Research Report No. 1260

Facilitating Local Natural Capital Investment: Literature Review

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RESEARCH REPORT

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Summary

Facilitating Local Natural Capital Investment: Literature Review

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Natural capital; investment; sustainable finance; Scotland; nature-based solutions; ecosystem services; conservation finance; environmental green finance

Background

NatureScot and its partners are exploring approaches to secure more varied and sustained investment in nature through the Facilitating Local Natural Capital Investment Initiative. The programme aims to identify the business cases, financing structures and mechanisms and supporting tools required to deliver significant investment in the natural environment that can be facilitated by regional partnerships and could be scaled up and replicated across Scotland.

The objective of this literature review is to develop a detailed understanding of natural capital investment initiatives in the UK and overseas and identify key learnings for the application of similar approaches in a Scottish context. These learnings will inform the broader Facilitating Local Natural Capital Investment Initiative and any future initiatives seeking to support investment into Scotland's natural capital.

Main findings

- Scotland's natural capital assets provide significant levels of ecosystem services, many of which have the potential to support a range of conservation finance opportunities.
- To catalyse private investment, natural capital project developers should fully explore the opportunities for each project to generate net positive cashflows.
- There are a range of financial products and investment vehicles that could be applied in the context of Scotland's natural environment, depending on the risk and cashflow profile of each project.
- Financing structures should be applied based on their suitability to the underlying revenue streams of a given natural capital investment project, as well as the applicable regulatory and market infrastructure in the region.

- Public sector support both locally and nationally could catalyse the growth of natural capital investment markets and this could take several forms, including investment-readiness funding, compliance regulations and price support mechanisms.
- Natural capital projects should be implemented with transparent and robust governance structures to ensure that both financial and impact goals are achieved.

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1. INTRODUCTION

"Natural capital" refers to the stock of renewable and non-renewable resources (biodiversity, air, water, soils and minerals) that combine to yield a flow of benefits to people.[1] Scotland is home to a range of natural capital assets, including some of the world's most important peatlands, extensive forests and hundreds of miles of coastline and marine habitat. NatureScot's Facilitating Local Natural Capital Investment Initiative ("the Initiative") seeks to demonstrate practical mechanisms to secure private investment into these assets in order to deliver environmental, social and economic benefits.

The objective of this literature review is to identify key lessons for facilitating investment in natural capital in Scotland, particularly at the regional level, by looking at relevant experience and initiatives from across the world. Section 2 sets out the broader context of natural capital investment and the current extent and condition of Scotland's natural capital assets. Section 3 identifies the main current revenue-generating opportunities for natural capital projects in Scotland. Section 4 describes a range of natural capital financing products and vehicles designed to address these revenue generation opportunities that are potentially relevant for Scotland. Section 5 provides a framework for the assessment of natural capital investment opportunities and a summary of the market infrastructure that can help accelerate the development of fledgling natural capital investment markets. Finally, Section 6 evaluates all findings and provides some recommendations for the Initiative.

[1] Seea.un.org. 2020. *Natural Capital and Ecosystem Services FAQ | System of Environmental Economic Accounting*.

2. BACKGROUND TO SCOTTISH NATURAL CAPITAL INVESTMENT

2.1 The global context

It has been estimated that globally up to £300 billion of annual investment is required to safeguard the natural environment, but current annual spending is only around £40 billion.[2] There is growing recognition of the importance of the private sector in filling this funding gap, by developing investment opportunities that protect or restore natural capital while generating a return on investment.

Today, the bulk of funding that flows into nature conservation comes from public and philanthropic sources. By 2015, the private sector had committed only c.£6 billion globally to conservation investments, although the market is rapidly growing in some parts of the world.[3] For example, the US ecological restoration industry has now reached £20 billion in annual economic output and supports 220,000 jobs, more than in the logging, coal mining, iron and steel industries combined.[4]

2.2 The Scottish context

Policymakers are increasingly recognising the importance of investing to protect Scotland's valuable natural resources. The First Minister's declaration of a climate emergency in April 2019,[5] and legislative commitments under the Climate Change (Scotland) Act 2019 to achieve net zero emissions by 2045,[6] demonstrate an increasingly accommodating political environment suitable for the growth of natural capital markets in Scotland. In its role as adviser to the Scottish Government, the UK Committee on Climate Change has set out the critical role of land use, particularly in relation to creating woodland, restoring peatland and creating green infrastructure in meeting climate targets in Scotland.[7] The Scottish Green Investment Portfolio has been recently launched to assist in this transition by supporting £3 billion of investment-ready projects by 2023, including those in peatland restoration and woodland creation.[8] In a UK context, the Green Finance Institute is working to bring together public and private sector experts to support the design of new policy and market mechanisms that unlocks capital to support the transition to a green economy. Supportive policy mechanisms will be fundamental to accelerating the growth of Scotland's natural capital investment markets.

Notwithstanding the hugely damaging impact on many people's lives and livelihoods, the COVID-19 crisis does present a unique policy opportunity to support natural capital initiatives that create immediate jobs across the country, accelerate the economic recovery and disrupt unsustainable industries. The Scottish Government's Advisory Group on Economic Recovery recently recommended a programme of national renewal based on an "unequivocal focus on climate change, fair work, diversity and equality" and recommended a "four capitals" approach (natural, human, social and economic capital), prioritising action where the "coincidence of emissions reductions, the development of natural capital and job creation is the strongest".[9]

The urgent need to attract private capital into this space has been recently highlighted in the *£1 billion Challenge* conservation finance investment route map published by the Scottish

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[2] WWF-NL. 2020. *WWF Bankable Blueprint Book.*
[3] Hamrick, K. and Goldstein, A., 2016. *Raising Ambition State of The Voluntary Carbon Markets 2016*.
[4] Barrett, K. 2015. *Ecological Restoration Is A $25 Billion Industry That Generates 220,000 Jobs*.
[5] BBC News. 2020. *Sturgeon Declares 'Climate Emergency'.*
[6] Gov.scot. 2020. *Climate Change - Gov.Scot.*
[7] Committee on Climate Change. 2020. *Land use: Policies for a Net Zero UK*
[8] Gov.scot. 2020. *Scotland's Green Investment Portfolio: Call for Projects - Gov.Scot.*
[9] Gov.scot. 2020. *Towards A Robust, Resilient Wellbeing Economy for Scotland: Report of The Advisory Group on Economic Recovery - Gov.Scot.*

Environment Protection Agency ("SEPA") and the Scottish Wildlife Trust ("SWT").[10] The publication outlined a range of natural capital policy and funding options to facilitate investment at scale across landscapes, with wide-ranging input from a broad community of non-governmental organisations ("NGOs"), public bodies and private sector entities.

In addition to broader policy and advocacy work, various supportive market-based mechanisms have been established or are in development in the UK. The Woodland Carbon Code and the Peatland Code provide independent certification standards that can be applied to two of Scotland's most valuable habitats.

Since 2012, the Scottish Government has provided funding to suitable peatland restoration schemes through Peatland Action. With £20 million of restoration work planned for 2020/21 and a commitment to invest £250 million over the next ten years, Peatland Action provides grant funding to restoration as well as innovation and awareness projects.[11] Locally based Peatland Action officers works directly with land managers to encourage take up.

While the Scottish Government has not announced any plans to implement a biodiversity net gain policy (as detailed in the UK Government's Environment Bill that applies to England only), some councils such as the Scottish Borders Council have collaborated with NGOs and infrastructure developers to develop localised or project-specific biodiversity offset programmes.[12]

The Initiative is designed to support local and regional approaches for investment in Scotland's natural assets. In this objective it is closely aligned with ongoing work led by the Scottish Land Commission to advise Scottish Government on developing regional land use partnerships to co-ordinate strategic investment in and management of nature. Pilot partnerships in Aberdeenshire and the Scottish Borders have already demonstrated the value of collaboration at this level, facilitating strategic co-ordination based on landscape level ecosystem service data.[13] The Scottish Government has recognised the opportunity for regional frameworks to effectively deploy limited financial resources, as outlined in the Land Use Strategy for Scotland and through its support for new Regional Economic Partnerships and regional spatial strategies.[14]

2.3 Overview of Scotland's natural capital

Scotland's extensive natural capital asset base spans mountains, moorland, peatland, forests, grasslands, cropland, freshwater and marine resources (see Figure 1 for land cover proportions), as well as non-renewable assets (such as fossil fuels and minerals).

The relative value of the various ecosystem services provided by Scotland's renewable natural capital assets is illustrated in the latest set of natural capital ecosystem services accounts produced by the ONS for Scotland, summarised in Figure 2.[15] These figures indicate that a significant proportion of the value generated each year by Scotland's natural capital is derived from regulating and cultural ecosystem services such as carbon sequestration and recreation. In addition, natural capital provides the underpinning provisioning ecosystem services for key sectors including agriculture, fisheries, renewable energy generation, timber production, and

[10] Scottish Conservation Finance Project. 2020. *The £1 Billion Challenge.*
[11] Numbers for Good. 2017. *Feasibility Study into New Financial Mechanisms for Forestry.*
[12] CIEEM Scotland Policy Group. 2019. *Biodiversity Net Gain in Scotland.*
[13] Trench, H. 2020. *Making the most of our land – the potential of new regional land use partnerships*
[14] Gov.Scot. 2016. *Getting The Best From Our Land: A Land Use Strategy For Scotland 2016 - 2021*
[15] Non-renewable Natural Capital such as fossil fuels and minerals are excluded from this project and analysis. Scottish Government, 2020. *Scottish Natural Capital Accounts: 2020*. An Official Statistics publication for Scotland. Experimental Statistics.

water abstraction. It should also be noted that these accounts are far from complete and omit several other important ecosystem services provided by Scotland's landscapes that are highly complex to value, such as flood risk mitigation.

Whilst this provides indications of relative value, a single year snapshot does not capture the changes and likely future trends in the value of benefits over time. For example, the natural capital accounts note that:

- Renewable energy generation has increased more than fourfold since 2004 (Figure 3). This increase is mainly due to wind power which now represents 72% of Scottish renewable power generation. In 2018, 54.9% of Scotland's electricity production came from renewable sources.
- Timber production more than doubled between 1997 and 2018, and in 2018 Scotland produced 62.5% of the UK's total timber production.
- Fish capture in Scottish waters increased by 72% from 2003 to 2016 and represents nearly 80% of total UK fish capture.
- Fossil fuel extraction more than halved between 1998 and 2018 (Figure 3).

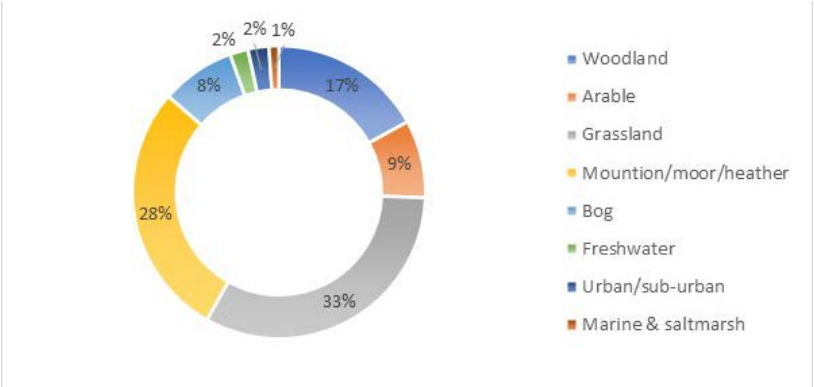

Figure 1 Scottish Land Cover 2015[16]

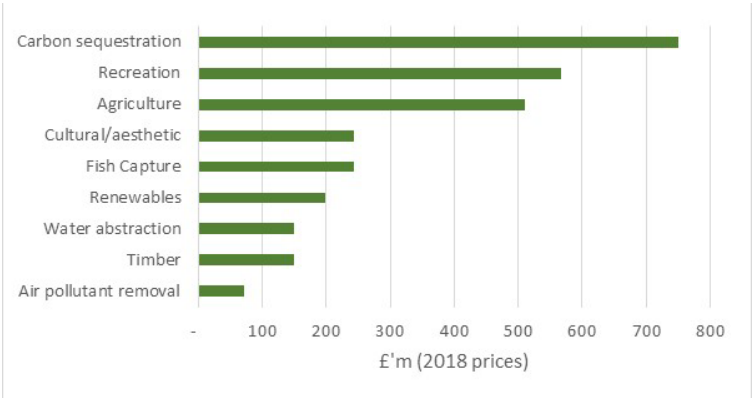

Figure 2: Value of Scotland's natural capital benefits in 2016 (ONS for Scottish Government 2020[17]*)*

[16] Prepared using Land Cover statistics derived from LCM2015 (Rowland et al., (2017)). Available from https://www.ceh.ac.uk/land-cover-map-2015-statistics

[17] Based on value information in Scottish Natural Capital Accounts: 2020 (ONS for Scottish Government 2020) https://www.gov.scot/publications/scottish-natural-capital-accounts-2020/pages/10/

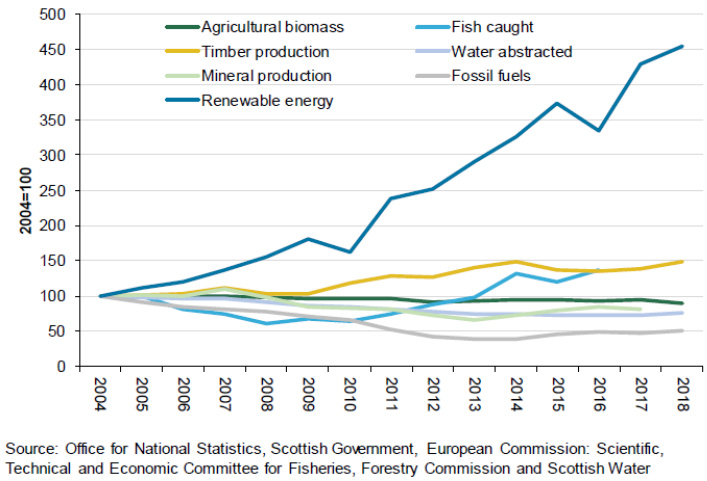

Figure 3. Physical flows of provisioning ecosystem services from natural capital in Scotland, 2004-2018 (Crown copyright, ONS for Scottish Government 2020[18])

Some of these trends can be expected to continue in the future, being reinforced by current policy drivers (e.g. zero carbon target implications for renewable energy), whilst others may be limited by the productive capacity of natural capital (e.g. fish capture and agricultural output if fish stocks/soils are depleted or degraded due to over-exploitation and/or climate change). Other benefits may become more important with climate change (e.g. urban cooling effects, flood risk mitigation and carbon sequestration).

2.3.1 Condition of Scotland's natural capital assets

Forests/woodland

Woodland covers 17% of the land area of Scotland. Scottish forests sequester 7.9 million tCO_2e per annum, more than the total emitted by croplands. 65% of Scottish woodland is non-native, with 32% classed as native, of which 94% is in intermediate condition mainly due to low levels of older and veteran trees.[19]

Peatland

Peatlands cover more than 20% of Scotland's land area and around 66% of UK peatland is situated in Scotland. Healthy peat plays a vital role in carbon storage, regulating water flow, maintaining water quality and the rich biodiversity and landscape which supports Scotland's tourism industry.

Much peatland is in poor condition or under threat from erosion, burning or peat extraction. In the UK, only around 20% of peatlands remain in a near-natural state. The remaining 80% have been modified through past and present land management and industrial pollution. The Centre for Ecology and Hydrology ("CEH") estimates that damaged peatland in Scotland emit 9.3 million tCO_2e greenhouse gas ("GHG") emissions per annum, more than offsetting the carbon sequestration in Scotland's forests.[20]

[18] Contains public sector information licensed under the Open Government Licence v3.0.
[19] Forest Research. 2020. *NFI Woodland Ecological Condition in Scotland - Forest Research.*
[20] Evans et al. 2017. *Implementation of an Emissions Inventory for UK Peatlands.*

Farmland & Grassland

In 2019, 520,000 hectares of land was used to grow crops, but most land (c.2.8 million hectares) was used for grazing nine million head of livestock.[21]

In 2017, croplands emitted 4.8 million tCO_2e GHG emissions, whilst existing grassland sequestered 2 million tCO_2e, making farming a net emissions source.[22]

Freshwaters

64% of surface water bodies in Scotland have an overall Water Framework Directive ("WFD") status of high or good, while 17% are rated as either bad or poor, and are concentrated in the central belt, North East Scotland, and Dumfries & Galloway.[23]

Marine

Scotland accounts for 80% by weight of the total UK landings of key fish stocks (88% by value).[24]

Urban Green Infrastructure

Urban and sub-urban land covers only 2.3% of the land area of Scotland but has a significant influence on the quality of life for most the nation's population. Recent additions to the national natural capital accounts highlight the value of benefits gained from green infrastructure, including urban cooling[25], noise mitigation, recreation and amenity, and these values are reflected in house price premiums for proximity to green infrastructure.

Recreation and tourism

Over one billion hours were spent on visits for outdoor recreation in Scotland in 2017 and the average Scot spends more time in the outdoors than the UK average.[26] £2.5 billion a year is spent in the tourism and outdoor leisure sector in Scotland, which is dependent upon the extent and condition of its ecosystems.[27]

Biodiversity

Whilst it is difficult to provide a composite measure of the overall condition of biodiversity, the Natural Capital Asset Index ("NCAI") is a composite index which tracks changes in the capacity of Scotland's terrestrial ecosystems to provide benefits to people. While the NCAI has shown stability in biodiversity measures over recent years, the long-term picture is one of decline since 1950 (see Figure 4). NatureScot has identified 41 terrestrial habitats (of which 27 are under threat of significant decline) and 20 marine habitats as highest priority for biodiversity conservation.[28.]

Designated sites

Scotland contains 1,870 SSSIs, covering around one million hectares or 12.6% of Scotland's land area. The status of designated features as at March 2020 was 78.8% either favourable

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[21] Gov.scot., 2020. *Scottish Agricultural Census: June 2019 - Gov.Scot*.
[22] ONS, 2020. *Scottish Natural Capital Accounts.*
[23] Sepa.org.uk. 2020. *Water Classification Hub.*
[24] However, not all fish landed in Scotland are caught in Scottish waters, and not all fish caught in Scottish waters are landed in Scotland. Gov.scot. 2020. *Setting the Scene*.
[25] For example, urban green space in Edinburgh and Glasgow prevented costs of £560,000 during a partial hot day in 2016. ONS, 2020. *Scottish Natural Capital Accounts.*
[26] ONS. 2020. *Scottish Natural Capital Accounts.*
[27] Eftec. 2019. *UK Tourism & Outdoor Leisure account for Scotland.*
[28] NatureScot. 2020. *Scottish Biodiversity List.*

or recovering, an increase of 7.4% since 2005.[29] However, over 20% remain in poor or unfavourable condition and not recovering.

NatureScot concludes that invasive species remain the single biggest negative pressure on natural feature condition, with climate change representing a small but growing additional negative pressure.

For species, marine mammals (57.1%) and birds (67.8%) have the lowest rates of favourable status. Scotland's Biodiversity Progress to 2020 Aichi Targets classified four species as being at serious risk (Scottish wildcat, ash, great-yellow bumblebee, and the freshwater pearl mussel), plus eight species classed as being at moderate risk.[30]

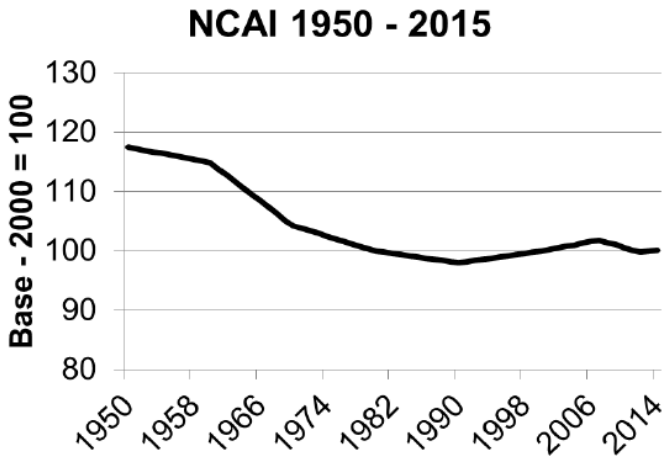

Figure 4 Scotland's reconstructed NCAI, 1950-2015 (NatureScot 2020[31])

2.4 Natural capital priorities for Scotland

Policy drivers determine which elements of natural capital will be priorities for maintenance and investment over the coming years. Key environmental legislation, frameworks and targets were considered in drafting this report. Relevant policy drivers identified include:

- The 2045 net zero target, towards which carbon sequestration through activities such as peatland restoration, woodland creation and regenerative farming practices can make valuable contributions. The Committee on Climate Change estimates that the planting of 90-120 million trees, the restoration of at least 50% of upland peat, the planting of 23,000 hectares of bioenergy crops and a 20% reduction in beef, lamb and dairy production and consumption will be required across the UK to achieve this.[32] A key enabler will be the development of carbon markets;
- Building economic resilience, both in a post-COVID recovery and in response to pressures from climate change.[33] Key aspects will be water quantity regulation/flood risk mitigation, resilient agriculture, fisheries and food security (to drought, floods, and

[29] Comprising: Favourable 65.5%, Unfavourable recovering 6.4%, Unfavourable Recovering Due to Management Change 7.0%. NatureScot, 2019*. Nature: The Proportion of Scotland's Protected Sites in Favourable Condition.*
[30] NatureScot. 2020. *Scotland's Biodiversity Progress To 2020 Aichi Targets – Aichi Target 13 – Genetic Diversity Maintained – Supplementary Report 2020.*
[31] NatureScot 2020. *Natural Capital Asset Index StoryMap*.
[32] Committee on Climate Change. 2020. *Land use: Policies for a Net Zero UK*
[33] Gov.scot. 2020. *Towards A Robust, Resilient Wellbeing Economy for Scotland: Report of The Advisory Group on Economic Recovery - Gov.Scot.*

threats from pathogens), and investment in place-making to attract tourists (including nature-based tourism), inward investment and talent;

- Improving health and wellbeing, chiefly relying on investment in urban greenspace which provides and enhances space for physical exercise and recreation, urban cooling, noise mitigation and air pollution removal benefits; and
- Reversing biodiversity loss, which will require a wide range of approaches that could include: interventions targeted at specific habitats, features or species; improvements to policy (in particular, the planning development process and agri-environment schemes); and building biodiversity improvement into natural capital investments that capture multiple benefits.[34]

Based on the assessment of the extent and condition of Scotland's natural capital, priority areas for investment include:

- Farming, especially contributing to food production and security, carbon sequestration and reductions in greenhouse gas emissions, improved water quality, flood risk mitigation and biodiversity benefits;
- Fisheries and the marine environment, focusing on the sustainability of fisheries, blue carbon and marine biodiversity;
- Forestry and tree planting, promoting sustainable timber use, carbon sequestration, recreation, flood mitigation, water quality, air pollution removal and biodiversity benefits;
- Peatland restoration, concentrating on reducing greenhouse gas emissions, but also improving flood mitigation, water quality and biodiversity;
- Urban green infrastructure, targeted at enhancing recreation, physical health and wellbeing, urban cooling, noise mitigation, and sustainable drainage systems ("SuDS");
- Catchment-based investment, focused on water quality and natural flood risk mitigation; and
- Landscape and biodiversity as an opportunity to boost tourism.

[34] Gov.scot. 2020. *Scottish Biodiversity Strategy: Report to Parliament 2017 To 2019 - Gov.Scot.*

3. MARKET OPPORTUNITIES

A limited supply of public and philanthropic grant funding is available for the protection or enhancement of Scotland's natural capital assets. Additional sources of private investment can potentially be secured against generating revenues or cost savings from natural capital project delivery. Revenues can be further reinforced by compliance-based markets which price in the environmental costs of impactful practices (e.g. by applying taxes to carbon intensive industries). Paired alongside existing forms of funding from government or local authority budget allocations, philanthropic grants, corporate and individual donations, private investment can support the creation of a long-term sustainable funding base for Scotland's natural capital.

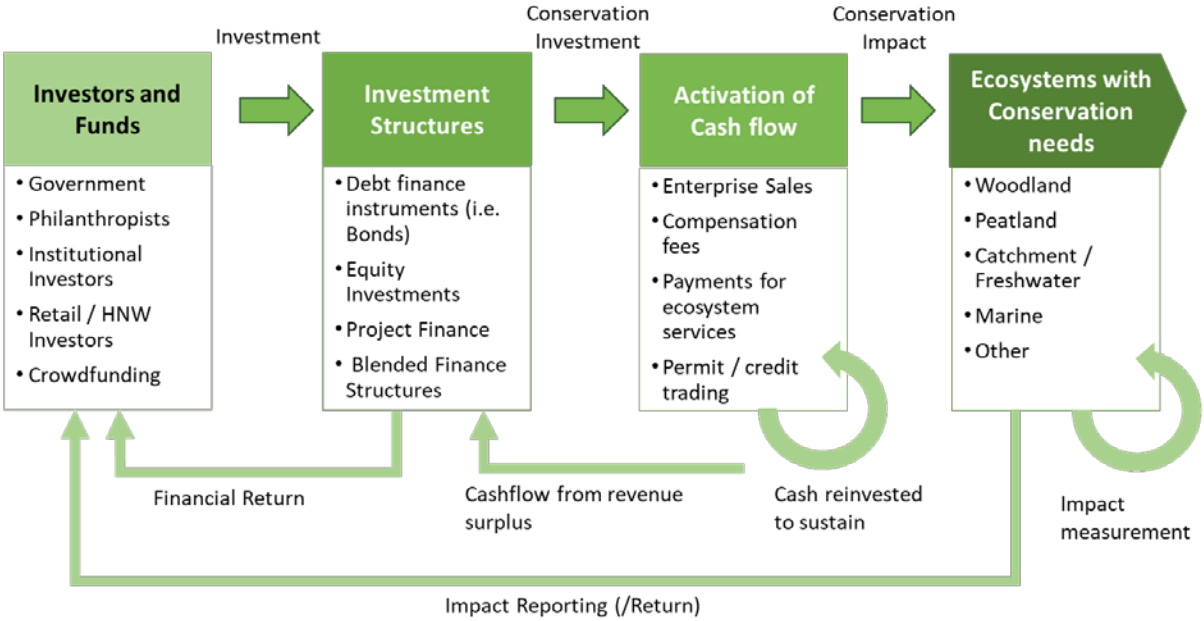

Figure 5 Conservation Finance Framework. B*ased on 'Conservation Finance. From Niche to Mainstream'*. (Credit Suisse 2016).

The primary criteria that define whether a natural capital project is investible or not is the availability and quality of its revenue streams. When assessing a potential investment decision, an investor will initially seek to confirm that the project has the potential to generate reliable revenue stream(s) to support a target return on the capital deployed based on the perceived level of risk taken. A given project may rely on multiple revenue streams stacked together into a more complex model to meet the minimum level of return. This could include a range of revenues generated from:

- Payments for ecosystem services ("PES"), such as water quality, flood mitigation or carbon sequestration;
- Levy mechanisms such as business taxes (e.g. tourist taxes) and developer mitigation payments; and
- Enterprise opportunities such as ecotourism, recreation or product sales (e.g. timber, aquaculture etc.).

For example, a forestry project could produce a blend of revenues from the sale of carbon credits, agro-forestry enterprises, sustainable timber harvesting and payments from a local utility for water quality benefits. While there are some limitations on the stacking of revenue streams, specifically relating to rules around *additionality*, this approach can enable natural capital projects to deliver sufficient investment returns to attract private capital. Figure 6

outlines the relationship between these revenue streams, the underlying ecosystem services and the eventual outcomes payers for three example market opportunities.

Market Opportunity	Ecosystem Service	Revenue Stream	Outcome Payer
Woodland Creation	➢ Carbon sequestration	➢ Carbon credit sales	➢ Corporate offsetting
	➢ Timber / agro-forestry	➢ Sustainable timber sales	➢ Timber Purchaser
Sustainable Urban Drainage (SuDS)	➢ Water management	➢ Avoided water infrastructure costs	➢ Water utility
	➢ Water quality		➢ Infrastructure provider
Habitat Creation	➢ Biodiversity	➢ Biodiversity credit sales	➢ Property developer
		➢ Agri-environment	➢ Government

Figure 6 Market Opportunities

3.1 Market opportunities

The main revenue-generating opportunities with a high potential for deployment in Scottish natural capital projects have been identified from the literature reviewed and are summarised below.

3.1.1 Carbon offsets

New woodland creation projects can access traditional as well as more innovative revenue streams such as carbon offsetting, a form of PES. Woodlands can store significant amounts of carbon in the long term, depending on the location, tree species and management approach. Additionally, the scientific understanding of the carbon sequestration ecosystem services provided by forests has increased in recent years, and increasing political attention is being paid to increasing national woodland cover. Some of these ecosystem services can now be monetised in the form of carbon offsets, generated by woodland creation projects and sold to corporates seeking to offset their emissions via the voluntary carbon credit market. Confidence of investors in carbon offset-based revenues is growing as supportive market infrastructure such as the Woodland Carbon Code is established.

Peatland restoration projects also offer carbon trading opportunities. Historical land management practices and industrial pollution have led to 80% of Scotland's peatlands being in poor condition.[35] Degraded peatlands are significant CO_2 emission sources, and peatland restoration can lead to large reductions in these emissions which are independently verifiable and accredited through the IUCN's Peatland Code.[36]

[35] IUCN. 2018. *The Peatland Code*.
[36] Ibid.

Under the code, carbon units must be formally registered to ensure a clear record of purchases. It is intended that this will be administered alongside the Woodland Carbon Code through the MARKIT platform to provide credibility and transparency. In 2018, Forest Carbon[37] facilitated the sale of Peatland Code carbon units generated by the first certified Peatland Code project in Scotland at Dryhope and Winterhope Moss, to offset c.100,000 tCO_2e for London-based corporate, NEX. The Peatland Code remains relatively novel, with only four independently validated projects to date and is pending phase 2 approval from the United Kingdom Accreditation Service (UKAS as a 'conformity assessment scheme'.

Additional market opportunities are emerging through stronger corporate and sector-wide commitments to meet carbon targets, such as Brewdog's commitment to sequester twice as much carbon as it emits across its product supply chain, planting one million trees by 2022.[38] A global task force for voluntary carbon markets has recently been launched by Mark Carney to accelerate the development of a robust and credible market as increasing private sector net zero pledges are announced[39].

Peatland and woodland provide a wide range of ecosystem services beyond carbon sequestration, including flood prevention, water quality and biodiversity benefits, so stacking carbon revenues with other forms of PES can be explored to support the costs of delivery, sustainable long-term management and a financial return for investors.[40] Woodlands have the additional advantage of potentially being able to provide other reliable revenue sources such as timber and agroforestry products through sustainable management practices.

Beyond woodland and peatland, there are several other potential carbon sink landscapes, from soil to marine and coastal ecosystems, where carbon offsetting approaches could be applied if appropriate policy and technical support is available.[41]

3.1.2 Biodiversity compensation and habitat banking

Compensation payments provided by property developers to offset biodiversity losses arising out of new developments could present an important market opportunity. Local or national planning policy could require that developers provide a net increase in appropriate natural capital assets for all developments ('biodiversity net gain'). Some developers in Scotland such as Scottish Power Energy Networks and Barratt Homes have already made voluntary commitments to achieve net biodiversity gain, and, with effective policy in place, there is potential to secure significant income flows for Scotland's natural capital.[42] Mandatory biodiversity net gain policy is proposed in the 2020 Environment Bill for England that is expected to generate around £200 million per annum in developer contributions for the environment.[43] The market opportunity for Scotland was recently highlighted in the Scottish Conservation Finance Project's *£1 billion Challenge* report.[44]

Biodiversity compensation schemes have the potential to accelerate investment in habitat creation and restoration through the formation of "Habitat Banks", ecological restoration projects that provide "off-the-shelf" options for developers looking to offset the environmental

[37] Forestcarbon.co.uk. 2020. *Forest Carbon - Planting UK Woodlands For Carbon Capture and Ecosystem Services.*
[38] Brewdog Retail Ltd. 2020. *Make Earth Great Again.*
[39] Institute of International Finance. 2020.*Taskforce on Scaling Voluntary Carbon Markets*
[40] Soils.environment.gov.scot. 2020. *Peatland Restoration | Scotland's Soils.*
[41] The Esmée Fairbairn Foundation. 2020. *Emerging Funding Opportunities for The Natural Environment.*
[42] CIEEM Scotland Policy Group. 2019. *Biodiversity Net Gain in Scotland.*
[43] DEFRA. 2019. *Biodiversity Net Gain and Local Nature Recovery Strategies.*
[44] Scottish Conservation Finance Project. 2020. *The £1 Billion Challenge.*

impacts of their projects. This model has been particularly successful in the US, where, thanks to a supportive policy framework, the wetland mitigation banking market alone is worth over $4.7 billion per annum and attracts significant mainstream private investment.[45]

3.1.3 Sustainable enterprise models

A broad range of enterprise opportunities such as ecotourism, Sustainable Agricultural Land Management ("SALM") practices and natural resources product sales (timber, aquaculture etc.) exist across Scotland. These range from traditional sustainable land management practices employed by crofters, farmers and land managers to improve resilience and productivity, to more novel approaches such as Nestle's support for local water quality interventions, benefiting milk production for its supply chain.[46] Where operated effectively, nature-based enterprises can provide a sustainable source of funding for natural capital assets. Revenue-generating activities might also be used to cross-subsidise the provision of other ecosystem services in the same landscape with less mature or monetisable revenues (such as installing cafés on nature reserves or public parks).

Investment across supply chains and vertical integration strategies can generate demand for nature and climate-friendly products, deliver efficiency gains and reduce costs through strategic co-ordination of sustainable enterprise. For example, Surrey's Natural Capital Investment Plan outlines the opportunity to develop a network of biomass resource-based enterprises based on the active management of Surrey's 40,000 hectares of woodland.[47] The Surrey Nature Partnership is currently exploring how strategic investment could catalyse the development of biomass based-business to capture revenue streams for Surrey's woodlands.

3.1.4 Environmental outcomes payments and green infrastructure

Sustainable drainage systems ("SuDS") are one example of green infrastructure, with a growing body of evidence to show that SuDS can provide more cost-effective surface water management in comparison to the traditional grey infrastructure needed to deliver equivalent water management outcomes, whilst also offering additional ecosystem services such as amenity space and biodiversity. The ongoing IGNITION project is exploring opportunities for securing private sector funding into SuDS in Greater Manchester through a partnership that includes United Utilities. Welsh Water has made significant investments through its Rainscape programme across Llanelli and Swansea, the largest retro-fit of SuDS in the UK. It expects to invest c.£130 million in SuDS between 2015 and 2025, a significant saving on the estimated £650 million for conventional engineering solutions.[48] Across the UK there is growing interest by water utilities in these solutions, although several barriers remain to widespread adoption.[49]

Outcomes-based approaches represent an underutilised but promising tool for attracting funding to nature-based solutions. These are used to transfer risk from outcomes payers (such as a government department or utility) to private investors to enable investment into nature-based solutions where the delivery of benefits may be considered uncertain. NatureScot has supported trials for outcomes-based strategies for sustainable land management through the Natural Capital Pilot Programme ("NCAPP"). One of the projects, Piloting an Outcomes Based

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[45] Eco Asset Solutions & Innovations. 2020. *Mitigation Credit Price Report.*
[46] Resilient Dairy Landscapes. 2020. *Integrating Natural Capital Schemes: Opportunity analysis for integrating carbon markets into multifunctional landscape marketplaces, such as those developed by the Landscape Enterprise Networks (LENs) approach.*
[47] Chimbwandira, S., Pearson, M. and Wickham, P. 2018. *Natural Capital Investment Plan for Surrey.*
[48] Welsh Water. 2018. *Our Business Plan 2020-25.*
[49] Eftec, Environmental Finance Ltd and Countryscape. 2019. *Greater Manchester Natural Capital Investment Plan.*

Approach in Scotland (POBAS) is working with 40 farmers and crofters across Scotland, and is exploring outcomes-based funding for a range of target outcomes such as improved peatland management.[50] Outcomes-based approaches include Environmental Impact Bonds, which are explored further in the next section.

3.1.5 Nutrient trading

Catchment-scale nutrient trading is a market-based mechanism that supports improved water quality and sustainable land management techniques. Nutrient trading schemes such as those being piloted by Entrade are a key example of how the trading of ecosystem services and specific environmental outcomes can operate in practice. [51] Under this model, landowners can sell certain environmental outcomes linked to land use and management practices to beneficiaries such as water utilities. Beneficiaries pay for these outcomes to comply with regulatory requirements or to avoid the cost of more expensive mitigation measures.

Hampshire and Isle of Wight Wildlife Trust ("HIWWT") has launched a nutrient-trading mechanism to tackle nitrate pollution in the Solent. Under the scheme property developers buy 'nitrate credits' from landowners who have taken verified steps to prevent nitrate run-off, such as rewilding previously intensive arable farmland.[52] Property developers must buy nitrate credits to comply with an EU Court of Justice ruling against housing development in South Hampshire whilst high nitrate levels in the Solent persist. In September 2020, Defra announced a £3.9 million investment into the platform to develop and scale the pilot scheme for national rollout.[53]

[50] NatureScot. 2020*. Scotland's Natural Capital Pilot Programme.*
[51] Entrade.co.uk. 2020. *Entrade*.
[52] Hampshire and Isle of Wight Wildlife Trust. 2020. *Nature-Based Solutions: Using the power of nature to clean up the Solent*.
[53] Gov.uk. 2020. *Wildlife Protection Plan to Unlock Hampshire Housebuilding*.

4. FINANCING MODELS

4.1 Forms of finance

Potential developers of natural capital projects seeking funding have a range of options, as shown in the Funding Landscape below (Figure 7).

Philanthropic grant funding sits at one end of the capital spectrum, providing a limited source of funding which typically has no expectation that capital will be repaid, although grants can be structured as fully or partially repayable upon a certain event being achieved. Philanthropic donors often seek specific non-financial impacts to be delivered from their capital donations.

Venture philanthropy is an alternative form of support where the donor provides a mix of financial and non-financial support to maximise the delivery of targeted outcomes, often focussed on enterprise-led solutions to given social or environmental issues. Financial support may take several forms, including repayable finance.

On the other end of the spectrum is **debt finance**, the most common form of available finance. Unlike grant funding, debt must be serviced by repaying capital and interest. Debt providers will often require a form of collateral or 'security' in the case of default. Even when not secured, the requirement to repay a debt is not linked to the success of the capitalised project. This means the debt must be serviced regardless of the performance of the project in generating income.

Between these extremes sit other forms of finance, principally **equity**, but also a host of combined structures. Equity finance is a method of raising capital by selling shares of the company or project. Equity investors can originate from the public, private or philanthropic sectors, and their financial return is directly linked to the success and performance of the company or project.

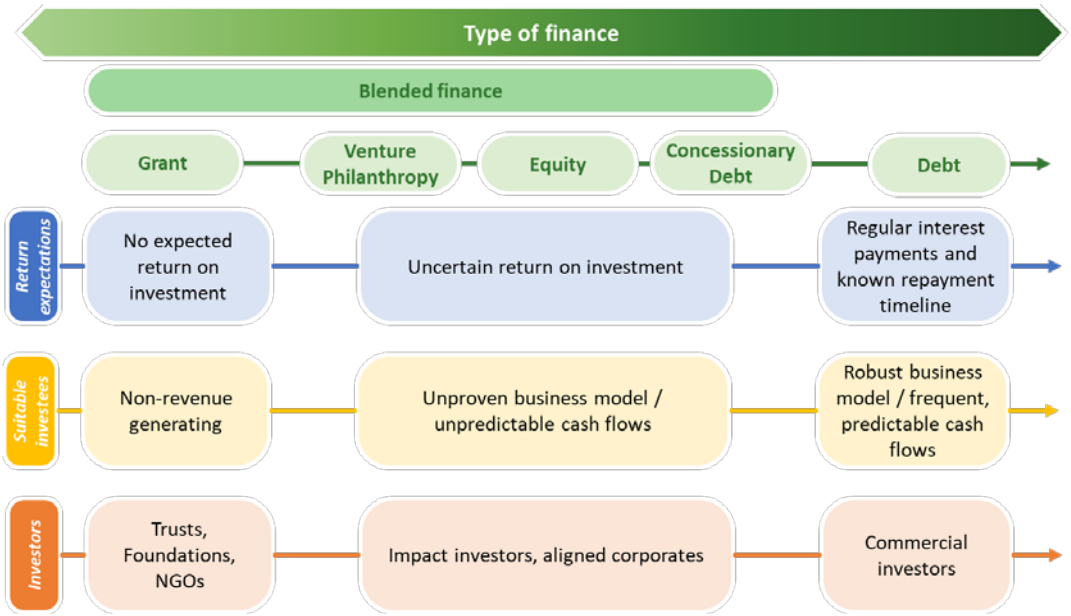

Figure 7 The Funding Landscape

To add a layer of complexity, higher risk or early stage projects may use "blended finance" approaches, where public and/or philanthropic funds are strategically deployed to reduce project risk and mobilise additional capital from the private sector. Public sector grants, such as those provided through Peatland Action or the Forestry Grant Scheme (FGS) should be

designed to facilitate and complement, rather than hinder or conflict with private sources of capital.

Used effectively, this can attract private investment to projects that, without grant or concessionary finance, would not provide a high enough return to justify the level of investment risk taken. Blended finance can be structured and used in variety of ways, including:

- Providing a tranche of grant within debt finance to reduce the overall cost of finance;
- Providing first-loss guarantees to repay investment in the case of project failure to reduce the risk to certain investors; and
- Incorporating technical support and expertise resources alongside investment.

4.2 Financial Products and Investment Vehicles

To facilitate large-scale investment into Scottish natural capital, appropriate financing models need to be designed to take advantage of the bespoke income-generating opportunities identified. These can range from traditional debt and equity structures based on the core principles discussed above, to more novel approaches designed to support investment into a range of natural capital projects.[54] Alternatively, a bespoke operational structure, such as a Charitable Trust or a Green Improvement District, can be used to raise investment from multiple sources and facilitate capital deployment. The below sections outline the key financing products and structures identified within the literature reviewed that could be applicable in Scotland.

4.2.1 Impact Investment Funds

"Impact investment" is a relatively new but growing field of investing where the explicit intention is to generate a measurable, beneficial social and/or environmental impact alongside a financial return. A key factor in the development of this market was the 2012 launch of the independent social investment institution, Big Society Capital ("BSC"), by the UK Government. By the end of 2019, BSC had disbursed £348 million of catalytic investment capital, which was leveraged by 3.5 times from co-investors to exceed £1.2 billion deployed into social investment across 1,200 social enterprises.[55] BSC acts as a 'fund of funds', providing both capital and expertise to impact investment funds such as the Access Foundation's Growth Fund, Bridges Social Outcomes Fund and Cheyne Capital Social Impact Fund. According to BSC, the value of the UK's impact investment market exceeded £3.5 billion in 2018, a 32% year-on-year increase.[56]

Successful social investment models are in principle highly applicable to the environmental sector. The Greater Manchester Combined Authority ("GMCA") is currently in the process of creating a Greater Manchester Environment Fund as a vehicle to raise a blend of public, philanthropic and private capital for natural capital projects across Greater Manchester. A coordinated investment fund can leverage additional private finance by providing strategic seed funding into projects before they are revenue-generating.[57] Impact funds pool together projects with similar themes or impacts, delivering capital more efficiently and cost-effectively

[54] Eftec, Environmental Finance Ltd and Countryscape. 2019. *Greater Manchester Natural Capital Investment Plan.*
[55] Big Society Capital. 2019. *Reports and Financial Statements.*
[56] Big Society Capital. 2020. *UK Social Investment Market Grows By 30% In One Year – Now Worth Over £3.5 Billion.*
[57] Eftec. Environmental Finance Ltd and Countryscape. 2019. *Greater Manchester Natural Capital Investment Plan.*

than if investee projects had raised finance on a standalone basis. This model has been implemented through PICNIC, a £3.3 million impact fund launched with investment from Heritage Lottery Community Fund and BSC, established to meet the funding needs of urban parks and greenspaces and support the development of community driven enterprise activities that ensure the long term financial sustainability of urban green infrastructure.[58]

The impact fund model for investing in sustainable enterprises or projects to generate financial returns and environmental benefits could be applied to a range of natural capital business models across Scotland, from enterprise models to carbon and biodiversity offsetting. An impact fund model may be used to help capture multiple revenue streams from a specific market opportunity or even from a range of separate opportunities, facilitating investment in projects that are not investible based on one revenue stream alone. In a similar way, impact funds can be based on a range of debt, equity or concessional finance and can be structured flexibly to optimally balance the risk profile of the investee natural capital assets with their individual financing needs.

4.2.2 Green Bonds

Green bonds are fixed-income debt financing instruments and are normally issued on a *pari passu* basis with traditional bonds from the same issuer. The onus falls to the issuer of the bonds to ensure that funds raised are used for sustainable projects. Bonds offer a flexible means of raising debt capital and have traditionally been used to finance large, low risk projects with reliable revenue streams. Bond investors can expect a fixed annual return or 'coupon' from their investment and in most circumstances can take reliance on the balance sheet of the issuer, providing security. Globally, the green bond market has scaled significantly in recent years with over $250 billion of green bonds traded in 2019.[59]

In 2017, Anglian Water issued the first water utility green bond in Europe with a total value of £250 million and a fixed annual coupon of 1.6% over eight years. This has been used to fund a range of projects, including the Ingoldisthorpe wetland project, where instead of constructing an onsite treatment plant, Anglian Water and Norfolk Rivers Trust designed a novel solution based on natural processes to treat the river water. The wetland naturally manages phosphate and ammonia levels, reducing capital and ongoing maintenance costs compared to grey infrastructure equivalents for Anglian Water while providing biodiversity benefits. In this example, the low interest rates available to an established utility with clear and reliable revenues and a strong balance sheet has facilitated investment in nature-based solutions. Following on from the success of the Ingoldisthorpe project, Anglian Water has committed to carrying out feasibility studies for 34 further possible wetland sites across East Anglia by 2027.[60]

It is important to note that only 0.2% of Anglian Water's green bond (£500,000) was applied to the Ingoldisthorpe project, reflecting the limited appetite for unfamiliar risk profiles in the bond market.[61] For this reason, the green bond approach may not be suitable for nascent natural capital investment models based on uncertain income streams and where the project sponsors or developers may not have such robust and 'investment grade' balance sheets.

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[58] Picnic Investment Ltd. 2018. PICNIC.
[59] Bloomberg.com. 2020. *Bloomberg - Green Finance: What It Is and Why It's Growing.*
[60] WWF-NL. 2020. *WWF Bankable Blueprint Book.*
[61] Ibid.

4.2.3 Municipal Bonds

While bonds have traditionally been issued and traded at a corporate or federal/national level, green bonds may also be structured at the municipal level where reliable revenue streams can be identified. Municipal bonds are a well-established tool used by local government agencies across the US. In January 2019, Atlanta's Department of Watershed Management raised a $14 million municipal bond supporting six SuDS interventions including bioretention cells in public parks and stream restoration projects.[62] This network of green infrastructure will capture stormwater and reduce sewer management costs for the municipality.

In July 2020, West Berkshire Council launched the UK's first community municipal investment to finance green infrastructure, including solar installations across several council-owned sites. This £1 million bond was launched via the crowdfunding platform Abundance Investment and is accessible to retail investors with a minimum commitment of £5.[63] A similar model for financing natural capital investments across Scotland is suggested in the *£1 Billion Challenge* report. Stable revenue streams such as a local enterprise levy could be used to ensure that a bond's agreed repayment profile can be met (see "Green Improvement District").

4.2.4 Environmental Impact Bonds

Pioneered in the UK in 2010, more than 100 Social Impact Bonds have now been established across the globe and significant interest has been generated in the application of this model to the environmental sector.[64] The premise of the impact bond model is that an "outcome payer" agrees to pay a pre-agreed price for the delivery of a specific outcome. These offtake agreements enable finance to be raised from impact investors to implement interventions aimed at achieving the target outcome and triggering the outcomes payment. Investor returns (and sometimes capital) are linked to the performance of the interventions. Where target outcomes are not achieved, investor returns are reduced, and principal investments may also be eroded, depending on the terms of the impact bond. Performance risk is thus partially or fully transferred from the outcome payer to the investor. Despite being described as bonds, impact bonds can take on a range of financing structures and typically bare little resemblance to traditional bonds. Due to the risk profile of impact bond projects, blended finance approaches are typically deployed to improve the risk/return profile for investors.

The first Environmental Impact Bond was the $25 million DC Water Bond launched in Washington DC in 2017. In a structure designed by Quantified Ventures and developed through grant-funding, investors (Goldman Sachs and Calvert Impact Capital) agreed to fund green infrastructure interventions across Washington DC, such as green roofs and raingardens, with their investment returns linked to the success of those interventions in reducing stormwater run-off. Three further cities on the east coast of the US are implementing similar models.[65] Blue Forest's Forest Resilience Bond ('FRB') concept presents another example of the application of this mechanism. Through a pilot scheme the FRB Blue Forest has supported the installation of wildfire restoration and protections for 15,000 ha of the Tahoe National Forest. The transfer of risk has more than halved the delivery timeline and the mechanism is expected to be deployed to support a further 275,000 ha of the Tahoe National Forest.[66]

In the context of Scotland's natural capital, beneficiaries of specific ecosystem services, such as the public sector, water utilities and insurance companies, could be contracted to pay for

[62] Quantified Ventures. 2020. *Quantified Ventures*.
[63] Lloyd, M. 2020. *Abundance Raises £300,000 In A Week for First Local Council Green Bond.*
[64] Socialfinance.org.uk. 2020. *Social Finance.*
[65] Quantified Ventures. 2020. *Quantified Ventures*.
[66] Blue Forest. 2020. *The Yuba Project*

positive outcomes arising from specific natural interventions. It may also be possible to crowd in multiple outcome payers who benefit from the proposed intervention. Investment is raised from private investors to carry out interventions (e.g. woodland and wetland creation, peatland and river restoration, urban green infrastructure) to achieve benefits (e.g. capital and operational cost savings) through improvements in the target environment, for example improved water quality and greater flood resilience. Environmental Impact Bonds can be useful where outcome payers such as water utilities and public bodies face regulatory spending restrictions that limit investment in novel or unproven strategies like nature-based solutions. By enabling third party investors to invest upfront in nature-based solutions, with investment returns conditional on achieving the desired outcomes, risk is transferred from the water utility or public body to the investors.

4.2.5 Place-based Investment

Place-based investment refers to the strategic management and funding of natural assets at a local level to achieve target outcomes. This approach works to align the management of different natural capital assets to achieve certain objectives in each area. Examples include Parks Trust / Management Vehicles, which work to improve the sustainable management of public parks; and Landscape Enterprise Networks ("LENs"), which facilitate co-funding from local businesses benefitting from a protected natural environment such as breweries heavily reliant on a quality water supply.

Place-based models are indifferent to the underlying revenue streams and are focused on the benefits of a co-ordinated approach in each area. An example of this can be seen in the Great Lakes Impact Investment Platform, which supports investment into a range of natural capital-oriented programmes to deliver demonstrable impact and support centralised goals for water quality across the region.[67]

Underpinning the Parks Trust model is the coordinated strategic and financial management of a portfolio of assets to achieve shared outcomes. Pioneering this model, the Newcastle Parks and Allotments Trust ("NPAT") was created in 2017 as a charitable vehicle to independently manage the city region's parks estate.[68] As a dedicated vehicle, NPAT is designed to deliver a long-term strategy focused on improving the financial sustainability of the underlying natural capital assets while enhancing the ecosystem services they deliver. Under this model, a network of green infrastructure assets is transferred outside of local authority control via long-term leases. Funds are generated through an endowment raised within the Trust, and investment income is used to cross-subsidise park assets that cannot generate a financial income.[69] In this way, the city's parks are protected from public sector budget cuts. The Future Parks Accelerator is a joint venture between The National Lottery Heritage Fund and the National Trust and is working to is explore models for green space management across several UK cities, from Plymouth to Edinburgh.[70] This form of place-based trust can be applied to a range of natural capital assets, such as SuDS and woodlands.

LENs programmes are another example of place-based strategies that focus on the co-ordination of assets and beneficiaries, considering the landscape from the perspective of business needs[71]. A LENs programme aims to convene businesses with a shared set of needs and provides a mechanism to enable these businesses to co-fund in the delivery of interventions that achieve positive outcomes within the landscape.[72] This approach was

[67] Greatlakesimpactinvestmentplatform.org. 2020. *Great Lakes Impact Investment Platform.*
[68] Eftec, Environmental Finance Ltd and Countryscape. 2019. *Greater Manchester Natural Capital Investment Plan.*
[69] Ibid.
[70] National Trust. 2020. *Our Vision for The Future of Parks.*
[71] 3Keel. 2020. *Landscape Enterprise Networks*
[72] McCosker, C. 2020. *Landscape Enterprise Networks: Pilot in Oxfordshire.*

piloted in Cumbria, focusing on the shared benefits that Nestle and United Utilities derive from a quality water supply to fund interventions by local dairy farmers to improve water quality. LENs is now being developed and tested in other UK locations including Oxfordshire[73] and South-West Scotland.[74] While LENs strategies are flexible, they rely on the interest and active engagement of local beneficiaries and a bespoke approach for each region, presenting a potential barrier to scale.

4.2.6 Timberland Investment Management Organisations

A Timberland Investment Management Organisation ("TIMO") is a management group created to manage large-scale investment in woodland assets. A TIMO manages assets to provide long-term returns to investors and generate surpluses to improve forestry management practices, supply chain sustainability and forest restoration activities. TIMOs have established a strong track record in the US in particular, with forest assets under management rising from US$24 billion to US$44 billion in the decade from 2006-2016.[75]

Although existing TIMOs typically operate effectively in larger, liquid land markets such as the US or Canada,[76] biodiversity-focused TIMOs offer a potential model for forest and land management to deliver on the Scottish Government's ambitions for 15,000 hectares of new woodland to be created per annum by 2025. Perth-based forest asset manager Gresham House manages 130,000 hectares of forests across the UK, targeting commercial returns on behalf of institutions, endowments, family offices and private investors.[77]

Commercial timber production is associated with a range of detrimental effects on biodiversity, especially through large monocrop plantations. Some TIMO structures have evolved to support the blending of sustainable timber harvesting and other ecosystem service revenues and are being increasingly used to support investment in forest and land conservation. The Lyme Timber Company, a US-based TIMO, has worked to achieve its financial returns in balance with protections for the ecological value of the land it manages. Lyme Timber uses a combination of sustainable forestry management practices and legally-binding 'conservation easements' to prevent land degradation and limit certain land uses in perpetuity, while enabling capital release through the sale of encumbered land. From 2011 to 2015, the Lyme Forest Funds (III & IV) invested $49 million in 35,000 hectares of forest land in Wisconsin. Conservation easements on this land allow for a sustainable level of timber production,[78] whilst perpetually avoiding activities with negative soil and water quality implications.[79]

4.2.7 Green Improvement Districts

Green Improvement Districts are a derivation of the Business Improvement District ("BID"), a structure whereby a voluntary levy is secured from businesses operating in the local area to fund the improvement of the local trading environment. In 2019, there were 321 operating BIDs in the UK generating £125 million of annual income.[80] Under a Green Improvement District, this levy is reinvested in green infrastructure assets such as parks, canals and SuDS for the benefit of all payers.

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[73] Ibid.
[74] Franzoi, M. 2019. *Diversification of Funding - The South-West Scotland Landscape Enterprise Networks: Opportunity Analysis and The Role Of SNH.*
[75] Real Assets, 2020. *Forestry: Carbon Capture*.
[76] Numbers for Good, 2017. *Feasibility Study into New Financial Mechanisms for Forestry.*
[77] Gresham House. 2020. *Forestry | Gresham House | Alternative Asset Management*.
[78] As defined by the Sustainable Forestry Initiative.
[79] Greatlakesimpactinvestmentplatform.org. 2020. *Great Lakes Impact Investment Platform*.
[80] British BIDs. 2019. National BIDs survey 2019.

Due to the success of BIDs in urban areas, Tourism Business Improvement Districts ("TBIDs") have since developed in the UK to support the sustainability of the tourist industry through securing tourist business levies. In Scotland, VisitInvernessLochNess was established in 2014 and now has nearly 400 levy-paying members from key tourism sectors, including hotels and outdoor activity providers and supports more sustainable tourism practices for the TBID area.[81] Whilst traditionally applied to urban centres, the successful adaptation of the BID structure for tourism demonstrates the versatility of this investment model and its potential to channel natural capital investment.

5. NATURAL CAPITAL INVESTMENT OPPORTUNITY DEVELOPMENT

5.1 Strategic frameworks and approaches

As part of this review, several natural capital investment plans and strategies were assessed, including those for Surrey, Cambridge, Oxford[82] and Greater Manchester. These considered how different projects and sources of investment can be brought together to benefit the local natural capital. These plans also assess available revenue streams, market opportunities and financing and governance models. Creating a plan for investment in and management of natural capital assets can help align stakeholder objectives and enable the strategic allocations of resources (in terms of funding, policy and governance).[83] The following steps were identified as important in designing a natural capital investment plan.

Setting clear objectives and parameters
Before engaging with stakeholders, the vision and objectives of the investment plan should be clearly defined. Clear goals will help identify the scale of costs involved and any funding gaps. It is also important to establish project scope in terms of any opportunities, operating models or revenue streams that are not considered.

Understanding project scope and scale
It is important to develop a clear picture of the geographical scope and character of the project area. This spatial mapping exercise should identify local natural capital assets and their characteristics. This process will provide the evidence base to identify strategic assets and understand their capacity for revenue generation.[84] This stage may also include identifying beneficiaries and suitable outcomes payers.

Engaging with stakeholders to develop the investment strategy
Engaging with a wide range of local stakeholders is critical to generating local buy-in and support for the investment strategy. Working with local stakeholders may also help refine objectives and generate new opportunities.

Identifying a target operating model
It is important to identify a suitable operating model, with clear governance and reporting structures and an appropriate funding vehicle. Investors will require a well-defined and governed project or fund vehicle. Investors will consider the "bankability" of the programme and will be reassured by an experienced project or fund management team and strong governance structures.[85]

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[81] Visit Inverness Loch Ness. 2020. *Members Section | Visit Scotland With Visit Inverness Loch Ness.*
[82] Ox Cam LNCP. 2020. Ox Cam LNCP.
[83] Eftec, Environmental Finance Ltd and Countryscape. 2019. *Greater Manchester Natural Capital Investment Plan.*
[84] Bowden, C. 2020. *Doubling Nature Investment Plan: Scoping Study.*
[85] WWF-NL. 2020. *WWF Bankable Blueprint Book.*

5.2 Project assessment

Private investors consider a range of criteria to evaluate potential natural capital investments. Credit Suisse created a funnel outlining the key criteria to enable investors to assess the investment potential of a natural capital projects[86]. The funnel can be used as a screening method to assess the development stage of a range of natural capital projects and prioritise projects to be considered in more detail. Table 1 lists the evaluation criteria in the funnel.

Table 1. Investor Evaluation Criteria for Natural Capital Investments. (Modified from Credit Suisse AG and McKinsey Center for Business and Environment. 2016)

Investor Evaluation Criteria for Natural Capital Investments	
Market	Regulatory framework Market growth Market maturity
Project	Revenue robustness Business case maturity Scalability Measurable impact Risk mitigation strategy
Financial	Risk-adjusted returns Duration of financing Size of investment Availability of co-investment Transaction fees Sufficient collateral Clear exit strategy
Management	Management capabilities Track record Adequate resourcing

5.3 Supportive market infrastructure

Supportive market infrastructure is important to facilitate natural capital investments. Dedicated investment readiness support and public policy can help to unlock natural capital investment opportunities and build a pipeline of recipients for funding.

5.3.1 Investment readiness support and capacity building programmes

Investment readiness support refers to technical assistance and capacity building support that enables project developers to create clear business models that are attractive to investors.[87] Currently, a lack of investible projects remains a critical barrier to private investment in natural capital. Project developers are constrained by a lack of precedent transactions, capacity and expertise in designing investible projects.[88]

Investment readiness support can be provided through funding or support in-kind. Strategically targeted support can help deliver proof-of-concept models that can act as demonstrators for

[86] Credit Suisse AG and McKinsey Center for Business and Environment. 2016. *Conservation Finance, From Niche to Mainstream: The Building of an Institutional Asset Class.*
[87] The Esmée Fairbairn Foundation, 2020. *Emerging Funding Opportunities for The Natural Environment.*
[88] Ibid.

sources of revenue and investment models, and can facilitate replicability and scalability.[89] Where investment readiness support is deployed, it should prioritise the dissemination of learning to facilitate the uptake and innovation of new approaches.

DEFRA's planned Investment Readiness Fund is a clear example of this type of support. The Investment Readiness Fund is a £10 million commitment to support the development of natural environment projects that can generate revenue from ecosystem services and attract repayable investment. Funding is intended to stimulate innovation in designing and implementing natural capital projects and is expected to launch in early 2021.

5.3.2 Regulatory Infrastructure

Markets for some ecosystem services such as biodiversity offsets are highly dependent on supportive regulatory frameworks. Top-down compliance policies and market mechanisms (for example price floors, such as England's Woodland Carbon Guarantee for woodland carbon) can help to establish and grow new natural capital investment markets.[90] Whilst these policies are often most efficient at generating private investment when applied at a national level, regional level support can be effective in creating local markets.

5.4 Investment Barriers and Mitigations

While there is a growing range of natural capital investment opportunities and an increasingly supportive policy framework in Scotland, the literature review has identified key barriers that remain to market development. These barriers, together with a range of possible mitigations, are detailed in the table below.

Table 1 Barriers to Investment and recommendations for Mitigation

Barrier	***Description***	***Mitigations and recommendations***
Revenue uncertainty	Many ecosystem services are complex to monetise. Where ecosystem services are delivered over extended timeframes, revenue streams are less certain which can limit access to finance.	Supportive government policy mechanisms (e.g. England's Woodland Carbon Guarantee) can facilitate access to finance. Compliance-based markets can support the monetisation of certain ecosystem services. Risk transfer mechanisms such as Environmental Impact Bonds and outcomes-based approaches can reduce risks for regulated buyers of ecosystem services, and guarantees can reduce risk for investors.
Track Record	Uncertainty over the ability for natural capital approaches to deliver outcomes traditionally provided using grey infrastructure (e.g. SuDS vs. water treatment plants) places a perceived high level of risk on green infrastructure projects.	Proof-of-concept pilot schemes and targeted investment readiness support can help bring natural capital investment models to market. Risk-sharing finance mechanisms such as Environmental Impact Bonds can transfer risk of underperformance from beneficiaries to enable novel projects.
Complexity	Some natural capital projects rely on bringing together a variety of stakeholders, revenue streams, forms of capital and bespoke interventions.	Clear project delivery plans should identify the range of project partner resources and expertise required to ensure successful project delivery.

[89] Chimbwandira, S., Pearson, M. and Wickham, P. 2018. *Natural Capital Investment Plan for Surrey.*
[90] The Esmée Fairbairn Foundation. 2020. *Emerging Funding Opportunities for The Natural Environment.*

Capacity and Expertise	Capacity constraints can restrict exploration of alternative market-based funding approaches. This can be further hampered by limited access to expertise to support pilot schemes.	Funding for capacity building, such as DEFRA's Investment Readiness Fund, can help project developers to design and pilot new schemes.
Scaling projects	Natural capital projects relying on bespoke or specific interventions can struggle to achieve scale (e.g. LENs, place-based models).	Project aggregation through investment funds or aggregation vehicles can improve cost efficiencies and facilitate replication.
Communication	Natural capital concepts may be unfamiliar to key stakeholders. This can create language barriers and miscommunication or misunderstanding of investment risk.	Education programmes can help stakeholders understand the application of natural capital investment concepts. Pilot projects provide proof-of-concept that reassure stakeholders around feasibility, investment returns and risk.
Sensitivity to critical stakeholder requirements	Individual private landowners and managers often invest significantly in their natural capital assets. These interventions provide public benefit but do not necessarily currently receive PES (from public or private sources). These landowners and managers are key to identifying and implementing further conservation interventions.	Outcomes-based funding structures and management incentive models should be designed with land managers in mind. This will facilitate the delivery of target outcomes.
Measuring, Quantifying and Verifying Impact	Measurement and attribution of outcomes to interventions can be complex, time-consuming and expensive. Certification methodologies are often not adapted to specific natural capital markets, e.g. restoration of lesser-known habitats such as intertidal, grasslands etc.	Project metrics should be agreed with stakeholders on a pragmatic basis, using proxies if required. State sponsorship is valuable in developing market codes. The costs of impact measurement and verification should be designed into a project at inception and funded accordingly.
Piecemeal or inconsistent standards	Environmental reporting and accounting guidelines and metrics may be inconsistent, limiting credibility, especially within voluntary markets.	Standardised or Government imposed reporting and accounting frameworks, registers or measurement tools (such as Defra's 'Biodiversity Metric or the Woodland Carbon Code) provide consistency and credibility. By reducing uncertainty standardisation and centralisation can simplify verification and measurement processes, whilst encouraging potential investors.

5.5 Programme Recommendations

NatureScot's Facilitating Local Natural Capital Investment Initiative seeks to demonstrate practical ways in which private sources of finance can be accessed to support conservation in line with local and national environmental, social and economic priorities. To achieve this, the Initiative aims to identify the structures and mechanisms necessary to stimulate investment in natural capital, particularly through action by regional partnerships.

Review of Scotland's natural capital indicated that areas of priority for investment based on the level and range of ecosystem services provided include farmland, nearshore marine, coastal habitats, woodland, peatland, urban green infrastructure, catchments and certain

landscapes important for tourism. Investment into these areas is expected to gain political support to the extent that it can be shown to help deliver a resilient economic recovery from Covid-19 in the near-term, and net zero emissions in the long-term.

A range of investment products should be considered for any natural capital project, considering the specific income generation opportunities and risks in the project and the nature of the ecosystem services supplied. For example, to fund more proven interventions such as new woodlands to sequester carbon, offset products may be the most appropriate tool; whereas less proven interventions such as SuDS may require outcome-based approaches such as Environmental Impact Bonds.

A full range of financing sources and structures should also be considered for any natural capital investment opportunity. Where grant-funding is insufficient to cover the full cost but the investment risks are unfamiliar to commercial investors, appropriate structures could seek to blend different forms of finance where appropriate, in order to de-risk private sector investment through the strategic use of philanthropic and/or public sector grants and concessionary finance. Financing structures should be applied based on their suitability to the underlying revenue streams of a given natural capital investment project, as well as the applicable regulatory and market infrastructure in the region.

Review of other regional natural capital investment strategies highlights the importance of a baseline review and spatial mapping exercise to identify and characterise investment needs and income generating opportunities in a project area. Opportunities should also be assessed against an investment criteria framework to refine key opportunities and highlight barriers/risks to investment (and potential mitigants). This process will help identify suitable financing structures for a pipeline of potentially investible projects. Finally, natural capital projects should be implemented with transparent and robust governance structures to ensure that both financial and impact goals are reached. Monitoring of outcomes against expectations and dissemination of learnings will help to accelerate market development.

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ANNEX 1: GLOSSARY

Term	Definition
Blended finance	The complementary and strategic use of public, private and philanthropic funds to increase private sector investments and sustainable development, resulting in positive results for both investors and communities.
BID	Business Improvement District
Conservation finance	Investment mechanisms that activate one or more cash flows generated by the sustainable management of an ecosystem, which in part remain with the ecosystem to enable its conservation, and which in part are returned to investors
Carbon trading	Carbon trading and markets refer to the trading of carbon credits representing units (tonnes) of carbon dioxide.
Ecosystem services	The direct and indirect contributions of the natural environment to human wellbeing
EIB	Environmental Impact Bond
GID	Green Improvement District
Green infrastructure	Nature based structures providing benefits from nature to people. Green infrastructure aims to enhance nature's ability to deliver multiple valuable ecosystem goods and services, such as clean air or water, replacing or supplementing traditional infrastructure.
Impact investing	Impact investments are made with the intention to generate positive, measurable social and environmental impact alongside a financial return
LENs	Landscape Enterprise Network
Natural Capital	Natural capital is the environmental resources (e.g. plants, animals, air, water, soils) that combine to yield a flow of benefits to people
Nature-based solutions	The use of nature and the environment to help tackle socio-environmental challenges, providing benefits to people and nature
Project developers	Individuals, organisations, or businesses involved with designing and implementing projects to support woodland creation, and other ecological interventions
Outcomes payer	An entity that has agreed to pay for the delivery of a specified outcome, e.g. an improvement in water quality (as opposed to the actions/service to deliver the outcome).
TIMO	Timberland Investment Management Organisation

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