Carbon Code from the start of planting. Since then, projects are required to be registered prior to work beginning.

Projects can be validated individually or can come together as a group to be validated. Group validation is an alternative approach which allows a number of projects to become validated under a single statement, enabling financial costs to be shared alongside a common responsibility for ensuring that Woodland Carbon Code requirements are met at all sites. Group validation benefits smaller woodland owners as a result of the lower validation cost per individual project.

A standard project can be any size, and can constitute several blocks of woodland with planting spanning up to five consecutive planting seasons; blocks of woodland must be part of a contiguous land ownership unit or must be under the same ownership, manager and management plan. A planting area should not be subdivided for the purposes of Woodland Carbon Code validation.

[44] Referred to as Woodland Carbon Units (WCU)

[45] Referred to as Pending Issuance Units (PIU)

[46] https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2021-07/UK%20Land%20Carbon%20Registry%20Fees%202021.pdf

Small projects have the same definition as a standard project, but with five hectares net planting area or less. There is optional streamlined carbon calculations and monitoring procedures which can be used for validation and verification, specifically:

- A simplified WCC Carbon Calculation Spreadsheet for small projects;
- Default assumptions made for some sections of the requirements (e.g. baseline and leakage); and
- Basic Monitoring from year 15 for projects which used the WCC Carbon Calculation Spreadsheet for small projects.

A group has no geographical restrictions, and can span no more than 5 consecutive planting seasons and be constituted of:

- Up to 15 “standard” projects; and
- Up to 50 hectares (net) in small projects.

To create a new project or group of projects within a Land Carbon Registry account, landowners must login to the Registry.[47] Once logged in, landowners go to the 'My projects and issuances' tab and click on 'New Project' (for a single project) or 'New Master Project' (for a group). For a group, landowners need to create 'New Subprojects' within the Master project.

For any new projects (or each subproject in a group), landowners are required to input the following information:

- Project name and description;
- Project implementation date (=start of planting), start date (=end of planting) and end date (up to 100 years after start date);
- Management regime;
- Validator;
- Location (Grid Reference, Nearest town, County, Country);
- Net Area (and whether conifer, mixed or broadleaved); and
- Predicted carbon sequestration over project lifetime (claimable by project, buffer and total).

Group projects also require a dummy subproject section, called “<Group Name> Documents” to place group documents. The rest of the details can be either zeros or “not applicable.”

Projects are also required to have draft carbon calculations and maps submitted. Once these are also submitted, projects are then considered “under development” and as such, the project’s details, accompanying carbon calculations and the map will be available on the Public View of the UK Land Carbon Registry.[48]

Validation

The next step for landowners once registered is to get their projects validated. Validation is the initial evaluation of a project or group against the requirements of the UK Woodland Carbon Code by a body accredited by the UK Accreditation Service. The validation body will check that statements about predicted carbon sequestration are materially correct, with a reasonable level of assurance. Both Organic Farmers and Growers and Soil Association are accredited by the UK Accreditation Service to validate Woodland Carbon Code projects.

[47] https://ihsmarkit.com/login.html

[48] https://mer.markit.com/br-reg/public/index.jsp?entity=project&sort=project_name&dir=ASC&start=0&acronym=WCC&limit=15&additionalCertificationId=&categoryId=100000000000001&srd=true&name=&standardId=100000000000042

Landowners have 3 years from the date you register to complete validation of your project. For groups this is 3 years from the group registers their first project in the group. Validation can't be signed off until all trees are planted, but it is possible to start the validation process in parallel with planting. Only the landowner who plants the woodland can validate it. A landowner who has purchased (or a tenant who has recently taken on a tenancy of a new woodland) cannot prove they wouldn't have planted the woodland without carbon finance and therefore are ineligible.

The cost of validation is currently between £1,100 and £1,400 per project. The cost for the validation of a group will be higher than that for an individual project, however there will be significant per-project savings across the group (e.g. per project within the group the cost could be £300-£800 depending on the size of the group).

There are four main steps to the verification process, and validators inform project leaders when their project has completed each stage.

The first stage is preparing and submitting the following documents, which have templates available online[49]:

- Project Design Document;
- WCC Carbon Calculator;
- Landowner, Tenant and Agent Contact Details Sheet;
- WCC Cashflow Sheet;
- Landowner/Tenant Commitment Statement and/or Group Agreement;
- Map of Site; and
- Woodland Benefits Tool.

Landowners are advised to start preparing their documents at least 12 months before their validation due-date and allow 4-12 months from signing a contract with the validator to receiving carbon units on the UK Land Carbon Registry.

The next stage in validation is the project's audit. The validator will audit the project/group against the requirements of the Woodland Carbon Code. This may involve a site visit if there hasn't already been a forestry-authority site visit during any woodland planning/creation Environmental Impact Assessment or grant application process. For a group, the validation body will also audit the Group Manager to assess their group documentation, control systems and management processes.

Auditors may ask for further evidence or to address some "corrective actions". Validators give landowners one month to complete these actions, except in exceptional circumstances.

Following this, project documentation will be reviewed by a second validator-reviewer, and checked by the WCC Secretariat for consistency/completeness. If validation is successful, the validation body will issue a Validation Statement. The statement will be valid for 5 years from the project start date.

The final stage regarding validation is to update the registry and receive any PIUs associated with the project. Account holders are required to login to the Registry and submit the project as "Validated." The validation body will then upload the final documents. Account holders will receive an email from S&P Global confirming the project is now shown as validated in the UK Land Carbon Registry. S&P Global will then setup and invoice for Pending Issuance Units to represent all the predicted carbon sequestration of the project. Upon payment the units will become active in the account.

[49] https://woodlandcarboncode.org.uk/landowners-apply/template-documents

Verification

For projects that last longer than 5 years, the Woodland Carbon Code requires additional verifications at 5 years from the project start date, and then at least every 10 years after this. The verification dates are linked to the vintage end dates on the Pending Issuance Units listed at validation.

The process for verification is similar to the process for validation, in that Organic Farmers and Growers and Soil Association are accredited by the UK Accreditation Service to verify Woodland Carbon Code projects and they are responsible for auditing against the requirements of the Woodland Carbon Code.

Projects are required to submit the following documents:

- Project Progress Report (PPR);
- Full Monitoring Report for each stratum identified in the project (or a Basic Monitoring Report for small projects);
- Photos of the site as a whole and taken at each plot location;
- Map showing plot locations;
- Landowner, Tenant and Agent Contact Details (if any parties have changed since last assessment); and
- Landowner/Tenant commitment statement (if any parties have changed).

This project documentation will be reviewed by a second verifier-reviewer, and checked by WCC Secretariat for consistency/completeness. If the verification is successful, the verifier will issue a Verification Statement. It will be valid for 10 years (except in exceptional circumstances). The Verification Statement will have a Green-Amber-Red rating. These ratings indicate the following present status of a project:

- Green projects indicate that they have delivered all carbon units within the current vintage and there are no concerns about the ability of the project to deliver units in future vintages.
- Amber projects indicate that they have delivered all carbon units within the current vintage, but are verified subject to ongoing “corrective actions” being completed. Assuming a Remedial Plan to complete these actions is followed, there are no concerns about the ability of the project to deliver units in future vintages.
- Red projects indicate they have failed to deliver all carbon units within the current vintage and/or there are concerns about this project’s ability to deliver sufficient units in future vintages.

If a project is classified as “Green” status from year 15 onwards, any extra units of carbon that have been sequestered over what was predicted will be issued as verified Woodland Carbon Units.

If a project is classified as “Red” status at year 5, all PIUs from the first vintage will be marked “Not Delivered.” Further, verifiers will require the next verification at year 10 rather than year 15. Landowners will be required to re-assess their carbon prediction and update the WCC Carbon Calculator at year 10 or 15, once the level of establishment is clearer. Any reduction in predicted sequestration will result in PIUs from future vintages being marked as “Not Delivered”.

If a project is classified as “Red” status from year 15 onwards, any survey results confirming less carbon is stored onsite will result in any undelivered PIUs being marked as “Not Delivered.”

If the survey results confirm less carbon is stored onsite than predicted, then any undelivered PIUs will be marked 'Not Delivered'. The next verification will be due in 10 years, and landowners will be required to re-assess their carbon prediction and update the WCC Carbon Calculator. Any reduction in predicted sequestration will result in PIUs from future vintages will be marked “Not Delivered”. If there is little or not chance of recovery of the project to deliver carbon in future vintages, the project will not be verified.

Once this verification occurs, landowners are required to login to the registry to create an “issuance” of the relevant number of Woodland Carbon Units for the vintage/time-period being checked. The verification body will then upload their final documents and Verification Statement to the UK Land Carbon Registry. S&P Global will then invoice a verification fee including converting any Pending Issuance Units into verified Woodland Carbon Units and issuing any extra Woodland Carbon Units. Upon payment, the units will convert in the account in which they are currently held.

The cost of verification is currently £1,600-£2,100 per project, plus extra for travel and subsistence where a site visit is required. The cost of verification of a group can be higher than that for an individual project, however there will be significant per-project savings across the group (e.g. per project within the group the cost could be £300-£1,000 - plus travel and subsistence - depending on the size of the group. Within a group only a proportion of sites will be visited by the verifier).

Selling credits

PIUs: Once a project has been validated, and Pending Issuance Units are listed in the registry, landowners have a 'product' to sell. This will be soon after the trees are planted. The Units have a 'Vintage'/timestamp as to when they will be delivered and the buyer can only use them to help with their plans to be Net Zero in future.

WCUs: Once a particular vintage is verified (at year 5, and every 10 years) PIUs will be converted to WCUs. These can be used by a company to offset their emissions or claim Net Zero straight away.

To find a buyer, landowners are encouraged to ask local businesses or businesses they have links with. Once a project is validated, WCC add the landowner to the list of project developers with units available to sell, including a case study if text/pictures can be provided.[50] Units can be categorised as “for sale” on the Registry through the “Request for Information” platform. There is also the opportunity to contact retail aggregators, who have corporate clients that want to buy PIUs/WCUs for offsetting and future Net Zero plans.[51]

Once a price has been agreed for the units (this varies, depending on the costs of creating and managing the woodland and the range of benefits that it provides), buyers of larger volumes can open an account on the UK Land Carbon Registry to manage their purchased carbon units – from either the Woodland Carbon Code or the Peatland Code. If the buyer does not have or want their own account, then sellers can “assign” Pending Issuance Units or “retire” Woodland Carbon Units, that will be “tagged” with the buyer's name and a comment as to the intention.

[50] https://woodlandcarboncode.org.uk/buy-carbon/woodland-carbon-projects

[51] https://woodlandcarboncode.org.uk/landowners-apply/how-do-i-sell-my-carbon-units

APPENDIX B: PEATLAND CARBON CODE REQUIREMENTS

PEATLAND CARBON CODE PROJETS

The Peatland Code has a similar process from project start-up to selling carbon credits as the Woodland Carbon Code. Ultimately, projects are registered on the same UK Land Carbon Registry and the credits associated with projects are bought and sold in the same ways.

Projects that are eligible for validation/verification to the Peatland Code must meet the following pre-requisites:

- Peat soils must be greater than 50cm in depth;
- Peatland type must be blanket or raised bog;
- Peatland condition must be 'Actively Eroding' or 'Drained' (See Field Protocol for definitions);
- Restoration activities must not include forestry removal;
- Restoration must not be legally or contractually required;
- Project must be able to enter a minimum contract of 30 years;
- Restoration activities must not conflict with any other land management agreements; and
- Project must be additional i.e. it must require carbon finance to take place.

Once eligibility has been established, landowners are then required to register the project on the Carbon Registry, following a similar process as that detailed in the Woodland Carbon Code section above.

To have a project registered on the Registry, account holders are required to complete and submit the following documentation:

- Field Protocol;
- Project Design Document;
- Additionality Calculator;
- Emissions Calculator; and
- Risk Assessment.

Once submitted, account holders are requested to contact OF&G or Soil Association, as the accredited validation and verification bodies of the Peatland Code, to have their project validated. Upon application a date to conduct audit of both the project site and the project documentation will be arranged. Amendments to the project plan may be required if determined necessary by the validation/verification body to ensure compliance with the Peatland Code.

Following validation, restoration activity is to be delivered as per the submitted Project Design Document. As with the Woodland Carbon Code, a public register of all available Peatland Code projects is available online, allowing potential buyers to search for one that meets their requirements.[52] Alternatively, projects can use the services of a specialist carbon broker to actively search for a buyer on their behalf. A sale can also result from a direct relationship, for example between a land manager/owner and a local business. Projects can sell the climate benefits at any time. By marketing the additional benefits that arise as described in the above section alongside the climate benefits of peatland restoration it may be possible to achieve a greater purchase value.

Within one year of finishing the restoration activities detailed in the Project Design Document the Project must arrange an independent Validation/Verification body to assess the restoration work on site. This validation of the restoration activity will check if the project has delivered the planned restoration work

[52] https://mer.markit.com/br-reg/public/index.jsp?entity=project&sort=project_name&dir=ASC&start=0&acronym=PCC&limit=15&additionalCertificationId=&categoryId=100000000000001&name=&standardId=100000000000157

to a good standard and adjust the expected emission reductions if necessary. A 'Restoration Validation' certificate is awarded stating the amount of expected emission reductions and the corresponding number of Pending Issuance Units (PIUs). If Pending Issuance Units were issued before restoration commenced these can be adjusted according to the Restoration Validation certificate.

Following successful validation and completion of the restoration activity a regular schedule of verification audits will be conducted by the validation/verification body. This will ensure the project achieves and maintains the expected condition category change, delivering the expected greenhouse gas benefit over its duration.

Validation and Verification Fees under the Peatland Code vary depending on the organisation and what is being audited. For pre-restoration validation with Soil Association, there is a fee of £1,500 for projects where less than 3,000 PIUs are forecast and £2,000 for projects with more than 3000 PIUs forecasted. For all Post-Restoration Validation Audits, there is a fee of £2,500 associated with Soil Association. For Verification Audits, Soil Association quote this price on a case-by-case basis. OF&G charge a £612 Application Fee for all validation and verification requests, and a standard fee of £812.40 per validation or verification. In addition to these fees, operators need to be mindful of the IUCN Administration Fee of 3p per unit (tCO_2e), plus reasonable inspector travel expenses where these are incurred.

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