

SUMMARY REPORT



Developing adaptation finance business cases

Case studies and results

Adaptation
Scotland
supporting climate change resilience

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**Adaptation
Scotland**
supporting climate change resilience



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Summary

The aim of this project on *'Developing adaptation finance business cases – case studies and results'* was to support the development of three adaptation finance business cases from the Adaptation Scotland Climate Finance working group.

The project looked at the opportunities for public, private, third sector and blended finance, for a set of projects that would have traditionally been public grant financed. The project was commissioned by Sniffer and was undertaken by Paul Watkiss Associates. The three case studies considered were:

- A coastal managed realignment at Inch of Ferryton in the Firth of Forth;
- A flood management project in Newcastleton in the Scottish Borders;
- A Community Climate Resilience project in the Uist Hebrides.

The project developed fifteen possible approaches for financing these adaptation projects and considered the applicability of these for the case studies. A summary is shown on the next page.

Positively, the analysis found there was potential for additional finance beyond traditional public grant finance for all three projects, though different instruments were relevant for each, i.e. it was not a case of one size fits all. However, the study found that delivering these additional revenue streams would involve re-adjusting project design to include extra activities and would take time and resources. Furthermore, in most cases, additional revenues were generated from co-benefits, rather than from the reduction in climate risks. This means that projects will need to manage and deliver multiple benefit streams. It was also found that the likely level of additional revenue generated from non-traditional sources would be modest, and would provide a supplementary stream of finance, rather than covering the scheme costs entirely. The findings highlight the potential for new revenue streams for financing adaptation, but also highlight the need for more dedicated resource mobilization efforts and project preparation support to assess blended finance opportunities during project conceptualization.



No.	Financing option	Inch of Ferryton Managed Realignment	Newcastleton Flood Protection	Uist Community Climate Resilience
1.	Carbon (mitigation) revenue streams	High	High	N/A
2.	Payment for ecosystem services	Low	Low	Low
3.	Tourism revenues	High	High	N/A
4.	Crowdfunding platform	High	Low	Medium
5.	Biodiversity habitat bank/biodiversity credits	Low	Low	Low
6.	Government grant funds	High	High	High
7.	Philanthropic based grant funds	Medium	Medium	Medium
8.	Equity financing	Low/Medium	Low/Medium	Low
9.	Flood insurance based on a risk pool model	N/A	N/A	Low
10.	Parametric insurance	N/A	N/A	N/A
11.	Resilience bonds	N/A	Low	Medium
12.	Land-use development option	Medium	Medium	Medium
13.	Household or local business charges	N/A	Medium	N/A
14.	Renewable energy revenues	Low/Medium	Medium	N/A
15.	Landowner investment	Low/Medium	N/A	N/A

Introduction

The Adaptation Scotland programme is delivered by Sniffer and funded by the Scottish Government. The current work programme includes a specific focus on developing Scotland's approach to adaptation funding and finance. As part of the programme, Sniffer has formed a Climate Finance Working Group. The aim of this group is to further support and develop this area, and by doing so, to increase the financing of adaptation activity in Scotland. This includes building capacity on how to access private finance sources.

As part of ongoing working group activities, Sniffer commissioned Paul Watkiss Associates to support the Climate Finance Working Group for a project on '*Developing adaptation finance business cases*'.

The aim of the project was to support the development of three adaptation finance business cases from the Adaptation Scotland Climate Finance working group, considering the opportunities for public, private, third sector and blended finance, for a set of projects that would have traditionally been public grant financed.

Financing Adaptation

The availability of finance is an obvious and important constraint to adaptation. Globally, there has been a major uplift in climate finance flows for mitigation, which exceeded US\$ 500 billion in 2020, but the level of adaptation finance is much lower (at 5% of total flows) and has primarily come from the public sector and been delivered through grants (CPI, 2021¹).

The same general trends, of adaptation finance being lower than mitigation and dominated by public flows, are also reflected in the UK.

The lower level of adaptation finance reflects a number of barriers to adaptation, notably from:

- Information failures, associated with incomplete or asymmetric information;
- Underdeveloped or non-existent markets, which are unable to efficiently allocate capital, or transfer risk for longer-term impacts; and
- Positive externalities, i.e. benefits to society that do not generate additional cash flows and thus a financial return (UNEP, 2016²).

This has meant that there are few investment-ready (bankable) private sector adaptation projects (Mortimer et al, 2020)³.

In practical terms, adaptation is difficult to finance because it often does not generate revenues (Khosla and Watkiss, 2020⁴). This means there is a disconnect between the high societal benefits of adaptation (the economic return, as identified in cost-benefit studies) versus the likely private financial return. Many adaptation investments are public goods (e.g. flood defence) or in non-market sectors (health, ecosystems). Further, when they are in market sectors, many adaptation investments are a defensive expenditure, i.e. an investment to keep things the same under a changing climate, rather

1 Climate Policy Initiative (2021). Global Landscape of Climate Finance 2021. <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2021>.

2 UNEP. (2016). Demystifying Adaptation Finance for the Private Sector. United Nations Environment Programme.

3 Mortimer, G. W. (2020). Adaptation Finance. Emerging approaches to solve the climate adaptation finance gap. Climate-KIC Australia.

4 Khosla, S. and Watkiss, P. (2020). Financing Clyde Rebuilt: Resource Mobilization for the Glasgow City Region Climate Adaptation Strategy and Innovation Portfolio. Deliverable 06 of the Resilient Regions: Clyde Rebuilt project. Published by Clyde Rebuilt, Glasgow, Scotland: Resilient Regions: Clyde Rebuilt, 2020

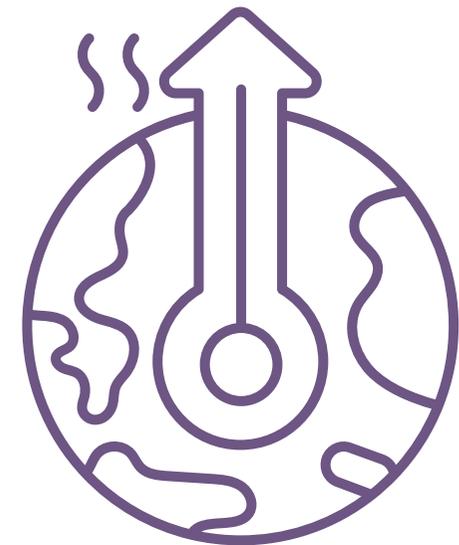
than being directly linked to goods or services. Finally, there is often a mis-match in the timing between adaptation expenditure in the short-term, versus the medium to long-term benefits it generates, the latter compounded by uncertainty. It is also often difficult to develop bankable adaptation projects because of the information requirements and technical level of analysis required, and the high site and context specificity.

As a result, there has been a lack of innovation and strategic use of available public funds to unlock/ crowd-in private sector funding. This requires new financing models, risk mitigation instruments and blended finance solutions that look for new revenue streams and encourage the private sector to invest.

More positively, in recent years, there has been some innovation in this area. First, there is the emerging use of financial markets to raise finance for adaptation. For example, the European Bank for Reconstruction and Development (2019) issued a resilience bond in 2019, which raised US\$ 700 million to finance existing and new climate

resilience projects, and Blue Forest Conservation developed the Forest Resilience Bond to fund a restoration project of US\$ 4.6 million which includes actions to manage wildfire risk in California. In the UK, Abundance Investment has developed four crowdfunded bonds for local authorities that include a blended green project portfolio structure. Second, there is growing private sector interest in delivering adaptation, with a range of new instruments and approaches developed to encourage this. These can include blended finance, which combines public and private sector finance, using the former to address barriers to unlock investment from the latter. This can help with the development of ideas and to attract private investment at early stages, and to de-risk investment by offering concessional lending, guarantees, insurance or even equity.

A key need is to build up the evidence base on private sector financing of adaptation, with more case studies that show what is involved to encourage replication and scale. This project has undertaken such an analysis, working with three adaptation projects and looking to identify additional finance beyond traditional public grant funding.



The Three Case Studies

Following an open invitation for possible case studies, and the evaluation of applications, three case studies were selected for the project.

These were:

- Newcastleton flood management project in the Scottish Borders;
- Uist Community Climate Resilience in the Hebrides;
- Inch of Ferryton Managed Realignment.

These are described briefly below.

Newcastleton flood management project

This project is a river flood management scheme, seeking to reduce the risks of fluvial flooding to the village of Newcastleton in the Scottish Borders, and its homes and businesses. The village has experienced increased frequency and severity of flooding, with homes being flooded in 1991, 2005, 2020 and 2021. The remote location of the village means that access roads could be cut off by flooding hindering emergency response and recovery. There has been flood risk modelling analysis for the village, to build up flood risk maps for current flooding, and for how this might increase under climate change.

To address these rising impacts, a flood management scheme has been designed. The main scheme involves

hard flood defences, with an embankment and flood wall, and realignment, with localized flood plain restoration. An appraisal study has been completed, which has assessed flood management alternatives and identified a preferred option. This scheme has a very defined role in flood risk reduction for the village, with economic benefits from reduced flooding. However, in line with this study, there was a need to consider the wider context of the proposed project, to look at additional sources of financing. This expanded the study further to consider new natural and social capital linked to a sustainable flood protection scheme, including tourism and community owned land.

The Scottish Borders Council is leading the Newcastleton Flood Protection Scheme, in close consultation with the community. Other key stakeholders include Scottish Government, Scottish Environment Protection Agency (SEPA), Newcastleton Community Council (as landowner and representative of the local community), NatureScot, and other statutory bodies.

The Newcastleton & District Community Trust has prepared a Newcastleton Development Strategy and Action Plan (NDCT) that looks at an integrated approach to developing opportunities for the community. A defined area of land in the village

owned by the NDCT (100 acres) will be used to develop new services and facilities, for tourism and local recreation. 'Placemaking' is a focus of the new developments. Placemaking is a multi-faceted approach to revitalise, plan, design and manage places, mostly as a community improvement initiative.

Uist Community Climate Resilience

Uist is located in Outer Hebrides and includes six islands (which are collectively known as Uist). The islands are very unique, in terms of language, community spirit, and crofting, and this is reflected in the proposed project, the Uist Community Climate Resilience Project. The project is at an early stage of development but builds on a previous INTERREG⁵ project (Angus and Hansom, 2021⁶). The aim is to create an integrated adaptation solution that addresses the multiple challenges of sea-level rise and climate change to the islands. It therefore includes a mix of interventions, e.g. using nature-based solutions (NBS) to enhance the resilience

5 Interreg is one of the key instruments of the European Union (EU) supporting cooperation between regions and countries to help their economic and social development.

6 Stewart Angus, James D. Hansom (2021). Enhancing the resilience of high-vulnerability, low-elevation coastal zones. *Ocean & Coastal Management*, Volume 200, 2021, <https://doi.org/10.1016/j.ocecoaman.2020.105414>.

of dunes, alongside community awareness and government changes, and has multiple objectives that include community resilience and wellbeing.

The project approach brings academics, agencies and communities together to pool knowledge and ideas to create an integrated adaptation solution that is a combination of both bottom-up and top-down perspectives. The main purpose of this approach is to remove silo-based thinking and move towards a system-based transformation. NatureScot is the lead agency, collaborating with the partners -Comhairle nan Eilean Siar (Western Isles Council), Storas Uibhist (Community Landowner), Crofting Commission, NHS Western Isles, Highlands & Islands Enterprise, SEPA, Western Isles Community Planning Partnership, and Outer Hebrides Community Planning Partnership. Most of North Uist is owned by a private owner. The majority of the land across the islands is under crofting tenure, organized in crofting townships.

Adaptation measures are proposed based on resilience enhancement including to: enhance resilience of dune ridge using nature-based solutions; enhance the drainage network to cope with additional rainfall and rising sea level; enhance community and agency awareness; enhance climate change aspects of governance; and enhance community resilience and wellbeing.

Consultations run by local communities are being held to bring in the bottom-up perspective. The project is

currently being advanced from the concept to design stage. An appraisal assessment of specific adaptation measures has not been done as yet. The preparatory phase of the project will begin in late 2021 for 18 months. Implementation of the project will follow the preparatory phase and last approximately 4-5 years.

Inch of Ferryton Managed Realignment

The Inch of Ferryton Managed Realignment project is looking to convert an existing stretch of estuary farmland in the Inner Firth of Forth, which is vulnerable to coastal inundation and erosion, into a nature reserve. This is an alternative to a major investment in hard, coastal protection at the site. As such, the project is a nature-based solution.

The project would involve a switch in land-use from the existing agricultural land to a managed realignment option. It would also build new harder defences alongside neighboring land. The project uses coastal intertidal habitat restoration as an adaptation response to the climate change risks and impacts of sea level rise, flooding and erosion within the Inner Firth of Forth Special Protection Area.

The project is proposed by Royal Society for the Protection of Birds (RSPB) Scotland and focuses on an intertidal creation project that covers approximately 80 hectares comprising of intensive farmland. The area is currently surrounded by an

earth and rubble embankment which runs for about 2.8 km around the site. It is estimated that, without further maintenance and upgrading action (a do-nothing scenario), an unplanned breach could occur within approximately 20 years. The project objectives are to use managed realignment and coastal habitat restoration as an adaptation to sea-level rise, to address the rising risks of erosion, flooding and impacts on high-grade agricultural land. It will also create a saltmarsh as a carbon store, restore the habitat and ecosystem, catalyze green tourism in the area and provide local access.

As such, this project is much broader than an adaptation investment alone: the project has multiple objectives which include mitigation and nature objectives. This involves different elements to a project that is incremental, i.e. where the aim is to protect current use with adaptation, or for the climate proofing of a planned new project.

RSPB Scotland has completed detailed options and feasibility work for the project. The project aims to build three bird islands in the large standing water area, with two 0.5ha high level lagoons cut into the higher saltmarsh areas near the edges of the site, to a depth of 1m. The habitats created within the site boundary would largely be intertidal – 74 out of 80ha.

However, project implementation is subject to finance being available, including for land purchase of the existing farmland.

Methods

Broad approach

The broad approach used for these studies was to adopt a business case model. This drew on the existing five case business model used in UK public policy making (HMT, 2018⁷). This has five interconnected areas (five cases): i) strategic, ii) economic, iii) financial, iv) commercial and v) management aspects. The project focused on the strategic and financial cases.

The Strategic Case aims to make the case for change and to demonstrate how the proposed project provides a strategic fit. This is particularly important if the project has a strong public sector orientation, or is seeking some level of public financing, in order to demonstrate the justification for public intervention.

The Financial Case aims to demonstrate the affordability and financial viability of the investment. This requires an understanding of the capital, revenue and whole life costs of the scheme, and the ability of the project to generate incremental cash flows, recover the financial costs and (if appropriate) generate profits. It looks at the financing of the investment, including opportunities for public, private, third sector and blended solutions. This analysis is carried out from the perspective of the project generator and/or investors.

Development of financing options

The study first developed a list of possible financing options, shown in the table below.

Table 1. Financing options considered in the study.

No.	Financing option
1.	Mitigation revenue streams from carbon sequestration
2.	Payment for ecosystem services
3.	Tourism revenues
4.	Crowdfunding platform
5.	Biodiversity habitat bank/biodiversity credits
6.	Government grant funds
7.	Philanthropic based grant funds
8.	Equity financing
9.	Flood insurance based on a risk pool model
10.	Parametric insurance
11.	Resilience bonds
12.	Land-use development option/ Green infrastructure finance
13.	Household or local business charges
14.	Renewable energy revenues
15.	Landowner investment

⁷ <https://www.gov.uk/government/publications/the-green-book-templates-and-support-material>

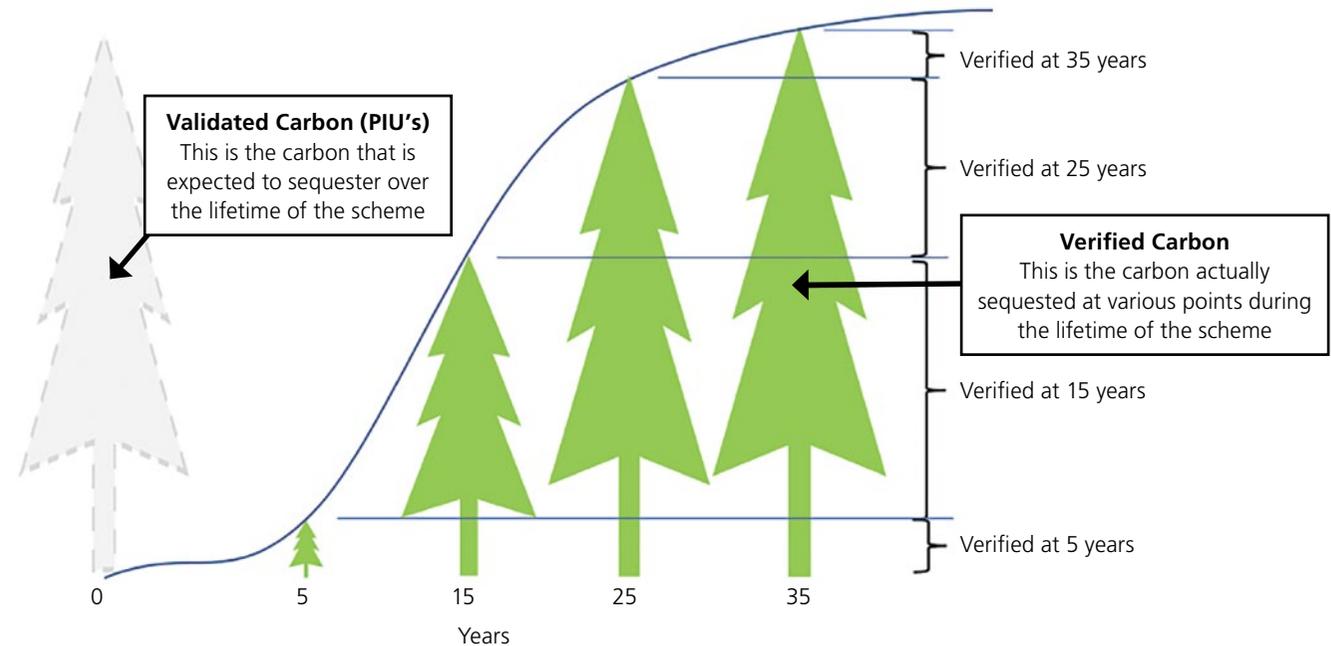
These are discussed in turn below.

1. Carbon sequestration

A number of codes are emerging for carbon sequestration using the natural environment. These were initially voluntary codes but are now being adopted by Government. The codes are intended to capture the value of natural assets created which, aside from the carbon sequestration potential, also includes improved biodiversity and other environmental benefits.

The **Woodland Carbon Code** is the most advanced of these. This is a government scheme administered by Scottish Forestry. The Code allows the owners of new woodland planting schemes to calculate the total carbon sequestration their woodland will achieve over the lifetime of the trees. The planting scheme is validated by a third party after which Pre-Issuance Units (PIUs) are generated. PIUs have a value and may be sold domestically but may not be used in an offsetting calculation until the trees have grown and the carbon sequestration verified. Verification allows the PIUs to be converted to 'Woodland Carbon Units' which may be used by companies to compensate for their UK-based greenhouse gas emissions. Woodland Carbon Code schemes may last between 35 and 100 years. These schemes could be particularly attractive for the Newcastleton project, given the community land owned by NDCT, and the existing plans for

Woodland Code Mechanism



Source: <https://www.scottishwoodlands.co.uk/services/woodland-carbon/#goto-woodland-carbon-code>

forestation. Additional services and facilities will be developed, including forest paths to attract tourism. These activities are not essential to the planned set of flood defence measure, but it would be beneficial to include forestation plans as part of the wider context of the climate adaptation project.

There are now plans to develop a **Saltmarsh Code**, in a similar vein to the woodland code above. This is aligned to the area of blue finance and carbon

sequestration in saltmarshes. Although the area sizes for saltmarshes might be smaller than for some woodland areas in the country, the amount of carbon sequestration potential could be higher. In particular, saltmarsh restoration measures could be applicable for the Inch of Ferryton Managed Realignment Project. It is anticipated that, in 20 years, saltmarsh would develop and dominate over approximately 32ha of the total 80ha project area.

Defra's Natural Environment Investment Readiness Fund (2021 results) is funding 27 schemes to test private investment in nature and address climate change. These include developing a **Farming and Soil Carbon** code to provide a framework for farmers and land managers to generate carbon credits from improved agriculture-based land management practices, and a **Hedgerow Carbon Code**. These Code based schemes can generate a positive revenue stream for a project. They were considered potentially relevant for two of the projects. For the Inch of Ferryton project, although the focus is on managed realignment, there could be scope to include regenerative agricultural practices on existing farmlands and scope the applicability of a farm soil carbon code. The potential to generate carbon credits from improved agriculture-based land management practices could also present an opportunity to landowners in Uist.

However, the revenues from carbon sequestration only accrue over a number of years, and the methodologies can be complicated and involve time and resources to undertake.

2. Payment for ecosystem services

Payment for ecosystem services (PES) is a financing model that involves payments to the managers of land or other natural resources in exchange for the provision of specified ecosystem services (or actions anticipated to deliver these services), over-and-above

what would otherwise be provided⁸. Payments are made by the beneficiaries of the services in question, for example, individuals, communities, businesses or governments. These are often voluntary systems. In order to work, a PES needs to identify beneficiaries and services provided. This could be from interventions that would result in avoided costs for other beneficiaries, who can save money and reduce their risk exposure by investing in the scheme. An example is the payment by a downstream hydro-electricity plant to upstream land managers in the water catchment, to maintain forests and reduce soil erosion, thus reducing hydro plant operating costs and maintenance.

There are some examples that might be relevant for the three case studies based on previous PES⁹. These include Visitor Payback Schemes, where visitors donate money to promote landscape management via participating local businesses, providing a mechanism for tourists who benefit from the natural environment to directly support it. There have also been some schemes based around coastal aquaculture, where payments are made to encourage aquaculture farmers to manage in a way that provides ecosystem service benefits.

8 See Payments for Ecosystem Services (PES): best practice guide. <https://www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide>

9 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/200901/pb13932a-pes-bestpractice-annexa-20130522.pdf

The advantage of PES is that it encourages the private sector to financially participate in restoring and protecting the ecosystem from which it draws resources. However, the accountability and valuation of downstream activities e.g. restoration of a floodplain that protects agricultural land, and the quantification of benefits derived for the private sector can be challenging to establish.

The three projects were reviewed for the potential to apply PES, for example, looking at possible businesses in Newcastleton that might benefit from flood prevention downstream or further inland, but the applicability was considered low across projects.

3. Tourism revenues

An ancillary benefit that could arise from adaptation projects is from tourism. This has potential applicability for all three projects. For example, there are examples of managed realignment in England that shows how realignment of a river can have significant beneficial impacts for flood protection and wildlife. These schemes provide some potential lessons on the concept of a nature reserve and potential revenues created. There are also managed realignment projects that have created wetlands and generated significant revenues. This has high applicability for the Inch of Ferryton scheme, especially as the project proposer is RSPB.

In Newcastleton there is already tourism, which includes mountain biking. The flood risk management project will have benefits for these tourism activities, and the project investigated if the scheme or additional NBS options could enhance the tourism base and increase revenues. Similarly, the tourism potential of Uist might present an opportunity to generate an additional stream of revenue for flood protection and related resilience measures. However, the potential was considered lower than for the other two projects.

This option can therefore create additional revenue streams, albeit linked to other project benefits rather than the direct adaptation components. However, there are additional costs (higher financing) for creation of tourism related amenities and attractions e.g. walking paths, resting areas etc. that could take time and require additional ongoing costs and activities to generate tourism revenues.

4. Crowdfunding platforms

Crowdfunding is an established financial mechanism for raising capital and is rising in popularity due to its common social framing. The crowdfunding concept typically uses a platform which brings together an investment opportunity (including capital investment for a project or portfolio of projects) with individual investors who receive a return. Crowdfunding can be either debt or equity based, depending on the underlying interventions, the risk profile of the

return and available financing. The concept is often connected to impact investing, i.e. investments made with the intention to generate measurable social and environmental impact alongside financial return. Crowdfunding offers the potential to link local projects to local investors, and thus create a higher incentive for the public to invest.

Abundance Investment has developed a series of municipal bonds which include a portfolio of green projects which contribute to net zero targets. These use a Community Municipal Bond (CMB) structure, where the bond is issued by a local authority directly to the public via a crowdfunding platform. These CMBs provide finance to local authorities at a slightly lower rate than they can typically access and offers a powerful and innovative way for local authorities to engage with citizens as investors. The revenues generated by the project pay back investors. While these bonds have, to date, been dominated by mitigation, some have included non-revenue projects (e.g. nature based solutions). As the underlying portfolio of projects can be put together by the local authorities, a combination of innovative adaptation interventions alongside more conventional renewable energy projects can be bundled together to generate net positive aggregate revenue streams from which to pay back investors.

Another example is the Scottish Wildlife Trust and SEPA, who have partnered to try to unlock £1 billion of new investments for nature conservation in

Scotland. One of the proposed innovative funding mechanisms is a Nature-Climate Bond.

For the Inch of Ferryton project, a crowdfunding platform could be used to tap into the RSPB membership base to raise funds. There could also be potential for place-based crowd funding or an innovative island bond concept for Uist. Newcastleton is already looking at placemaking activities for the village and the area around it, and this might provide a platform to investigate possible crowdfunding, engaging with locals and tourists. However, a key issue is that for crowdfunding to work, some level of revenue might be generated (to pay a return to crowdfunding investors). It is not clear what level of revenue could be generated by each project, and there is also uncertainty on the amount of funds which will be raised.

5. Biodiversity Offsets and Habitat Banking

In the UK, biodiversity offsets have been defined as 'conservation activities that are designed to give biodiversity gain to compensate for residual losses'. Biodiversity offsetting is understood as a 'last resort' in a 'mitigation hierarchy' to be adopted only after all measures had been taken to avoid and minimize development impacts and to rehabilitate or restore biodiversity on-site.¹⁰ The Environment Bank has

10 Biodiversity offsetting – GOV.UK (www.gov.uk)

developed a toolkit to support local authorities in Scotland to introduce a transparent and auditable framework for biodiversity accounting.¹¹ A project site qualifies only after avoidance and mitigation measures have been implemented to avoid biodiversity loss i.e. on-site gains have to outweigh on-site losses after the project activity to qualify.

The creation of biodiversity credits could enable 'habitat banking' (also known as 'conservation banking' and 'biodiversity banking'). Credits are provided by a conservation or mitigation bank, consisting of a site (or several sites) where resources (e.g. habitats, species, wetlands) are restored, established, enhanced and/or preserved. Providers of credits enter an agreement to sell credits to developers to offset impacts on biodiversity that result from their projects. Biodiversity offsets through habitat banking is still at a nascent stage with limited applicability.

The advantage of biodiversity offsets is that it could develop into a market similar to carbon offsets, and provide an additional revenue stream for projects such as the Inch of Ferryton where tidal habitats that could restore biodiversity losses are created. However, the existing methodologies in the UK are rigorous in their approach to calculating baselines and assessing net gain for biodiversity, which makes it difficult to qualify. Although innovation such

as habitat banking is shifting the market towards increased incentives to conserve biodiversity, the uptake is still low with not many pilots. Even though the potential is likely to be low, all three projects could benefit from further biodiversity assessments.

6. UK and Scottish Government Funding

A number of Government grant-based schemes were considered as funding options for the three projects. These included:

- The Forestry Grant Scheme
- Rural Communities Testing Change Fund
- The Biodiversity Challenge Fund
- The Green Growth Accelerator.
- Nature Restoration Fund – NatureScot
- Natural Environment Investment Readiness Fund – Defra
- Scottish Enterprise grants
- The UK Shared Prosperity Fund
- The Scottish Rural Development Programme (SRDP) 2014-2020 funds¹²

These offer the potential for major grant funds for all three projects. They are known and transparent, and currently provide the only obvious route to funding for the projects. However, they do take time and resources to complete and there are usually different application processes for each one.

Also, there is a danger of relying on one project funding approach. There are benefits to having other financing options, as an alternative source of finance and also to demonstrate to the Government the efforts made to leverage in additional sources of (innovate and private sector) finance.

7. Philanthropic funding

Given the environment and societal benefits of the projects, there are potential opportunities to seek philanthropic funding, e.g. from charities, foundations, trusts, etc. for all three projects. The study reviewed a number of such funders, that might be highly relevant for the projects, including the Esmée Fairbairn Foundation, Craignish Trust, the Robertson Trust, Garfield Weston Foundation, Cadogan Charity and the Dulverton Trust. None of the three projects have currently considered philanthropic funds. This is likely due to the smaller sizes of funds available compared to the project costs.

Most philanthropic funding is grant-based, which can be blended with other finance streams to be used for key enabling activities for a project e.g. setting up of tourism facilities or renovation of existing ones. Applications for funding need to be closely aligned with the specific priorities and eligibility conditions of the fund. For small amounts of grant funds, this could be a more time and resource intensive process.

11 <https://environmentbank.com/>

12 <https://www.ruralnetwork.scot/funding/scottish-rural-development-programme>

8. Equity financing

One of the emerging areas of finance for adaptation is equity financing, which vary based on the investment focus and strategy, for example impact equity that supports higher risk, early investments or growth equity that looks at investing in established businesses. Whatever the focus of the investment, it usually involves taking a partial ownership stake in projects or companies.

The study specifically looked at Green Angel Syndicate (GAS), as an example. GAS is the only angel network in the UK that specifically targets investments tackling climate change. To assess positive environment investment impact, the syndicate considers two key metrics: emission reduction (not necessarily limited to CO₂) and/or ecosystem restoration and regeneration. GAS has launched an Enterprise Investment Scheme (EIS) co-investment climate change fund.¹³ The EIS component is a Government scheme that provides a range of tax reliefs for investors who subscribe for qualifying shares in qualifying companies (a small sized limited company is a pre-requisite to apply for financing).

Such an equity financing option could be considered for any of the three projects if financial assessments indicate that is beneficial to set-up a Special Purpose Vehicle (SPV) (or another a legal entity) to channel profits from a set of activities.

9. Flood insurance based on a risk pool model

Flood insurance for homeowners in the UK is supported by Flood Re- a joint blended finance initiative between the Government and insurers. Its aim is to make the flood cover part of household insurance policies more affordable and widely available. It works on a risk-reflective pricing model that helps to keep householders' premiums down. Businesses choose their own insurance companies with premiums set according to the risks faced by each insurance – including flooding of property and other assets.

The study considered the potential to develop alternative insurance products specific to the three projects being assessed. In particular, a flood-related risk pool was looked at, which would combine the risks faced by several entities into a single, diversified portfolio. A risk pool at the local level would allow for a similar risk profile across customers and potentially decrease individual premiums – both for businesses and homeowners. The design of such a local level risk pooling could be led by the local authority in partnership with interested insurers to support the wider resilience strategy for local communities. The insurance product could also be linked to a contingency fund that would allow for faster and more efficient pay-outs during a climate related flood disaster.

Although not directly linked to the project activities, such an approach could present an opportunity for the Uist project to develop a risk mitigation instrument to develop affordable insurance for communities and businesses to cover damages from flooding. However, developing such a scheme would need detailed feasibility assessments, which take time and resources.

10. Parametric Insurance

Other products are being developed that use insurance as a climate-risk mitigation instrument. Parametric insurance, although not obviously applicable to the three projects, was considered to review the potential for innovation in this space. A frequently cited example is the development of parametric insurance for coral reefs in Quintana Roo Mexico, which covers actions to identify and address damage to reefs after the impact of a hurricane. The project is a partnership for reef resilience insurance between the public and private sectors, including the tourism industry, that are working together to maintain coral reef ecosystems, support tourism infrastructure, fisheries' value chains, and provide protection from climate related disasters. In theory, the coastal dunes of Uist might have some characteristics that are similar to this, i.e. providing protection, but there is not the equivalent size of tourism or agricultural sectors to make this feasible.

¹³ <https://greenangelsyndicate.com/>

11. Resilience and climate bonds

Climate bonds are financial instruments with a fixed-income that could be used to raise finance for climate adaptation solutions. These bonds represent a debt-based financing tool to mobilize resources from domestic and international capital markets, with proceeds of the bonds channelled towards activities that promote climate change mitigation, adaptation or other environmentally sustainable purposes.

The advantage of using a bond approach is that there is potential to cross subsidise projects making the collective portfolio financially attract to generate investor interest. Bonds can also be supported by local municipalities providing some amount of public sector support. The Uist project might have some potential to further assess the use of bonds as a financing option.

12. Land-use development option.

There have been a number of climate adaptation schemes that have funded investments on the basis of wider development prospects. These include examples where flood protection schemes reclaim land (or protect land that would otherwise be at high risk of flooding and thus of low value), and then work with private developers to maximise the value and revenue opportunities from the use of this land, most commonly with new housing development.

In the case of Newcastleton, there could be potential to develop the community owned land, working with developers for new private housing development. The nature of the island communities, land ownership and crofting for the Uist project does not lend itself to this financing option, and the Inch of Ferryton does not have the scale of available land needed for such development.

Although this type of investment could bring in private sector financing for infrastructure, the land area and opportunity will need to be at a large enough scale to attract investors, and there may be resistance to such schemes (either because they may increase housing in flood risk areas, or because local communities would prioritise community projects over private investment).

13. Household or Local business charges.

Some large-scale flood management schemes have been funded through the transfer of project costs through local charges. The best example of this is the Copenhagen Cloudburst scheme, which has invested in major green and grey adaptation to address flood risks, with the costs of the schemes funded through increased household water charges for residents. There are also other variations of such schemes internationally, where charges are applied through local business rates, or local taxes or charges. In theory, it might be possible to adopt such an approach for the islands, but

given the existing socio-economic situation, and the low revenues from current activities, this is not considered an attractive option. This approach could be relevant for Newcastleton, however further assessment would need to be undertaken, including the affordability and willingness to pay of residents and businesses affected by the fluvial flooding. The advantage of such schemes is the recovery of costs by charging those segments of society that can afford to pay, however, they are often unpopular.

14. Renewable energy revenues

There are some schemes where a blend of mitigation and adaptation components are included to generate revenues that help fund the overall investment. An example is the siting of wind turbines on the top of coastal dike projects. This provides opportunities for private sector investments in mitigation-based revenue generating renewable scheme to help fund the overall project. Such an approach might have some potential for Uist, e.g. from the potential for wind or wave energy, or for Newcastleton for solar energy. These projects generate revenues but need to be at a scale to cover investments, and land availability can be an issue.

Overall Results

The analysis of these options for all three case studies is brought together below.

Information is presented on:

- Source of finance (private/public);
- Potential to attract finance (high/medium/low);
- Time-frame to receive the financing (short term – immediate to 1 year/medium term – 2 to 4 years/long term – above 4 years).

The mapping of the options to the case studies highlighted the potential for different instruments varied for each of the three case studies. This implies that each project would need to adopt a bespoke strategy to develop targeted funding options.

Table 2. Analysis of the potential financing options for the three case studies.

No.	Financing option	Inch of Ferryton Managed Realignment	Newcastleton Flood Protection Scheme	Uist Community Climate Resilience
1.	Mitigation revenue streams from carbon sequestration	High	High	N/A
2.	Payment for ecosystem services	Low	Low	Low
3.	Tourism revenues	High	High	N/A
4.	Crowdfunding platform	High	Low	Medium
5.	Biodiversity habitat bank/biodiversity credits	Low	Low	Low
6.	Government grant funds	High	High	High
7.	Philanthropic based grant funds	Medium	Medium	Medium
8.	Equity financing	Low/Medium	Low/Medium	Low
9.	Flood insurance based on a risk pool model	N/A	N/A	Low
10.	Parametric insurance	N/A	N/A	N/A
11.	Resilience bonds	N/A	Low	Medium
12.	Land-use development option / Green infrastructure finance	Medium	Medium	Medium
13.	Household or local business charges	N/A	Medium	N/A
14.	Renewable energy revenues	Low/Medium	Medium	N/A
15.	Landowner investment	Low/Medium	N/A	N/A

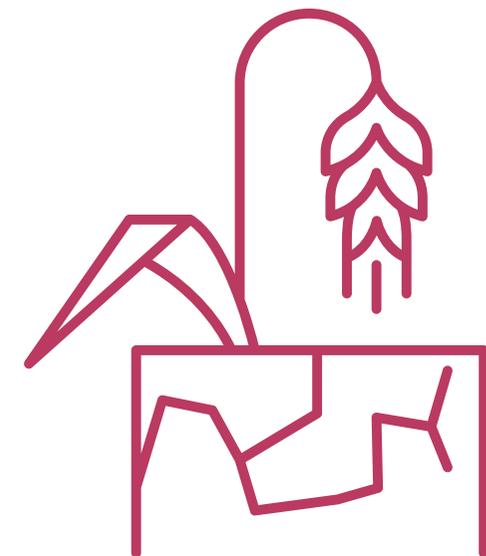
Key Lessons

The consideration of this diverse set of financing options for the three differing project types has highlighted some useful lessons for climate adaptation projects in Scotland. Feedback from the projects proponents also provided insight on the practicality of applying the options and the level of required experience. The key lessons are summarized below.

- The analysis found that for all the projects, there is some potential for additional finance (beyond traditional public grant finance), however, different instruments were relevant for each of the three case studies. This reflects the site and context specific nature of adaptation.
- The pay-off between effort and reward (revenue) do not always match up. Delivering additional revenue streams would involve extra activities and take considerable time and resources – they would be unlikely to happen autonomously. Project developers could struggle with lack of time and expertise to assess and follow-through on some of the more innovative financing options. An accessible platform from where basic information on a menu of financing options for climate adaptation and related project evaluation criteria could encourage the uptake of more innovative approaches for financing.
- The additional revenue streams identified are often not associated with the reduction in climate risk (adaptation) but instead arise from co-benefits, for example carbon sequestration or tourism revenue. This is important, because to deliver these revenues, projects will have to deliver adaptation and other benefits at the same time. This means that projects will need to manage and deliver multiple benefit streams (for potentially different beneficiaries). This may involve changes to scheme design or additional activities to maximize these co-benefits, and it might even lead to trade-offs with adaptation.
- The analysis has found that the likely level of additional revenue generated from non-traditional sources would be modest, and would mostly provide a supplementary stream of finance, rather than covering the scheme costs entirely.
- Dedicated effort and expertise are needed for generating finance from these alternative sources, including the development of proposals or business cases. These options are often new to project developers and project financiers. There is a need for knowledge brokers who can help projects develop these new solutions, because they involve a new skill set that is not often/always present in public organizations. There is also the potential for more information, guidance and best practice examples on how to develop these new approaches.



- Partnership development between projects is essential. There is potential to create a live network of knowledge that builds and flows between different projects. Given that adaptation financing is such a new space, dissemination of real-time opportunities and learnings between projects will be key to promote and build finance for adaptation. This is applicable both to project proponents and financiers keen to invest in climate adaptation. There is also potential to tap into the considerable experience and knowledge of initiatives such as the Scottish Conservation Finance Project (the £1 Billion Challenge) which is already looking at several innovative financing mechanisms.
- Earlier is better: finance needs to be considered at the project concept stage. Evaluation of financing options and related innovation for adaptation needs to be integrated within the first stages of project development. This approach could also save costs in the long run by taking advantage of project development funding, building in necessary climate adaptation components and co-activities to project design and building of essential (financing) partnerships.
- Knowledge products and capacity building are required. Whilst encouraging project proponents to be bolder and explore alternative financing options, it should also be recognized that the provision of some basic knowledge and expertise building would accelerate both the learning and the impetus to try new approaches to financing adaptation.



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