

Mobilising private investment in natural capital



AGRICULTURE, ENVIRONMENT AND MARINE

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Glossary

Term	Definition
Aggregation facility	An investment vehicle which brings together multiple projects to reduce transaction costs by aggregating multiple investments into a single portfolio, enabling investors to finance multiple projects through a single investment.
Blended finance	Use of catalytic capital from public or philanthropic sources to mobilise additional finance from the private sector.
Broker	An intermediary that buys and sells goods and/or assets (e.g., credits from peatland restoration projects) with the intent of reselling them at a profit.
Carbon credit	A tradeable security that corresponds to 1 tonne of CO ₂ equivalent (tCO ₂ e) which can be purchased on voluntary or regulated carbon markets.
Catalytic capital	A socially and/or environmentally driven investment made in order to unlock the participation of private investors that would not have otherwise participated.
Conservation dividend	A benefit sharing agreement that enables a fund to donate a portion of its returns towards conservation activities, supporting often uneconomical but highly impactful projects benefiting communities, whilst also potentially benefiting from tax relief on their donation.
Crofting	A form of land tenure and traditional system of farming on a small scale particular to the Scottish Highlands.
Ecosystem	The complex of living organisms, their physical environment, and all their interrelationships within a particular geographic area.
Ecosystem services	The benefits that are obtained from ecosystems, including provisioning, regulating, cultural and supporting services.
Environmental Land Management scheme (ELMs)	A government policy designed by Defra to support the rural economy through rewarding environmental land management in England. It is made of three potential schemes: Sustainable Farming Incentive, Local Nature Recovery, Landscape Recovery.
Equity investment	An amount of money that is invested in a company by purchasing shares of that company on a listed

Term	Definition
	exchange (public equity) or the private market (private equity).
First-loss capital	A credit enhancement provided by an investor or grant maker who agrees to hold a first-loss position in an investment.
First-loss position	The position of an investor which is last in the order of payment and first to bear the loss in an investment.
Hurdle rate	A threshold rate of return on an investment required by an investor.
Impact	The outcomes for nature and societies created by undertaking target activities (such as delivery of NbS). Impact can be positive (for example, mitigating climate change) or negative (for example, displacing local communities).
Insetting	The implementation of nature-based solutions within an organisation's own value chain to achieve decarbonisation goals.
Institutional investor	An organisation that invests money on behalf of clients or members, such as hedge funds, mutual funds and pension funds.
Investment	The act of providing capital in return for repayment and profit. Investment utilises repayable capital, unlike non-repayable capital typically provided by grant and philanthropic funders.
Land manager	An organisation managing land and advising landowners.
Landowner	A person or organisation who owns land. Landowners can be estates, community organisations, environmental Non-Governmental Organisations, corporations etc.
Liquidity	A financial term to characterise how quickly and easily assets can be converted into cash.
Liquid market	A term used for a market in which the liquidity of a traded asset is high. A liquid market enables the purchase and sale of a traded asset with minimised friction costs (such as transaction costs).
Natural capital	The environmental resources (e.g., plants, animals, air, water, soils) that combine to yield a flow of benefits to people.

Term	Definition
Nature-based solution (NbS)	The actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.
Net-zero	A state in which the greenhouse gases going into the atmosphere are balanced by removal out of the atmosphere, resulting in no net addition of emissions into the atmosphere.
Origination costs	The upfront fee charged by a lender to provide new finance to an investment opportunity.
Peatland Carbon Unit (PCU)	The reduction of 1 tCO ₂ e emitted to the atmosphere through the restoration of peatland environments. Upon verification, PIUs vest into PCUs.
Pending Issuance Unit (PIU)	The 'promise to deliver' a PCU at a given point in the future.
Portfolio approach	The effect derived from investing in a range of projects or investments rather than a small number. By spreading investment, an investors risk is diversified.
Project developers	The individuals, organisations, or businesses involved with designing and implementing nature-based solutions projects (e.g., peatland restoration).
Project operators	The individuals, organisations, or businesses undertaking the long-term maintenance required to ensure the delivery of targeted outcomes.
Repayable finance	The capital made available over a set period which must be repaid, often with interests in addition of the initial amount made available.
Reserve price	The maximum price that a buyer (e.g. Scottish Government) is willing to pay for a good or service (e.g. a PCU) through a reverse auction. This price acts as a ceiling to protect the buyer/guarantor.
Reverse auction	The type of mechanisms through which a single buyer or provider awards pricing to/contract(s) with the most cost efficient eligible bidder(s). The auction continues until all available funding / contracts are exhausted, all bidders have been awarded, or no offers remain that comply with auction parameters including reserve pricing.

Term	Definition
Stranded asset	The assets (e.g. land) that are unable to earn their original economic return as they have suffered from unanticipated or premature write-downs, devaluation or conversion to liabilities. ¹
Transaction costs	Expenses incurred through the buying or selling a good or service.
Uniform Price Auction (Reverse Auction)	A mechanism to determine a price for a good, service, or right. Under this mechanism participants bid their proposed price. All successful bidders are paid equally for the provision of goods.
Pay-As-Bid Price Auction (Reverse Auction)	A mechanism to determine a price for a good, service, or right. Under this mechanism participants bid their proposed price. All successful bidders are paid according to their bids.

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Executive summary

Finance Earth was commissioned by the Scottish Government, in partnership with NatureScot, to explore how voluntary carbon markets can be harnessed to accelerate the delivery of high-integrity peatland restoration across Scotland.

The project, “Mobilising Private Investment in Natural Capital” aims to understand both the financial and non-financial barriers to peatland restoration, the opportunities to scale-up restoration activities, and sets-out recommendations on how public capital can be used most effectively to crowd-in private investment into peatland restoration. The project was delivered through a process of action research, working iteratively with a large group of stakeholders including landowners, farmers, project developers, investors and carbon-buyers.

This project builds on NatureScot and Finance Earth’s 2021 report, “[Facilitating Local Natural Capital Investment](#)” which evaluated a range of funding and financing mechanisms to unlock investment in Scotland’s natural capital. It proposed two key mechanisms be developed, namely a **Scotland Carbon Fund (SCF)** and a **Price Floor Guarantee (PFG)**. This report explores these two proposed mechanisms in more detail, and based on extensive stakeholder consultations, research and data analysis, provides recommendations regarding their design, particularly as it relates to the financing of peatland restoration.

The Challenge

The United Kingdom has one of the most depleted natural capital stocks on the planet. This extends to peatland, which cover approximately one third of Scotland’s land area (when afforested peat is included). Peatlands are a key part of the Scottish landscape providing a range of ecosystem services spanning water filtration, carbon storage, flood management and biodiversity, yet about 2 million hectares are in a modified or degraded state. In their current condition, Scotland’s peatlands are a net emitter of greenhouse gases (GHGs). In order to achieve its net zero target by 2045, Scotland will need to restore its peatlands.

Public investment in peatland restoration has been increased over recent years, but remains below what is needed to restore this natural asset at scale. The Scottish Government has a target to restore 250,000 hectares by 2030, and in 2020 committed an additional £250m in funds for this work. However, only around 6,000 hectares are currently being restored annually and beyond public funds, there has been minimal investment to-date from private sources, including through voluntary carbon markets.

The Opportunity: Voluntary carbon markets

Voluntary carbon markets are developing rapidly with an average 30% annual growth rate internationally over the last three years.² Further growth is also expected over the next 20 years, as many businesses and organisations look to voluntary carbon markets as a key tool to deliver on their net zero commitments. While there are continued concerns around supply-side integrity in the market, multiple standards and codes have emerged over recent years which aim to provide market participants with confidence in project quality and their positive climate and environmental impacts. This includes the UK Peatland Code, a voluntary certification standard for UK-based peatland projects seeking to leverage carbon markets for income. As of 7th September 2022, 92 projects have registered under

the code, equivalent to c.15,000 hectares of degraded peatland. While this is growing quickly, it remains relatively small in the context of the total extent of Scottish peatland.

What we tested

1. Scotland Carbon Fund

The overall aim of a SCF would be to attract private investment in peatland restoration, with income from the sale of carbon credits providing positive financial returns for private investors. The fund would be open only to projects that met certain eligibility criteria, aiming to assure high-integrity and transparency in the projects being supported. Finance Earth analysed a series of fund design features and criteria, including fund type, investment mandate, capital structure, community benefit sharing mechanisms, and governance arrangements to identify how best to address key barriers in the market and unlock private finance at scale while ensuring that the Scottish Government's just transition principles and principles for responsible investment are respected.

2. Price Floor Guarantee mechanism

A PFG is a price control mechanism designed to transfer risk and provide confidence in early stage markets. Price floors are used to accelerate market development by removing the risk that prices fall below a pre-agreed threshold. Finance Earth analysed how such a mechanism might be designed to maximise the efficiency of public spending and support specific desirable outcomes like carbon storage, biodiversity or community benefit.

Stakeholder views and perspectives on voluntary carbon markets for peatland restoration

To inform our analysis, Finance Earth consulted with a wide variety of important stakeholders, including project developers, landowners, community organisations, investors and potential buyers of voluntary carbon credits. They identified both financial and non-financial barriers to the scaling of voluntary carbon markets to restore peatland in Scotland.

Table 1: Financial and non-financial barriers to scaling voluntary carbon markets to restore peatland in Scotland, identified by engaged stakeholders

Financial Barrier	Non-Financial Barrier
Low and uncertain carbon prices in the future which affect the commercial viability of projects	Lack of qualified contractors
Concern over the variability of restoration costs and the long-term costs to maintain restored peatland in a particular state	Desire to preserve autonomy over the use of land
Uncertain demand for carbon credits	Relatively high failure rate of some peatland restoration projects
Ownership rights over carbon credits (split between tenants vs. landowners)	Diversity of habitats within a mosaic landscape making it difficult to reach the

Financial Barrier	Non-Financial Barrier
	critical size for peatland proposition to be attractive to private investors
Concern over integrity of the voluntary carbon market (reputational risk)	Lack of knowledge of the market
Availability of 100% public grant funding which crowds-out private capital	Uncertainty over future policy and regulatory framework
Lack of investment-ready pipeline	Perceived early mover disadvantage

Despite these barriers, several stakeholders consulted had participated in voluntary carbon markets for peatland restoration albeit at a small-scale, and many displayed a keen interest to learn more about how it could work for them with a view to more active participation in the future. Of those that had engaged, many indicated a strong preference for holding onto a significant portion of their Pending Issuance Units (PIUs) until verification in order to retain as much value as possible. On the buyer side, several indicated an interest in purchasing carbon credits, potentially at a premium, if it could be shown that those credits also support other desirable outcomes, specifically community benefit and improvements in biodiversity.

Evaluation and recommended design features

Scotland Carbon Fund

The report finds a strong case can be made to develop a SCF as an effective tool to unlock finance for peatland restoration at-scale. Specifically, this should be structured as a project finance vehicle versus a liquidity vehicle. This structure would appear a better fit with the preferences of the market actors consulted and has a series of advantages, including:

- Better temporal alignment between revenues from the sale of verified carbon credits and project costs;
- Ability to capture any upside in carbon credit prices that would otherwise have been captured by intermediaries buying PIUs;
- Optionality to invest in capacity and supply chain building;
- A well-known institutional structure; and
- Ability to provide upfront project finance to cover restoration costs and project maintenance in the early years.

It was identified that a fund size of at least £50m would be required to allow for efficient management and a larger vehicle would be more impactful in restoring a larger area of degraded peatlands (although the availability of pipeline is a limiting factor).

The incomplete mapping data on the condition of Scottish peatlands and the limitations in terms of eligibility criteria set by the Peatland Code both create uncertainty over the size of the available pipeline of projects for restoration. As such, it was suggested that the SCF could pursue a wider investment mandate, spanning not only peatland and woodland

carbon markets, but also providing finance to green companies operating in the peatland restoration sector to alleviate capacity constraints.

To avoid inadvertently contributing to land price inflation in Scotland, a leasehold investment strategy is also recommended. Under this strategy, land is leased from landowners and a portion of the carbon benefits is also shared with landowners, thereby limiting the transfer of land to large international investors. The leasehold investment strategy is also more in line with the objectives of the Scottish Land Reform bill and Scottish Land Fund in terms of addressing highly concentrated patterns of land ownership in Scotland.

A financial contribution to a SCF from the Scottish Government was viewed favourably by investors as an important display of commitment. A first loss position was seen as particularly impactful, providing further confidence in the market.

The fund could also be structured to share benefits with local communities, in line with Scottish Government's ambitions for a Just Transition and the Interim Principles for Responsible Investment in Natural Capital. A conservation dividend, payable above a pre-defined hurdle rate was found to be the most attractive approach, where a portion of profits are diverted from investors to communities as a donation.

The inclusion of governance tools to support investee projects was also considered. A central endowment fund was identified as a key means to support good financial governance, with funds structured to support long term maintenance costs. In a similar vein, a portfolio approach could allow for the sharing of risks, with projects pooling resources to insure against unforeseen delivery risks and cost overruns.

Finally, to overcome challenges faced by small projects, aggregation facilities could be structured under which a partner with a track record (e.g. an eNGO) could work with and aggregate a group of smaller projects and receive a pre-defined amount of investment capital from the fund.

Price Floor Guarantee mechanism

A PFG can operate alongside a SCF as an aligned mechanism, rather than an alternative to it as suggested in the NatureScot and Finance Earth 2021 report, "Facilitating Local Natural Capital Investment". The PFG provides project developers with confidence in project revenues over a fixed period, significantly reducing their downside risk (i.e. the risk of low carbon prices negatively impacting the financial viability of a project). This is valuable given the current volatility of carbon markets. It is particularly supportive of those projects where developers wish to hold some – or all – of their PIUs to verification. Retaining PIUs until they vest into verified carbon usually allows developers to achieve a higher selling price.

While many stakeholders expressed broad support for this approach, it was also noted that it would need to be carefully designed to avoid a "race to the bottom" in which low quality projects with a low cost base would manage to secure a guaranteed price for their carbon credits over high value ones (e.g. projects with multiple co-benefits such as biodiversity and community benefits).

Finance Earth assessed several existing PFG mechanisms and identified the reverse auction-based approach as the best fit with for the market for carbon credits from peatland restoration. Two potential auction structures, 'Uniform Price' and 'Pay As Bid' were identified as suitable models. While recent evidence indicates the former as the better

option, further testing of both approaches is recommended and simplicity and accessibility should be prioritised.

The term of the guarantee was identified as a crucial feature of the PFG, with a longer guarantee offering significantly greater benefit to projects, but also a larger liability for Scottish Government. Another challenge is that it remains difficult to forecast demand for carbon credits over long time periods, particularly after 2050, with current demand being driven by institutions seeking to meet their near-term offsetting needs. As such, establishing a price floor that extends beyond 2050 could improve developer confidence in the long-term economic viability of projects, noting that the minimum project duration according to Peatland Code eligibility standards is 30 years.

To avoid a race to the bottom on project quality, eligibility criteria can be built in that limit access to only those projects that fulfil minimum requirements, aligned with public policy objectives, such as the Scottish Government Interim Principles for Responsible Investment in Natural Capital and the National Strategy for Economic Transformation (NSET). Eligibility criteria proposed by stakeholders included sites with specific physical characteristics (e.g., high altitude peatlands, forested bogs, etc.), community benefit, and biodiversity and water based co- benefits (e.g. flow attenuation and quality). It should be noted however that the eligibility criteria embedded within the Peatland Code already set a high bar for participating projects, and further criteria may well add limited value.

Other features including the indexation of the guarantee price, and the timing and frequency of auctions were also tested with stakeholders with some form of indexation likely to be attractive to potential investors.

Building coherence in the peatland financing ecosystem: operating payments

At current market carbon prices, peatland restoration projects are not viable without partial (and typically substantial) public funding or private forms of grant funding. However, full capital grants from public funding may serve to unnecessarily crowd-out private finance while not providing support for ongoing project maintenance costs. Restructuring Peatland ACTION grants to include an ongoing support or “Operating Payments” could provide multiple benefits, including confidence in cashflows over a fixed period. These payments could be provided alongside a lower capital grant that may be reduced over time as the market matures. In reorganising Peatland ACTION payments, it will also be important to consider the impact of agricultural land reform in potentially creating other income streams to support the management of peatlands post restoration. Operating payments may be provided for a fixed period of time or for the full operating life of the project. A period of 5-20 years will allow projects to understand their costs prior to the sale of carbon credits, as well as provide confidence to potential investors in the market around the ‘permanence’ and integrity of projects.

Good financial governance

All three recommended financial mechanisms (SCF, PFG and operating payments) support good financial governance practices, i.e. sound planning for the long-term maintenance liabilities of restoration projects. Projects with poor financial governance are likely to struggle to cover ongoing costs, raising concerns for carbon buyers and prospective investors.

Conversely, projects with sound financial planning can expect to generate positive cashflows, even over an extended period (e.g. 50 years). In Section 9 we model a project scenario supported by the three mechanisms covered in this report.

There is a strong case to develop a SCF and aligned PFG as tools well suited to build market integrity and scale-up private investment in peatland restoration in Scotland. Delivering these mechanisms will resolve some of the key barriers identified by market participants. However, to maximise their effectiveness, these mechanisms should also be designed in tandem with changes to the public sector funding infrastructure to unlock investment and ultimately scale the market.

Section 1: Introduction

Objectives of the project

The “Mobilising Private Investment in Natural Capital” research project was commissioned by Scottish Government, in partnership with NatureScot, to explore how voluntary carbon markets can be harnessed to accelerate the delivery of high-integrity peatland restoration across Scotland. The project aims to understand both the financial and non-financial barriers to peatland restoration, the opportunities to scale-up restoration to deliver on Scotland’s climate, biodiversity and community benefit targets, how public capital can be used most effectively to crowd-in private investment into peatland carbon markets and the wider lessons for developing other carbon markets.

This project builds on NatureScot and Finance Earth’s 2021 report, “[Facilitating Local Natural Capital Investment](#)” which evaluated a range of funding and financing mechanisms to unlock investment in Scotland’s natural capital. Based on a range of criteria, including market maturity, scalability, replicability, social and environmental outcomes, the report proposed the creation of two investment structures as effective mechanisms to catalyse investment into natural capital in Scotland:

- **Scotland Carbon Fund (SCF):** an investment vehicle enabling private investors to gain exposure to peatland restoration projects funded by the sale of carbon credits. The SCF provides a vehicle to facilitate private investment at scale into Scotland’s peatlands, whilst also providing a model for funding other nature-based solutions; and
- **Price Floor Guarantee (PFG):** a mechanism that guarantees a minimum price floor for peatland projects aiming to sell carbon credits, de-risking private investment and project delivery. The PFG provides a solution to overcome some of the key barriers to market development and can enable improvements in the efficiency of public spending.

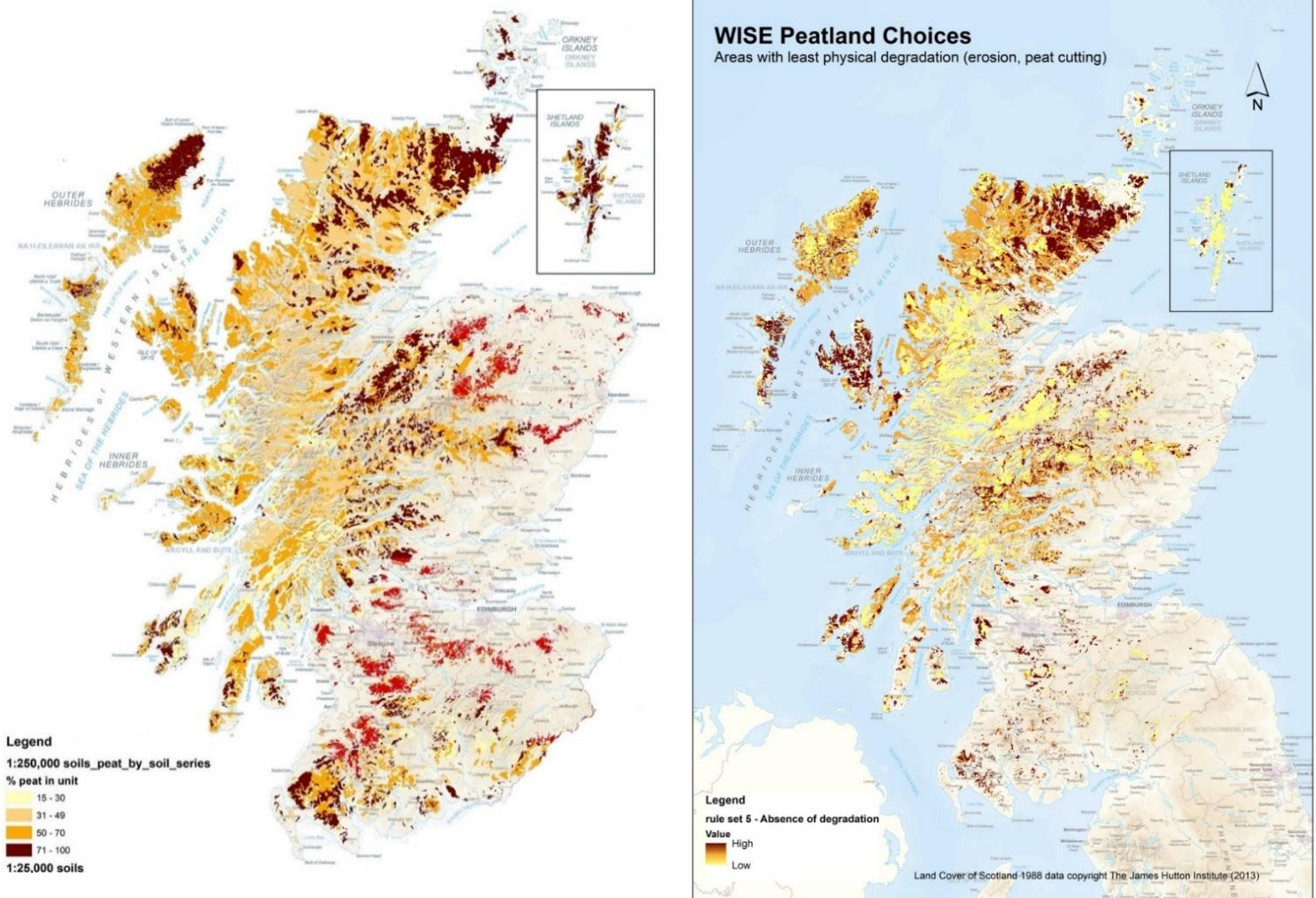
This report explores these two proposed mechanisms in more detail, providing recommendations regarding their design. The proposals and business case set out in this report are informed by an extensive process of stakeholder engagement with key groups engaged in, and affected by, peatland restoration in Scotland, spanning landowners, project developers, carbon buyers, investors and more. This report considers how these funding mechanisms should be deployed alongside grant funding to establish a coherent financing ecosystem to address key barriers to scaling high-integrity peatland restoration, and ultimately accelerate the delivery of nature restoration objectives in Scotland. Although the focus of the work is on peatlands, the findings and recommendations are also relevant to other nature markets in Scotland.

Context

The United Kingdom has one of the most depleted natural capital stocks on the planet³. Whilst public commitments are in place to begin to address this issue (e.g. UK government’s 25 Year Environment Plan⁴ in England and the natural capital indicators under the National Performance Framework in Scotland⁵). Within Scotland, public funding alone will not be sufficient to meet the targeted nature-related outcomes, with the financing gap estimated at up to £20 billion over the current decade.⁶ Private capital will need to be leveraged to close this financing gap.

Peatlands cover over 2.5 million hectares (or one third) of Scotland and are of national and global significance. In good condition, they provide multiple benefits: storing carbon, supporting nature, reducing flood risk, cleaning water bodies, and providing places that can support physical and mental wellbeing. It is estimated that these landscapes store over 1.7 GtCO₂e, yet 75% of Scotland's peatlands are degraded.⁷

Figure 1: a) The distribution of peatland soils across Scotland ([James Hutton Institute, 2016](#)), b) The distribution of degraded peatland across Scotland ([WISE, 2013](#)) – Scottish Government have initiatives underway to update this mapping.



Current land management practices, including land drainage, inappropriate muirburn, industrial pollution, grazing pressures and high deer populations have accelerated degradation. This represents a key challenge for Scotland, with degraded peatland acting as a major source of greenhouse gas (GHG) emissions. It is estimated that Scotland's degraded peatlands emit upwards of 6 MtCO₂e annually⁸ (equivalent to the annual emissions of 1.1 million combustion engine cars or 15% of Scotland's total net annual emissions).⁹

For Scotland to meet its climate change targets of net zero emissions by 2045, peatlands must be restored and preserved.¹⁰ The restoration of peatlands can also deliver a multitude of additional economic and social benefits (Table 2), such as new jobs, providing livelihoods within local communities, and enhanced recreation and tourism opportunities.

Table 2: Key benefits associated with healthy peatland ecosystems

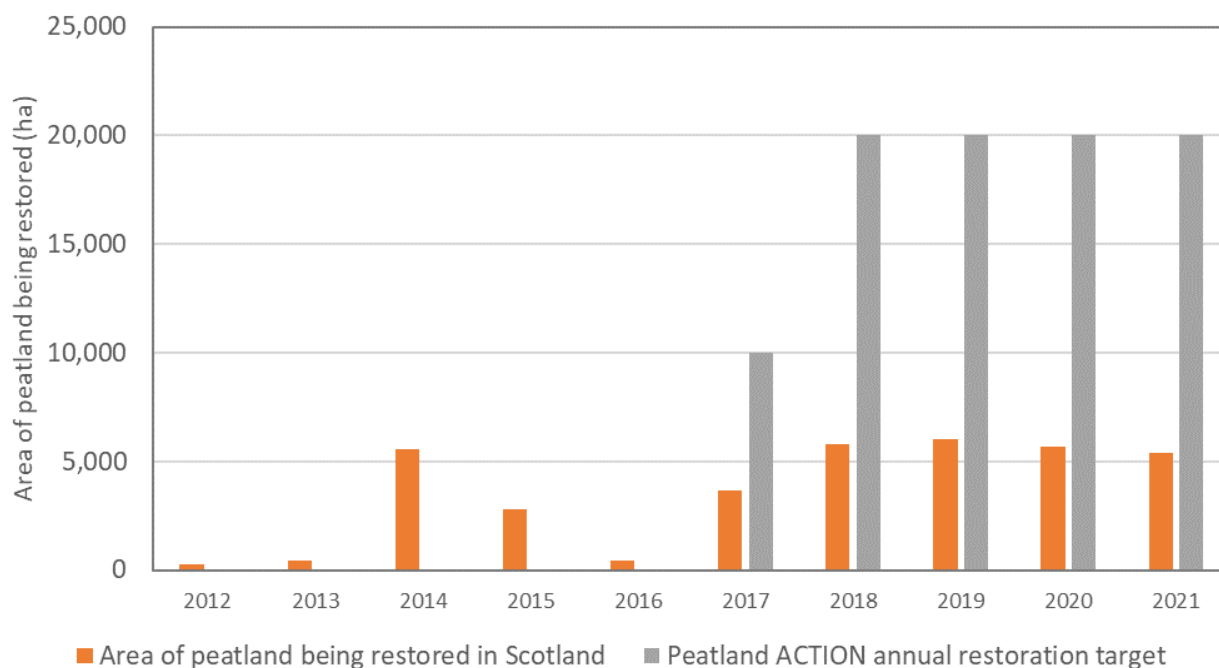
Benefit	Description
Carbon storage and sequestration	Contributes to climate change mitigation by avoiding emissions from degraded sites and gradually capturing and sequestering carbon in restored sites
Flood prevention	Protects local communities and assets against flooding by slowing overland flow of water and reducing flood peaks
Biodiversity and wildlife habitat	Underpins healthy habitats for a range of rare and endangered species
Water filtration	Contributes to water quality (e.g., reduces water colour, nutrient loads and trace metals)
Beauty and heritage	Constitutes a major attraction for recreational uses and tourists

Peatland restoration: current funding landscape

The Scottish Government has taken a proactive approach to the restoration of peatland landscapes. Between 2012 and 2020, the Scottish Government has invested more than £30 million in the restoration of degraded peatlands in Scotland through its flagship Peatland ACTION Programme.¹¹ In February 2020, the Scottish Government committed a further £250 million to the restoration of 250,000 hectares of degraded peatlands by 2030.¹² The primary purpose of this funding is to support the upfront capital costs associated with peatland restoration, rather than the long-term maintenance costs.

Despite these commitments, current trends suggest that peatland restoration is not being undertaken at the pace and scale required to meet Scottish Government's 250,000 hectare target by 2030, nor the UK's Climate Change Committee's target of restoring 50% of the UK's upland peatlands by 2050,¹³ with just over 30,000 hectares restored since 2012 (Figure 2).¹⁴ It should also be noted that the current 250,000 hectares commitment represents just 20% of Scotland's degraded peatland.

Figure 2: The number of hectares of peatland being restored annually in Scotland since 2012. Peatland ACTION targets from 2017 are also displayed for comparison.¹⁵



Beyond public funding, there has been minimal investment in peatland restoration from private sources to date, including through voluntary carbon markets. In this context, the Scottish Government is keen to develop the attractiveness of carbon markets to both reduce dependence on public funds as well as deliver high impact, high-integrity peatland restoration at the pace and scale required.

The UK peatland carbon market

Emerging markets for ecosystem services represent a major opportunity to draw more private capital into nature restoration and conservation. Voluntary carbon markets in particular are developing rapidly, with an average growth rate internationally of 30% over the last three years¹⁶. Markets have benefited from a growing trend of businesses and organisations announcing net-zero targets.

In parallel, compliance “cap-and-trade” Emission Trading Schemes (ETS), such as the UK ETS, are also considering the inclusion of a carbon offsets allowance, as a substitute to emission allowances, on their trading platforms, which could represent another significant driver of demand in carbon credits.¹⁷

To ensure that voluntary carbon markets function with integrity and transparency, several codes of practice and standards have been developed to reassure market participants of the climate claims being made about projects. In the UK, the Peatland Code (PC) is a voluntary certification standard for UK-based peatland projects which aims to provide assurances to carbon buyers that the climate benefits being sold are real, quantifiable, additional and permanent.¹⁸ Launched by the International Union for Conservation for Nature (IUCN) in 2015, the PC is one of only two standards in the UK that is government endorsed (the other being the Woodland Carbon Code). The PC provides businesses with a means to invest in peatland restoration projects through the purchase of carbon credits. As of 7th September 2022, the PC had 92 projects registered under the UK Land Carbon

Registry, covering approximately 15,000ha of peatland.¹⁹ To be noted, not all peatland is currently eligible to the PC due to the eligibility criteria summarised in Table 3 below. As such, further work would be needed to ascertain the area of peatland in Scotland currently eligible under the PC.

Table 3: Selected eligibility criteria for the IUCN PC²⁰

Eligibility criteria	Description
Peatland type	Peatland type must be blanket or raised bog (forested bog currently excluded). The next version of the peatland code is likely to expand this criteria to other peatland types (e.g., fenlands peatlands).
Peatland depth	A minimum of 75% of the peat depths recorded within each Assessment Unit must be greater than or equal to 50 cm.
Peatland condition	Peatland condition must be 'Actively Eroding' or 'Drained' as defined in the PC 'field protocol'. ²¹
Duration	Project must be able to enter a minimum contract of 30 years.
Additionality	Project must be additional i.e. it must require carbon finance to take place.

In addition to the PC, there are other voluntary standards for projects looking to market the climate benefits of peatland restoration. For example, Verra has developed an internationally applicable standard for peatland restoration projects (VM0036 Methodology for Rewetting Drained Temperate Peatlands).²² However these other standards have not yet been used in the UK, likely due to the validation and verification processes being more complicated and expensive than the PC, especially for small scale projects and the low prices obtained (per tonne) on international voluntary markets for peatland carbon.

More recently, the Wilder Carbon standard has been developed by Kent Wildlife Trust to enable the generation of carbon credits from rewilding activities including peatland restoration, using metrics developed by the PC, and requiring the collection of biodiversity data using Defra's biodiversity offsetting metric. In contrast to the PC, it requires buyer checks to ensure those investing in projects have done everything possible to reduce emissions at source before offsetting their residual emissions. It also has long minimum contract lengths of 100 years, or 50 years with conservation covenants to ensure that projects are effectively permanent. Due to these requirements, it is likely that the majority of projects will be developed by eNGOs that own peatlands, such as the Wildlife Trusts, with limited scalability beyond these types of institutional landowner²³.

Section 2: Methodology

The project ran from April 2022 to September 2022 and included five phases. Each phase of the work had distinct objectives and was designed to build on the previous phase.

1. **Evidence review:** Review evidence and learnings from existing relevant financing mechanisms (nature funds and PFG mechanisms) in addition to the current policy context within Scotland;
2. **Design action research:** To ensure an inclusive approach to the research, Finance Earth worked with the Scottish Government, NatureScot, Forest Carbon and RSPB to map stakeholders and design questionnaires and other materials for engagement;
3. **Develop the business case:** This phase was designed to identify the various structural options for a SCF and PFG mechanism that would be tested through the action research programme. Prior to initiating the action research programme, Finance Earth convened an options assessment workshop to discuss the key structural options to be tested with the project steering group;
4. **Stakeholder testing and analysis of findings:** Targeted interviews and questionnaire surveys were used to explore stakeholders' views on key barriers to peatland restoration, their experiences of carbon markets so far and overall appetite for participating in voluntary carbon markets (see Annex B for further details). In this phase, Finance Earth interviewed over 30 stakeholders, including landowners and managers, project developers, NGOs and community organisations, carbon brokers, investors and potential buyers of carbon credits. A full list of stakeholders interviewed can be found in Annex A. Through this stakeholder testing phase, two intermediary workshops were held with the steering group to provide an opportunity to share findings to date and refine recommendations on the proposed financing mechanisms; and
5. **Report and recommendations:** Based on insights from stakeholders and Finance Earth's analysis of the market, recommendations were put forward on how the SCF and PFG Mechanism should be designed so as to meet the requirements of various market participants, while also ensure that public funds, where used, are spent effectively to crowd-in private investment.

Section 3: Overview of the financing mechanisms tested

This section provides a high-level overview of the two financial mechanisms that were tested through this action research project. These mechanisms could potentially be deployed independently, or in parallel. Recommendations on the proposed design and structure of these mechanisms are presented from section 5 onwards.

Scotland Carbon Fund

The purpose of the SCF would be to attract responsible private investment into eligible peatland restoration projects with repayments and returns to investors funded through revenues from the sale of carbon credits. By providing transparency, reducing transaction costs and attracting more investment into the sector, the fund would enable high quality peatland restoration to be undertaken at scale. Government leadership in the fund's creation and an initial cornerstone investment would in turn allow the Scottish Government to set a high bar for project quality and build market confidence.

Building on the learnings from the "[Facilitating Local Natural Capital Investment](#)" report, two possible fund functions were considered and tested: (1) a liquidity vehicle; and (2) a project finance vehicle.

Liquidity vehicle

As a market liquidity vehicle, the SCF would act as a guaranteed buyer of Pending Issuance Units (PIUs), holding onto these credits until they vest into verified Peatland Carbon Units (PCUs). Investor returns are generated by the increase in value of the credits over time as they are verified.

For project developers, this vehicle provides certainty that the PIUs generated through peatland restoration can be sold quickly at a transparent and guaranteed price, and also provides an option for an agreement with the fund to share in any upside in the long-term growth in the value of carbon credits. The facility would be both buying and selling credits in the market, thereby offering a "market maker" function helping to build liquidity and transparency for market actors.

Project finance vehicle

A more traditional project finance vehicle provides project developers with finance (e.g. in the form of a loan or equity injection into the project) to support the upfront capital costs of peatland restoration, bridging the time gap between project development and revenue generation. Investment returns are paid once PIUs vest into verified PCUs.

A project finance vehicle provides the upfront capital required to cover the restoration costs to enable project developers to retain PIUs until they vest into verified PCUs, thereby enabling income from carbon sales to be delivered over the lifetime of the restoration project. This distribution of carbon income ensures project developers have a steady supply of capital to meet long-term maintenance costs, which usually decline over time but still represent a significant long-term financial obligation, and reduces the risk of areas of peatland becoming a stranded asset, not generating any income for future generations.

In order to explore the suitability of the two possible fund functions, a number of questions on the potential design features were tested with key stakeholders through the research phase of the project (**Table 4**)

Table 4: Potential design features that were explored through the research phase to structure the Scotland Carbon Fund

Design feature	Key question(s)
Fund function	<ul style="list-style-type: none"> • Should the SCF be a market liquidity vehicle or a project finance fund? • What are the primary barriers to high-integrity peatland restoration project creation and delivery (liquidity or upfront investment)?
Fund general characteristics	<ul style="list-style-type: none"> • What could be the key characteristics of the fund: size, target return, in-kind versus cash returns, legal structure, exit strategy, etc. • How long should the fund be operating? How long should the deployment and the holding periods be?
Investment mandate	<ul style="list-style-type: none"> • Should the fund invest only in peatland carbon projects or also in other forms of natural capital/ access other ecosystem service markets? • Should the fund also invest in capacity building (e.g., contractors)? • Should the fund use a leasehold or freehold strategy?
Government contribution	<ul style="list-style-type: none"> • How much should the government contribute to the fund (e.g., as a first-loss guarantor)?
Community benefits	<ul style="list-style-type: none"> • How can the fund benefit local communities? • How should a profit sharing mechanisms be structured?
Endowment	<ul style="list-style-type: none"> • Should the SCF provide a mechanism to fund long term maintenance costs of projects?
Governance	<ul style="list-style-type: none"> • How is the SCF aligned with other market initiatives (Peatland ACTION grants, PFG, Principles for Responsible Investment in Natural Capital)?

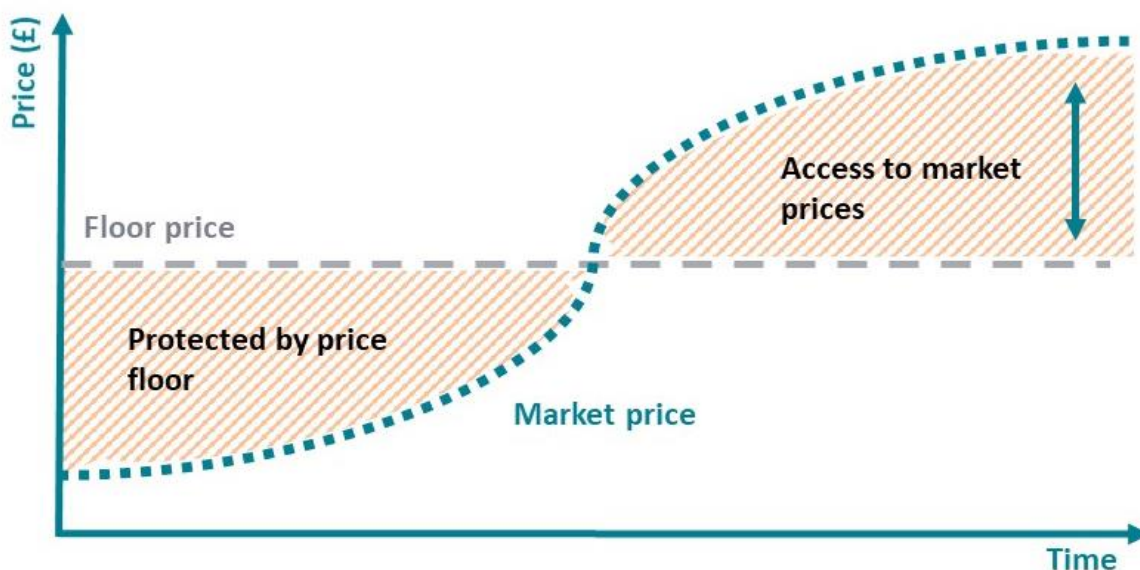
Price Floor Guarantee

A PFG is a risk reduction or transfer mechanism. A PFG is well suited to early-stage markets in which demand is uncertain. Unlike the SCF, the PFG supports the underlying project by reducing revenue risk, rather than de-risking the investor directly. Price floors are used to accelerate market development by removing the risk that prices fall in the future through a guarantee to participants. This builds confidence in the cashflow generation of beneficiary projects, and in turn should improve economic viability / investability. Unlike a traditional form of subsidy support, the guarantor only pays out if

market pricing falls below a pre-agreed threshold. In this way, the PFG can operate more efficiently than a traditional subsidy scheme.

A PFG could be used by Scottish Government to de-risk investment in, and accelerate delivery of, peatland restoration. Future carbon pricing cannot be accurately predicted, and estimates vary widely. In this context, the price floor acts to remove the risk of most pessimistic outcomes (“downside”) while still providing the opportunity for projects to benefit in upside scenarios. The market function of a guarantee mechanism is reflected in Figure 3 below:

Figure 3: The market function of a price floor mechanism



As shown, beneficiary projects are protected from carbon pricing below the price floor, but are able to benefit from pricing in excess of the floor price. As a means of de-risking projects without crowding out private capital, price floor guarantees offer an interesting and cost-efficient alternative to existing subsidy regimes. The design of the guarantee can be flexible and strategic, allowing for the targeting of specific outcomes, for example by setting qualification criteria to access the price guarantee such as enhancements in biodiversity or community benefit. Table 5 provides an overview of the questions which were posed to stakeholders through the research phase of the project to elicit their views on what would be the most important design features.

Table 5: Potential design features that were explored through the research phase to structure the PFG mechanism

Design feature	Key question(s)
Guarantee mechanism	<ul style="list-style-type: none"> Is a PFG the right structure? What alternative guarantee structures could be considered?
Floor price setting	<ul style="list-style-type: none"> How should the price floor be set (administratively or using an auction)? Where an auction process is used, is this uniform or pay-as-bid?

Design feature	Key question(s)
Eligibility and delineation	<ul style="list-style-type: none"> • What projects should be eligible to participate? • How can eligibility be used to target specific outcomes (co-benefits such as biodiversity or community impacts)? • Should auctions be split to target different project types?
Scale and frequency	<ul style="list-style-type: none"> • What is the appropriate auction capacity? • How often should the auction take place?
Duration	<ul style="list-style-type: none"> • How many years of carbon sales should the mechanism guarantee?
Indexation	<ul style="list-style-type: none"> • Should the price floor be indexed to a specified metric (e.g., a measure of inflation)?
Accounting and use of surpluses	<ul style="list-style-type: none"> • How are unspent funds used? • Are credits acquired resold or retired? • How are contingent liabilities accounted and provided for?

Section 4: Evidence review

This section reviews existing fund and price floor mechanisms and their associated design features. The aim is to provide insights into how these mechanisms could be applied to inform the structure of the proposed SCF and PFG mechanisms.

Precedent funds

Globally there are a variety of carbon and nature-related funds which are structured to facilitate the flow of private finance into natural capital. These funds set a potential precedent for the proposed SCF.

Table 6: An overview of existing carbon and nature-related funds and learnings for the proposed SCF

Fund	Description	Learnings for the SCF
Livelihoods Carbon Fund ²⁴ (LCF)	Launched in 2011, the LCF is a project finance vehicle providing upfront financing to project developers to implement large scale agroforestry, rural energy and mangrove restoration projects across Africa, Asia and Latin America. The LCF also looks to support the long-term sustainability of the projects it invests in through funding 10 to 20 years of maintenance costs. Investors in the fund, which include corporates and financial institutions, receive carbon credits in return for their investment. In 2021 the LCF launched its third fund, raising €150M, bringing the total amount raised to €290M. The LCF's ability to attract investment is improved by the fact that it targets funding to projects which not only deliver carbon benefits, but also deliver wider social and environmental benefits for local communities.	The first LCF has more than 10 years of operating performance and 2 subsequent funds have been launched, evidencing continued interest in carbon credits, from a range of investors and corporates, over the past decade. The fund is using a project finance approach by providing upfront capital to cover development costs and some maintenance costs. A similar model could be suitable for the SCF.
Land Degradation Neutrality Fund ²⁵ (LDNF)	The Land Degradation Neutrality Fund (LDNF) is an investment vehicle which leverages public money to raise private capital for sustainable agriculture, livestock and forestry projects. In addition to carbon sequestration, revenue is generated from the production of sustainable commodities, the creation of green jobs and increasing food and water security. Leveraging the support of the Government of Luxembourg, IDB Invest and the Global Environment Facility	The LDNF leverages the participation from a number of public entities to crowd in private capital. The fund invests in a broad range of projects to ensure adequate diversification of risk as well as facilitate the rapid deployment of its capital.

Fund	Description	Learnings for the SCF
	(GEF), alongside anchor investments from the European Investment Bank (EIB) and French Development Agency (AfD), projects are sufficiently de-risked to attract a number of institutional investors and insurance companies for the amount of upwards of \$100M in the fund.	

Precedent benefit sharing mechanisms

The structuring of financing mechanisms ensuring the sharing of benefits of peatland restoration will be essential to obtain the long-term support of local communities. The Scottish Government, and several stakeholders consulted, indicated a keen interest in options to develop some form of benefit-share scheme to enable the sharing of the benefits with local communities. This is central to the Scottish Government's *Interim Principles for Responsible Investment in Natural Capital*.

This section explores several mechanisms which have been effectively used in relevant contexts.

Donor Advised Funds (DAFs)

DAFs are flexible philanthropic vehicles that provide attractive tax benefits to donors interested in making gifts to charitable causes. DAFs allow for the donation of funds before specific recipient charities can be identified by the donor. This allows the donor to offset their donation against payable tax.

In the renewable energy sector, DAFs have been established to act as a mechanism to share surplus funds with local communities. In Scotland, this has been achieved through the Community and Renewable Energy Scheme (CARES). For example, the Fallago Environment Fund was established by EDF Renewables and Roxburghe Estates to share the economic benefits of the Fallago Rig windfarm with local communities and visitors to the Scottish Borders.²⁶ Each year, community and charitable groups can apply for a share of the £200,000 which is available to support local environmental, cultural and education-related projects.

Direct community investments

Direct community investment in restoration projects via crowdfunding platforms, including Triodos and Ethex have been used successfully to build community ownership of a range of projects. Crowdfunding campaigns are an alternative to donations that enable communities to realise a financial return as well as have a voice in project governance in exchange for their investment. At the same time, community or retail investors may not be aware of the risks of investing, especially in nascent markets.

One example is the Langholm Initiative, which in August 2022 used £2.2 million in proceeds raised from its crowdfunding campaign (using the platform Go Fund Me), along with a contribution from the Scottish Land Fund, to finance the acquisition of 2,415

hectares of land from Buccelch estates to create a new nature reserve.²⁷ In another example, Highlands Rewilding sold £7.5m of shares to 50 investors to replicate the rewilding of the Bunloit Estate to other Scottish estates.²⁸

Revenue and profit sharing agreements

A revenue or profit share agreement is a benefit sharing agreement that allows for the sharing of revenues/profits between the various stakeholders involved in a project. In this type of agreement, a percentage of the revenues or profits could be allocated to communities.

For instance, one of the models operated by Respira International,²⁹ a carbon finance business, utilises a profit share model whereby a percentage of profits generated above a hurdle rate (e.g., a specific carbon price) are shared with the project developer and landowner, allowing these stakeholders to benefit from any upside in carbon prices. This type of mechanism could be adapted and expanded to include a profit share agreement with communities.

Conservation dividends

A conservation dividend is another type of benefit sharing agreement that enables a fund to donate a proportion of its returns towards conservation activities, supporting often uneconomical but highly impactful projects, whilst also potentially benefiting from tax relief on their donation.

Working in partnership with Big Society Capital (BSC) and Power to Change (PtC), Finance Earth manages 'Community Owned Renewable Energy' LLP (CORE), a £50m social and environmental impact fund. CORE focuses on the acquisition and restructure of commercial solar projects to allow for long term community ownership. CORE distributes a fixed Community Benefit Payment to community partners each year, with a total of £350,000 donated to date (May 2022). This funding is provided alongside further direct grants from PtC, partially funded through returns generated from CORE.

A combination of the above mechanisms could support the SCF in sharing economic benefits from carbon sales with local communities and other relevant stakeholders. These options are explored in further detail in section 6 of the report detailing the recommended design options for the SCF.

Precedent price floor guarantees

Price floor mechanisms have been used in a variety of environmental contexts. Table 7 provides an overview of a variety of price floor mechanisms which have been successfully implemented in the UK.

Table 7: An overview of existing price floor mechanisms and learnings for the proposed PFG

Example	Description	Learnings
Feed-in-Tariff for renewable energy	A government programme introduced in 2010 designed to promote uptake and financing of renewable energy generation	The Feed-In Tariff was highly effective in supporting investment in Renewable Energy in the UK. The scheme currently supports an

Example	Description	Learnings
	<p>technologies by providing market access and price certainty for energy generated alongside subsidy payments. Guaranteed prices are set centrally at fixed tariff rates (based on technology type), providing revenue for 20 years.</p>	<p>installed capacity of 6.43 GWs of generating assets. In part thanks to the scheme, renewable energy assets are able to access finance at very low cost, akin to other established infrastructure assets.</p> <p>The price of renewables decreased rapidly and was hard to effectively predict. This meant that at times administratively set pricing was “too generous” leading to surges in demand.</p>
<p>Woodland Carbon Guarantee³⁰ (England only)</p>	<p>A £50 million government scheme designed to stimulate woodland creation in England through a guaranteed price for Woodland Carbon Units generated by 2055/56. Projects compete in reverse auctions for price floor agreements, bidding below a maximum (reserve) price determined by the Forestry Commission which runs the scheme. A proportion of each auction's budget is notionally allocated to projects which meet specific criteria and deliver additional positive outcomes. This is achieved through a two-step auction process. These projects are likely to secure a higher reserve price.</p>	<p>According to the Forestry Commission, Woodland Carbon Guarantee (WCG) auctions have helped stimulate 2,650 hectares of tree planting³¹ in England. This sets a precedent for the PFG mechanism to catalyse peatland restoration.</p> <p>Initial applications to the WCG were dominated by farmers and small land landowners, however, as market dynamics are becoming more well understood larger entities have recognised the benefits of the WCG. Given the general similarities between the WCG and the proposed PFG, this newfound understanding of the benefits of the mechanism may increase investor support for the PFG from the outset.</p> <p>Based on the outcomes of early auctions, the Forestry Commission identified that mono-crop, less biodiverse woodlands were over-represented within the pool of successful projects (compared to targets). To address this, in 2021, the WCG shifted from a single auction mechanism to a more nuanced auction structure that allowed projects with certain biodiversity characteristics to access a higher price floor. The use of</p>

Example	Description	Learnings
		eligibility and delineation criteria in this was is explored in section 7.
EnTrade's Catchment Nutrient Market ³²	EnTrade operates an online trading platform to buy and sell environmental credits, including nutrient credits. Acting as a broker, EnTrade designs and runs auctions for Wessex Water, a water utility looking to pay upstream farmers to alter their land management practices to improve water quality and in turn reduce operating costs at water treatment works. Farmers bid for the true cost of land use change, with the auction accepting the lowest bids, but pays the amount specified in the highest accepted bid to all accepted bids. This approach is known as a uniform price auction and promotes a more transparent bidding process.	<p>Through using a uniform price over a pay-as-bid mechanism, Wessex Water were able to purchase greater improvements in water quality and alter land use over a greater area within the same budget. The comparative benefit of each of these mechanisms is explored in detail in section 7.</p> <p>This EnTrade example was the first to demonstrate the benefits of using a uniform price for a payment for ecosystem service. Given its success, the applicability of using a uniform pricing mechanism should be explored when considering a PFG.</p>

Under each of these structures, price floors have effectively supported market development in slightly different ways. The Woodland Carbon Guarantee (WCC) and EnTrade mechanisms both demonstrate the effectiveness of reverse auctions in setting an efficient price floor. This sets a precedent for how a PFG for peatland carbon could operate. The benefits of this approach, alongside the key risks and challenges of a PFG are explored further in Section 7.

Policy context

The Scottish Government has taken a proactive approach to climate action and natural capital restoration. This leadership has resulted in the formulation of a multitude of new policies, consultations and other commitments across a broad range of sectors to support their aims.

The SCF and PFG must be designed with these in mind. Through ensuring these policies inform the design and structure of the SCF and PFG, these mechanisms can support the delivery of the Scottish Government's aims. Existing and forthcoming policies therefore played a critical role in the formulation of our recommendations for the SCF and PFG. Those of particular focus are explored in more detail in Table 8.

Table 8: The implications of existing Scottish Government policy on the proposed SCF and PFG

Policy	Date published	Implications on proposed SCF and PFG
Climate Change Plan Update ³³	2020	<p>Twin commitments of achieving net-zero by 2045 and reducing biodiversity loss by 2030 – accelerating peatland restoration beyond existing target of 25,000ha/year through effectively leveraging private finance will support these commitments.</p> <p>The Climate Change Update Plan includes a commitment to increase the woodland carbon market by 50% by 2050. As such, it could be possible to broaden the mandate of the SCF to fund a certain number of woodland carbon projects.</p> <p>The Policy includes a commitment to increase peatland restoration contractor/delivery jobs. The SCF could also provide finance to support the upskilling of people to become contractors, whether that is direct funding or through benefit sharing mechanisms.</p>
National Strategy for Economic Transition (NSET) ³⁴	2022	<p>A key action of NSET is to “<i>Establish a values-led, high-integrity market for responsible private investment in natural capital...</i>” by 2032. It is therefore important for Scottish Government to be able to use the proposed SCF and PFG to enact financial governance over the peatland carbon market.</p> <p>NSET has a strong focus on ensuring a Just Transition and that local communities are empowered and benefit from investment in natural capital. In order to ensure alignment, the SCF and PFG should be structured to include benefit sharing mechanisms so that monetary and non-monetary benefits are shared with local communities</p>
Land Reform Bill consultation paper ³⁵	2022	<p>Proposals for Scottish Government’s forthcoming Land Reform Bill look to address some of the barriers to peatland restoration which cannot be addressed through financing mechanisms alone, from regulating the transfer of large-scale landholdings to pushing large landowners to support nature restoration efforts.</p>
Scotland’s Biodiversity Strategy consultation ³⁶	2022	<p>The Scottish Government’s forthcoming Biodiversity Strategy aims to drive the transformation in the way Scotland’s natural resources are managed to support biodiversity. A key focus of the consultation is on ensuring that public investment leverages and works</p>

Policy	Date published	Implications on proposed SCF and PFG
		alongside increasing levels of responsible private investment in a values-led high integrity natural capital market as well as ensuring Just Transition principles are embedded in all investment in nature recovery. The SCF and PFG could therefore play a key role in realising this strategy.

To support the delivery of the NSET’s natural capital markets commitments, Scottish Government published a set of Interim Principles for Responsible Investment in Natural Capital in 2022. The six Interim Principles set out the Government’s ambitions and expectations for a values-led, high-integrity market for responsible private investment in natural capital across Scotland. The Interim Principles lay a strong foundation for the implementation of a SCF and PFG, and provide a useful guide as to how these mechanisms should be designed and structured. An overview of how each of the six Interim Principles have guided the design of these mechanisms is provided in Annex C.

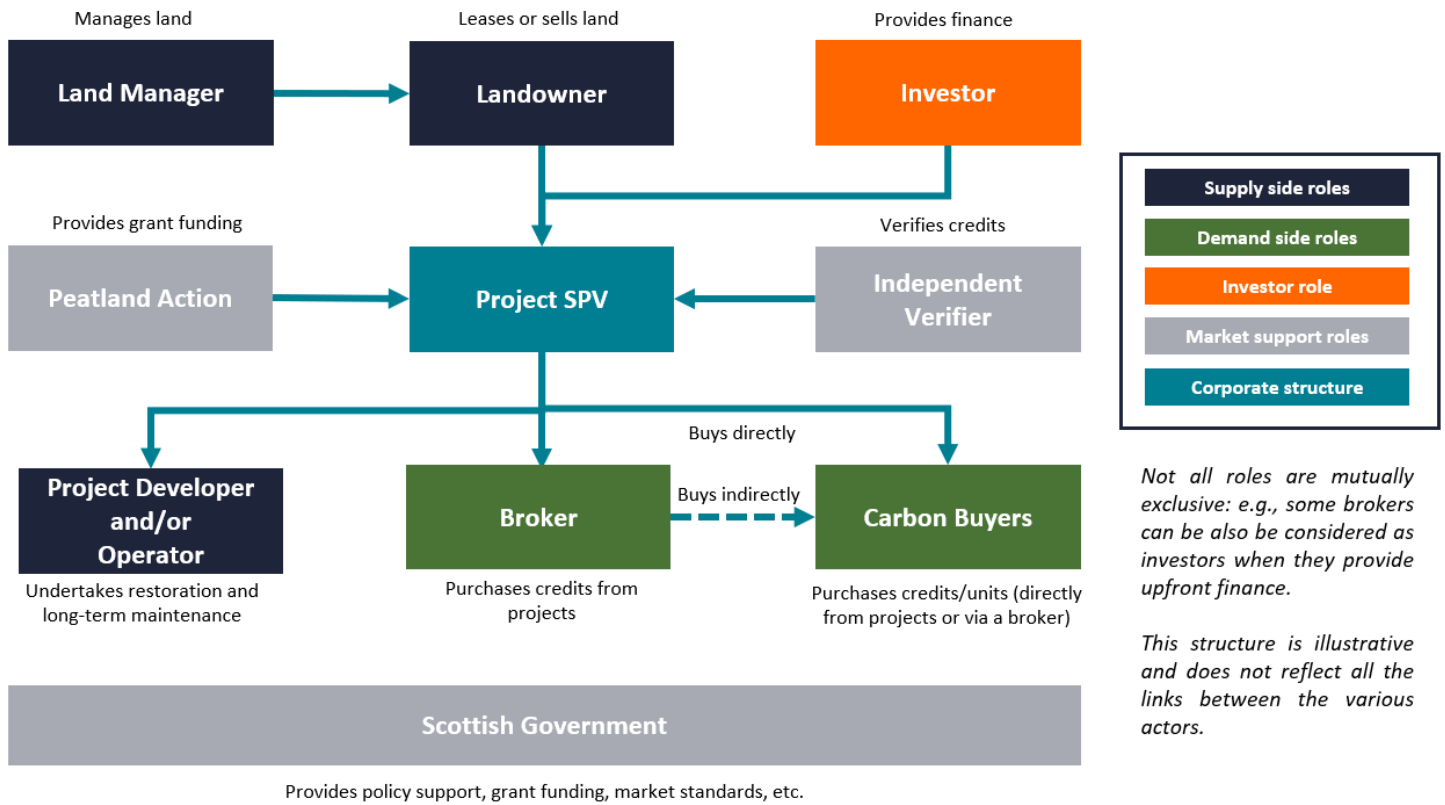
Section 5: Stakeholder engagement findings

The stakeholder engagement process was designed to gather the views of a representative sample of organisations involved in, or impacted by, nascent natural capital markets in Scotland, with a particular focus on peatland and on carbon markets. The process aimed to determine if support from any of the key stakeholder groups is currently lacking and identify the reasons behind any reluctance to engage in peatland restoration.

Stakeholder interviews focused on identifying the key barriers and enablers to peatland restoration, as well as testing interest in the SCF and PFG mechanisms and potential design features. The interviews also aimed to understand the key factors influencing stakeholders’ decision to undertake or take part in peatland restoration.

Figure 4 below summarises the main stakeholder groups involved in the peatland carbon market and their roles.

Figure 4: Selected roles in the peatland carbon market



The various stakeholders involved in peatland restoration were classified into 3 main categories:

Supply side: includes landowners, land managers and project developers/ operators. These actors are directly involved in the delivery of peatland restoration, and include both privately-owned and community-owned estates.

Investors: refers to market actors providing finance to peatland restoration projects, typically to achieve a financial return. This category focuses on large institutional fund

managers that are managing money often on behalf of large institutional clients, such as pension funds, insurance and corporations, or retail investors such as private individuals.

Demand side: refers to the buyers of credits, mostly corporate entities and brokers/intermediaries.

Additionally, a few stakeholders providing **market infrastructure** support, such as the Scottish Nature Finance Pioneers and the Peatland ACTION scheme, were also contacted.

Figure 5: Classification of stakeholders interviewed



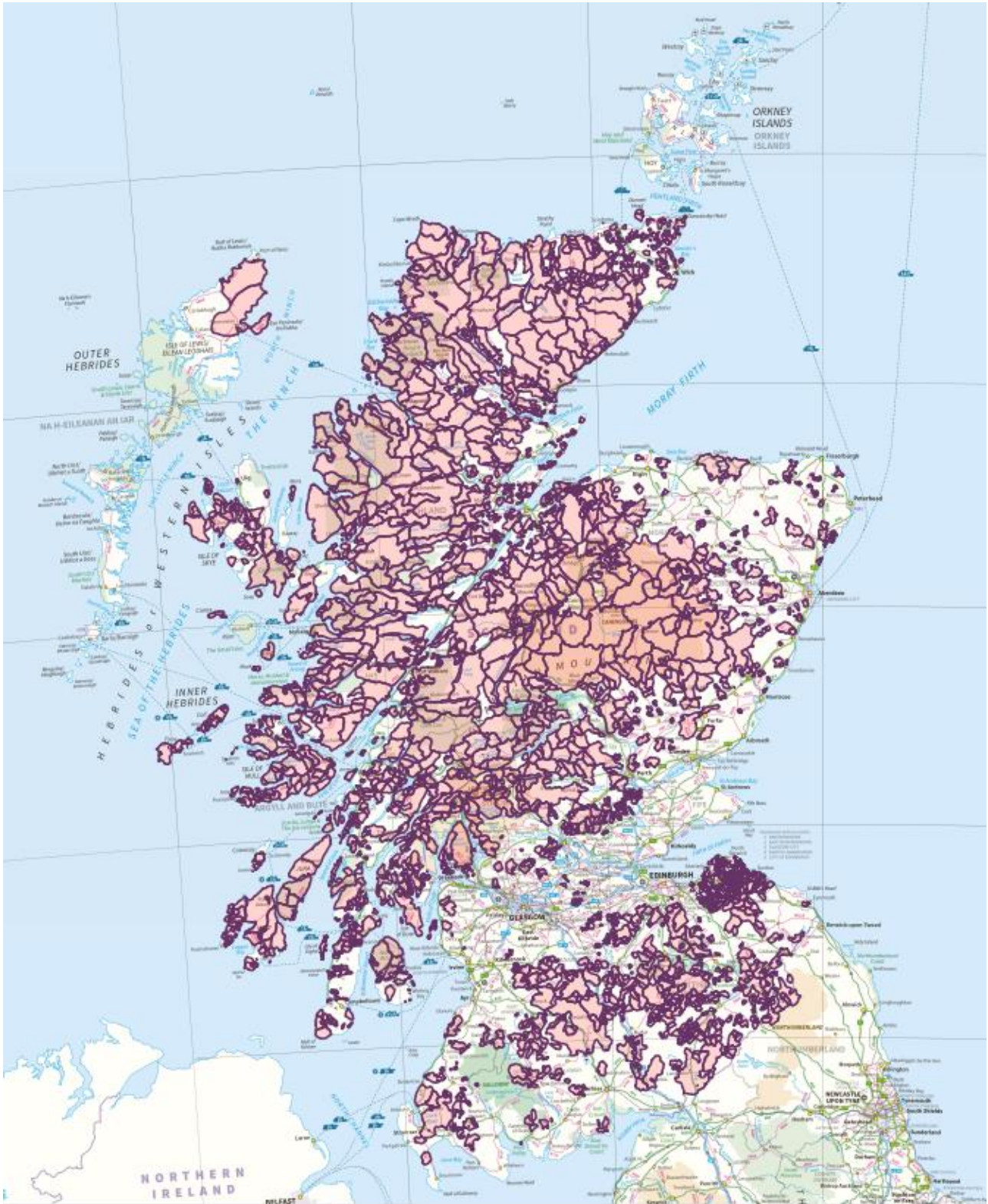
^[1] The 9 estates we engaged were: Invercauld, Atholl, Glenfalloch, Rottal, Dalhousie, Balmoral, Wemyss & March, Roxburghe and Rosebury

Engagement with supply side: findings

Landowners

Scotland has one of the most concentrated land ownership patterns in Europe. As such, the ability to scale peatland restoration hinges on the decisions made by a relatively small number of large landowners.

Figure 6: "Who owns Scotland" map of major Scottish landowners



Finance Earth engaged with both private and community-owned estates. All estates consulted had some involvement in peatland restoration. However, the areas restored were often small. To-date, estates have mostly experimented with pilot projects to understand key success factors and test approaches to the physical work involved in peatland restoration projects. Estates' restoration activities have been financed mostly through Peatland ACTION grant funding and, in some cases, the upfront sale of PIUs.

Altitude, deer grazing and movement, effects of climate change, public access rights, the short annual window in which to carry out restoration work, the short supply of quality contractors, and difficulties in accessing peatland sites were all mentioned as factors significantly affecting restoration success. These many factors create a significant level of uncertainty and risk for peatland restoration projects, a problem that is compounded by the limited track record of existing peatland restoration projects (few projects are older than 10 years in the U.K.). As a result, several stakeholders suggested that insurance mechanisms might help to mitigate some of the risks affecting the success of projects.

Several estates also communicated a desire to preserve their autonomy and independence, and to manage their land according to their own priorities. Although most estates are comfortable with long term planning, the use of Peatland ACTION funding, private finance, and the PC all come with a set of restrictive conditions which have the potential to create material long-term liabilities. For instance, the minimum length for a peatland restoration project registered under the PC is 30 years (but in practise minimum length is rarely under 50 years) and several estates highlighted concerns over the long-term maintenance requirements and associated financial liabilities, noting that there are few peatland restoration projects older than 10 years in the UK, making it difficult to assess their long-term performance.

More broadly, the potential imbalance of power between large investors and landowners, which could result in the unequitable split of benefits, was perceived as a key risk. For instance, the upfront sale of carbon to a large investor or project developer presents the risks of insufficiently provisioning for long-term maintenance costs, capping the upside for landowners and concentrating proceeds in the hands of the current generation at the expense of future generations that will have to maintain the project without receiving carbon revenues. Additionally, some landowners were concerned about selling carbon that could be needed in the future to meet their own carbon insetting requirements.

In short, landowners appear to be one of the main stakeholder categories that remains to be convinced to scale up restoration beyond small pilot projects. They will require a compelling value proposition that preserves some of their independence, and provides mechanisms to share long-term delivery risks and rewards for land use changes.

Case study: Rottal Estate

Located in the south-east corner of the Cairngorms National Park sits the ~3,200 ha Rottal Estate. Over the last 15 years, the estate has undergone a transition from a focus on traditional upland activities, such as grouse shooting and deer stalking, to a more holistic approach to estate management. Habitat restoration at a landscape scale, including the planting of over 250,000 native trees, the restoration and re-naturalisation of rivers and burns and the creation of wetlands, has resulted in significant improvements in water quality and reduced flood risk in regions downstream of the estate, and delivered improvements in the population numbers of peregrines and Atlantic salmon.

In 2020, using funding from Peatland ACTION, the Rottal Estate took 27 ha of upland peatland out of agricultural and sporting use for restoration and carbon purposes, blocking historical agricultural drains and revegetating areas of bare peat. With support from Caledonian Climate Partners, the restoration project was certified and validated under the Peatland Code, issuing 5,493 PIUs to the project for the emissions reductions that the restoration is expected to achieve over the 100-year duration of the project¹. Rather than claiming a lump sum at the start of the project through selling all these PIUs upfront, Rottal Estate have chosen to hold onto PIUs until they vest into PCUs over time. Through this approach, the estate is able to benefit from any future increases in carbon prices, whilst also generating a sustainable revenue stream to support the long-term maintenance obligations of the project.

Given the success of this 27ha pilot, the Rottal Estate are now looking to scale peatland restoration efforts over 300 ha, delivering carbon and wider ecosystem services benefits.

Land managers and advisors

Land managers (providing estate management services to private landowners) were also able to provide additional insights about a more diverse set of landowners.

Some indicated that landowners are reluctant to undertake peatland restoration because it is perceived as an activity directly conflicting with their other economic activities, such as deer and game hunting.

Additionally, several estates are managed for leisure purposes and securing additional financing, whether through carbon markets or other sources, is not necessarily a motivating factor. For these estates, the point was made that a “stick”, such as peatland emission pricing / taxation, might be more effective than a “carrot”, such as the ability to generate income through the sale of carbon credits.

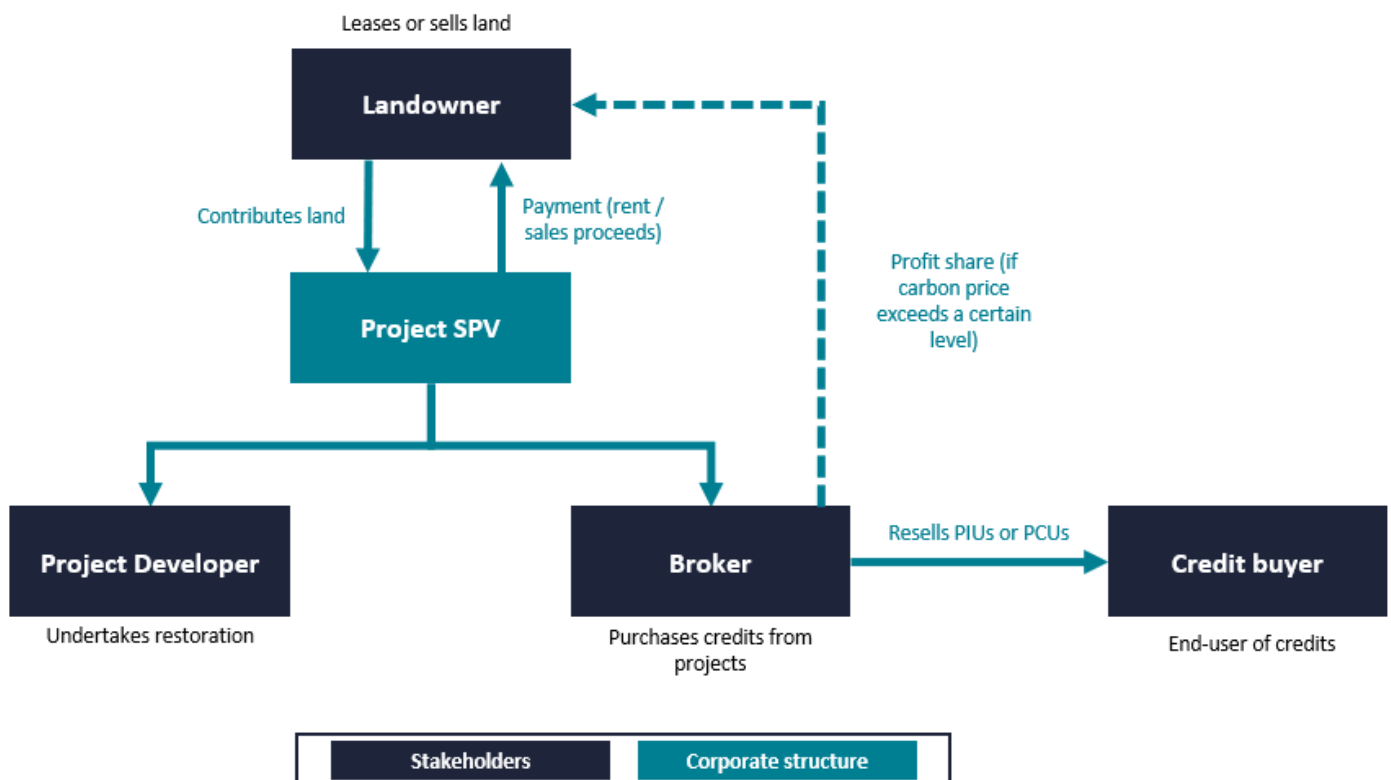
At the same time, land managers also pointed out that a significant portion of their clients are indeed curious about – and considering – natural capital markets (carbon markets in particular) as a potential new revenue stream to add to their existing economic activities. It is notable that, in many cases, land managers increasingly have dedicated employees specialised in natural capital and carbon markets, evidencing the heightened interest in these emerging opportunities.

Project developers

Project developers often assume several roles in the peatland restoration market. In addition to developing projects, they can also act as carbon brokers and finance providers to landowners looking to restore their peatlands – often in exchange for the sale of PIUs.

Figure 7 shows a simplified financing structure for a project selling PIUs upfront to finance restoration and maintenance costs. Some projects are structured using a profit sharing model that enables landowners to benefit if carbon prices pass a pre-determined threshold.

Figure 7: Financing structure with upfront sale of PIUs to a broker



Several project developers are of the opinion that the current structure of the peatland restoration market is not yet favourable to private investment and limits the growth of the market. This is due to a range of factors, such as low carbon prices affecting the economic viability of projects, Peatland ACTION funding for capital costs crowding out private investors, uncertainty regarding future changes in government policies, verification methodologies and carbon prices, and the perceived complexity of the PC.

To be noted, although the PC was perceived as complex, Verra’s “VM0036 Methodology for Rewetting Drained Temperate Peatlands” and Gold Standard’s “Soil Organic Carbon Framework Methodology” are more complex and costly, and less well suited to small scale peatland projects, which represent the majority of the restoration opportunities in Scotland. Innovations being introduced by Wilder Carbon are likely to appeal to some segments of the carbon offsetting and insetting market, but the longer project durations are unlikely to appeal to most private landowners.³⁷

In conclusion, project developers were not identified as a major barrier to scaling up the peatland restoration market. They broadly perceived the SCF and PFG as useful in shaping the market and unlocking some of the key barriers associated with peatland restoration. However the lack of contractors on which projects developers rely to perform the physical restoration works was seen as a significant barrier.

Community groups

Farmers and crofters are key community stakeholders whose geographical distribution overlaps significantly with Scotland's peatlands. Most land in Scotland is either under crofting or farming management agreements which involve activities such as sheep grazing on common land, crop planting on arable land, forestry and sometimes peat cutting (for fuel and growing media).

In their majority, bodies representing farmers and crofters have adopted a cautious approach to carbon markets. For instance, the National Farmers Union of Scotland (NFUS) recommends that its members do not engage in the sale of carbon credits until the integrity of the market improves. One of the main concerns is related to the impact of carbon markets on land use change, as crystallised in this quote: *"NFUS is concerned that unregulated trading [of carbon] could lead to a reduction of land which would be best used to produce sustainable food."*³⁸ In recent years, farmers have experienced significant increases in land prices, in part due to tree planting programmes fuelled by organisations aiming to offset their GHG emissions and are concerned that peatland restoration could further exacerbate the trend of shifting land from agricultural use to other uses.

One key question for tenant farmers and crofters relates to carbon ownership rights and how rewards are split between tenants, landowners and investors. In particular, tenant farmers are concerned that most of the rewards from the sale of carbon benefits generated by their interventions would accrue to landowners and investors, and thus have little incentive to participate. As such, a peatland restoration model which provides tenant farmers and crofters with a financial reward for their participation could help to incentivise their involvement in the market. Crucially, involving farmers could also help to alleviate capacity constraints around the supply of qualified contractors that is currently hampering the scaling of peatland restoration projects. However, this solution would also require further training and investment – which could be provided by Peatland ACTION and/or could be incorporated into new market mechanisms, such as the SCF.

The importance of education and awareness raising efforts to explain the benefits of carbon markets (and peatland restoration) was mentioned as a key factor in obtaining buy-in from the agricultural sector. This requires working with farmers to look beyond food towards a broader set of ecosystem services as a source of revenue.

This shift is already being encouraged in England through the proposed Environmental Land Management scheme (ELM) under development by Defra. Under the largest ELM programme, the Sustainable Farming Incentive (SFI), farmers are remunerated for taking specific steps to generate positive outcomes for nature.³⁹ In Scotland, the Agricultural Bill consultation recognises the important role that both public and private investment in Scotland's natural capital can play in delivering net-zero targets, alongside wider environmental and social benefits.⁴⁰ Ahead of the forthcoming Agricultural Bill, the Scottish Government is rolling out the National Test Programme⁴¹ (NTP) over the next three years. The NTP gives farmers, crofters and land managers access to new guidance on financial support for activity that will improve awareness of their climate performance, for example information on how to make a claim toward the cost of carbon audits. Creating

the right incentives framework and land use framework for the farming and crofting sector, as well as ensuring that tax and inheritance rules do not penalise farmers undertaking nature restorationⁱ will be key to creating the right incentives to unlock nature restoration that benefits communities.

In summary, farming and crofting communities remain to be convinced that peatland restoration could provide long-term benefits to support livelihoods. For farmers, creating the right agricultural payment incentives, access to finance and an equitable split of carbon revenues might suffice. However, for crofters that consider their activities as a way of life, measures beyond economic incentives may be required, including greater awareness regarding what it means to be a good custodian of the land.

Engagement with investors: findings

Investors are becoming more aware of the importance of nature, and are increasingly seeking new greener and more sustainable investment opportunities. However, given that natural capital markets remain relatively nascent, investors remain cautious of the risks and cite several barriers hampering their participation.

Investors perceive the lack of investable pipeline as the main barrier to investing in peatland restoration. This barrier is related to a range of factors, including data gaps in the mapping of peatland condition, limited contractor and surveyor capacity, small project size and fragmentation of peatland habitats eligible for the PC. In addition, Peatland ACTION capital grant funding was seen to crowd out private capital.

Some of these barriers are being addressed. For instance, the Scottish Government is filling data gaps by developing a more accurate mapping of Scotland's peatland conditions and depths. These maps will be available to investors and landowners and should better enable the identification of suitable pipeline. Additionally, the PC v2.0 will be published in late 2022 and allow more peatland types to be eligible for restoration (e.g., lowland fens and agricultural peatland), and additional types of intervention (including raising arable peat water tables and paludiculture) which should contribute to increasing the overall area of eligible peatland.

Investors are also often interested in the additional non-monetary benefits that are associated with nature restoration projects (e.g., local job creation, access to nature). However, they often do not endorse direct transfers of monetary benefits (e.g., through profit sharing mechanisms). The sharing of monetary benefits with communities is viewed by some as an additional burden on a nascent sector within which the economic viability of projects remains uncertain compared to more established sectors. Despite these reservations, investors broadly acknowledged that financial support provided by the Scottish Government to peatland restoration (through Peatland ACTION or potentially another future mechanism) meant that community profit sharing mechanisms should be considered.

Investors consulted viewed a potential financial contribution of the Scottish Government to the SCF and creation of a PFG mechanism very positively, and as a very important stamp of approval and display of their long-term commitment to the peatland carbon market. This is particularly important for investors such as pension funds and insurance providers

ⁱ Converting agricultural land to non-productive land for nature restoration could have implications on taxes and inheritances for farmers.

looking to make long-term investment decisions but are currently cautious due to the nascent nature of natural capital markets and their fiduciary duties to members

In conclusion, there is significant investor interest in peatland restoration, but there is a lack of market-ready opportunities. The limited data availability, uncertainty regarding future carbon prices, small size of the projects and generous upfront capital grant funding all currently limit the flow of private capital into peatland restoration. The SCF and PFG were perceived as an attractive combination to enable investors to gain exposure to peatland restoration while mitigating the long-term risks associated with engaging in the nascent peatland carbon market.

Engagement with demand side: findings

Engagement on the demand side was focused on brokers and end-buyers of credits, typically corporate entities and financial institutions. The engagement process uncovered evidence of demand from a wide range of corporate entities – from local Scottish Small and Medium Enterprises (SMEs) to large FTSE 100 and international companies. Two main demand drivers are currently driving purchasing decisions:

- Corporate Social Responsibility (CSR) needs whereby the buyer will use the credits to advertise their sustainability credentials; and / or
- Offsetting needs whereby the buyer will use the credits to achieve its net zero commitments or another corporate social or environmental target.

To be noted, these two drivers are not mutually exclusive and buyers might be purchasing credits to fulfil both needs. It is also notable that many buyers interviewed also value the local co-benefits associated with Scottish peatland carbon. This is illustrated by the following quote from one of the buyers interviewed: “*We want to see biodiversity and community benefits in the carbon credits that we are buying*”. There is evidence of some buyers’ willingness to pay a premium for Scottish peatland carbon and co-benefits – though it is unclear how much.

Despite positive demand signals, it was difficult to assess the robustness of demand over a multi-decade time horizon which matches the lifecycle of peatland restoration projects. Currently, most end-buyers of credits are focusing on securing PCUs or PIUs that will be vest into PCUs in the near term. This means there is a significant shortfall in supply of verified carbon in the carbon markets (both peatland and woodland) compared to demand. Although some large buyers of credits are starting to consider purchasing agreements allowing them to secure a supply of carbon over longer time periods, most of the demand for carbon remains concentrated in the near term.

Over longer time horizons, there remains a lingering preference of buyers for emission *removal* credits (such as woodland carbon credits) over emission *reduction* credits (such as peatland carbon credits), particularly after the 2050 timeframe. This is in part due to the Science-Based Target guidance for Beyond Value Chain Mitigation which recommends the use of removal credits to offset residual emissions after 2050.⁴² This translates into limited demand for PIUs from peatland projects post-2050.

Anecdotally, Scottish peatland carbon credits appear to trade at a premium to international peatland credits (verified using methodologies from Verra or Wetlands International). However, buyers also tend to perceive less reputational risk in the purchase of Scottish peatland carbon due to the high standards of the IUCN PC and the robust jurisdictional framework in Scotland.

Overall, there is good evidence of near-term demand for large volumes of nature-based carbon credits with strong co-benefits, and for verified units. As a result, the stakeholder engagement process did not identify the lack of demand for peatland carbon as a major barrier to overcome in order to scale the market. However, it remains challenging to quantify precisely the demand for Scottish peatland credits, over the longer time horizon under which peatland projects generate carbon reduction benefits.

Summary of main barriers

The main barriers encountered during the stakeholder engagement are enumerated in Table 9 below. While some of the financial barriers and non-financial barriers can be addressed by the SCF and PFG, others would require further governmental action. The detailed mapping of proposed solutions against these barriers is developed in Table 18 in the conclusion.

Table 9: Key barriers to peatland restoration

Category	Description	Importance*	Supply	Investors	Demand
Financial barriers	Low carbon prices affecting current financial attractiveness	Medium	X	X	
	Uncertain future demand for carbon credits, particularly reduction credits	High	X	X	X
	Increasing land prices and associated social consequences	Medium	X		
	Existing funding mechanisms crowding out private money	Medium		X	
	Small project size raising origination and transaction costs	Medium		X	
	Taxes, inheritance laws, Common Agricultural Policy (CAP) payments incentivise agriculture and/ or commercial forestry over nature restoration	Medium	X		
	Money is not everything for some	Low	X		

Category	Description	Importance*	Supply	Investors	Demand
	landowners, tenants and communities (e.g. crofters = lifestyle, estates = private interests)				
Non-financial barriers	Delivery risk and long-term maintenance obligations	High	X		
	Technical and ecological difficulties to restore peatland	Low	X		
	Data gaps on peatland mapping and lack of transparency of delivery costs	Medium		X	
	Capacity constraints across the supply chain	High	X	X	
	Lack of education on the wider benefits of peatland restoration	Medium	X		X
	Concerns over land use changes and impacts on local livelihoods	Medium	X		
	Perceived early mover disadvantage incentivises many landowners and tenants to wait until the peatland carbon market has matured.	High	X		

* Importance was estimated based on how often the barrier was mentioned during the stakeholder engagement.

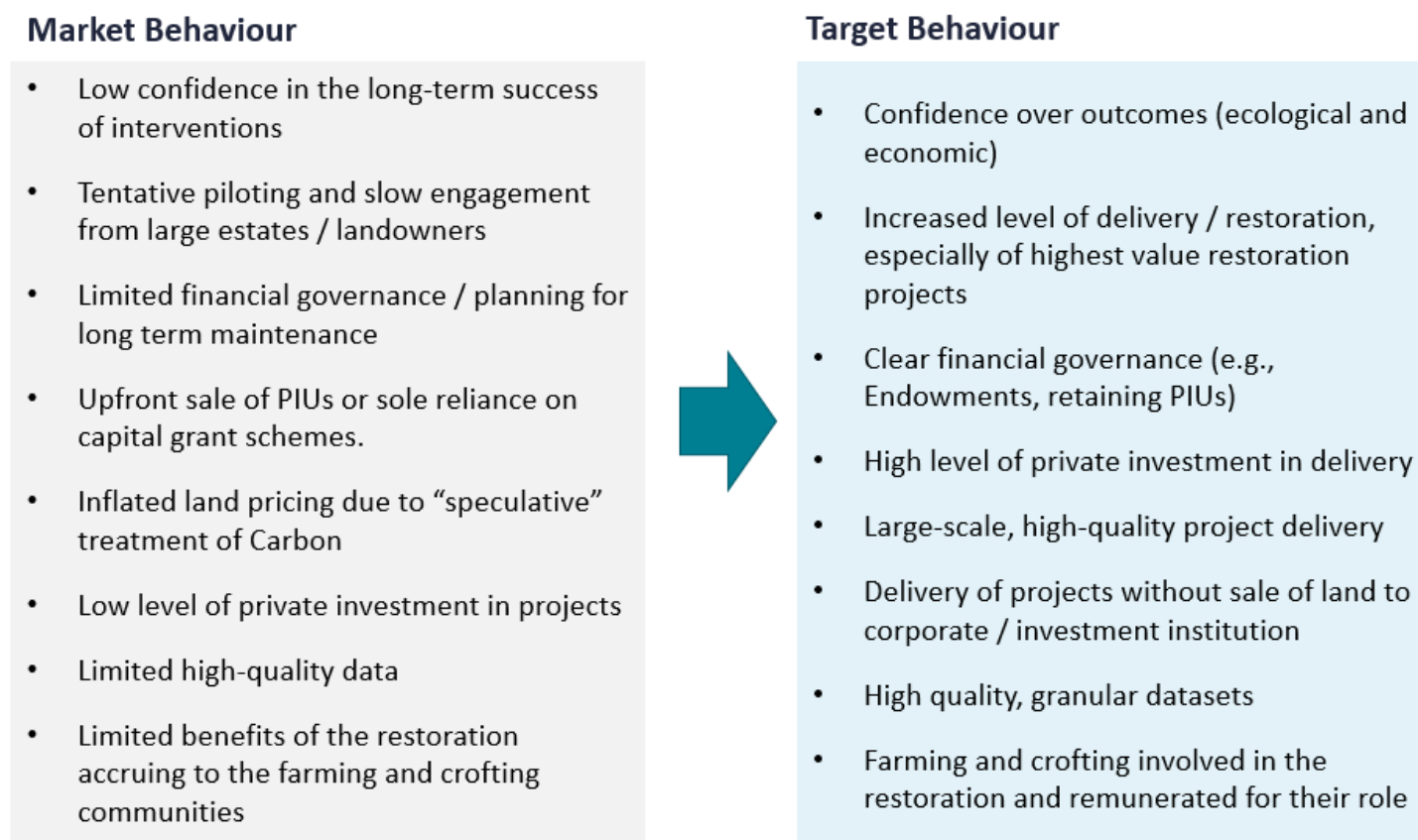
Key takeaways

- There are significant barriers to achieving peatland restoration at scale. In particular, some stakeholder groups are reluctant to participate as a result of real or perceived barriers.
- Landowners remain to be convinced to scale up restoration beyond small pilot projects. They are mostly concerned about retaining optionality over the use of their lands, receiving fair remuneration for the carbon benefits generated, and limiting their exposure to the long-term liabilities associated with peatland restoration.
- Landowners perceived the SCF and PFG as useful to enable their participation in the peatland carbon market. However, they were cautious of the conditions associated with receiving financing from the SCF.
- Some estate owners are less responsive to financial incentives, especially where estates are managed for recreational activities (primarily deer hunting).
- Farmers and crofters have significant activities overlapping with areas eligible for peatland restoration. Obtaining buy-in from these communities is essential, however they currently remain to be convinced of the economic benefits of peatland restoration and are cautious of selling carbon that they might need to offset the emissions from their own activities.
- For investors, the lack of investment-ready pipeline is a major issue, which can be linked to limited peatland condition mapping data availability, the small size and fragmentation of the peatland eligible under the PC and the generous upfront capital grant funding available.
- Investors perceived the combination of the SCF with a first-loss contribution from the government and PFG as highly-attractive, and as a strong sign of commitment of the Scottish Government in the peatland carbon market.
- Although demand for peatland carbon credits remains difficult to assess, particularly over the long time horizons of the restoration projects, there is evidence of a robust near-term demand for Scottish peatland carbon and its co-benefits.
- The lack of clarity on current and future demand as well as price opacity in the carbon market limit the confidence of landowners and investors to participate in peatland restoration.
- Some of the barriers identified in the stakeholder engagement can be overcome by the SCF and PFG, but others will require different policy responses.

Section 6: Evaluation and design of financing mechanisms

The domestic peatland carbon market in Scotland and more widely in the UK is developing but, as shown through the stakeholder consultation process, there are multiple financial and non-financial barriers to achieving the Scottish Government's peatland restoration objectives. A key constraint identified through this process is a lack of appropriate mechanisms to support the maintenance of restored habitats over the long-term, undermining the credibility of this nascent market. Financial mechanisms have a key role in incentivising good financial governance, such as planning for long-term maintenance costs, as well as other target behaviours (see Figure 8).

Figure 8: Current and targeted market behaviour



Our recommendations over the following sections focus on how two key pieces of proposed market infrastructure, the SCF and the PFG can be designed to support a shift towards target market behaviour, working in tandem to both de-risk and crowd in investors but also to support and incentivise other project stakeholders. In addition, we look at how these mechanisms could work alongside traditional grant funding, which should, in turn, be restructured to build a coherent funding and financing ecosystem for peatland carbon projects.

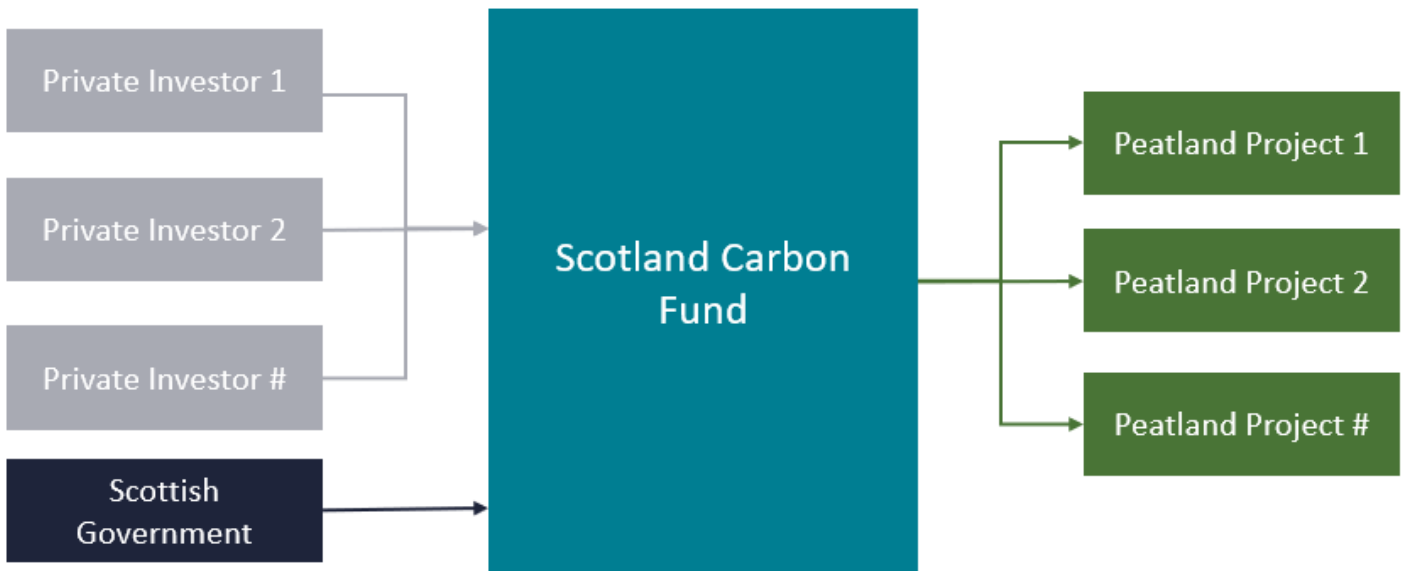
Section 7: Scotland Carbon Fund

Overview of the mechanism

The purpose of this section is to review the key design features highlighted in section 2 of this report. It will highlight the options most likely to incentivise participation from the various stakeholder categories, and create a high-integrity market to enable Scottish peatland restoration at scale.

The purpose of the Scotland Carbon Fund (SCF) would be to act as an investment vehicle to enable private capital to invest in high-quality peatland restoration projects in exchange for financial returns generated from the sale of carbon credits, as illustrated in Figure 9 below. The SCF aims to enable the scaling of peatland restoration in Scotland by leveraging public capital provided by the Scottish Government to crowd in private investors.

Figure 9: Illustrative fund structure



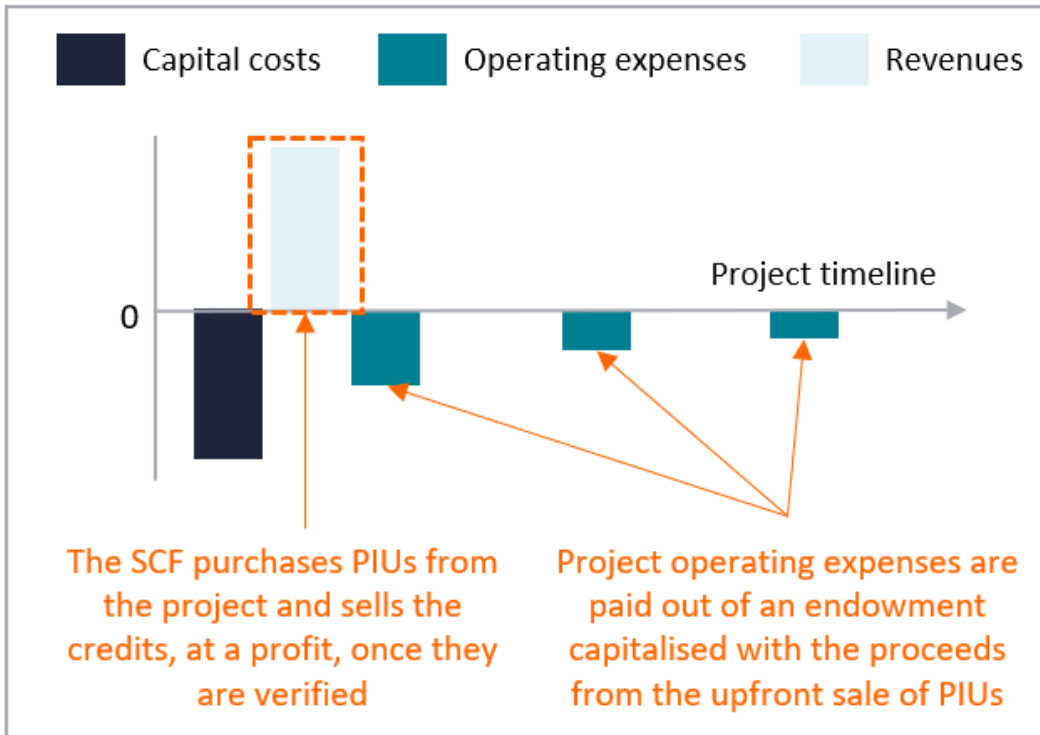
Recommended design options

Fund function

Two possible fund functions were considered: a liquidity vehicle and a project finance vehicle.

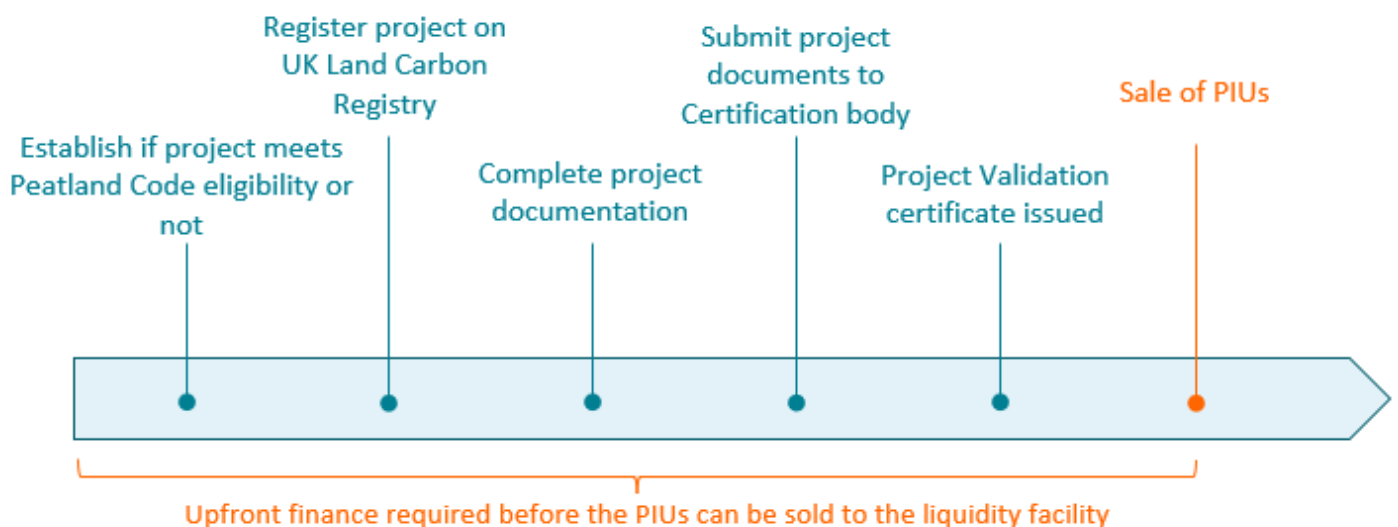
As a **market liquidity vehicle**, the SCF would act as a guaranteed offtaker of PIUs, buying these credit from projects upfront and holding onto them until they vest into PCUs. According to this model, peatland projects receive a one-off upfront payment from the sale of PIUs to the SCF (as shown in Figure 10 below). SCF investor returns are generated by the expected increase in value of the credits over time and through verification.

Figure 10: Liquidity vehicle and illustrative peatland project cash flow structure



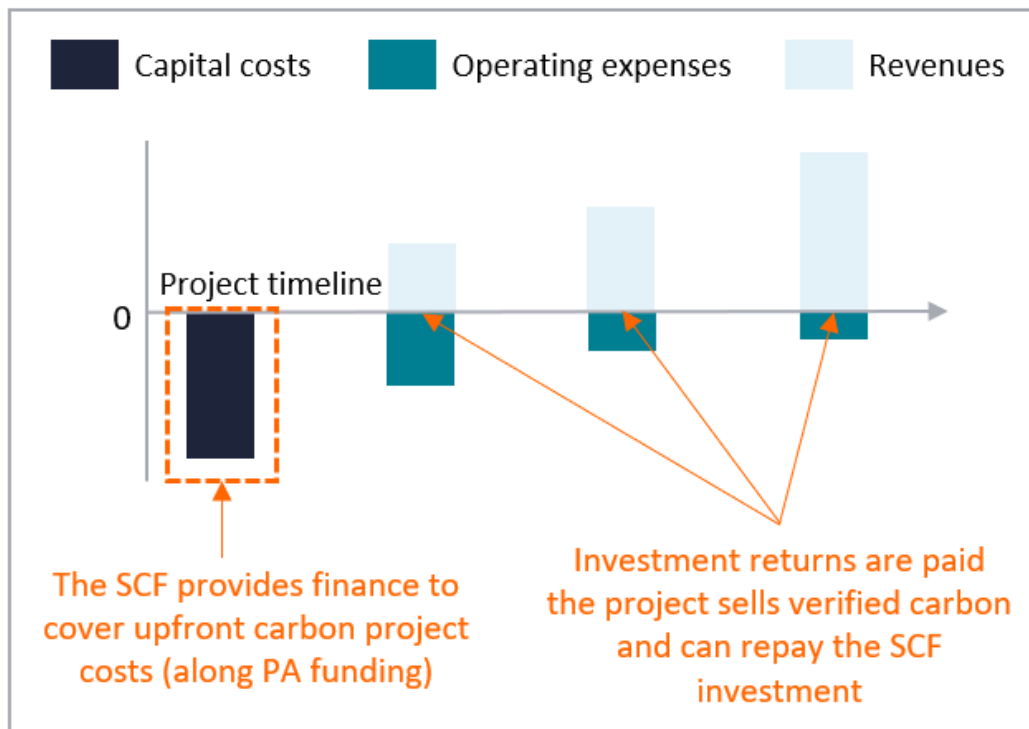
To be noted, a project selling its PIUs to the liquidity facility would still require some upfront finance to bridge the time gap between when the some of the early upfront costs are incurred, and when PIUs are sold. This is illustrated in Figure 11 below.⁴³ For projects that undertake restoration works before PC validation, Peatland ACTION funding could help to close the financing gap, however costs related to the development and validation process under the PC are not eligible and therefore would need to be covered by other forms of finance.

Figure 11: Illustrative project development timeline leading to the sale of PIUs (the process can take a maximum of 3 years)



As a **project finance vehicle**, the **SCF provides** project developers with finance to support the delivery of peatland restoration, bridging the time gap between project development and revenue generation. Investment returns are paid once PIUs vest into verified PCUs and are sold.

Figure 12: Project finance and illustrative peatland project cash flow structure



The stakeholder engagement process revealed a bias towards projects holding PIUs for future sale / use. This trend is being driven by market sentiments of rising demand and prices for verified carbon (PCUs), together with delivery risk associated with the early stages of project development.

This trend is well suited to a project finance vehicle with revenues realised over a longer time frame. In contrast, the declining interest in the immediate sale of PIUs (given widespread expectation of increasing carbon prices and concerns about selling carbon credits that might be needed to offset landowners' own emissions) undermines the attractiveness and potential role for a liquidity vehicle. A more detailed analysis of the considerations relevant in choosing a fund function is developed in Table 10 below.

Table 10: Evaluation grid for the two fund functions options

Objectives	Project finance vehicle	Liquidity vehicle
Enables high-integrity and good governance	High , the project finance vehicle would incentivise projects to keep their PIUs until they vest into PCUs. Selling PCUs creates a better temporal alignment between revenues from the sale of verified carbon and	Medium , the liquidity vehicle would purchase PIUs from projects upfront, perpetuating the current transaction structure which might lead to the underfunding of future operating expenses, and the concentration of benefits of the

Objectives	Project finance vehicle	Liquidity vehicle
	<p>project operating expenses. It also generates extra revenues for the project that would have otherwise been captured by market intermediaries buying the PIUs.</p>	<p>sale of carbon in the hands of the present generation (unless an adequate endowment or revenue sharing agreement is set to ensure the long-term financial viability of projects).</p>
<p>Attractive to private investors</p>	<p>Medium, project finance vehicles are very common and well known to institutional investors, for instance in the renewable energy and forestry sectors. However, project finance in the nascent nature-based sector involves significant risks (e.g., project failure) that might curb the enthusiasm of some investors.</p>	<p>Low, liquidity vehicles are less common in the market and institutional investors (which are able to provide the large amounts of capital necessary to scale peatland restoration) are less likely to be familiar with them. Additionally, the vehicle would need to pursue the dual objectives of providing liquidity to the market and generating a return for investors. This might create tensions, for instance a stringent eligibility criteria might limit the fund's ability to fulfil the mission of providing liquidity to the market.</p>
<p>Attractive to landowners and project developers</p>	<p>Medium, provided that the project finance vehicle offers an equitable share of the benefits from the sale of carbon to landowners and project developers.</p> <p>Additionally, the project finance vehicle can provide an all-inclusive upfront finance package allowing project development to move forward with maintenance for the early years of the project when delivery risk is the highest.</p>	<p>Low, landowners are increasingly cautious of selling their PIUs upfront and therefore might be reluctant to engage with a liquidity facility (this issue could potentially be resolved with a profit sharing mechanism). Additionally, the early project delivery risk is not shared with the liquidity facility which only purchases the PIUs once the project development phase is concluded.</p>

In conclusion, the analysis identifies the project finance vehicle as a better fit given the current needs of the market and preferences of market actors, such as private investors and landowners. A project finance vehicle could be paired with a PFG (reviewed in the next section) to help set strong governance standards for the peatland carbon market by incentivising projects to keep PIUs until they vest into PCUs.

Fund general characteristics

The **size** of the SCF would need to be determined by the availability of pipeline, the breadth of the investment mandate and restoration targets. It remains difficult however to estimate the size of the potential pipeline of peatland projects eligible to generate carbon under the PC's eligibility criteria. Positively, in late 2022 the PC is expected expand the types of peatland eligible to include lowland fens and agricultural peatlands. This may increase the availability of pipeline, although it should be noted that a significant portion of the peatland in Scotland is already in categories currently eligible under the current PC (i.e., upland blanket bog or lowland raised bog). Using NatureScot's average restoration cost estimates of £1,900 per hectare of peatland restored⁴⁴, acknowledging that fenland and agricultural peatlands are likely to incur higher restoration costs per hectare than upland peatlands, a £50 million fund could finance the restoration of c. 105,000 hectares of peatland (assuming a Peatland ACTION contribution of 75% of the capital costs) and use the PC to sell carbon in order to pay a return to investors.

Smaller funds tend to be less economical to run due to significant fixed costs (e.g., investment professionals' salaries, back and middle office infrastructure expenses, etc.) so positive economies of scale are generated as fund size increases. Based on this analysis, and assuming that the fund would target institutional investors (which tend to have multi-million minimum investment thresholds to meet in order to participate in funds), the SCF should target a size of £50 million or more.

It is worth noting, as evidenced in Table 11 below, that most funds operating in the natural capital space are larger than £50 million. There are two notable examples below that threshold in the table below: the Livelihood Carbon Fund #1 and the SLM Silva Fund (Ireland). However, both these funds led to the creation of larger funds subsequently (i.e. the Livelihood Carbon Fund #2 and #3, and the SLM Silva Europe Fund).

Table 11: Selected funds operating in the natural capital space

Fund Name	Fund Manager	Fund size
Athelia Sustainable Ocean Fund ⁴⁵	Mirova	US\$132 million (equivalent to £123 million ⁱⁱ)
Land Degradation Neutrality Fund ⁴⁶	Mirova	US\$200 million (equivalent to £186 million)
Livelihood Carbon Fund #1 ⁴⁷	Livelihoods Funds	€40 million (equivalent to £36 million ⁱⁱⁱ)
Livelihood Carbon Fund #2	Livelihoods Funds	€100 million (equivalent to £89 million)

ⁱⁱ Using the United State Dollar to Pound Sterling conversion rate of 0.93 (as of 27/09/22)

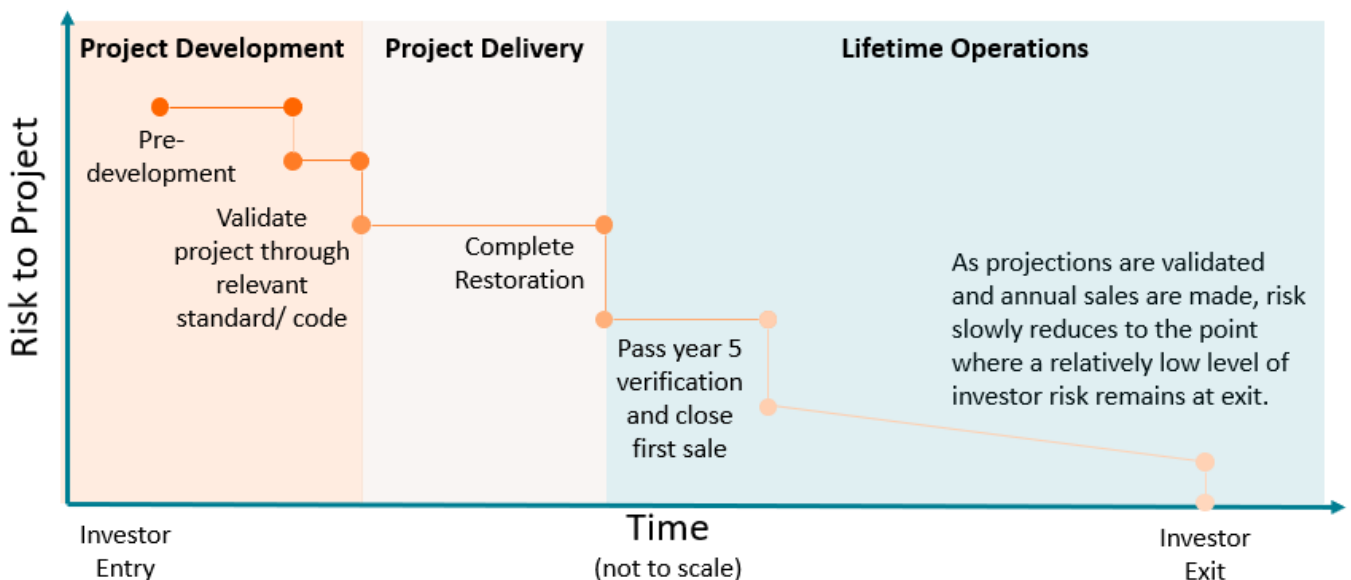
ⁱⁱⁱ Using the Euro to Pound Sterling conversion rate of 0.89 (as of 27/09/22)

Fund Name	Fund Manager	Fund size
Livelihood Carbon Fund #3	Livelihoods Funds	€150 million (equivalent to £134 million)
Foresight Sustainable Forestry Company ⁴⁸	Foresight Group	£175 million
SLM Silva Fund (Ireland) ⁴⁹	Sustainable Land Management (SLM) Partners	€30 million (equivalent to £27 million)
SLM Silva Europe Fund ⁵⁰	SLM Partners	€250 million (targeted) (equivalent to £223 million)

A project finance vehicle typically has a **lifecycle** of several years including a deployment period (which could be 3 to 5 years), during which funds are invested, and a holding period (which could be 5 to 10 years, as commonly seen for project finance and private equity vehicles, and allowing for the peatland projects to be well established), during which investments are managed and optimised / de-risked, prior to exit. As a result, the SCF could have a lifecycle of 10 to 15 years.

Figure 13 shows that project risk decline as that project matures and becomes more established. Once investments are de-risked (i.e. once the peatland ecosystem is well established, maintenance costs are declining, and some PCUs have been successfully verified/ sold), the vehicle can sell them to long-term investors seeking lower risk investments. Long-term investors for peatland projects do not yet exist but an *ad hoc*, “yieldco” could be created to hold the assets over the long term. This is a process well known to investors and commonly used for investments in infrastructure (e.g. renewable energy assets).

Figure 13: Illustrative project lifecycle and associated risk level



The stakeholder engagement process also revealed that it might be attractive for some investors to have the option to choose between receiving their returns in kind (in carbon credits) or in cash. The former would constitute an attractive proposition to investors seeking to secure in advance a reliable supply of carbon credits to fulfil their own internal GHG emissions offsetting targets.

Investment mandate

Peatlands can often be found adjacent to woodland habitats and thus there may be opportunities to combine restoration activities across both habitats to deliver integrated landscape-level restoration. The creation of new woodland and restoration of peatland can both be enabled by issuance and sale of carbon credits through high-integrity certification schemes. As such, it is worth exploring expanding the investment mandate of the SCF to woodland carbon.

The inclusion of woodland carbon in the SCF would generate benefits to investors by enabling a better diversification of the portfolio of investments, which would reduce the overall financial risk of the fund, and allow the fund to deploy capital faster, by expanding the pipeline to woodland, which is a more mature investment opportunity with potentially stronger pipeline availability.

If the investment mandate was expanded to woodland, the inclusion of a minimum target allocation to peatland projects might be required in order to limit the incentive to allocate all the resources of the fund into less risky, more mature woodland creation projects. Additionally, a detailed analysis of the woodland creation pipeline and financing requirement would need to take place as well.

The stakeholder engagement process identified that capacity constraints across the peatland restoration value chain (e.g., contractors, Peatland ACTION officers, project auditors, etc.) currently limit the ability scale peatland restoration. Therefore, the SCF should also consider the introduction of a distinct strategy which would invest in the businesses contributing to the delivery and maintenance of peatland projects. This strategy of investing in enterprises operating across the supply chain and undertaking activities supporting the development of peatland restoration (e.g., sphagnum moss growers, diggers, standards bodies, etc.) would help to ensure a coherent and integrated approach to peatland restoration. These investments would likely take the form of an equity contribution in exchange for a minority stake in those companies. This strategy departs from the project finance investment model developed earlier in this report; it would require additional resources to be implemented and potentially alter the risk/return profile of the SCF.

The investment mandate should also consider the trade-offs between freehold and leasehold investment strategies. The advantages and disadvantages of each are summarized in Table 12 below. Given the objectives of the Scottish Government to limit land price increases, the SCF should favour a leasehold strategy.

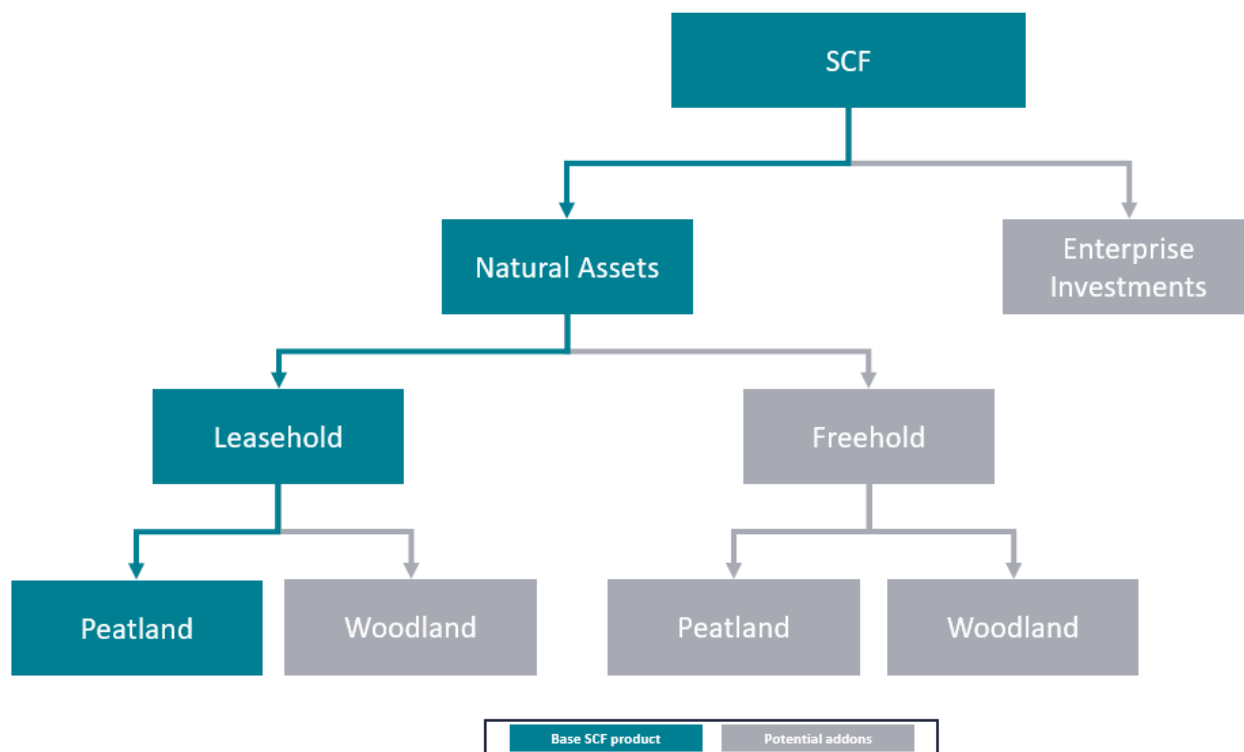
Table 12: Comparison of freehold and leasehold investment strategies

Strategy	Description	Advantages	Disadvantages
Freehold	The SCF purchases the lands on which peatland restoration projects are located.	This strategy gives more control over the project. Purchasing the land also could provide an additional source of return for investors, in the form of capital appreciation from the land owned.	This strategy may fuel further land price increases and price out local communities. Land prices have risen aggressively in response to demand for woodland planting sites in recent years. It is also capital intensive (i.e. the SCF would need to allocate resources to purchase land in addition to financing project development costs) and relies on the availability of peatland for sale. Finally, this strategy might lead to increased concentration of land ownership into the hands of a few large investors, which runs counter to the Government’s Interim Principles for Responsible Investment in Natural Capital.
Leasehold	The SCF enters a lease agreement with the owner of the land on which peatland restoration projects are located.	This strategy limits further concentration of land ownership into the hands of large investors and is less capital intensive. It also allows to tap the expertise of and work in collaboration with local landowners. If the SCF were to favour leasehold transactions, a carve out for community-led land acquisitions should be considered.	This strategy gives less control over the outcomes because it requires cooperation with the landowner(s) over long periods of time.

In conclusion, there is potential benefit in expanding the SCF’s investment mandate beyond peatland carbon projects to better support the market, and improve attractiveness to investors through diversification and faster deployment of capital. However, the inclusion of additional investment opportunity types would warrant further analysis. Figure 14 below illustrates the various investment buckets that could be created within the SCF. To be noted, “natural assets” investments would use the project finance model described

earlier, whereas “enterprise investments” would likely use a private equity model (i.e., making an equity investment into the capital of companies in exchange for a share of the returns and ownership).

Figure 14: Options within the SCF investment mandate



Government contribution

A potential financial contribution from the Scottish Government to the SCF was perceived as a crucial stamp of approval and display of commitment to the peatland carbon market by the investors consulted. There are two main options for the Scottish Government to make a contribution:

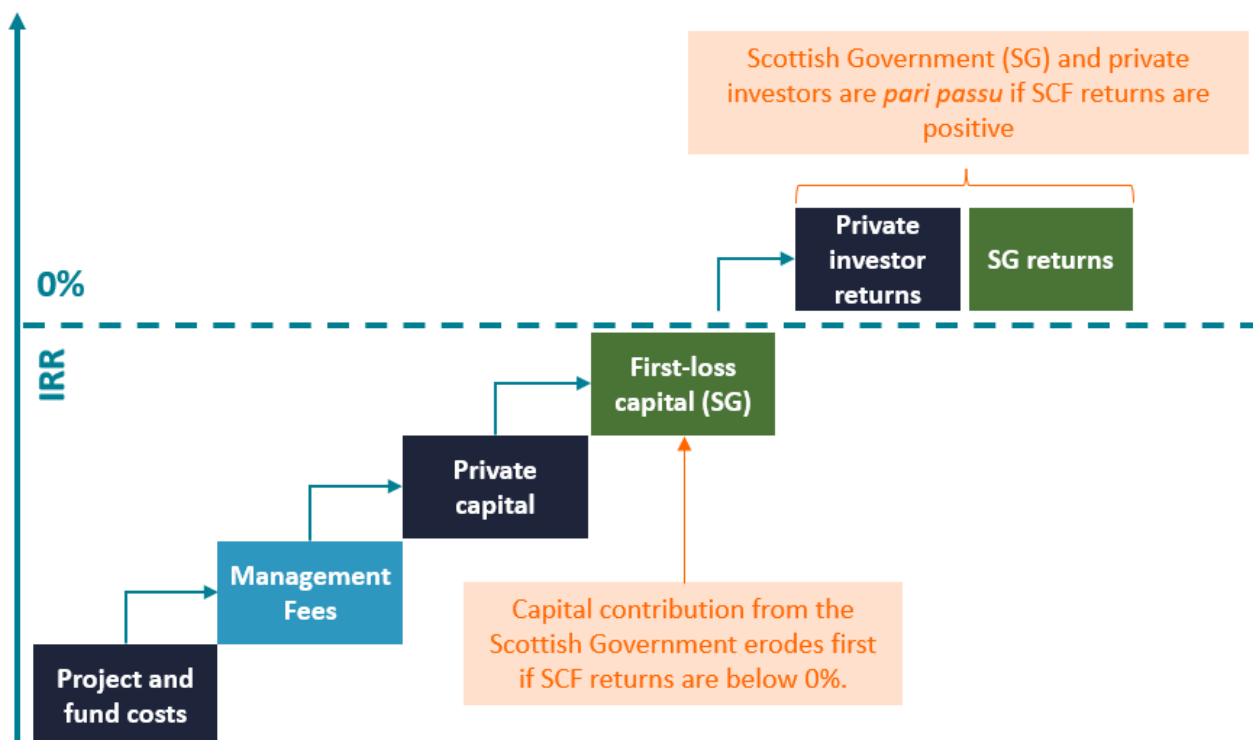
A pari passu contribution: in this scenario, the Scottish Government would be entitled to the same returns and exposed to the same capital loss risks as private investors; or

A subordinated contribution: in this scenario, the Scottish Government would take a first-loss position on the capital invested in the fund and/or on the returns generated by the fund.

A subordinated capital contribution from the Scottish Government, in the form of a first-loss guarantee or similar arrangement, was identified by investors as an attractive proposition during the stakeholder engagement process. Private investors currently perceive peatland restoration as risky, due to the range of factors outlined earlier and first-loss guarantee would reduce the risks of investing in the SCF, therefore playing a key role in crowding in private capital.

Figure 15 illustrates a scenario in which the Scottish Government has taken a first-loss position in the capital of the fund, but is *pari passu* with other investors if the fund generates positive returns.

Figure 15: Example of first-loss guarantee



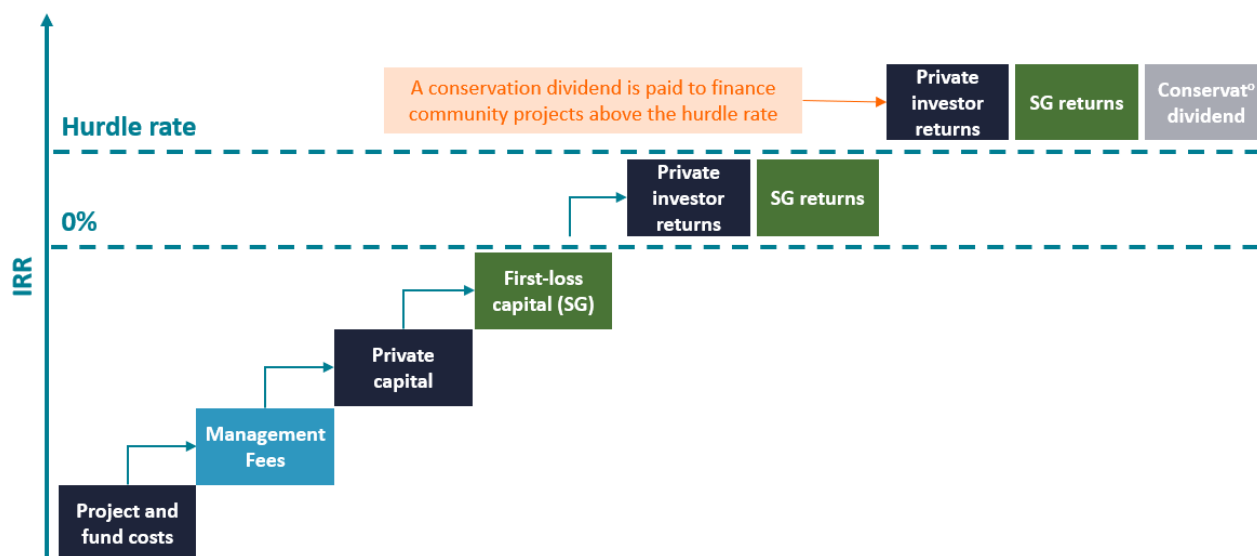
Community benefits

In order to ensure that peatland restoration contributes to the Scottish Government’s objective of a fair, just and green future for all⁵¹ through Community Wealth Building, the SCF should be structured in a way that enables communities to benefit while still representing a compelling investment opportunity for private investors.⁵² At the same time, expectations that a community benefit mechanism could leverage large amounts of money for communities must be carefully managed. Surpluses generated in the early years of the development of the peatland carbon market are likely to be limited based on the low carbon market prices compared to the significant cost of peatland restoration.

The SCF could enable the sharing of community benefits at a fund level by creating a surplus sharing mechanism (such as a conservation dividend) that activates above a pre-negotiated hurdle rate. The hurdle rate should be negotiated between the investors and communities at a level that ensures a fair and attractive level of financial returns to both stakeholder groups. Above the hurdle rate, a certain proportion (to be defined) of the returns that would normally accrue to the Scottish Government and the private investors would be paid to communities.

Figure 16 illustrates how the a surplus sharing mechanism and hurdle rate could operate in the distribution of returns waterfall.

Figure 16: Payment waterfall leading to the payment of a share of surplus returns to communities



The surpluses generated could be channelled to communities either through a Donor Advised Fund (DAF) or via donations to a pre-agreed list of charities. It is worth noting that a DAF would be more expensive to set up and operate, but would give a greater degree of control over the end-use of proceeds.

The SCF should also aim to maximise local communities’ involvement in peatland restoration projects, to create local jobs and livelihoods. In order to do so, the SCF could create and fund a training programme aimed at providing local communities with the skills required to participate in peatland restoration projects. For instance, Tilhill and Foresight Sustainability Forestry Company Plc are running the “Foresight Sustainable Forestry Skills Training Programme” to provide communities with the skills required to perform forestry jobs.⁵³ This could be replicated in the peatland restoration sector, building on capacity building work led by Peatland ACTION to date.

Endowment and risk-sharing mechanisms

An endowment mechanism may be useful to ensure that the lifetime costs of projects are adequately provisioned. The projects would contribute a certain proportion of their revenues from carbon sales to the endowment. The amount contributed by the projects should be a function of the modelled project lifetime cost, ideally secured in long-term service contracts with maintenance providers, and the portion of PIUs sold upfront (i.e., the more PIUs are sold upfront, the higher the contribution required to the endowment).

A central endowment designed to cover the project lifetime costs of all projects in the SCF portfolio would present the benefit of being more cost efficient, more resilient, and easier to invest in than separate endowments created for each project.

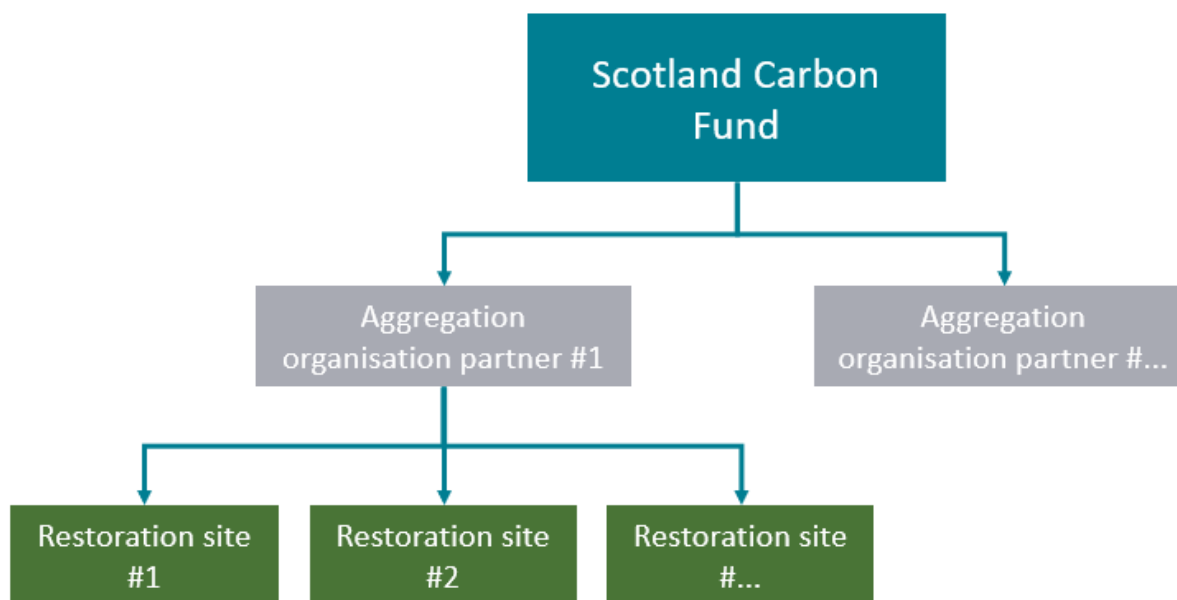
The stakeholder engagement also highlighted the need for mechanisms to mitigate project delivery risk in order to obtain the support of landowners to restore peatlands. The use of portfolio-wide insurance contracts could mitigate the risk of cost overruns due to external factors (such as extreme weather events that might become more prevalent over the long-term time horizons of peatland projects), thereby overcoming a major hurdle in obtaining

landowners' buy in. More research and engagement with insurance companies would be required to determine the appetite of insurance providers for peatland restoration projects. However woodland and forestry insurance products are already well established and widely available to landowners, setting a precedent for peatland insurance products.

Project aggregation

Stakeholder engagement revealed that the small size and fragmentation of projects significantly increased transaction and origination costs for investors. In order to minimise this issue, the creation of aggregation facilities might be needed. Aggregation facilities would enable the SCF to offer financing to several small size projects at once, thereby reducing transaction and origination costs (Figure 17). Aggregation is also likely to have a positive effect on project costs, with efficiencies of scale realisable for both capital works and maintenance activities.

Figure 17: Illustration of the use of aggregation facilities



Typically, aggregation facilities can provide a pre-defined amount of investment capital to project aggregator partners (existing or to be created) such as eNGOs (e.g., RSPB) and regional partnerships (e.g. Tweed Forum) that will source a pipeline of projects. For instance, a regional partnership such as the Tweed Forum could coordinate landowners in the Tweed catchment area to deliver landscape-scale peatland restoration, with the SCF providing a pool of money for the catchment area as a whole instead of financing each landowner separately. This approach could also feed directly into structured aggregator models such as Landscape Enterprise Networks (LENs)⁵⁴ and Regional Land Use Partnerships (RLUPs)

Key takeaways

- A project finance vehicle with a targeted recommended size of £50 million (or more depending on the inclusion of woodland in the investment mandate) would help to leverage significant private capital to scale the restoration of peatlands while promoting good market governance by enabling projects to keep the flexibility to decide when to sell their carbon.

- Some investors would like to have the option of choosing between receiving their returns in kind (in carbon credits) or in cash. The former would constitute an attractive proposition for investors seeking to secure in advance a reliable supply of carbon credits to fulfil their own internal GHG emissions offsetting targets.
- A first loss protection would likely constitute a compelling investment proposition for private investors otherwise hesitant to participate in the nascent natural capital sector.
- Expanding the mandate of the SCF to invest in woodland could achieve diversification benefits and greater fund scale (which implies a more efficient cost structure).
- The SCF should provide community benefits. It could do so by creating a surplus sharing mechanism that is activated above a hurdle rate negotiated between investors and communities.
- The creation of a central endowment structure would ensure that the lifetime maintenance costs of projects are covered and the use of further insurance mechanisms to mitigate delivery would be beneficial to attract landowners' interest.
- The use of project aggregators and aggregation facilities can reduce the origination and transaction costs associated with the financing of small projects.

Table 13 below provides a summary of the risks identified in the development of the SCF and the mitigations identified through the mechanism design and action research processes.

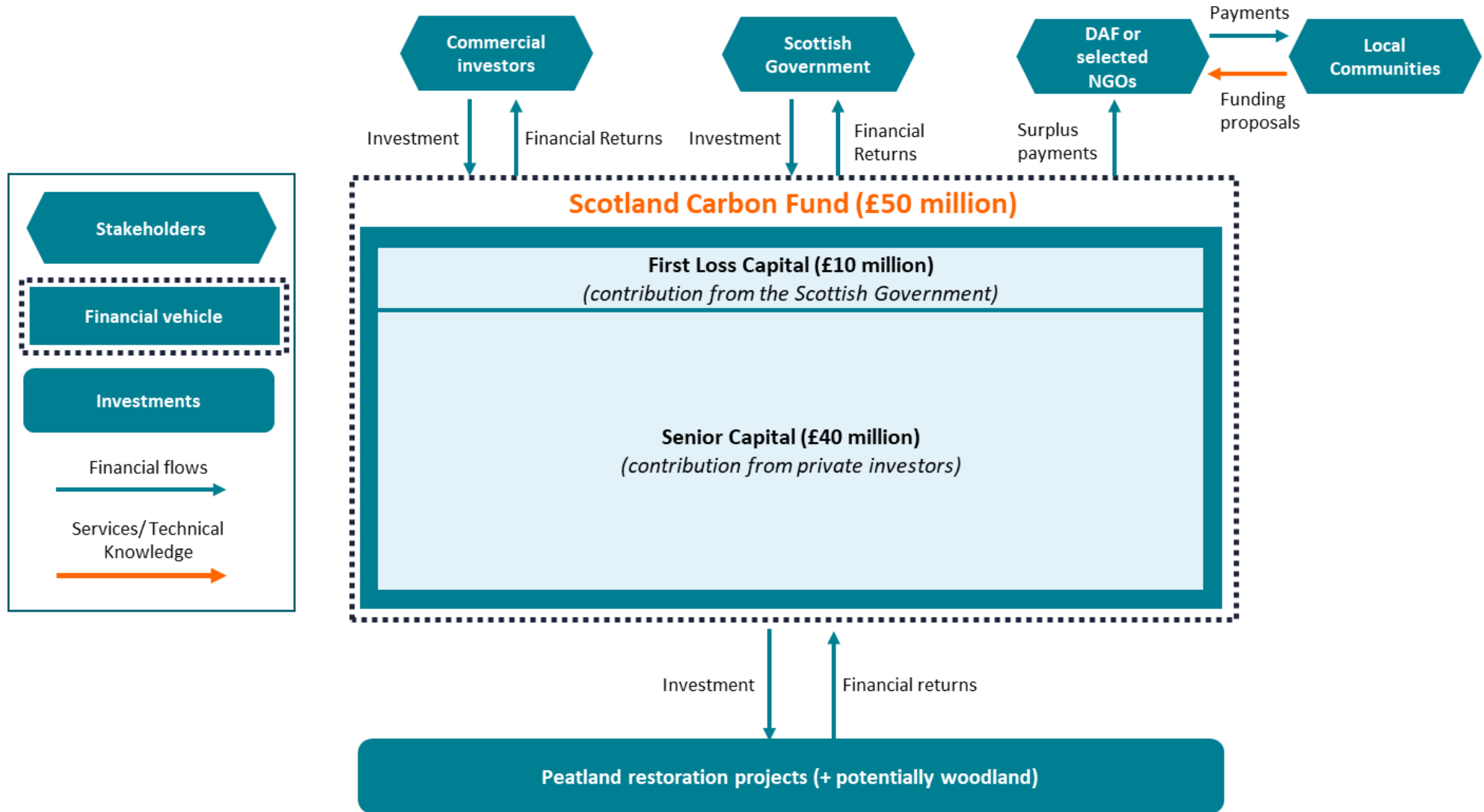
Table 13 Summary of SCF Risks and Mitigations

Risk	Mitigation
The SCF drives further increases in land prices.	The SCF can focus on, or be limited to, leasehold models to prevent a rush for land acquisition.
The SCF is not able to access a large enough investment pipeline.	The SCF's investment mandate should include supply chain businesses and other carbon landscapes, in particular woodland. Additionally, further strategic assessment of the peatland resource in Scotland to estimate PC eligibility will be required.
The SCF is unable to attract private investment at a competitive price.	The introduction of concessionary first loss capital will offer confidence to private investors while reducing risk. This will also act to reduce return requirements / expectations.
Benefits generated by the SCF are not shared with the local community.	The SCF can be structured to share a portion of profits generated locally, and use risk sharing and transfer mechanisms to ensure restoration is delivered, and maintained to a high standard.

Risk	Mitigation
Small scale projects are excluded from the market.	The SCF will allow for project aggregation and will build standardised contracts / documents to reduce friction costs for smaller projects.
There is uncertainty over the possible scale of cost overruns, especially for maintenance.	The SCF can be structured with governance tools to provide assurance to lenders. This includes endowment and risk-pooling / portfolio structures. Additionally, insurance options to guarantee the amount of carbon generated by a project will need to be considered.

Figure 18 combines the recommended design options into an illustrative structure for the SCF.

Figure 18: Illustrative SCF structure



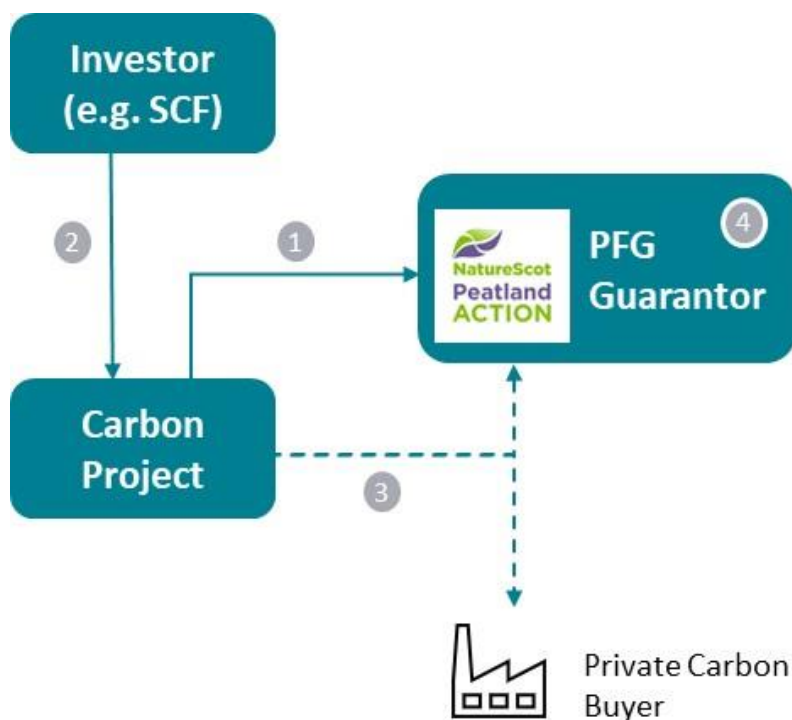
Section 8: Price Floor Guarantee

Overview of the mechanism

A PFG is a risk reduction or transfer mechanism. A PFG is well suited to early-stage markets in which demand is uncertain. The mechanism offers confidence in project revenues over a fixed period, which significantly reduces the downside risk profile for both investors and project developers. This is supportive of those projects that wish to hold some, or most, PIUs to verification.

The price floor should operate as an aligned mechanism rather than an alternative to the SCF. Additionally, the guarantee should be accessible to projects that are not financed by the SCF too. The proposed structure of the guarantee is illustrated in Figure 19 and explained below.

Figure 19: Illustrative example of how a PFG could be structured



How a PFG mechanism works:

1. The project submits a bid to secure a price floor agreement for the future sale of their PCUs to the PFG Guarantor. Typically, projects would aim to bid above their cost base, in order to ensure profitability or at least break even.
2. The project secures investment at an attractive rate from the investor as a result of the risk reduction offered by the guarantee. This could be the SCF.
3. Income is generated by the project from the sale of either PIUs or PCUs to corporates or brokers, or where market prices fall below the price floor, to the guarantor at the pre-agreed price threshold.
4. The guarantee reduces downside risk to participants. Where designed effectively, and if carbon prices are increasing over the period during which the guarantee operates, this is achieved with minimal government pay out to participants.

Managing Risk with a Price Floor Guarantee

Investors and Project Developers are exposed to two forms of risk, project risk and market risk.

Project risk refers to risks at the project level, such as cost overruns, or risks associated with validation and verification that impact the number of PIUs / PCUs a project is able to sell. A price floor does not reduce project level risk. Project risk can be mitigated by diversifying investment across a portfolio of projects and through other tools, such as contractual agreements with landowners and third party contractors.

Market risk relates to future carbon pricing and liquidity (i.e. ease of sale) of carbon credits. This risk is common to all projects. Market risk is driven by a variety of external economic and political factors. Where a price floor is agreed, the downside risk is reduced by the guarantor, with the price floor representing a revised “worst case scenario”. If the price of carbon rises above the price floor the investor benefits from the market pricing; should the price fall, the investor is protected by the price floor mechanism.

Under normal market conditions, the target or ‘risk adjusted’ return required to attract investors is proportionate to the perceived risk taken. By reducing market risk, the target return required to attract investment can be reduced, translating to a lower cost of investment

Recommended design options

The stakeholder engagement process evidenced mostly positive market feedback on the proposed PFG mechanism. Investors in particular noted the attractiveness of this mechanism to limit the downside risk of their investments given the difficulties associated with assessing the demand for carbon credits over very long timescales.

Some stakeholders noted that the guarantee would need to be designed carefully to avoid undue complexity, potentially limiting participation, or a “race to the bottom” in which only low quality projects with a low cost base would manage to secure a guaranteed price.

The mechanism also compares well when evaluated next to other alternatives which have limitations, as detailed in Table 14 below.

Table 14: Alternatives to the PFG

Mechanism	Headline Considerations
Buyer Of Last Resort (BOLR) mechanism	<ul style="list-style-type: none"> • Under a BOLR mechanism, all market participants are able to sell credits to government at a fixed, administratively set price. • Provides similar confidence to participants to the PFG, without the complexity of an application / auction process. • Might result in inefficient price setting given the limited information available to decide on the appropriate price level. • Without a capacity limit or cap, this mechanism could expose government to significant liabilities. • Without appropriate safeguards in place, it could also lead to a race to the bottom in terms of the quality of projects.
Revenue Guarantee	<ul style="list-style-type: none"> • Under a revenue guarantee, projects are guaranteed a minimum cashflow in exchange for a fixed number of PIUs/PCUs, regardless of project performance. • As projects are protected from market risk (pricing, liquidity) but are also protected from delivery risk. • Delivery risk protection is not necessary, and should be assumed by projects and investors. • Delivery risk protection may dis-incentivise appropriate project design and delivery, leading to poor quality outcomes for nature.
Contracts for Difference (CfDs)	<ul style="list-style-type: none"> • CfDs act as a ‘swap’ between a fixed future price and the actual future market price. Where market prices over-perform the agreed pricing curve, the project pays the guarantor. • Appropriate for mature, liquid commodity markets with transparent pricing (e.g. energy). • A centrally recognised pricing index is required. This does not exist in voluntary carbon markets. In future, if such a transparent and liquid index does emerge (or credits are recognised under an existing scheme, such as the UK Emissions Trading Scheme (ETS)) a CfD mechanism may represent the most effective market support tool available to government.

In conclusion, the PFG is best adapted to the current level of development of the peatland carbon market. The mechanism uses a reverse auction process for efficient price discovery. It also leaves the delivery risk in the hands of the projects, and ensures that appropriate project design and delivery is incentivised.

Setting the Price Floor

When structuring an effective PFG, setting an appropriate floor price is key. Pricing can be set in two main ways, administratively or through a reverse auction process.

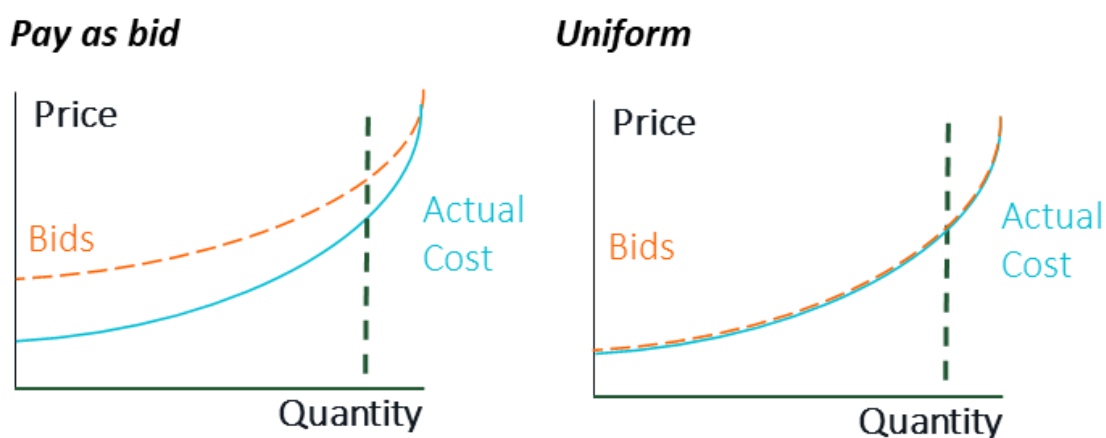
Administrative pricing: The guarantor defines the floor price internally based on an assessment of the market (or negotiation with stakeholders). All eligible projects applying to the guarantee are accepted until funding capacity is exhausted. OFGEM’s Feed-in-Tariff Export programme is an example of an administratively set price floor.

Administrative pricing is simple to administer but may be less effective than an auction (as a market based mechanism) at identifying the most efficient pricing because the Scottish Government would have to make assumptions on aggregate peatland projects’ cost structure to determine an appropriate level for the price floor (i.e., a level that allows projects to breakeven).

Auction based pricing: Eligible projects bid into a reverse auction held periodically by the government to set a price. Projects are ranked by price and are accepted sequentially until the funding capacity is exhausted (or an administratively set reserve price cap is hit). Through this project, two key mechanisms have been assessed:

- **Uniform pricing:** in which all successful projects receive the same guaranteed price (equivalent to the highest bid approved), regardless of their bid price point; and
- **Pay as bid pricing:** in which all successful projects are awarded a guaranteed price according to their own bid price point.

Figure 20: A comparison of bidding behaviour in the "pay as bid" and "uniform price" auctions



The difference between these two pricing models is illustrated in Figure 20.⁵⁵ In both cases, bids are ordered from lowest to highest cost. Price is represented on the Y axis with bids distributed from left to right along the X axis. The total capacity of the auction (funding available from the guarantor) is represented by the quantity line in green on the X axis. Projects to the right of the dotted quantity line are not funded because all the funding available from the guarantor has been used.

Under a pay-as-bid model, successful participants receive a PFG based on their submitted bid price. Participants with a lower cost of delivery are (inadvertently) incentivised to approximate the maximum price at which their bid may be accepted, a practice known as “sniping”. As represented, this may lead to a divergence of bid pricing from the true price point that bidders would be willing to transact (represented in blue).

By contrast, under a uniform price auction, the price floor received is not linked to the bid price submitted. This removes incentives for participants to bid above the true delivery cost of restoration activities (or minimum price at which they would be willing to transact). In theory, this transparency may lead to a lower auction clearing price and more equal treatment of bidders. In addition a uniform price point may allow for more transparent long-term administration with a single price threshold.

For these reasons, it may be more cost efficient to operate a uniform price auction than a pay-as-bid model. Notably, the Entrade Poole Harbour nutrient trading scheme shifted from a pay-as-bid to the uniform price auction to test the comparable effectiveness of these approaches. Working in partnership with the University of Exeter Land, Economics, Environment and Policy Institute a uniform price auction structure was designed and implemented. A significant reduction in costly bidding behaviours was observed under the uniform pricing approach, leading to a greatly improved spending efficiency for Wessex Water.⁵⁶

It should be emphasised however that in different scenarios, other factors (e.g. other grant programmes or revenue streams, incomplete understanding of the mechanism or uncertainty over delivery and maintenance costs) may also drive participant behaviour. This is particularly true given the wide variety of interventions required by different peatland restoration projects. Designed poorly, auction based mechanisms can incentivise lower cost rather than better value, but can be managed actively to avoid perverse incentives. Different auction based mechanisms for a government-backed price floor should be further explored to better understand their suitability for peatland carbon markets in Scotland.

Duration and Capacity

Under the PC, restoration projects can span from 30 to 100 years in length.⁵⁷ PIUs are verified on a linear basis across the lifetime of the project. A PFG could be offered to projects for their full life, or for a fixed period. The longer the term of the PFG, the greater the benefit to the project. A shorter term guarantee (e.g. 5-10 years) is likely to offer limited benefit to projects. Notably the Woodland Carbon Guarantee has a maximum duration of 35 years.⁵⁸ The benefit of a long duration will need to be weighed up against the challenges for Scottish Government of managing this type of long-term liability.

Another challenge is that it remains difficult to forecast demand for carbon credits over long time periods (many peatland restoration projects will continue to generate credits for up to 100 years). This is being driven by the current focus of carbon buyers on purchasing credits to meet their near-term offsetting needs. Additionally, the SBTi framework, which drives the climate commitments of numerous organisations, favours the use of carbon removal credits (such as woodland carbon credits), over carbon reduction credits (such as peatland carbon credits), particularly over the period after 2050. As such, establishing a price floor that extends beyond 2050 could improve confidence in the long-term economic viability of projects.

The capacity, or amount of funding committed through the guarantee will need to be considered alongside duration. Auction capacity should be frequently revisited to ensure that market demand is met, while ensuring the process remains competitive.

Timing and frequency

Alongside the duration of the guarantee, auction designers will also need to consider the timing and frequency of auctions for the PFG.

Auctions should be designed so that applicants are also able to apply to other schemes. Some projects will only be able to proceed if successful in applications to both grant funding and the PFG. In particular this will include coordination with Peatland ACTION funding. Auction designers can build in flexibility for participants by providing extended application windows, clearly advertising timings in advance and holding multiple auction cycles annually (in order to provide frequent opportunities for new projects to apply for the guarantee).

Eligibility and delineation

Eligibility criteria can be used to target support towards projects with specific characteristics. Such criteria can be used to both limit access to the PFG to only those projects that fulfil minimum requirements, and to provide different levels of support to projects with different characteristics. This provides an important protection against the delivery of low quality projects or a “race-to-the-bottom effect. As an example, within the Woodland Carbon Guarantee’s fifth auction, 50% of the available budget was allocated to ‘predominantly native woodland’ projects in order to incentivise the creation of native woodlands.⁵⁹

Eligibility criteria can be used strategically to provide additional support to less economical projects which exhibit other ‘desirable’ features aligned with Scottish Government policy objectives. This additional support can be allocated as aligned grant funding (such as further targeted grants from Peatland Action for projects that include desired features), or through the operation of multiple auctions for projects with different characteristics (e.g. holding separate auctions for those projects that exhibit certain features, in recognition of associated higher costs). Stakeholders interviewed were asked to consider what eligibility criteria could be used to identify projects with desirable characteristics. These are considered in Table 15 below.

Table 15: Eligibility criteria considerations for a PFG proposed by stakeholders

Eligibility & Delineation Characteristics	Considerations
Peatland Code Participation	It was noted that the PC has specific eligibility requirements (e.g. minimum term of 30 years, minimum Peat depth). Some participants noted that the PC already set a high bar for eligibility and further or misaligned criteria would be unhelpful. Initially requiring PC participation may prove a simple and effective criteria to filter appropriate projects. Since the PC only requires restoration to a modified state, there may be scope for additional eligibility criteria to incentivise restoration to a near natural state.

Eligibility & Delineation Characteristics	Considerations
	<p>While it is possible to not link the PFG to the PC, we would strongly recommend this relationship is established to support market integrity.</p>
Physical project characteristics	<p>Supply side stakeholders pointed to a large variance in restorations. While costs vary for different reasons, projects at high altitudes or furthest from transport networks were singled out as particularly complex to restore. It was noted that additional support may be required to restore sites in specific areas. However, this may be better provided as a package of targeted, aligned grants to improve the viability of these projects. This should be explored in further research.</p> <p>It was noted that actively eroding sites had a higher cost of restoration and are linked to higher project risk than drained or modified peatland sites. However, due to the significant carbon abatement benefit recognised under the PC, these sites were often the most economically viable to restore based on carbon revenues alone.</p>
Community engagement / benefit	<p>During the stakeholder engagement process, it was noted that community engagement in delivery was aligned to the Scottish Government Interim Principles for Responsible Investment in Natural Capital.</p> <p>It was noted that the PC has specific requirements for projects to demonstrate community engagement and benefit sharing. Due to the diversity of community led / engaged projects, indicators of engagement tended to vary broadly. As a result these indicators may be poorly suited to identify projects for additional support via this mechanism. More in depth consultations with community organisations may be required to determine the allocation of additional support on a case by case basis.</p>
Ecosystem service co-benefits	<p>Restored peatland landscapes can provide additional ecosystem services beyond abatement of carbon. This includes a series of biodiversity and water environment benefits (flow attenuation and quality).</p> <p>Biodiversity benefits include the restoration / creation of habitats for protected species including a range of ground nesting birds. Based on feedback from stakeholders, there was no evidence that peatland sites with greater biodiversity value were less economical to restore. Rather, it was noted that the greatest biodiversity benefit was achieved from</p>

Eligibility & Delineation Characteristics	Considerations
	<p>restoring those sites in an actively eroding condition. As noted these sites are rewarded well through the PC. It was noted that delivery beyond “modified” condition is not well rewarded by the Peatland code. Sites that aim for higher, “near-natural” condition could receive supplementary support if desired/ targeted.</p> <p>Water environment services provided by restored peatland include flow attenuation and water quality benefits. The value of these benefits is geographically variable. This benefit may be monetised and stacked with carbon revenues for sites where willing payers exist and restoration would not otherwise occur (thereby meeting PC additionality criteria). In other areas with lower hydrological stresses there may be limited value in these services. For this reason, water based co-benefits are also a poor fit for eligibility criteria.</p>

For eligibility criteria to be used effectively to earmark projects for differentiated levels of support under a PFG mechanism, this must be clear and transparent to ensure consistent treatment of projects. While some clear cases for varied levels of funding exist, the additional complexity of this may outweigh the benefits offered. As this mechanism matures, and specific cases where supplementary grant funding is required to tackle specific project types / features, this may be implemented gradually.

As noted, the eligibility criteria embedded within the PC already set a high bar for participating projects. It will be important for the Scottish Government to continue to engage with the PC to ensure that alignment between national objectives and existing eligibility requirements continue.

Indexation

The indexation of a floor price was perceived as a key desirable feature of the guarantee mechanism for investors. In particular, large institutional investors have a strong appetite for “index-linked” products which provide protection from variable levels of inflation over long periods of time. Three broad options are available in the design of a PFG:

- **No Indexation:** The price floor will not increase over time and will stay fixed at the agreed price. Under this approach the “real” value of the price floor will decrease over time (due to inflation). This may undermine the function of the price floor as after a 20 to 30 year period, funds may be worth a small fraction of their current value;
- **Fixed inflation:** The price floor will increase annually by a fixed percentage. This may be aligned to a target value (e.g. the long term Bank of England inflation target of 2%⁶⁰). This de-links the price floor from indexation and allows for accurate government forecasting of liabilities, but is less attractive to investors than a fully index linked product; and

- **Indexation:** Linking a price floor to an established index such as the Retail Price Index (RPI), provides investors with confidence that the “real” value of the floor is maintained. Both the Woodland Carbon Guarantee, and Feed-in-Tariff Export have linked price floors to RPI. This model is the most attractive to investors.

An Index-linked approach will be most suitable for attracting low cost investment into peatland restoration projects. We recommend this approach is pursued if wider policy and economic constraints facing Scottish Government allow.

Surplus Management and Value Recovery

In the design of a PFG, the Scottish Government will need to consider how funds are accounted for and used over time.

The Scottish Government will need to account for commitments under the price floor as a contingent liability until participating projects decide whether or not to exercise their rights under the guarantee (i.e. to sell their verified carbon credits via the guarantee and not to a private buyer). If funds are set aside (likely as a forecast budget cost) to meet the contingent liabilities generated by the price floor, this will include considering how funds are repurposed if the price floor is not exercised (as expected given expectations of increasing carbon prices).

Similarly, if projects do sell their carbon through the price floor, the Scottish Government will have the choice to retire credits, or resell these in the market to recover value through the scheme. Resale could significantly improve the efficiency of this mechanism if market pricing is close to the guarantee price. However this should be weighed up against the benefits of directly retiring credits, and the risk of deflating the market further through the resale of credits.

Key takeaways

A PFG offers an exciting way to unlock new investment in restoration and support longer term planning for carbon projects. The PFG is a highly flexible mechanism and can be designed in a range of ways. However, the benefits of these additional features should be weighed up against the risks and cost of building complexity.

It may be most effective to develop the PFG over time starting with a simple model and refining this gradually. It is important that the PFG provides index-linked price support for an extended period (such as 30 years or more) to provide long-term confidence for investors. Importantly, the PFG should be designed in the context of other mechanisms and aligned grant funding to ensure that an appropriate level of support is offered to varying project types. Designed well, the PFG offers good value for money to Scottish Government and could have a transformative impact on the rate of peatland restoration in Scotland.

Table 16 below provides a summary of the potential risks associated with the PFG mechanism concept and the mitigations identified through the proposed design and action research process.

Table 16 Summary of PFG Risks and Mitigations

Risk	Mitigations
<p>The PFG is set too high and may expose the government to large costs</p>	<p>An auction based approach, with a fixed reserve price will cap the total liability to government and drive cost efficiency.</p> <p>Where projects do sell via the price floor the government is still spending effectively on restoration objectives. Moreover value may be recovered through onward unit sales if desired.</p>
<p>The PFG triggers a race to the bottom with the delivery of low quality projects</p>	<p>The use of a uniform bid approach, coupled with clear eligibility criteria will reduce the risk of a race to the bottom.</p>
<p>Less economically viable projects are not supported</p>	<p>The PFG is flexible and can use delineation criteria to shift support to underrepresented project types. This could also be supported by the use of targeted aligned grants to set all projects on an equal footing in carbon markets.</p>
<p>The complexity of the mechanism disincentivises participation</p>	<p>The mechanism should be developed gradually with complexity and nuance added over time. Clear communication and outreach to market participants will help to build knowledge and awareness.</p>

Section 9: Building coherence in the peatland financing ecosystem

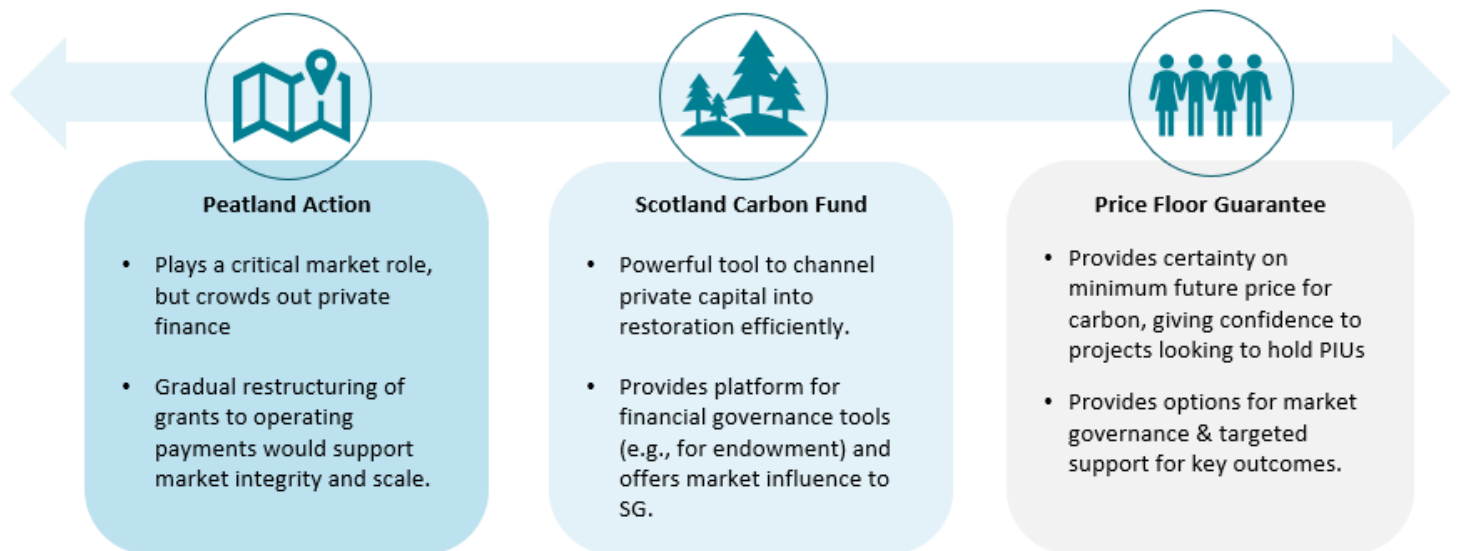
To function most effectively, the SCF and PFG must be designed as part of a broader financing ecosystem for peatland restoration that is coherent and takes an integrated approach. Without a coherent approach, mechanisms may generate misaligned incentives or reduce the efficiency of public spending.

The funding and financing ecosystem is comprised of all market and public sector financial infrastructure, and requires that mechanisms are designed in parallel to ensure that participants are appropriately incentivised for target behaviours and outcomes.

Designed effectively, a coherent funding financing ecosystem will support high-integrity projects and crowd in private capital at scale. Crowding in private capital will allow for a scale up of delivery, spreading risk effectively, improving transparency and credibility, and unlocking cost efficiencies.

To situate the SCF and PFG within the wider financing ecosystem it is also important to consider existing Peatland ACTION grants, and how these might be re-designed to better align with these mechanisms, and to remove existing barriers to private investment, while also improving financial governance.

Figure 21: Integrated approach to peatland restoration leveraging Peatland ACTION, SCF and PFG together



Operating Payment: redesigning subsidies

As noted earlier, eligible peatland restoration projects can currently access capital grant funding through the Peatland ACTION programme equivalent to 100% of capital costs.

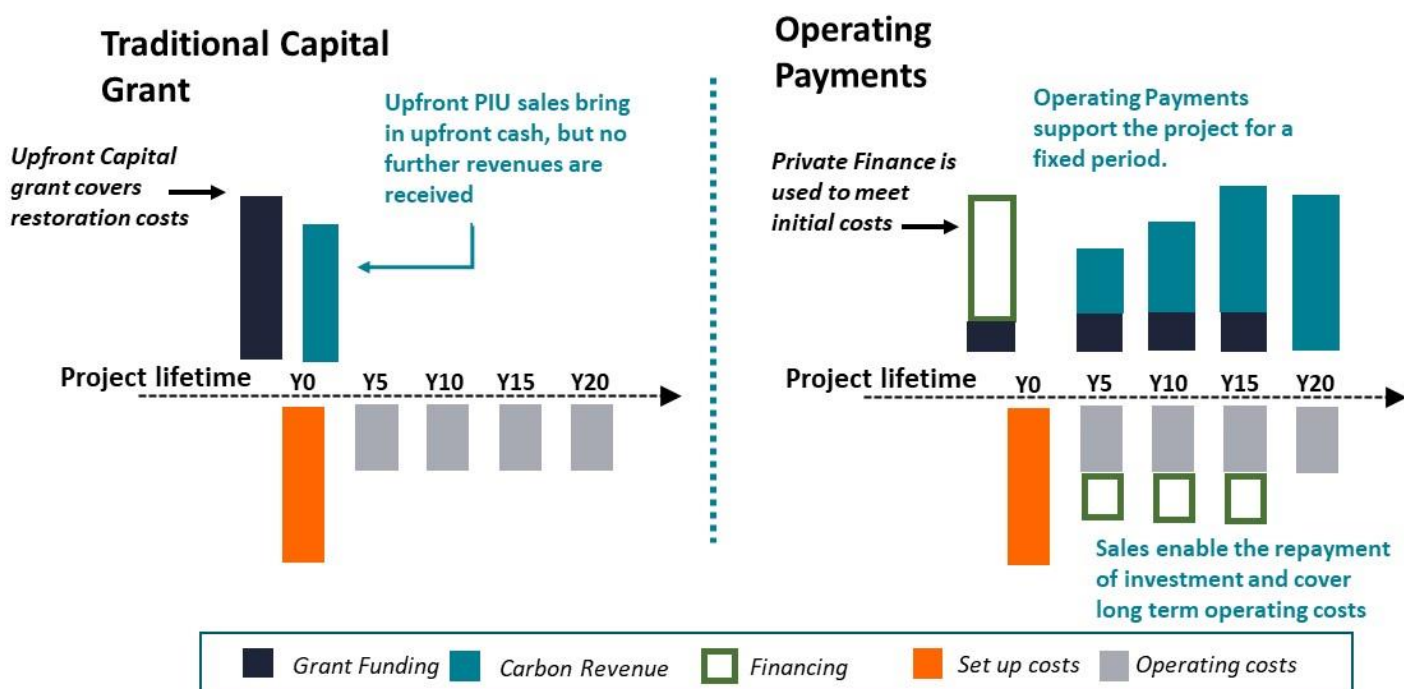
At current market carbon prices, peatland restoration projects are not viable without partial (and typically substantial) grant funding. However, full capital grants may provide unnecessary subsidies, while not providing support for ongoing project maintenance costs.

As identified through the action research, some stakeholders suggested that capital grants have crowded out private investment, limiting market development. As such, restructuring Peatland ACTION grants to include an ongoing support or “operating” payment could provide a series of key benefits. These payments could be provided alongside a lower capital grant that may be reduced over time as the market matures.

Where desired, or if carbon markets reach sufficient price thresholds, operating payments could be linked to the achievement of specific outcomes or be restricted to projects with specific features or desirable co-benefits (e.g. biodiversity).

Operating Payments are annualised grant payments provided for the operation of a natural capital project. Unlike capital grants, operating payments are made on a recurring basis for a fixed period. The difference between an operating grant and a capital grant is explored below in the illustrative scenario set out in Figure 22. This hypothetical example compares a traditional project using a capital grant and PIU sales to a project using a mix of private finance, operating payments and the ongoing sale of PCUs to meet costs. In practice, a mixed approach providing both capital and grant funding may be most effective in the short term.

Figure 22 Comparing Grant and Operating Payments



The England Woodland Creation Offer (EWCO) scheme represents an example of a mixed capital and operating payment model. Under this model the majority of funding is provided as a capital grant but projects receive a payment of £300 per hectare payment annually for the first ten years of the project. Projects with specific target characteristics (e.g. riparian planting in proximity to population centres) receive additional supplementary grants.

Key considerations

Operating Payments consist of a contract between a grant making body (e.g. Peatland ACTION) and a recipient land owner / tenant. The contract sets out a fixed payment amount, frequency and term. It may be subject to specific conditions (e.g. delivery of specified outcomes). This payment structure provides confidence in project cashflows for a fixed term.

Private investment is suited to the provision of upfront capital (as debt or equity) which assumes risk in the near term on the assumption of future cashflows. Unlike capital grants, Operating Payments encourage projects to seek private financing while de-risking investment. This is particularly beneficial in emerging ecosystem service markets where market-based revenues (e.g. carbon) are highly volatile. Operating Payments help to attract this upfront private finance by lending credibility to the project and by providing assurance that it will generate a predictable cashflow alongside market revenues.

Under this approach, grant payment levels are set on an administrative basis and applied broadly, rather than through market-based mechanisms. This may expose the Scottish Government to risk of incorrect price setting. In addition, contracts represent binding funding obligations, restricting Scottish Government funding flexibility on an annual basis. While commitments are fixed for projects during the life of funding agreements, funding levels can be adjusted over time for new projects to reflect changing market conditions.

Operating Payments can be introduced gradually and refined in the market alongside existing capital grant programmes.

Potential design options

In the short term, alignment to a **capital grant programme** will allow for a smoother transition from existing funding mechanisms for restoration. As capital grants are reduced, the opportunity for private investment will increase. For example, an initial Operating Payment could be provided alongside a 75% capital grant. Over a period of five to ten years, this could be reduced to a 25% capital grant.

The value of Operating Payments should reflect overall project costs and not be linked directly to periodic costs of maintenance. Initial payments could be linked to the value of the capital grant provided to ensure consistency in the total value of support provided.

Operating Payments may be provided for a fixed period of time, or for the full operating life of the project. While a longer period is beneficial for financial governance (as cashflows are available to meet maintenance costs), this length of liability may be unviable for the grant making authority. A period of 5-20 years will allow projects to hold all, or a portion of, PIUs to a first (or second) period of verification. This will provide projects and landowners a baseline understanding of ongoing costs prior to the sale of carbon credits, as well as the opportunity to establish longer term financial governance arrangements from the sale of verified PCUs at a future price. In addition, this will also provide confidence to investors and carbon buyers of a minimum level of project establishment and permanence.

Grant payments can be varied to reflect specific project characteristics. Under the current Peatland ACTION regime, grant payments are based on the specific capital costs of a project. A grant payment scheme could be similarly bespoke or provide a fixed payment value based on specific project characteristics. Varied payment levels may be used to target specific outcomes (e.g. enhanced biodiversity value).

Operating Payments may be provided on a conditional or outcomes-linked basis.

Linking operating payments to the delivery of specified outcomes reduces the risk to Scottish Government of non-delivery, especially in the case of landowner / manager negligence. This is a key benefit compared to unconditional capital grants. The benefits of implementing an outcomes based approach should be weighed up against additional complexity and further verification costs incurred.

Key takeaways

Shifting existing grant funding to an Operating Payments model is a key step in facilitating private finance. The current structure of Peatland ACTION funding has been shown to disincentivise investment to date.

It may be most effective to transition gradually from a capital to an Operating Payment led grant model to ensure continuity. Operating Payments should be provided for an extended period and at a minimum 5 years (first date at which carbon is verified).

Grant payments can be varied to reflect specific project characteristics, and can be used to target specific outcomes.

Table 17 below provides a summary of the risks identified in the development of the Operating Payments concept and how these can be mitigated through the mechanism design.

Table 17 Summary of Operating Payment Risks and Mitigations

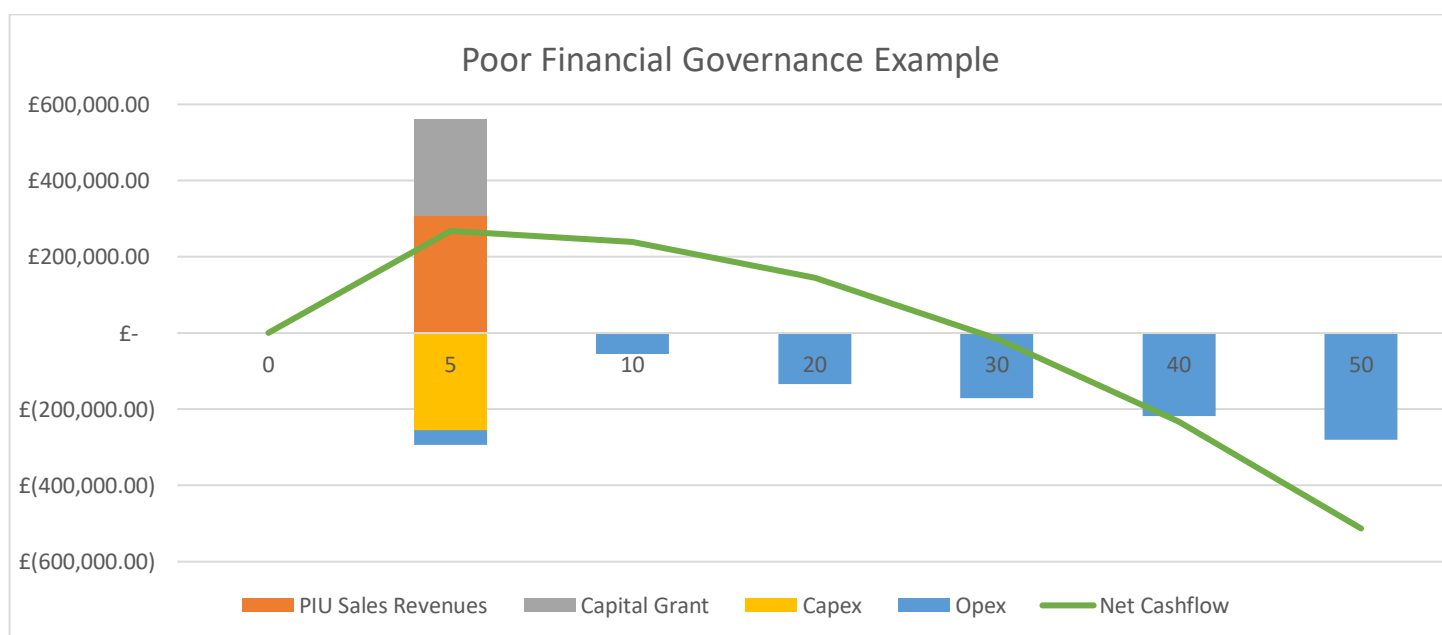
Risk	Mitigations
Replacing capital grants with operating payments leads project delivery to stall as the market adjusts	A staggered and well publicised transition to an Operating Payment led model will allow the market to transition. A period of more generous grants may help ease this transition. This could also include a twin track period where projects can access either grant structure.
Projects are unable to access private finance to fill funding gap for delivery	The implementation of the SCF and PFG alongside the Operating Payments will address this, offering suitable forms of finance to projects.
Operating payment levels are set too high, leading to a lower cost effectiveness of public spending	Operating payment levels can be adjusted for new projects. Some overspending during the transitional period is expected.

Section 10: Establishing good financial governance

Scaling peatland carbon markets without building strong financial governance could have disastrous consequences for the Scottish Government’s peatland and climate objectives. Projects without appropriate financial governance are more likely to fail, undermining market confidence and potentially creating unforeseen long-term liabilities for farmers and landowners. Projects must clearly demonstrate how restored peatland will be maintained in the long term and crucially how this will be funded in order to build confidence in their long-term viability. Analysis carried out under this project based on project costing data provided by RSPB Scotland and Peatland ACTION indicate that upfront delivery costs represent a mere 35% of lifetime costs (on a net present value (NPV) basis for a 50 year project). As such, the three mechanisms covered above (namely the SCF, PFG and Operating Payments) are well suited to support the establishment of financial governance practices in the Peatland Carbon market in Scotland.

The benefit of good financial governance is illustrated in the two illustrative cashflow graphs below. The first represents a restoration project with poor financial governance, defined as no / limited planning for long term maintenance liabilities. The second graph represents a project with stronger financial governance, supported by private investment and the three mechanisms explored in this report. In this scenario each of the mechanisms play a key role in directly de-risking investors (in particular the SCF), reducing price and liquidity risk to the project as a whole (in particular the PFG) and providing confidence in financial governance and carbon outcomes (in particular the Operating Payments). As illustrated, the benefit of these mechanisms in tandem is substantially greater than the sum of the parts. All assumptions used to design these scenarios are included in Annex E.

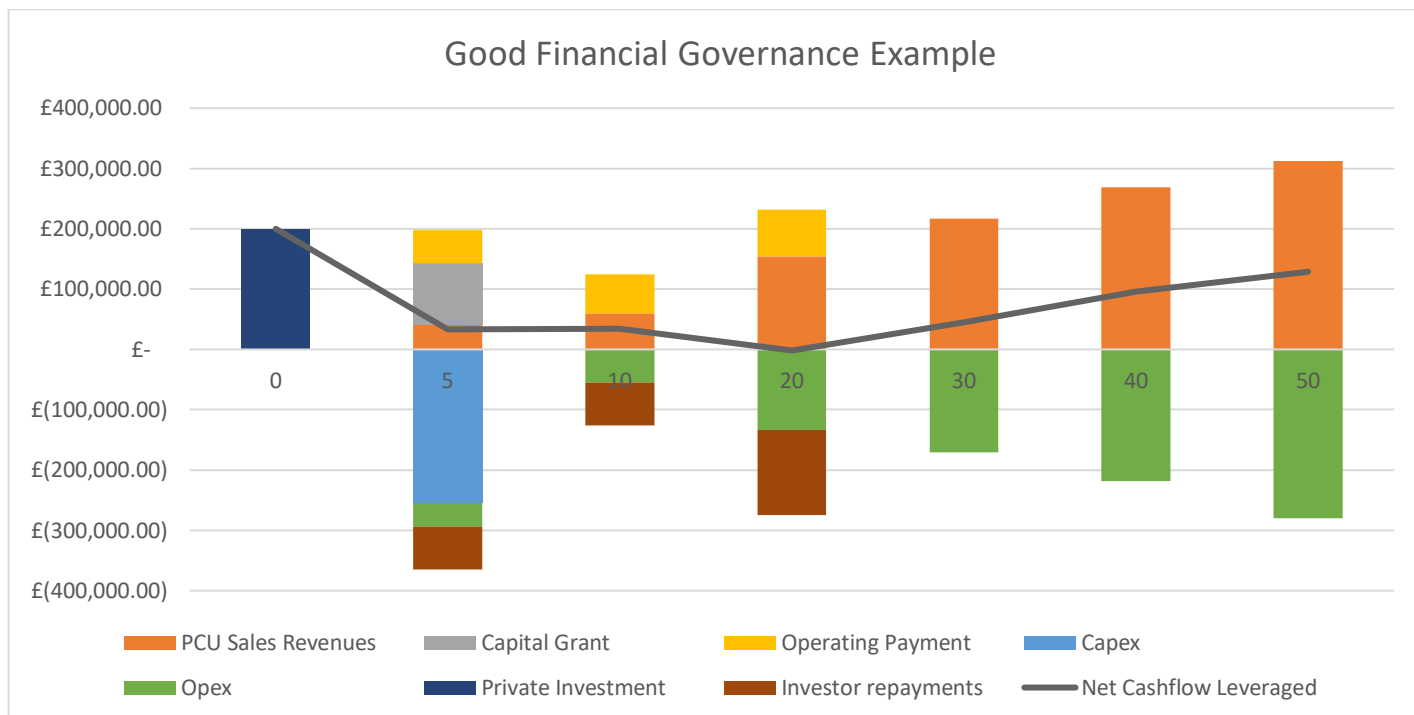
Figure 23: Illustration of a typical Peatland Carbon project managed without good financial governance practices.



In this first scenario, capital costs are fully funded by a capital grant from Peatland ACTION, as illustrated in **Figure 23**. The project generates a short term surplus from the

sale of 100% of PIUs at a price of £20 per PIU. In this scenario, this surplus is placed in an interest yielding account and appreciates at a rate of 1.5% per annum, with funds used to meet operating costs. Funds are sufficient to meet costs for a period of 28 years (and the landowner does not make any profit from the sale of carbon as all the proceeds from the sale are used to cover maintenance costs). Without the interest generated, this would be a period of 24 years. After this period, costs of maintenance fall to the responsible entity (e.g. landowner). If the landowner is unable to service costs, the project may revert to its pre-restoration condition due to a lack of maintenance.

Figure 24: Illustration of a typical Peatland Carbon project making use of green finance tools to support good financial governance



In this second scenario, a set of strong financial governance arrangements allow projects a better chance to remain cashflow positive for the full 50 year term, as set out in **Error! Reference source not found.** All other project assumptions (as set out in Annex E) remain equal. The same amount of grant funding is provided to the project (on an NPV basis) but a portion of this is provided as an annualised operating payment spread over 15 years. In this scenario, capital costs are funded by a smaller capital grant (40%), and a fully amortising term loan (a loan which is completely paid off by the end of its term). This loan could be secured from the SCF, or from a third party investor. Investors are attracted to the SCF due to the existence of first-loss capital, as well as the PFG which both reduces market risk as well as provides a minimum annual cashflow to projects. The project is able to meet capital repayments and maintenance costs through the regular sale of verified PCUs and through operating payments. Following the repayment of the capital, PCU sales remain sufficient to meet operating costs and generate a small annual surplus for the project manager/ developer/ landowner (indicated by the net cashflow leveraged line on Figure 24).

Good Finance Governance Example – How it works

- In the scenario illustrated in Figure 24, we see investment raised at the start of the restoration project used to fill the capital need left by reduced grant funding.

- Alongside the capital grant, this investment covers the cost of restoration and early maintenance.
- Capital is repaid over a term of 25 years from the revenues generated by the project.
- Both financing and operating costs are met by the sale of verified carbon on a recurring basis, and operating payments provided for the first 15 years.
- Carbon sales continue to support the project until the end of the project term.
- The project is able to raise investment at establishment against confident future carbon revenues, because these ongoing carbon revenues are supported by a PFG, providing confidence to funders.

Supporting strong financial governance is not only desirable, but is necessary to unlock private investment at scale. Impact investors will not support projects unless they can demonstrate their ability to deliver target outcomes with confidence. The SCF and PFG are well suited to support scale up, create and share best practises, and drive improvements in financial governance. but should be designed in tandem with changes to the public sector funding infrastructure to unlock investment and ultimately scale the market.

Section 11: Conclusion

The Mobilising Private Investment in Natural Capital project explored the potential role and design of a Scotland Carbon Fund, Price Floor Guarantee and Operating Payments as effective tools to scale peatland restoration across Scotland. Over the course of the project, various design features were tested and refined through engagements with key stakeholders. This iterative co-design process ensured that insights from a wide variety of market actors were effectively captured and used to inform the recommended design of the mechanisms.

The recommendations for the Scotland Carbon Fund, Price Floor Guarantee and Outcome Payment mechanisms, outlined below, will support the scaling up of private investment in Scotland's peatland landscapes and play a significant role addressing a number of the financial and non-financial barriers to peatland restoration, as outlined in Table 18. It is important, however, to recognise that these mechanisms are not a panacea to address every barrier to peatland restoration. It will be important for the Scottish Government to further explore how additional policy mechanisms can be implemented to address other remaining barriers, including those relating to data gaps on peatland condition, harmful subsidies and tax incentives which dis-incentivise peatland restoration and the general lack of awareness of the benefits generated by peatland restoration.

Table 18: Overview of how the proposed SCF, PFG and OP could materially address the key financial and non-financial barriers to peatland restoration across Scotland (Key: MA – Materially addresses barrier, A – Addresses barrier)

Category	Description	Importance	SCF	PFG	OP
Financial barriers	Low carbon prices affecting current financial attractiveness	Medium		MA	
	Uncertain future demand for carbon credits, particularly reduction credits	High		MA	MA
	Increasing land prices and associated social consequences	Medium	A		
	Existing funding mechanisms crowding out private money	Medium			MA
	Small project size raising origination and transaction costs	Medium	MA		
	Taxes, inheritance laws, Common Agricultural Policy (CAP) payments incentivise agriculture over nature restoration	Medium			
	Money is not everything for some landowners, tenants and	Low			

Category	Description	Importance	SCF	PFG	OP
	communities (e.g. crofters = lifestyle, estates = playground)				
Non-financial barriers	Delivery risk and long-term maintenance obligations	High	MA	MA	MA
	Technical and ecological difficulties to restore peatland	Low			
	Data gaps on peatland mapping and lack of transparency of delivery costs	Medium			
	Capacity constraints across the supply chain	High	MA		A
	Lack of education on the wider benefits of peatland restoration	Medium	A		
	Concerns over land use changes and impacts on local livelihoods	Medium	MA	A	
	Perceived early mover disadvantage incentivises many landowners and tenants to wait until the peatland carbon market has matured.	High	MA	MA	A

Recommendation for a Scotland Carbon Fund

A SCF, structured as a project finance vehicle with a minimum fund size of £50 million, would enable Scottish Government to leverage sufficient private capital to facilitate the restoration of Scotland's peatlands at scale. In order to support the crowding in of private investors who would otherwise be hesitant to participate in the nascent natural capital market, the fund should include first loss protection, a stamp of approval from Scottish Government and an initial expansion of the investment mandate to cover woodland projects. Through the SCF, the Scottish Government would have strong financial governance over the peatland carbon market, ensuring market activity aligns with the Interim Principles for Responsible Investment in Natural Capital and the need to provide benefits to local communities.

Recommendation for a Price Floor Guarantee

A well-designed PFG offers strong value for money to the Scottish Government and would play a significant role in catalysing private investment into the restoration of Scotland's peatland. Given the PFG is highly flexible, it may be most effective to initially implement a simple PFG and then refine over time as specific activities need to be incentivised. Despite its flexibility, it is important that at its core, the PFG provides index-linked price support for 30+ years in order to provide long term confidence to private investors. When paired with the SCF, these mechanisms could imprint strong governance standards onto the peatland carbon market through facilitating projects aiming to keep PIUs until they vest into PCUs,

providing landowners with a long-term revenue stream to cover the lifetime maintenance costs of projects.

Recommendation for Operating Payments

Grant funding through Peatland ACTION should gradually transition from the existing upfront capital grant to an annualised Operating Payment to also support the long-term maintenance costs of peatland restoration projects, with the value of these Operating Payments reflecting the overall project costs. These Operating Payments should be provided for the first 5-20 years of a project to provide optionality to landowners to hold onto PIUs until they begin to vest into PCUs. The provision of Operating Payments will support the development of the evidence base on the costs of peatland restoration and provide confidence to investors and carbon buyers of a minimum level of project establishment and permanence.

Areas for further research and next steps

To build on our proposals, we have outlined specific next steps to support practical implementation. These steps focus on activities that will further build the case for each of the recommended models as proposed in this report.

Scotland Carbon Fund

- *Pipeline Mapping and development:* SG should conduct further strategic assessments of the peatland resource in Scotland to understand the extent of PC eligibility and the availability of investment ready opportunities. This should identify the near term projects and low hanging fruit for early investment. This will inform work to identify the appropriate scale and mandate of the SCF and how it will invest in aligned opportunities and supply chain businesses.
- *Term sheet and fund design:* Fund costs should be modelled, and management fees estimated. This will build on the strategic mapping and development, and mandate setting described above. A draft term sheet with key fund characteristics could then be developed.
- *First loss guarantee:* Assess options to provide first loss capital, including considerations around who should make the contribution and what the conditions of this contribution would be.
- *Fund manager:* A fund manager should then be selected to undertake fund co-design and testing with potential investors. This will help the Scottish Government's understanding of investors' preferences including expected return, hurdle rate and more.
- *Aggregation facilities:* Undertake further analysis of options, including an assessment of existing structures which could be leveraged (e.g., LENSs, RLUPs) and what skills, capacity and expertise would be required.
- *Financing offering to projects:* Review the mechanisms through which the SCF might provide capital to projects (such as traditional loan financing, revenue sharing, equity holding etc).
- *Insurance mechanisms:* Explore how insurance mechanisms could be utilised to mitigate some of the risks specific to peatland restoration projects. Research and engagement with insurance companies would be required to determine their appetite for such products.

Price Floor Guarantee

- *Accounting and treatment of long term liabilities:* It will be important to engage with the Treasury and/or the Financial Management Directorate (FMD) to understand the viability of funding the PFG. FMD will need to opine on the total value of the guarantee, the amount per auction, the term of the guarantee and the treatment of surpluses. This could be achieved through collaboration with the Woodland Carbon Guarantee to understand how this was initially funded and how the PFG might augment this model. Working with Defra and Treasury, the Scottish Government may also identify an opportunity to expand the guarantee to a UK scale.
- *Eligibility and delineation:* Further work is required to determine which eligibility criteria are suitable for use by the PFG, and how those projects with desired characteristics are supported through the mechanism. An initial PFG should follow a simple approach, with eligibility criteria refined over time.
- *Mechanism design and structuring:* Different auction-based mechanisms for a government-backed PFG should be explored further to better understand their suitability for peatland carbon markets in Scotland. The Scottish Government may consider engaging with a specialist consultant, such as the University of Exeter's Land, Economics, Environment and Policy Institute (LEEP) on the final design and implementation of the PFG. SG should also further consider learnings from the Woodland Carbon Guarantee to date.
- *Indexation:* Further research is needed to understand how indexation of the PFG would affect future liabilities on the Scottish Government. This should be considered alongside accounting for long term liabilities.

Operating Payments

- *Peatland ACTION verification:* It may be valuable to review previous recipients of Peatland ACTION funding to understand how, and to what extent, sites have been maintained, and at what cost for different project types.
- *Market testing:* Targeted market research should be carried out on the attractiveness of Operating payments for restored and high-quality peatlands. This should include research into the term and level of payments that is most cost-effective while successfully catalysing action.
- *Structuring:* Scottish Government and Peatland ACTION will need to work to design a suitable initial offer based on market feedback. This offer may be more generous in the short term to accelerate early uptake, then refined over time.
- *Soft launch:* The Scottish Government should consider exploring how the OP model could initially be offered alongside the existing offer of full capital grants to provide increased optionality to projects. This could also be tested regionally to explore and refine levels of support.

Annexes

Annex A: List of stakeholders engaged

Supply-side

Bidwells

Borders Forest Trust

Caledonian Climate Partners

Community Woodlands Association

Environment Systems

Estates:

- Atholl
- Balmoral
- Dalhousie
- Glenfalloch
- Invercauld
- Rosebury
- Rottal
- Roxburghe
- Wemyss & March

Forest Carbon

Highland Rewilding

NatureScot

NFU Scotland

Palladium

The Real Wild Estates Company

RSPB

Savills

Trees for Life

Demand-side

Ecoact

Respira

Santander

Scottish Power

South Pole

Investors

Federated Hermes

Foresight

Par Equity

The Scottish National Investment Bank

Other

Kana

Peatland ACTION

Scotland's Rural College (SRUC)

Scottish Nature Finance Pioneers

Annex B: Stakeholder engagement methodology and questions

Stakeholder interviews

In advance of each interview, stakeholder engagement materials tailored to each category of stakeholder (supply, demand, investor) were distributed to the interviewee. These materials included a summary of the project, options materials and questions, in order to allow for efficient discussion. Each 45-minute interview began with a short presentation explaining the concepts and meeting objectives, with the remainder of the discussion centred around the stakeholder category specific questions. Following each interview, meeting notes were shared with the interviewee to ensure their thoughts were accurately captured and provide them with an opportunity to make any additional contributions.

Supply-side questions

- 1) What is your experience in peatland restoration?
- 2) What are the barriers to peatland restoration?
- 3) What is needed to overcome barriers, and encourage greater participation from all stakeholders in peatland restoration?
- 4) Are the current funding options (i.e. Peatland Action Grants) sufficient and adequate to fund peatland restoration? If not, why not?
- 5) What is your interest in the Peatland Carbon market? What benefits are you looking to achieve by engaging with the peatland carbon market?
- 6) What are your concerns about / limitations of the Peatland Carbon market? Are there any key bottlenecks you see? E.g. Contractor capacity?
- 7) We are looking at how further support could be provided to projects. We have looked at a range of approaches. Would upfront project finance or a guaranteed upfront buyer of all PIUs be useful? The former offers greater opportunity to share in benefits of carbon sales over time, but less opportunity for short term benefit. The latter offers greater security that credits can be sold at an understood price.
- 8) Would a guaranteed government supported price floor for verified carbon remove barriers to delivering projects? This wouldn't stop you selling to private buyers if you could get a better price.

Additional questions for community organisations and tenant farmers

- 1) How do you view peatland restoration and carbon markets in Scotland? What concerns and opportunities do these have for communities?
- 2) How can peatland restoration projects and carbon markets be structured to benefit local communities in Scotland?
- 3) How can local communities participate in peatland restoration?

- 4) What are the key barriers to unlocking community led projects? What could help overcome these barriers?
- 5) What local engagement / benefit sharing would you like to see from private led projects?

Demand-side questions

- 1) Do you have or are you looking to develop a corporate Net Zero Policy? Have you mapped your emissions and what steps are you looking to take to reach Net Zero?
 - a. Have you considered purchasing carbon offsets as part of your strategy? If yes how so? If not, why not?
 - b. Have you considered purchasing from Scottish peatland restoration projects? If yes how so? If not, why not?
- 2) When considering carbon offsets what are your key considerations and why? For example:
 - a. Pricing
 - b. Co-benefits (community / environmental)
 - c. PR benefit/narrative (is the project charismatic)
 - d. Location (e.g. UK/international)
 - e. Project distribution (all from one or from multiple varied projects).
 - f. Credit quality
 - g. What standard / carbon code (UK standards (e.g., WCC, PC) versus international standards (e.g., Verra, Gold Standard, etc.).
 - h. Project Type (nature-based solutions, e.g., woodland/peatland vs. technological solutions e.g., DAC).
 - i. Negative emissions vs emission reductions (i.e. abatement of emissions)
 - j. Market factors – maturity and liquidity of supply, track record.
 - k. Which of these are more important to you and which would you be willing to trade for other benefits?
- 3) Have you considered purchasing carbon offsets from peatland restoration projects?
 - a. On behalf of Scottish Government, we are looking to design funding mechanisms to focus in particular on restoring Scotland’s degraded peatlands. The carbon locked up in peat soils is equivalent to 140 years’ worth of Scotland’s total GHG emissions and need to be restored to prevent further degradation.
 - b. How do you consider abatement credits like these compared to sequestration credits (if different at all)? What are your key considerations?
- 4) What are your concerns when buying credits (e.g. “quality”, market price volatility)?
- 5) When buying credits are you looking to purchase credits for reporting purposes? Are you looking for longer term contracts to secure prices or do you purchase for near term needs?
- 6) Do you prefer to purchase credits from a small number of projects, a wide range, or do you have no preference? Would exclusivity from a specific site be interesting?

- 7) When buying credits do you work with a broker or have you tried to approach projects directly? What challenges have you faced?

Investor questions

Scotland Carbon Fund

- 1) Have you either invested, or considered /assessed the opportunity to invest in Natural Capital and specifically UK voluntary carbon markets?
 - a. If so, what was your experience, in which markets and through the use of which financial mechanisms (e.g. fund, direct investment into projects, purchase of credits, etc.)?
 - b. If not, is this something you would consider in the future? If not, why not?
- 2) What barriers do you see to engaging with carbon markets (at all / more)?
 - a. Do you have the necessary expertise and internal capacity to make informed decisions about carbon funds?
 - b. Are there specific risks or market failures you would point to (e.g. lack of liquidity, price volatility and uncertainty, understanding of project risks, project availability, counter party risk (e.g. individual farmers), investment horizon, etc.)?

We are working with Scottish Government on the design of two possible approaches to market development, the SCF (Scotland Carbon Fund) and PFG. Regarding the SCF, we are looking at two models:

- A liquidity vehicle would act as large-scale buyer of PIUs with a view to resell these a premium as PIUs, or PCUs (once verified). This would be an evergreen brokerage or “market maker” vehicle.
- A more traditional project finance vehicle which would invest in projects to finance their upfront development costs.

Under both models we would expect the SCF to play a major leadership role in the market and play a part in setting minimum standards for projects.

- 3) Would either of these vehicles be attractive as an investment?
 - a. What parameters would you be considering to make an investment decision (e.g. return, size, duration of the fund, ability to receive some of the return in-kind, tax considerations/incentives, etc.)?
 - b. How important would first loss government capital be to your response?
- 4) What co-benefits / outcomes are important to you when investing in a carbon project (e.g., community, biodiversity linked outcomes)? Why are these benefits important to you?
- 5) We would aim to enshrine Scotland’s Just Transition and Responsible Investment Principles into the SCF characteristics. How important is the community benefits element to you? What would be acceptable for investors in terms of profit-sharing mechanisms?
- 6) What other fund characteristics would be important to you? (e.g., fund investment ticket size, investment horizon, return in cash vs in-kind (i.e. carbon), shared endowment to cover projects maintenance costs, any other).

Price Floor Guarantee

To kickstart the peatland market, a price floor guarantee may also be offered. The price floor would be expected to cap downside market pricing based risk from projects (although some delivery risk remains and the potential upside from price increases remains available for investors to capture).

- 1) Would a price floor guarantee change your approach to investment peatland carbon markets?
- 2) How would a price floor mechanism (protecting your capital from downside carbon price volatility) affect your return expectations?
- 3) How do the two risk-reduction proposals of the price floor guarantee and first loss capital compare, are the benefits additive, is one more attractive than the other?
- 4) Are there any other mechanisms that Scottish government could employ to increase your interest in this type of project?
- 5) Are there any wider concerns you have regarding this approach?

Stakeholder survey

A short accessible survey was created to gather thoughts and opinions from a broader range of stakeholders, on peatland restoration and voluntary carbon markets. The survey was distributed through a number of channels, including the Scottish Nature Finance Pioneers Forum. The results of the survey were used to generate additional insights and outputs for the final report.

Survey questions

- 1) How would you describe yourself or your organisation?
 - Landowner
 - Provider of finance
 - Buyer of carbon credits
 - Community
 - Expert / Adviser
 - Tenant farmer
 - Project delivery
 - Other (please specify)
- 2) Have you participated in (1) the delivery of peatland restoration and/or (2) the peatland carbon market (i.e., bought / sold credits)?
 - Yes, both
 - Yes, in the delivery of peatland restoration only
 - Yes, as a participant in the peatland carbon market only
 - NoIf "Yes", please provide a description of your involvement
- 3) If you are not yet involved, are you intending to participate in peatland restoration or peatland carbon markets?
 - I am already involved (as per response to question above)

- Yes
 - No
- If “Yes” or “No”, please provide a reason for your response
- 4) Are you supportive of the sale of carbon credits in the voluntary carbon market? [sliding scale from “Not supportive” to “Very supportive”]
 - 5) Please describe the main reason(s) for your views on the voluntary carbon market (as provided in Q4).
 - 6) What do you see as the main barriers to delivering peatland restoration in Scotland? (please select your top 3)
 - Capacity of contractors to deliver restoration
 - Design / limitations of Peatland ACTION programme
 - Impact on use / value of land
 - Long term maintenance obligations / liabilities
 - Scale of financial incentive
 - Ecological / logistical challenges to delivery and maintenance
 - Awareness of benefits of restoration
 - Unattractive carbon prices
 - Uncertain future carbon prices
 - Concern over ability to find a buyer (liquidity)
 - Uncertainty over access to future grant funding mechanisms
 - 7) Have you experienced any other key barriers to delivering peatland restoration beyond those detailed above? Please provide details below. [open text box]
 - 8) What should be prioritised to overcome these barriers? (please select 2)
 - Stronger market governance
 - Improved access to funding
 - Increased resourcing / capacity
 - Greater financial rewards
 - Further regulation of landowners
 - A guaranteed carbon price
 - Other (please specify)
 - 9) Who should pay for the restoration of peatland in Scotland?
 - Government
 - Carbon buyers
 - Landowners and operators
 - Non-governmental organisations
 - Local communities
 - Other (please specify)
 - 10) Who should be recognised as the key beneficiaries of peatland restoration? (please select up to 3)
 - Landowners
 - Farmers / tenants / crofters
 - Nature
 - Corporates
 - Local communities
 - General public
 - Investors
 - Other (please specify)
 - 11) How can benefits (monetary and non-monetary) be shared amongst the beneficiaries? [open text box]
 - 12) What more do you think the government should be doing to support peatland restoration? [open text box]

- 13) Is there anything else you would like to tell us about facilitating peatland restoration
[open text box]
- 14) If you are happy to be contacted further, please provide your name, email and, where applicable, the name of your organisation

Annex C: Interim Principles for Responsible Investment in Natural Capital

An overview of how the six Interim Principles for Responsible Investment in Natural Capital guided the design of the proposed SCF and PFG mechanisms.

Interim Principles for Responsible Investment in Natural Capital	Considerations for the proposed SCF and PFG
<p>1. Investment that delivers integrated land use</p>	<ul style="list-style-type: none"> • As the primary focus of the SCF is on peatland restoration alongside the carbon benefits generated, the restoration of these environments will deliver wider ecosystem services including improving biodiversity, reducing flood risk and supporting amenity value • Given the ability to aggregate projects, it may be possible for the fund to support peatland projects which may not be financially viable on carbon revenue alone (e.g. due to inaccessibility of site), but deliver wider environmental, social and economic outcomes • It is possible to structure the PFG mechanism to incentivise projects which include targeted characteristics (e.g. demonstrated local community involvement) through implementing a higher reserve price for these projects. These targeted characteristics can be amended from auction to auction, providing flexibility to align with national priorities
<p>2. Investment that delivers public, private and community benefit</p>	<ul style="list-style-type: none"> • The structure of the SCF should enable the benefits of peatland restoration in Scotland, both monetary and non-monetary, to be shared between market participants, local communities and the general public • There are an array of benefit sharing mechanisms which can be incorporated within the fund to support this benefit sharing, however a balance is required in order to ensure projects remain financially viable in order to crowd-in investment • In addition to funding upfront capital costs, the SCF could support the capacity building of contractors and other relevant jobs, boosting the economy of local communities

**Interim Principles
for Responsible
Investment in
Natural Capital**

Considerations for the proposed SCF and PFG

3. Investment that demonstrates engagement and collaboration

- Important to consider how communities could have their voice heard in major investment decisions, e.g. a public interest test
- Once up and running, engagement materials, including case-studies of success could be published to build awareness of the benefits of peatland restoration to public, private and community stakeholders and catalyse further interest in peatland restoration
- The PFG could require projects to demonstrate sufficient community participation in order to be eligible for the guarantee or a higher reserve price

4. Investment that is ethical and values led

- Investors in the SCF should meet the six principles for responsible investment⁶¹

5. Investment that is of high environmental integrity

- Strict eligibility criteria should be imposed for the purchase of carbon credits. E.g. buyers must be able to demonstrate progress against an emissions reduction target in line with SBTi's criteria and/or certain industries should be restricted from purchasing credits
- Whilst out of scope for the SCF and PFG, improvements in the monitoring of peatland condition will be key in the delivery of a high integrity market.
- Transparency is critical. All transactions should be made publicly available through the UK Carbon Registry

6. Investment that supports diverse and productive land ownership

- The SCF should incentivise a leasehold model, rather than freehold, supporting collaboration with communities and reducing the negative impacts associated with "Green Lairds"
- Where existing leases are in place, the fund should engage relevant parties (e.g. tenant farmers, crofters) early to consider opportunities for shared benefit

Annex D: Mechanisms for improving financial governance

Finance Earth assessed options for a range of mechanisms to support market development and good financial governance. Each of these mechanisms represents a broad approach and several could be delivered in combination or as a hybrid.

Mechanism	High-level Considerations
Scotland Carbon Fund	<ul style="list-style-type: none"> As an investor, the SCF is able to directly structure financial governance mechanisms into investee projects (e.g. endowments, long term financial planning, sales strategies for carbon credits). Acting as a cornerstone investor in the Scotland Carbon Fund, the Scottish Government is well placed to set the market standard for governance for wider projects / investors.
Price Floor Guarantee	<ul style="list-style-type: none"> Market pricing risk is transferred away from projects but not the risk of delivery. This helps investors get comfortable with the market as it matures. The price floor gives confidence to project developers / investors over medium/long term revenues, in turn providing greater medium/long term certainty for the project.
Operating Payments	<ul style="list-style-type: none"> Providing a mix of capital and grant, or full grant funding would reduce delivery risk to Scottish Government while creating a role for private investment. In particular operating payments (e.g., for 10 years) will build sector credibility, while granting confidence of a minimum level of permanence to carbon buyers. As the market matures maintenance grants could be reduced or made conditional on target outcomes. This mechanism is a key enabling factor for other approaches including the SCF and PFG.
Dis-incentivise Upfront PIU Sales	<ul style="list-style-type: none"> Restricting PIU sales may improve long term outcomes by forcing a portion of revenues into the operating life of the project. This and other regulating mechanisms could be aligned to schemes that incentivise holding PIUs including the PFG.
Endowments	<ul style="list-style-type: none"> Projects could be required / incentivised to capitalise an endowment to fund (a percentage of) long term maintenance costs. This will build a greater understanding of long-term costs but may reduce delivery until carbon pricing climbs further if requirements are too punitive. Endowments could be designed directly into the Scotland Carbon Fund investment model.

Regulatory Pressure

- The prospect of the introduction of carbon disclosures and pricing for peatland emissions (in 2030 or later), could be used to convince landowners to take action and restore peatland now, to avoid predatory delay.
 - Public policy measures such as carbon price could also be used to resolve discrepancies in land pricings that currently cause degraded peatland to be worth more than healthy peatland.
-

Annex E: List of assumptions used in financial analysis

General Assumptions

Assumption	Value	Unit
Project Area	100	Ha
Project Length	50	Years
Weighted tCo2e benefit	3	TCo2e/ha/yr
Inflation	2.5	%
PIU price (Year 0)	20	£/PIU
Verification Premium	50	%
Carbon Price CAGR (yr 1-30)	3.5	%
Carbon Price CAGR (yr 31-50)	1.5	%
Capital Appreciation	1.5	%

Cost Assumptions provided by Peatland Action

Feasibility Study	27	£/ha
Project Design	130	£/ha
PC Registration / validation	2200	£/Site
Restoration cost	1900	£/ha
Dear Fencing installation	400	£/ha
Maintenance	73	£/ha/yr
Other Monitoring	6	£/ha/yr
Peatland Code Verification	1164	£/site (recurring)

Scenario A Assumptions

Assumption	Value	Unit
Capital Grant	2,479	£/ha
PIU Sales in Year 1	100	%

Scenario B specific Assumptions

Assumption	Value	Unit
Total Grant (NPV)	2,479	£/ha (NPV of grants)
Grant provided as capital	40	%
Grant provided for maintenance	60	%
Grant term	15	Years
Annual Grant value	99.16	£/ha/yr

Financing Assumptions		
Loan Profile	Fully Amortising	Description
Loan Value	200,000	£
Tenor	25	Years
Interest rate	5.00	%

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