Emerging funding opportunities for the natural environment

For philanthropic funders and impact investors in the environment sector

February 2020

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EXECUTIVE SUMMARY

The UK has one of the most depleted natural environments in the world.[1] The latest State of Nature report shows that the UK is losing habitats and species at an alarming rate – two fifths (41%) of all species have declined in abundance since the 1970s.[2] The natural environment is facing increasing pressures from land management practices and climate change. In addition to its intrinsic and cultural value, natural features such as woodland, wetland and marine habitat support vital benefits for people, businesses and wildlife.

Current environmental funding sources, mostly public and philanthropic grants, are unable to meet the need to prevent further decline of the natural environment. Such grant support will remain critical if we are to reverse the current crisis, but a significant increase in funding is needed to support the recovery of the natural world. The reform of public policy and an appropriate regulatory framework will also be crucial for both protection and restoration.

This report examines the state of emerging funding opportunities for projects designed to protect or enhance the natural environment across the UK. There is a growing opportunity to access new sources of funding by developing projects that deliver long-term revenues or cost savings in addition to benefits to nature. Income generating opportunities such as payments for ecosystem services, carbon credit sales and ecotourism enterprises could complement existing sources of funding to provide a more resilient funding base for environmental restoration.

New or diversified funding streams are not intended to replace public and philanthropic grant funding for the environment, but rather to provide additional income at the scale required to deliver nature recovery. Further development of income-generating opportunities would allow public and philanthropic funding to be focused on funding conservation efforts which will never generate income. Equally, public or philanthropic funding could be aligned with private finance to maximise the non-market benefits that could be delivered through a scheme's design, such as ensuring that a natural flood management or forest management scheme also benefits nature.

This study was carried out through a market engagement process involving in-depth interviews with stakeholders working across 95 projects that are designed to restore the natural environment. The review aimed to gather project examples and gain insight into experiences of project developers seeking to develop income-generating opportunities for nature. The output is intended to inform initiatives that can increase access to new or diversified funding streams for the natural environment.

Consultation results

Organisations are actively exploring emerging funding opportunities for the natural environment, but the market is underdeveloped.

Organisations are trialling a variety of innovative approaches to accessing alternative funding for the natural environment. Of the projects reviewed, 28% are generating revenues or accessing funding from beneficiaries of actions to restore or protect natural features. Although most projects are in the early stages of their pathway to access emerging funding markets, there were many examples of successful pilot projects now seeking to scale up and replicate approaches. There is considerable opportunity for market growth as a result of recent supportive policy commitments and growing interest from the private sector to provide capital to achieve environmental impact.

Projects spanned a diverse range of environmental ambitions, scales and stages of development. To enable more detailed analysis of emerging funding approaches, projects were split out across natural environment themes, summarised below:

Catchment

39% of projects

Status

- Strong cross-sectoral stakeholder collaborations are delivering actions at a landscape-scale.
- Regulatory pressure to meet water quality targets is driving funding from water utilities.
- A lack of confidence in enforcement of the regulatory baseline makes it challenging to demonstrate that investment is delivering additional benefits.

Development opportunities

- Building the evidence base for effectiveness of natural flood management (NFM) interventions.
- Advancing governance and delivery systems to enable market mechanisms to draw in the most appropriate source of funds.

Peatland

7% of projects

Status

- Peatland restoration projects are seeking to access markets for carbon credits verified by the Peatland Code and, through this, secure investment.

Development opportunities

- Strengthening domestic offsetting policy to increase demand for carbon credits.
- Showcasing how complex projects can be implemented successfully to further develop the track record.

Woodland

8% of projects

Status

- Wide range of business models are in development including woodland product sales and enterprises. Opportunities are emerging to access funding for the wide range of benefits provided by woodlands.

Development opportunities

- Policy changes to increase demand for carbon credits.
- Further exploration of stacking revenue streams within business models.
- Northern Forest opportunity to test funding models for large-scale woodland creation to attract a wider pool of investors.
- Designing incentives and funding models for woodland planting and management to ensure social and environmental benefits are maximised.

Habitat conservation

8%
of projects

Status

- Projects are seeking to respond to recent policy commitments to mandate biodiversity net gain.
- Limited awareness of best-practice, capacity, and expertise to deliver schemes.

Development opportunities

- Development of a robust structure to enable coordination between planning authorities, provision of consistent metrics and monitoring of outcomes.
- Leverage funding from developer biodiversity net gain contributions with additional upfront private investment to finance large-scale habitat creation.

Urban green space and infrastructure

15%
of projects

Status

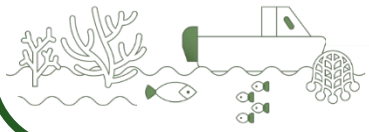
- Increased consideration for green infrastructure (GI) in building plans to support climate change resilience.
- GI proven to be cost-effective for water management.
- Enterprise models have promise to support a self-sustaining funding base for parks and greenspace.
- Limited funding models for air quality and health outcomes.

Development opportunities

- Large scale financing of urban GI requires a contracting and delivery mechanism.
- Dissemination of learnings from the sustainable funding models that are being explored for greenspace.

Coastal

7%
of projects



Status

- Array of potential revenue streams identified – payments for water quality/ NFM outcomes, ecotourism and carbon credits.
- Resource constraints in coastal partnerships prevent business model development.

Development opportunities

- Greater recognition for the value of coastal benefits and stronger evidence-base for delivery of outcomes.
- Funding and resources for feasibility studies, project development and delivery plans.
- Linking with economic regeneration in coastal communities

Marine

4%
of projects

Status

- Limited activity reported – particularly challenging to access new funding for marine conservation.
- Complexity of marine management and governance.

Development opportunities

- Increased policy support to develop carbon markets and biodiversity net gain in a marine context.
- Governance structure to interface between stakeholders.
- Capturing surpluses from marine enterprise activities for marine benefit.
- Establish greater confidence in the regulatory baseline.

Market infrastructure

11%
of projects

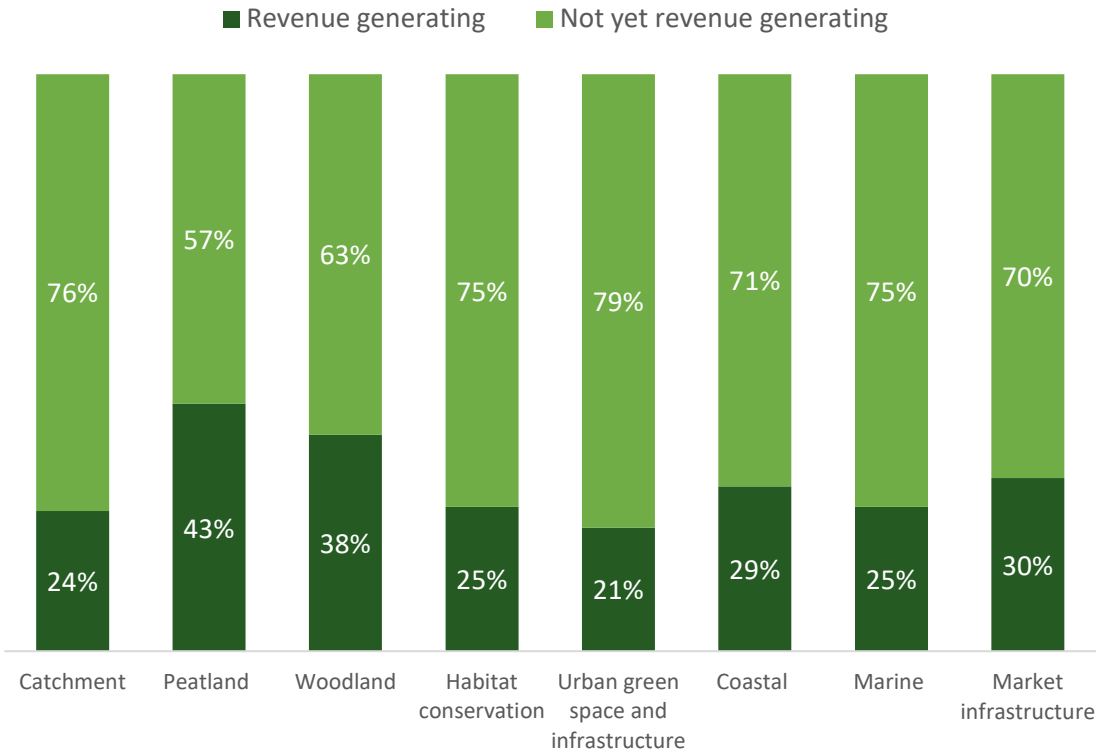
Status

- Market infrastructure is key to supporting environmental markets.
- Public policy, certification codes and dedicated environmental impact funds have been shown to unlock funding opportunities.

Development opportunities

- Dedicated environmental impact investments, driven by government, alongside technical assistance could kickstart environmental markets and draw in private finance.

Figure 0.1 – Project status by environmental theme



Project developers reported common obstacles and enabling factors when targeting emerging funding sources.

Respondents consistently reported cultural and communication challenges in convincing stakeholders to fully recognise the benefits of natural interventions and engage with new funding approaches. Many environmental benefits are hard to measure, and appropriate paying beneficiaries are difficult to identify. Constraints to organisational capacity to develop and implement complex and novel schemes has restricted progress on the development of emerging funding approaches.

Through their direct experience, project developers identified enabling factors which may spur an increase in funding. Extensive communication and engagement played a central role in obtaining buy-in and alignment from key stakeholders. Other key factors included supportive government policies and regulation, availability of funding to explore new opportunities, proof-of-concept models to follow and robust data monitoring to evidence success of interventions.

Policy support is crucial to increasing market activity.

Policy changes affecting the natural environment remain in flux and could have significant impact on future market developments. Project developers are seeking to capitalise on emerging funding markets from new policy commitments, such as the post-Brexit Environmental Land Management Scheme (ELMS), biodiversity net gain, and a strengthened domestic carbon market. Government has a critical role in enabling access to new forms of conservation funding, particularly in voluntary markets where floor prices (imposed price control) could be introduced.

Philanthropic funders and impact investors in the environmental sector have an important role to play to stimulate market development.

There is considerable opportunity to expand funding markets for the natural environment. Based on the review findings, immediate priorities for philanthropic funders and impact investors include:

1 ***Support the development of proof-of-concept models and exemplar pilot projects***

2 ***Provide technical assistance and infrastructure to support organisations to raise and manage emerging funding sources***

3 ***Use funding strategically to catalyse a greater range of public and private capital into protecting the natural environment***

1. ABOUT THE REVIEW

A market review was performed to explore emerging funding approaches used across the UK's natural environment. The review's objective is to focus on projects which may be generating, or have the potential to generate, revenues to complement philanthropic or public funding. The project aims to identify barriers and enablers to funding such projects.

This report examines the state of emerging funding opportunities for the protection or enhancement of the UK's natural environment. For the purposes of this review, emerging funding refers to long-term sources accessed through income generation, including through the sale of environmental goods and services and payments from beneficiaries of natural interventions driven by cost savings. The focus is on natural features such as woodland, wetland, marine habitat and urban greenspace.

The work explores the potential for increasing funding for the UK's natural environment through developing projects that deliver sustainable revenues or cost savings. The objectives for this were:

- Understand the state of emerging funding opportunities for the natural environment in the UK;
- Illustrate examples of projects seeking to access emerging funding sources to deliver environmental objectives;
- Gain insight into the barriers preventing projects from accessing such funding and opportunities to support projects to address these challenges.

The report is structured in sections:

Section 1. Introduction – The section sets out the context of the report and identifies the report's objectives and scope.

Section 2. Project Methodology – The section outlines how the market engagement process was conducted and the classification methodology.

Section 3. Consultation Results – Eligible projects were classified across several metrics. Eight themes were identified for further analysis including catchment, peatland, woodland, habitat conservation, coastal, marine, urban green space and infrastructure, and market infrastructure. Consultation results were also quantified across organisational sector and project status.

Section 4. Lessons Learned – Across the results, common barriers and enabling factors were uncovered.

Section 5. Results by Environmental Theme – Using the eight identified themes, this section deep dives into each, addressing the state, barriers and enabling factors, and example case studies.

Section 6. Conclusions and Recommendations – The final section outlines the review's results and findings and provides suggestions of supportive interventions which could improve access to emerging funding sources for the natural environment in the future.

2. PROJECT METHODOLOGY

Focused interviews were conducted to gather experiences of stakeholders and live project examples. Datasets were examined across various lenses, including organisational sector, project status and environmental theme.

Between March and June 2019, Environmental Finance (EF) and Ecosystems Knowledge Network (EKN) consulted with stakeholders working to access emerging funding opportunities to benefit the natural environment. Stakeholders and initiatives were identified through the network (comprising a diverse mix of 2,000 volunteers and professionals UK-wide) and experience of the project delivery team. Individuals across the public and private sector and non-governmental organisations (NGOs) were approached to gather a wide range of experiences.

Telephone interviews and meetings were held to gather project examples and explore the needs and barriers that organisations face. A framework was developed against which project information was gathered and categorised. This included:

- **Project summary information:** *background, location and stage of development.*
- **Environmental and social impact:** *ecosystem services or other benefits delivered.*
- **Financial impact:** *potential revenue streams or cost savings generated for beneficiaries.*
- **Sources of funding:** *from philanthropic, public and/or private sources.*
- **Replicability:** *across geographies or ecosystems.*
- **Barriers and challenges:** *for example, market failures, capacity or skills limitations, policy and regulatory environment.*
- **Enabling factors:** *for example, third party technical support, internal capacity building, new policies, regulations, contract structures, stakeholder coordination and data.*
- **Key stakeholders:** *implementing agents and funders.*

Projects in scope for consideration needed to demonstrate the following characteristics:

- Seek to make a positive impact on the condition of the natural environment
- Have the potential to generate sustainable and non-reductive revenues or cost savings
- Be in development already or have key stakeholders in place ready for development

2.1. Data analysis

Organisational sector

Project developers were classified by sector to determine which sectors were active in developing emerging funding models for nature.

Table 2.1 – Organisational sectors of interviewees

Sector	Definition
Public sector organisation	Organisations owned and operated by the government
Non-governmental organisation	Charities and not-for-profits
Private sector organisation	For profit private corporations (including utilities) and social enterprises
Independent	Independent landowners, consultants etc.
Partnership	Partnerships of a combination of public, private and NGOs

Project (revenue) status

Each project was classified under a single project status, indicating the project's trajectory towards generating revenues.

Table 2.2 – Project status classifications

Classification	Summary
Not operational (key stakeholders identified and engaged)	Stakeholders have been identified and engaged for project development, but the project is not yet operational
Operational (pre-generation of revenues / cost savings)	Project is operational, but is not yet accessing funding sources through generating revenues or cost savings
Operational (generating revenues / cost savings)	Project is operational, and is accessing funding sources through generating revenues or cost savings

Projects classified by environmental theme

The projects were split out by a natural environment theme to enable detailed analysis. The classifications by environmental theme are not scientific but aim to highlight the key habitats in which activities are occurring. Many projects could be considered across more than one theme, in particular, activities within the catchment theme overlap with the woodland, peatland and coastal categories.

Table 2.3 – Environmental themes

Theme	Summary
Catchment	A broad range of coordinated activities involving a cross-section of stakeholders within a landscape to improve the water environment
Peatland	Peatland protection and restoration
Woodland	Woodland creation, protection and enhancement of existing woodland, sustainable management practices
Habitat conservation	Habitat creation and enhancement with the primary aim of increasing biodiversity
Urban green space and infrastructure	Implementation of urban green infrastructure; creation, protection and enhancement of urban green space
Coastal	Coastal activities including saltmarsh restoration, and coastal wetland and habitat creation to protect and enhance coastlines
Marine	Enhancement of the marine environment through sustainable aquaculture, fisheries and other marine activities
Market infrastructure	Infrastructure to enable access to emerging funding opportunities e.g. Innovation Funds, Investment Funds, Carbon Codes

Key terms

For the purposes of this report, the below key definitions apply. Definitions of other terms are included in the glossary.

Table 2.4 – Key terms

Term	Definition
Emerging funding	Long-term sources of income through revenue generation; excludes grants
Funders	Includes all types and sources of funding, including public funders, philanthropic donors, and investors seeking repayment
Funding	All types of funding, including grants and repayable investment
Investors	Providers of repayable funding, sometimes with an expectation of interest
Investment	Monetary contributions with the expectation of repayment
Natural environment	Living and non-living things that occur naturally, including wildlife, water, soils and forests and urban green spaces
Project developer	Organisations or individuals pursuing initiatives with the aim to protect, enhance, or restore the natural environment
Revenues	Project outcomes that can be monetised; including costs savings which would have otherwise been incurred

2.2.Limitations of the methodology

Although the review sought to capture the breadth of projects in development, there are limitations to the review's scope and methodology including:

Identification of projects – The stakeholder consultation process was based on the professional contacts within the network that is facilitated by EKN (including representation from a wide range of local environmental initiatives). While the review team have a broad network and awareness of projects, there may be projects which were not covered. The interview responses, while based in all areas of the UK, may not wholly represent the entirety of the UK's efforts in pursuing emerging funding opportunities for the natural environment. Equally, there may also be project developers which did not respond when contacted or did not wish to be included in the review.

Interviewed participants – In most cases, the individuals interviewed for the review were heavily involved in their respective project. However, there may be circumstances where the participants interviewed were not aware of all aspects of the project, given the range of stakeholders involved and project complexity. Interviews may not have revealed full details of each project.

The interpretation of data – The review did not seek out quantitative data and should not be interpreted as scientific or statistically reliable data. The data collected is reliant upon the consistency of the interviewer's recordings and interpretation of responses.

3. CONSULTATION RESULTS

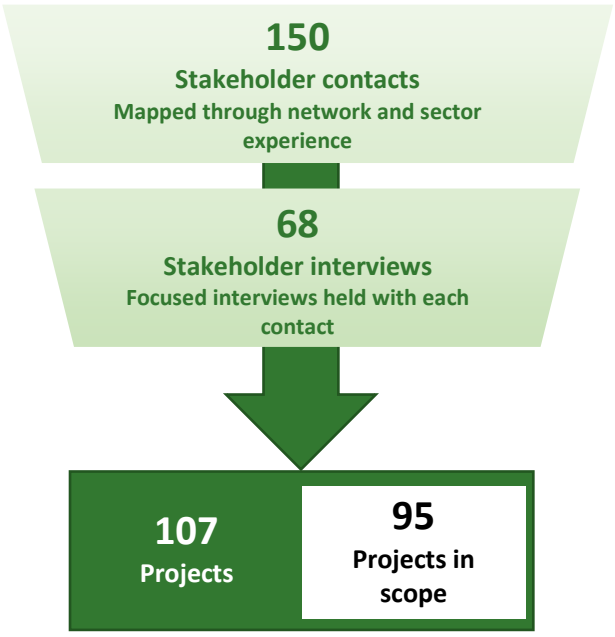
Interviews identified 95 projects within the review scope. Analysis of the results revealed that organisations across different sectors are actively engaged in sourcing emerging funding opportunities to achieve environmental objectives, however, most projects are not yet generating long term revenues.

1 ***Project developers are active in developing projects that can deliver positive environmental impact and generate emerging sources of funding***

During the consultation phase, interviews were held with 68 out of 150 potential contacts identified through the stakeholder mapping process. Stakeholders provided details on 107 projects, with many providing information about more than one project. Out of these, 12 projects were considered out of scope because they did not have the potential to generate revenues or did not result in benefits to nature.

When interviewed, stakeholders were keen to share project information and provide contact details of alternative stakeholders for interview. In some cases, project confidentiality limited access to information, however, in general, stakeholders would welcome the opportunity for open access information to learn from other innovative projects, with the widespread view that pilot projects do not often showcase their success.

Figure 3.1 – Consultation phase process

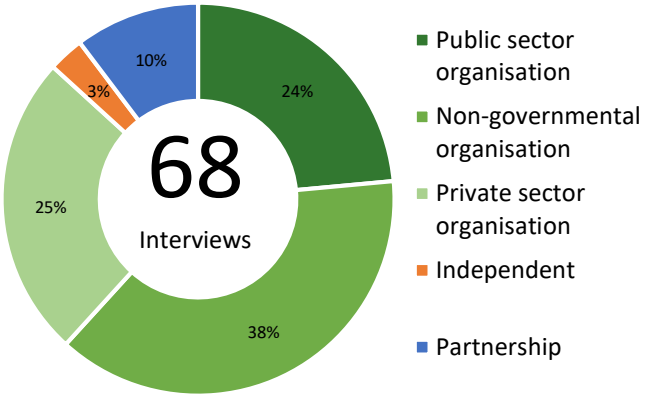


2 ***NGOs were the most actively engaged organisational sector in finding new funding solutions for conservation objectives***

Interviewees were broken down by organisational sector to gain an understanding of the types of actors involved in implementing projects.

Most interviews were with representatives from NGOs, which is the most actively engaged sector in exploring new funding approaches for conservation objectives. Representatives from private and public sector organisations made up a similar number of interviews, with 17 and 16 respectively. The majority of the private sector interviewees represented water utilities and environmental consultancies, with the remainder made up of built infrastructure developers and businesses closely aligned with 'sustainability'.

Figure 3.2 – Organisational sector split of interviews conducted

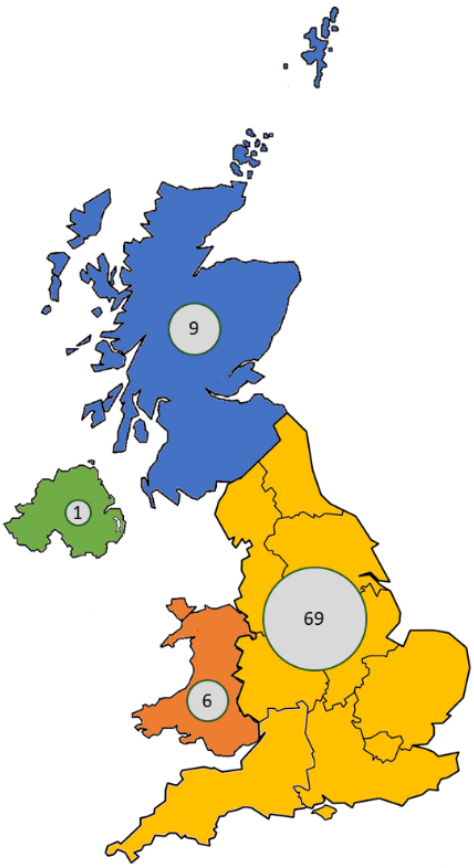


3 ***Projects have been identified across the UK, with the majority based in England***

Nearly three-quarters of projects reported were in English regions, with the bulk of the remaining projects in Scotland and Wales. Ten projects operated UK-wide. The policy framing for natural capital concepts used in England and Scotland may have been successful at communicating ideas and increased engagement with some relatively novel concepts and funding approaches. Despite forming a relatively new area of work in Wales, the Welsh government has provided significant grant support since 2014 to investigate the use of payments for ecosystem services as a tool to support collaborative sustainable land management at a landscape-scale.

Within England, a relatively high proportion of projects were based in DEFRA's 25 Year Environment Plan 'Pioneer' areas in the North West, East and South West of England. The Pioneers are focused on testing new tools and methods for investing and managing the natural environment, which may have resulted in greater engagement with this topic. There were ten UK-wide projects, which included schemes aimed at building up market infrastructure, such as environmental funds, certification schemes and verification codes.

Figure 3.3 – Geographic distribution of projects

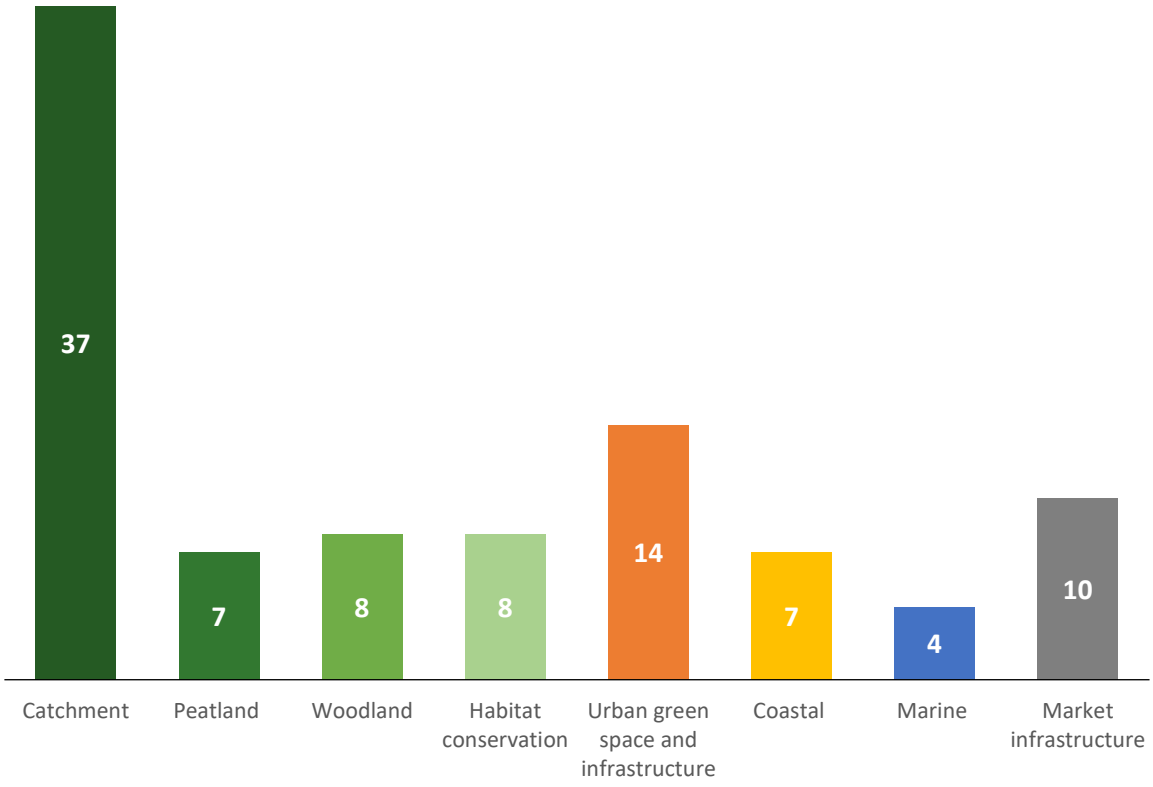


4 ***Most projects involved cross-sectoral collaborations at a landscape-scale***

Projects spanned a diverse range of environmental ambitions, scales and stages of development. Projects were grouped across eight broad themes, which are explored in more detail in section 5. Given the inter-linked relationship of natural processes and ecosystems, many projects could be captured under more than one theme; however, the most prominent theme has been assigned subjectively to each project.

Among the themes identified, the largest number of projects (39%) were focused on enhancing the landscape within a catchment to deliver multiple benefits. Relatively few organisations reported on specific coastal, habitat conservation and peatland projects, partly because projects in these environments were often delivered as part of wider catchment-focused schemes. Marine projects were also less common.

Figure 3.4 – Number of projects by environmental theme



5 ***Stakeholders are interested in migrating from a reliance on public and philanthropic funding to access longer term sources***

Stakeholders reported many examples of collaborative action, working to implement long-term funding solutions for the protection of nature. The majority (73%) of projects lack established revenues, indicating that environmental markets are at a relatively early stage of development. Within each environmental theme, there were examples of projects that have piloted successful approaches and are now seeking to scale up and replicate.

Figure 3.5 – Project status

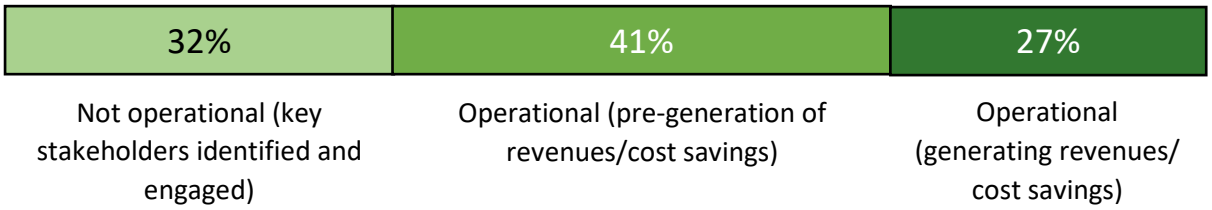
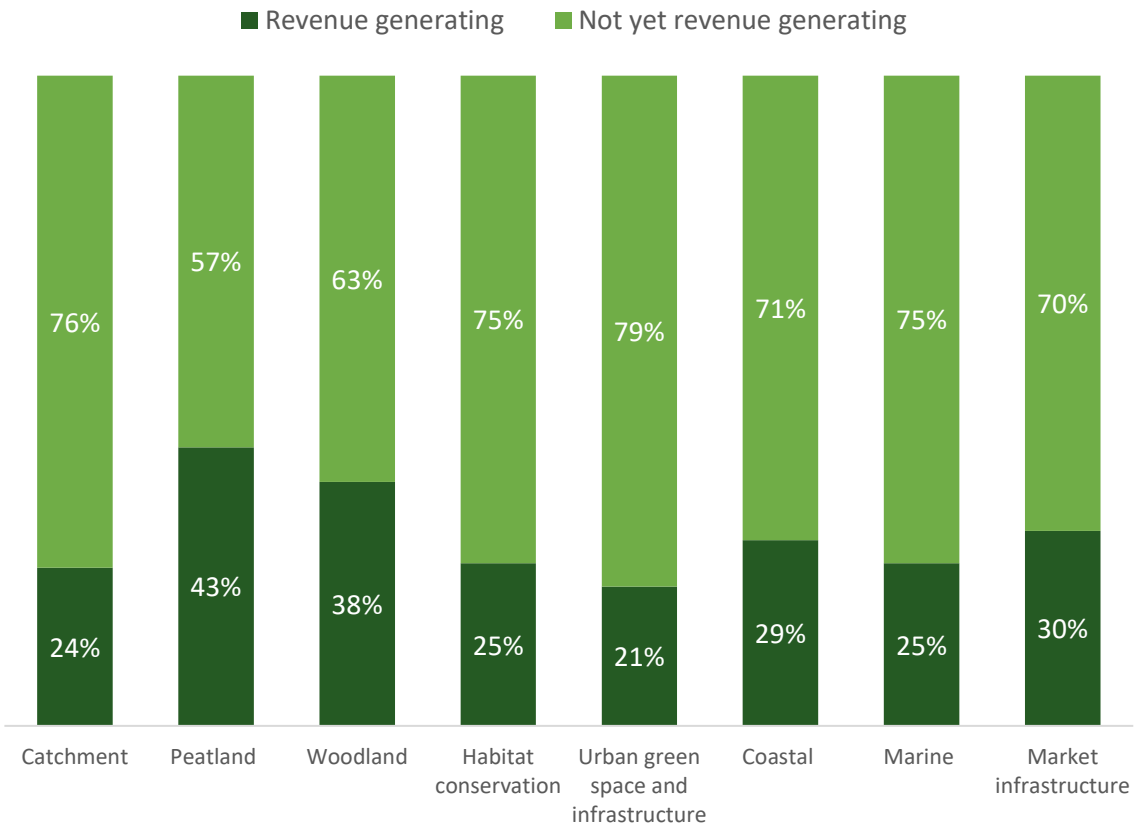


Figure 3.6 – Project status by environmental theme



6 *Sources of revenue targeted by projects are at different stages of maturity*

The study has identified nine key revenue sources targeted from project outcomes. Most projects were seeking to diversify funding sources by accessing multiple markets. More than half of the projects reviewed were primarily seeking to access payments for ecosystem services for water quality benefits. Many projects prioritised biodiversity offset payments, sales of carbon credits and income from enterprise opportunities. Markets for the health outcomes delivered from the natural environment are currently very limited. The figure below assesses the maturity of revenues that are generated from the natural environment based on outputs from interviews.

Figure 3.7 – Maturity of revenues

Source of revenue	Description	Stage of maturity
Biodiversity offsets	Compensation payments for the restoration, improvement and/or creation of new habitat	
Payments for water quality outcomes	Transactions where the beneficiaries of water quality benefits provided by the natural environment pay for the outcomes	
Sustainable agriculture	Revenues from farming practices that produce products whilst supporting ecosystem services	
Sustainable fisheries / aquaculture	Revenues from the sale of products from environmentally supportive aquaculture or fisheries practices	
Woodland products	Revenues generated from sustainable production of timber or other woodland products	
Carbon credits	Revenues generated through the sale of certified carbon credits	
Place-based enterprise & infrastructure	Revenues from the development of enterprises or investment in infrastructure cross-subsidise conservation objectives	
Ecotourism	Revenues from tourist services that support conservation of the natural environment	
Payments for NFM outcomes	Transactions where the beneficiaries of NFM benefits provided by the natural environment pay for the outcomes	
Payments for health outcomes	Transactions where the beneficiaries of the health benefits provided by the natural environment pay for the outcomes	

Low / uncertain revenue  *High / certain revenue*

4. LESSONS LEARNED

The consultation revealed common challenges faced by project developers. Enabling factors were less consistently reported – many solutions are bespoke to local operating environments.

Project developers face common barriers in accessing emerging funding opportunities

Project developers provided information on barriers and enabling factors for the vast of majority of projects. Many of the challenges raised recurred for several projects.

Communication and cultural issues – Extensive communication and engagement played a central role in obtaining buy-in and alignment from key stakeholders. Respondents experienced challenges in convincing those with a stake in the condition of the environment to fully recognise the benefits of natural interventions and engage with new funding approaches. Working with stakeholders across a range of sectors created language and communication barriers due to relatively novel concepts involved, such as natural capital. Some project developers are concerned that engaging with new approaches to funding creates additional financial risk and could undermine environmental goals.

Complexity – Many of the projects reviewed included complex arrangements between landowners, council authorities, regulatory bodies, NGOs and local businesses, resulting in a practical challenge of coordinating the large number of stakeholders involved to deliver successful schemes. Interventions required are generally bespoke due to the technical site-specific characteristics, restricting opportunities for shared learning. There is a high level of complexity in the process required to assess project feasibility, identify buyers, deliver interventions and quantify benefits.

Capacity and expertise – Project developers reported internal capacity constraints, restricting exploration of alternative market-based funding approaches. Limited grant funding is available to support the development of pilot projects with uncertain operating models. Project developers also reported a lack of business planning and enterprise development skills to access new funding sources, particularly where complex collaborations and new contractual structures are required. New funding models are often deemed to be excessively complex and likely to take up too much internal resource to be considered further.

Revenue uncertainty – Respondents frequently cited the difficulty of tying the benefits of the environment to revenue-generating opportunities, as many project outcomes are uncertain or delivered over long timescales. Project developers often struggled to identify and convince beneficiaries, such as corporates that benefit from land management improvements within their supply chain, to pay for environmental outcomes. Equally, concerns were raised about beneficiaries being expected to pay for improved environmental outcomes, if stronger regulation of those directly responsible for harming environmental quality could achieve the same end.

Data and evidence base – Project developers reported issues in measuring the benefits of natural interventions, both to specifically link interventions with outcomes, and the need to record data over long timescales. The multiple approaches used to gather data has prevented standardised results in an easily interpretable format, restricting the opportunity to attract potential funders.

Track record – Uncertainty over the ability for natural approaches to deliver outcomes traditionally provided using grey infrastructure places a perceived high level of risk on novel projects. Potential beneficiaries are unwilling to invest until results are delivered. There is also a lack of 'proof-of-concept' examples with limited evidence of successful models from inception through to financing the delivery of outcomes.

Policy and regulation – Government policy commitments surrounding the natural environment are in ongoing development and liable to change. Organisations reported that Brexit uncertainty, which may shift the funding landscape by directing public money to pay for public goods, made them hesitant to explore new funding approaches. Regulatory challenges reported included the timescales and costs involved in negotiating regulatory permissions and licenses to deliver natural interventions. The risk of failure of natural interventions compared to certain hard-engineered solutions leads to greater regulatory risk of trialling new approaches.

Development experience gave stakeholders insight into enabling factors

Enabling factors reported were not as consistent as barriers, as many solutions to the challenges faced were bespoke unique to the local operating environments. Common factors of success and opportunities for future support include:

Communication and engagement – Multi-stakeholder collaborations have been critical to deliver successful projects. Initiatives such as the Catchment Based Approach[3] have enabled partnerships between government, local authorities, NGOs, water companies and businesses to collaborate in support of healthy landscapes. Strong partnerships have provided a broad range of perspectives and expertise, strengthening the opportunity for shared learning across different programmes. The concept of natural capital is being used more consistently to provide a common framework and language to engage with cross-sectoral organisations. Natural capital mapping and valuation exercises have shifted perceptions and helped stakeholders to embrace approaches and new funding models. Ongoing advocacy and leadership are key to further development of funding opportunities.

Availability of grant funding – Project developers need grant funding for resources to explore new funding opportunities. A dedicated fund could provide internal project developer capacity and external technical assistance to support organisations to build the business case for new funding models and manage the delivery of complex projects. Greater use of blended funding, where public or grant funding supplements private finance to achieve environmental objectives, was highlighted as an opportunity to unlock further investment in projects that would otherwise not be achievable. It is critical that the learning from these projects is shared widely with potential practitioners. Esmée Fairbairn Foundation is currently funding a small number of projects seeking to develop

new funding models for environmental projects. This is also an area of interest for Defra, devolved administrations and public agencies with functions relating to the natural environment.

Reduced project complexity – Project developers requested a governance system in place to facilitate better project coordination and enable stronger market mechanisms. This could support project developers to draw in funding from multiple sources as a result of 'stackable benefits' of natural interventions. There is an important role for intermediaries and facilitators with the appropriate expertise to link funding sources with projects. As common models evolve, the development of standardised legal structures and contracts, centralised guidance and tools could reduce project complexity and development costs.

Data monitoring – Robust data collection to support environmental baselining and long-term monitoring is needed to make the case for the benefits of interventions. An agreed valuation methodology and more standardised indicators would provide greater certainty of results to potential funders. The resources and knowledge of academics could be aligned more strategically to evidence outcomes.

Evidence based proof-of-concept examples – Successful pilot programmes and proof-of-concept models with consistent reporting across projects would increase project developer and funder confidence. Organisations are keen for more opportunities to connect and share best practice and lessons learned across the sector.

Supportive government policies and regulation – Environmental markets are highly dependent on public policy, where tax incentives, funds and consistent policy frameworks can spur the development of new markets. Stakeholders requested more action from government to embed the natural environment within national policies. A well-defined Environmental Land Management Scheme (ELMS) and biodiversity net gain policy was deemed to be particularly important. In addition to supportive policies, a flexible regulatory environment is important to enable trials of untested natural interventions to be pursued. For example, regulatory drivers in the water industry have been critical to incentivise water companies to invest in catchment approaches to risk reduction.

5. RESULTS BY ENVIRONMENTAL THEME

5.1.Catchment

Barriers	Enablers	Sources of Funding	Revenue Streams
- Data and evidence base - Complexity - Communication and cultural issues - Track record - Revenue uncertainty - Policy and regulation - Capacity and expertise	- Stakeholder engagement and collaboration - Governance and delivery system to enable market mechanisms - Evidence of effectiveness of interventions - Blended public/private sector funding to catalyse schemes - Regulatory drivers and support for new approaches	- Water utilities - Corporate beneficiaries - Infrastructure bodies and developers - Insurance industry - Public bodies – EU wide, national and local - NGO in-kind payments	- Payments for water quality and NFM outcomes - Biodiversity offsets - Agri-environment schemes - Ecotourism - Carbon credits

86% of river bodies in England have not reached the required environmental standards specified under the EU's Water Framework Directive.[4] To address challenges at a landscape-scale, partnerships between government, local authorities, NGOs, water companies and businesses are collaborating in support of a healthier water environment.

In total, 39% of projects reviewed were classified under the catchment theme, encompassing a broad range of activities to improve the water environment within a landscape. Of the wide range of benefits delivered from investment in catchment management, most projects are focused on accessing funding sources to deliver water quality and NFM outcomes.

Water companies are developing collaborative market-based strategies for meeting water quality targets.

Many projects were focused on water quality improvements within a landscape, driven by regulatory pressure on water utilities to use catchment management approaches to reduce pollution entering water courses. Water companies have recognised that it is often more cost-effective to support farmers in adopting better land management practices to improve water quality at the source of pollution, rather than investing in water treatment infrastructure. The Upstream Thinking project, funded by South West Water and delivered by Westcountry Rivers Trust, was one of the early adopters of this approach. Among a variety of schemes, a 'reverse auction' system was devised, whereby farmers bid to put in measures to provide the desired nutrient reductions. Following the success of the initial stage of the scheme, the regulator, Ofwat, approved an £11 million follow-on programme to run from 2015-2020.

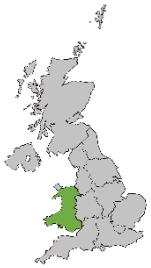
Online brokerage platforms are being trialled to enable more efficient allocation of funding between beneficiaries of improved land management and land managers. Wessex Water set up the online trading platform, Entrade, to facilitate funding allocations through a reverse auction. After success of a trial in Poole Harbour, in which Wessex Water paid farmers through the platform to offset nitrogen pollution and save costs of investing in a new water treatment plant, the platform is being expanded to cover a diverse range of services and landscapes.

Approaches to adopt similar trading entities are in trial in different UK regions, for example, the Building Resilience into Catchments Programme in Wales. These schemes could act as facilitation tools to aggregate multiple sources of funding and facilitate payments to land managers to deliver a broader range of environmental benefits.

Case Study: Collaborative partnerships to reduce nutrient discharges in a catchment

Building Resilience into Catchments	
Location	Pembrokeshire, Wales
Status	Operational (pre-generation of revenues/cost savings)
Main environmental and social benefits	• Nitrate reduction • Water quality • Land stewardship
Sources of revenue	• Payments for water quality
Barriers	• Complexity of engaging with stakeholders • Embedding the natural environment in policy • Consistent regulatory expectations and baselines
Key stakeholders	• Pembrokeshire Coastal Forum • Pembrokeshire Local Action Network for Enterprise Development • EEP-Ecobank • Welsh Government

Overview:



Loss of biodiversity in Pembrokeshire is a key concern with many Marine Special Areas of Conservation features in "unfavourable" conservation status. The Milford Haven Waterway is considered to have reached maximum capacity for nutrients discharged within the catchment from sources such as agricultural land, sewage treatment plants and industry, acting as a potential barrier to any future development. To confront this challenge, the Welsh Government has funded Building Resilience into Catchments (BRICs) to find new solutions to allow the economy to grow sustainably around the marine conservation zone and achieve environmental benefit. BRICs is investigating the feasibility of creating a partnership framework to develop and implement a nutrient trading scheme. This would provide a mechanism for land managers to be paid for land management practices that deliver reduced nutrient run off and other benefits beyond the requirements of regulation. BRICs is seeking to build on trials to design a nutrient trading scheme with a trading ratio that ensures a greater quantity of pollutant will be removed than any input from a development, to achieve an overall reduction in nutrients and produce environmental gain. BRICs is aiming to develop a business management plan by the end of 2019 and set up a focused trading entity by 2021.

Key takeaways

Funding opportunities – Blended income streams alongside public funds could allow expenditure for activities above the regulatory standard and unlock projects that would otherwise be unviable. The project is currently focused on nutrients as the priority issue and is seeking to expand to other services using established infrastructure and relationships to generate more funding opportunities.

Policy commitments – The scheme is supported by Welsh Government policy, where the Well-being of Future Generations Act provides an emphasis on the long-term impact of decision making and every public body must report on their progress against policy goals. Natural Resources Wales' corporate plan is open to innovation to meet targets set for the Welsh natural environment. The scheme is being driven by planning restrictions in place within the conservation zone. Nutrient offsetting may be the only way to realise new developments in areas with a protected designation.

Participatory method – BRICs have carried out substantial stakeholder engagement to understand perspectives and needs of a wide-variety of organisations. In particular, BRICs have worked across farms to understand what changes in land practice farmers are able to practically and efficiently implement, which has allowed assignment of real costs and identification of nutrient savings, and improved awareness of the importance of the project from a local economy perspective. Continued engagement will be required with a need for neutral facilitators to help maintain balance and keep all parties engaged.

Catchment schemes can fail to meet the 'polluter pays' principle when beneficiaries, rather than those that cause pollution, are required to pay for improvements to the environment. There are challenges in determining what costs land managers should cover and what water utilities, and hence their customers, should be responsible for. A lack of confidence in the regulatory baseline and enforcement on polluters challenges the ability to demonstrate that water company investment delivers additional environmental benefits.

Corporates benefitting from catchment interventions within their supply chain could represent an increasing source of funds.

Major UK retailers have signed up to the voluntary Courthauld 2025 Water Ambition to commit to safeguarding water in key sourcing areas.[5] Approaches to aggregate funding from multiple beneficiaries of a river catchment, where corporates rely on availability and quality of water for the performance of their business operations, are being explored. The Landscape Enterprise Network (LENs) approach provides a framework to link multiple beneficiaries with the emphasis of greater business engagement with landscape outcomes. The approach is seeking to open a broader array of larger-scale funding opportunities.

Case Study: Pooling funding from multiple parties with a shared interest in a landscape

Landscape Enterprise Network	
Location	Cumbria and 6 other UK pilots
Status	Operational (generating revenues/cost savings)
Main environmental and social benefits	• Water quality • Soil quality • NFM • Biodiversity
Sources of revenue	• Payments for water quality & NFM outcomes
Barriers	• Cultural issues preventing landscape being considered from business demand side • Practical difficulties to coordinate landowners • Governance of the system to enable a funding market
Key stakeholders	• 3Keel • Nestlé • Environment Agency

Overview:

The LENs approach uses a stakeholder network assessment and spatial analysis to link the benefits of a quality landscape to business interests. LENs identifies and convenes businesses with a shared set of needs and provides a mechanism to enable businesses to co-invest in the delivery of interventions that achieve positive outcomes within the landscape. This approach was piloted in Cumbria, focusing on the shared benefits that Nestle and United Utilities derive from a quality water supply to enable a collaborative trade with dairy farmers, facilitated by First Milk and Eden Rivers Trust and. LENs is now being developed and tested in other UK locations.

Key takeaways

Practical approach – LENs considers the landscape from the perspective of business needs, pulling together partners with shared commercial interests. Landscape quality, functionality and performance are considered from a demand-side perspective through a business 'lens' to enable transactions. The practical take of this approach breaks down the complexity of delivering sustainable landscapes and supports identification of potential income streams.

Developing the evidence-base – The LENs approach is being developed through a set of live collaborations and projects across the UK within different landscapes, involving interests from a range of sectors including water utilities, food manufacturers, property developers and local authorities. These "LENs Laboratories" provide a format within which to develop and prove the LENs process, considering landscape interventions, trading platforms, monitoring functions and development of governance models.

Expertise and perspectives from different schemes are being brought together to develop a national delivery organisation as the interface between the markets and the landowners. The National Infrastructure Schemes pilot brings together LENs on the demand side, the National Trust on the supply side, and Entrade to act as the broker to bridge the gap between buyers and sellers of the services provided by environmental assets. The partners are implementing the concept on the ground to provide insights into practicalities of coordinating approaches, deploying legal structures and fitting in with existing policy and regulatory frameworks. Drawing together this experience could provide the standardised commercial frameworks required to roll out schemes on a much larger scale.

Wetlands are being constructed as a cost-effective means to improve water quality.

Constructed wetlands are a natural solution to filtering wastewater from treatment works, removing nutrients prior to discharge back to local rivers. In areas where regulatory limits for nitrogen discharges require investment in water treatment works, Anglian Water is piloting the construction of local wetlands to improve water quality and avoid expenditure on traditional grey infrastructure. Due to the relative simplicity of evidencing the impact of localised interventions compared with on a catchment scale, there is huge potential to deliver similar schemes in other locations.

Case Study: Wetland construction as a natural method for improving water quality

River Ingol Constructed Wetland	
Location	Norfolk
Status	Operational (generating revenues/cost savings)
Main environmental and social benefits	• Water quality • Biodiversity • Local community access
Sources of revenue	• Avoided cost of investment in water treatment infrastructure
Barriers	• Effective monitoring • Stakeholder negotiation • Land availability and site-specific features • Timescales for benefits
Key stakeholders	• Anglian Water • Environment Agency • Norfolk Rivers Trust

Overview:

Anglian Water was seeking a solution to enhance water quality in the river Ingol downstream from its Water Recycling Centre at Ingoldisthorpe in Norfolk. Instead of building an onsite treatment plant to reduce ammonia content in the effluent, Anglian Water and Norfolk Rivers Trust designed a novel solution to construct a wetland to naturally filter the water downstream from the site. This flagship project promotes the potential for using natural wetlands to improve water quality, paving the way for other similar projects to be delivered across the UK. Anglian Water is actively interested in unlocking more of these projects and has plans to build up to 34 more wetlands, subject to feasibility, by 2027.

Key takeaways

Sources of finance – This project was financed in part by Anglian Water's green bond, which could be used to fund similar schemes. A blended finance approach, where public or philanthropic funding tops up private investments, could unlock future schemes by sharing financial risk to trial wetlands where their application to meet statutory obligations is considered novel and/or performance is uncertain. Third party finance could also enable a broader design scope to deliver a wider range of environmental outcomes, where additional cost might otherwise fall foul of regulatory cost:benefit tests designed to protect customer interests.

Partnership approach – The project was enabled by a strong collaborative partnership between private, public and third sector organisations. Delivering projects at scale within other regions will need a mechanism to enable efficient negotiation, contracting and project implementation.

Evidence base – There is still limited evidence of treatment benefits compared with built facilities since the project became operational. A monitoring plan is in place and a stronger evidence base is needed to prove the treatment benefits provided by wetlands and catalyse the development of further projects.

Insurers are engaged in piloting nature-based solutions for flood risk mitigation.

NFM is an increasing focus for catchment-based projects, encompassing a range of interventions including wetland and woodland creation, restoration of flood plains, and species reintroduction programmes. The Environment Agency has estimated that annual investment of £1 billion will be needed in flood and coastal defence to cover increasing climate change risks.[6] The majority of annual spend is currently on the creation and maintenance of grey infrastructure, however, NFM schemes are expected to become an increasing part of the solution. The broad range of benefits delivered supports the potential for shared investment from multiple beneficiaries.

There are currently limited buyers of the benefits delivered by NFM interventions due to the difficulty in predicting the impact of schemes compared to engineered solutions. Large grant-funded programmes, such as the European-wide Interreg programme, are piloting schemes to develop, test and rollout approaches to improve climate resilience. Water utilities are interested in piloting NFM within catchments, but current regulatory focus on water quality and relative ease of measuring these benefits limits the funding available for NFM interventions.

The insurance industry is well-positioned to become an important funding source for NFM. Detailed modelling carried out in the Wyre River catchment has shown that there is a strong case for NFM investment due to the potential savings available for the insurance industry from a reduction in household flooding claims. Structural issues exist where individual insurers only represent a small proportion of insurance for an area, meaning they are unlikely to commercially benefit from these schemes. However, there is scope for support via reinsurance, where organisations such as FloodRe, a not-for-profit fund that provides flood insurance coverage to UK properties deemed at significant risk of flooding, could allow programmes to be developed targeting high risk flood areas. Pilots of these schemes would support a stronger evidence base to encourage investment.

Key project facts: Quantifying the impact of NFM

Wyre River Catchment	
Location	Lancashire
Status	Operational (pre-generation of revenues/cost savings)
Main environmental and social benefits	• Flood mitigation • Water quality • Soil erosion
Sources of revenue	• Avoided costs from NFM
Barriers	• Shifting mindsets for payments of public goods • Lack of evidence for success of schemes • Reputational risk if schemes fail
Key stakeholders	• United Utilities • FloodRe • Co-operative Insurance • Environment Agency • Rivers Trust • Veridian Logic

Overview:

United Utilities, the Environment Agency, the Rivers Trust, Cooperative Insurance and FloodRe sought to understand the potential for NFM to protect communities around the Wyre river catchment in Lancashire, where downstream communities are regularly flooded. Veridian Logic used its modelling tool to prioritise which NFM interventions would be best placed to reduce flood risk. Interventions included planting woodland, returning land to grassland or creating water retention features. The implementation of the top 2% of NFM solutions based on a 1 in 50 storm event occurring every 5 years was shown to provide £11.7m cost benefit over 30 years. The model outputs show a compelling case for carrying out NFM in the Wyre river catchment.

Funding from stackable benefits are catalysing NFM schemes.

In localised areas, NFM schemes have been unlocked by accessing funding streams from multiple beneficiaries. At Warton Mires in Lancashire, the design of a dual function wetland for both habitat and flood defence enabled Section 106 mitigation funding from the local authority to be leveraged with funding from NGOs and local community beneficiaries to deliver the first stage of the scheme. Putting in place a robust mechanism to align beneficiaries could enable this scheme to be replicated, with the potential to draw in additional funding from the insurance industry.

Key project facts: Stacking benefits to create a multi-purpose wetland: an example of packaging partnership funding to access flood defence grant-in-aid

Warton Mires Wetland	
Location	Lancashire
Status	Operational (generating revenues/cost savings)
Main environmental and social benefits	• Urban flood alleviation • Species offset • Habitat restoration • Landscape enhancement
Sources of revenue	• Biodiversity offsets • Warton community • Countryside Stewardship • Arnside & Silverdale AONB Landscape Trust • Environment Agency FDGiA
Barriers	• Negotiation with multiple parties • Agreement over future maintenance of the flood bank
Key stakeholders	• RSPB • Charitable trusts • Community • Environment Agency • Natural England

Overview:

Land south of Warton village in Lancashire falls into the floodplain of the River Keer. During very high tides water backs up from the tidal outfall. This caused the landowner, a dairy farmer, to approach the RSPB to acquire his land. In 2015, Storm Desmond hit the area particularly hard, flooding houses in the village. Working with the community, RSPB commissioned Penny Anderson Associates to develop a plan to build an embankment between the village and floodplain farmland. The farmland would be remodelled as a nature-rich washland, with excavated material used to construct a floodbank on its northern edge to defend the village. Pumps would be installed to prevent water accumulating on the village side of the bank. The project would be funded through EA Flood Defence Grant-in-Aid (FDGiA) drawn down through packaging partnership funding. Phase 1 has been completed: RSPB acquired freehold of the land using Section 106 payments from Lancashire County Council required to offset the loss of breeding lapwings (a Section 41 NERC Act Biodiversity Action Plan priority species) to a business park development in the county. The AoNB Landscape Trust also acquired land in support of the scheme. Phase 2, earthworks to model the washland and construct the floodbank, are in advanced planning.

Species reintroduction is being trialled as a NFM solution.

Several projects are focusing on the reintroduction of beavers as a novel NFM solution. At Spain Halls Estate in Essex, beavers have been introduced to prevent downstream flooding of a local village, which would not qualify for flood risk benefit funding or traditional grey infrastructure investment. Wildlife photography tours are being run to support the project's financial viability. The project has been designed to show the benefits of this natural intervention style compared to traditional interventions: man-made leaky dams have been used to restore one tributary of the river, whilst beavers have been introduced in the other tributary which flows through woodland. Monitoring will provide a stronger evidence base to inform similar interventions.

5.2.Peatland

Barriers	Enablers	Sources of Funding	Revenue Streams
- Policy and regulation - Revenue uncertainty - Complexity - Communication and cultural issues - Capacity and expertise	- Stronger domestic carbon offsetting policy - Stackable benefits to achieve co-funding - Track record of project implementation and greater evidence - Capacity for communication and engagement	- Corporates - Water utilities - Infrastructure bodies - Landowners - Public bodies - NGOs	- Carbon credits - Payments for water quality outcomes - Biodiversity offsets

Peatland covers 10% of the UK's land area and provide a wide range of vital benefits including carbon sequestration, flood prevention, water quality and habitats for wildlife. Historic land management practices have led to significant deterioration and 80% of the UK's peatlands are now in poor condition. Peatland restoration in the UK is expected to require £500 million over the next 10 years.[7]

Projects aimed at delivering peatland restoration are in development across the UK, seeking to attract funding from the private sector to complement existing funding sources through the sale of carbon credits calculated by the Peatland Carbon Code. Peatland restoration is also being carried out as part of broader catchment initiatives, predominantly accessing private funding from water utilities. Seven projects in the review were focused specifically on restoring large areas of UK peatland, where damage sustained from historic land practices has been significant.

International Union for Conservation for Nature (IUCN) Peatland Code

IUCN launched the Peatland Code in 2017 to support an increase in peatland restoration, recognising that the scale of the need to address the poor condition of the UK's peatlands could not rely solely on the sporadic public funding sources available. The Peatland Code facilitates access to private funding through independent assurance of the carbon benefits achieved from peatland restoration, enabling corporates to purchase carbon credits to offset their emissions.

Project developers have recognised that the funding model for peatland restoration needs to change to bring in larger and more reliable funding sources. Projects are currently predominantly focused on trialling and developing the UK Peatland Code to exploit private funding through carbon markets.

Private funding for peatland restoration is currently reliant on CSR-motivated corporate pioneers.

In 2018, Forest Carbon facilitated the sale of c.100,000 tonnes of carbon from the London-based corporate, NEX, as a voluntary scheme to offset their emissions, which supported the restoration of the first certified IUCN Peatland project at Dryhope and Winterhope Moss in Scotland. Other projects since certified are yet to receive private funding, attributed to a lack of clear demand for peatland carbon offsets by voluntary buyers. Market opportunities are emerging through stronger corporate and sector-wide commitments to hit carbon neutral targets.

The price of carbon is too low to cover the cost of peatland restoration. The economic viability of projects is likely to hinge on access to a blend of funding sources based on the wide variety of benefits delivered. The Peatland Code does not currently incorporate the multiple other benefits delivered by peatland, providing an opportunity to develop the evidence base to support investment in these outcomes.

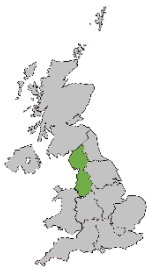
The competing interests with other land uses, complexity of certification and length of contract timescales can inhibit engagement with landowners to secure their commitments. Due to the relatively high cost of accreditation, projects need to be bundled to achieve a viable scale, which can be complicated by the need to deal with multiple land managers and types of land tenure. The Welsh Government is exploring sustainable management schemes for Welsh peatland by targeting 10 peatland-code approved sites by 2020. The ambition is to develop proof of concept pilots to showcase to landowners how projects can be implemented effectively.

Policy support for peatland restoration projects continues to be critical. Other funding streams, including public funds, will be required to supplement carbon funding through the Peatland Code. A policy commitment to develop a stronger carbon market and floor price would improve the economic viability of projects.

Case Study: Mixed funding for peatland restoration

Little Woolden Moss	
Location	Salford
Status	Operational (generating revenues/cost savings)
Main environmental and social benefits	• Soil erosion protection • Biodiversity • Carbon sequestration • Water quality
Sources of revenue	• Carbon credits
Barriers	• Long timescales for implementation • Communication and engagement with corporates
Key stakeholders	• Lancashire Wildlife Trust • Greater Manchester Wetland Initiative • Heathrow airport • Esmée Fairbairn Foundation • Defra Peat Fund

Overview:



The peat-extracted landscape at Little Woolden Moss, a large peat bog in Lancashire, is being restored through accessing a range of different funding sources:

- A pilot between Heathrow airport and Lancashire Wildlife Trust has led to 70 hectares being restored as a carbon offset for the airport acting as the first aviation demonstration project, with the longer- term ambition to support carbon neutral aviation using offsetting as a tool;
- Consistent carbon offset payments are being received from a local courier service company, which is using the green credential as a central pillar for the marketing of their business;
- A "carbon farming" project is in development, where sphagnum moss is being replanted at both Winmarleigh Moss and Little Woolden Moss.

Key takeaways

Revenue stacking – The site restoration was enabled through stacking benefits and funding opportunities, made more achievable on a large site that could achieve scale. Co-funding projects from a variety of ecosystem services would support viability of future projects.

Communication and engagement – There are a need for extensive communication and translation to engage with, and access funds, from corporates for carbon sequestration benefits from peatland restoration. An increase in resources and capacity would enable the levels of engagement needed to access novel funding opportunities, translate benefits to potential funders and deliver robust calculation of carbon benefits.

5.3.Woodland

Barriers	Enablers	Sources of Funding	Revenue Streams
- Revenue uncertainty - Communication and cultural issues - Policy and regulation - Complexity	- Brokers to bundle projects and sell benefits to funders - Stronger domestic carbon offsetting policy - Stacking benefits within business models - Incentives and funding designed to maximise benefits	- Corporates - Water utilities - Private landowners - Public sector grants	- Carbon credits - Woodland products - Biodiversity offsets - Place-based enterprise and infrastructure - Ecotourism - Payments for water quality / NFM

The expansion of tree cover as a benefit to society has been recognised by many European countries. At present, woodland only covers 13% of the UK's landmass, whereas the EU average is around three times the UK's figure.[8]

Recent policy commitments and the availability of dedicated woodland grant funds have renewed interest in the sector. DEFRA's 25-year Environment Plan sets out an ambition to create large-scale woodland. The Northern Forest would see the planting of 50 million trees over 25 years, with an estimated £500 million delivery cost. The scale of this proposition provides the opportunity to test interventions and funding models to attract a wider pool of funders.

Eight projects were categorised under the woodland creation and management theme, aiming to deliver a broad array of outcomes including carbon sequestration, biodiversity enhancement, flood mitigation, air and water quality improvements, and health and well-being benefits.

Funding for carbon sequestration benefits has improved the viability of woodland creation.

Trees have a vital part to play in mitigating climate change through carbon sequestration. The Woodland Carbon Code (WCC), launched in 2011 by the Forestry Commission, acts as a standard to enable landowners to quantify the carbon benefits of woodland planting. Carbon credits can be verified through the WCC and sold to private companies seeking to offset their emissions. To date, over 250 projects have been validated by the WCC.

Forest Carbon is supporting the creation of new woodlands by partnering with corporates seeking to mitigate their carbon impact. At Eddleston Water in Scotland, verified carbon credits were sold to Allstar Business Solutions (Allstar), the UK's largest supplier of fuel card services, to make the establishment of riparian woodland cost effective for farmers and provide significant flood mitigation benefits to downstream communities. Forest Carbon acts as a broker to bundle multiple individual woodland projects to meet Allstar's carbon offsetting demands.

Expansion of the WCC scheme is limited due to the lack of incentives for companies to buy carbon credits. Comparable to the Peatland Code, a stronger domestic carbon policy is required to increase the demand for carbon credits. The policy commitment made by the UK government in Autumn 2018 to implement a Woodland Carbon Guarantee scheme aims to stimulate the domestic woodland carbon market. By providing a guaranteed floor price for the delivery of verified Woodland Carbon

Units over the next three decades, this could raise awareness and confidence from the private sector in nature-friendly woodland as an investment opportunity.

On high land value areas, carbon funding is unlikely to be enough of a financial incentive to encourage woodland planting. The ability to stack the range of other benefits delivered by woodland and an increase in domestic production of sustainable timber could improve the financial viability of projects.

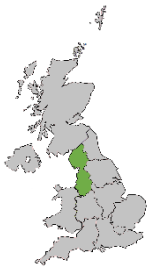
Woodland-based projects offer a wide variety of enterprise models.

The multiple benefits delivered by woodlands creates opportunities for a broad range of income opportunities. Smithills Estate, an area owned by the Woodland Trust based on the edge of Bolton, has potential to demonstrate the social, environmental and economic value that can be achieved through woodland assets and generate income to support the long-term management of the site.

Key project facts: Place-based enterprise opportunities from woodland assets

Smithills Estate	
Location	Bolton
Status	Operational (generating revenues/cost savings)
Main environmental and social benefits	• Recreation and tourism • Community social enterprise • Water quality • NFM
Sources of revenue	• Place-based enterprise • Payments for water quality and NFM
Barriers	• Ensuring the financial viability of community enterprises
Key stakeholders	• Woodland Trust • Defra • Esmée Fairbairn Foundation • Heritage Lottery Fund

Overview:



The Woodland Trust completed its purchase of the Smithills Estate from Bolton Council in 2017, and is working to restore habitats, engage the community and improve access to the iconic site. The Woodland Trust is seeking to show the contribution social enterprise can have to create a resilient landscape.

A wide variety of enterprise opportunities have been explored including firewood and charcoal enterprises, community owned restaurants, venue spaces, and forest allotments. Opportunities for payments for ecosystem services for the water quality and flood mitigation benefits delivered from the estate to local businesses and public bodies are also being investigated. A Smithills Enterprise Group has been set up to enable local decision making for the development of the assets and market the benefits to potential funders.

Securing funding for the health and wellbeing benefits provided by woodland is proving to be a challenge.

In addition to the wide-ranging environmental outcomes, woodlands provide health and wellbeing benefits for communities. The Natural Health Service programme, established by the Mersey Forest, is seeking to promote the use of the natural environment as a cost-effective way to reduce health inequalities. The programme has developed five evidence-based products, including health walks, horticultural therapy and forest schools, which can be purchased by commissioning bodies as part of a holistic approach to health and social care, and reduce pressure on NHS and local authority resources. Further policy support is required to increase recognition of the health and well-being benefits provided by the natural environment to access funding for these outcomes.

5.4.Habitat conservation

Barriers	Enablers	Sources of Funding	Revenue Streams
- Policy and regulation - Complexity - Data and evidence - Communication and cultural issues - Capacity and expertise - Debate about the replaceability of certain habitats	- Mandatory biodiversity net gain policy - Local authority commitment - Monitoring, reporting and contractual governance - Availability of land	- Infrastructure bodies and developers - Commercial finance - Public bodies - NGOs	- Biodiversity offsets - Agri-environment schemes - Place-based enterprise and infrastructure - Ecotourism

Nature is under threat in the UK, with 15% of species threatened with extinction.[9] Habitat conservation needs to be carried out at a much broader scale to support vital ecosystems and species recovery. Projects have been hindered by insufficient funding and support from policymakers.

The principal objective of the eight habitat conservation projects reviewed are to protect, restore and create habitats to enhance biodiversity. The projects categorised under this theme typically fall into two funding categories: strategic use of developer planning obligations, and development of nature-based enterprises and assets to generate more income to fund conservation objectives.

The main sources of current funding for biodiversity is via compensatory funding from developments and agri-environment payments made to landowners as part of the Common Agricultural Policy. Brexit offers the opportunity for the c.£2 billion of annual EU subsidy payments to be converted to deliver benefits to biodiversity and the wider natural environment. As the UK leaves the EU, DEFRA should channel this into a new system of payments to reward land managers for delivering environmental outcomes and assess what additional funding is required to meet its environmental goals.

Conservation organisations are seeking to access new sources of finance for nature-based enterprise activity.

Conservation organisations are seeking to grow and enhance the offering of their assets, by developing visitor centres, catering outlets and property, to attract visitors and generate enhanced income opportunities. NGOs are shifting in their ambitions for financing business operations by using external repayable finance instead of core income and donations where there is a reliable income source available. This approach aims to release funds by reducing the amount of internal funds locked up over the long-term within assets.

Policy commitments to biodiversity net gain provide an opportunity for increased funding for habitat enhancement.

Compensatory funding from developments aims to offset damage to nature. At best, this sees an ambition of no net loss of biodiversity but does not contribute to nature recovery. There is a significant opportunity for increased funding for biodiversity conservation in the UK, as a result of the commitment made by government in March 2019 to make biodiversity net gain a mandatory requirement of the planning system.[10] In light of this policy shift to ensure that all developments deliver an uplift in biodiversity, collaborations between conservation organisations, local planning authorities and facilitators, such as the Environment Bank, are seeking to create habitat banks that can enable large-scale nature recovery across the UK. These approaches aim to generate conservation

credits from the biodiversity benefits created through habitat banks to be sold to developers. These developer payments could be leveraged with other sources of investment to significantly enhance the biodiversity benefit that can be achieved.

Since policy shifted in favour of larger landscape-scale offsets, habitat banking has been rapidly developing in the US, and now represents a significant source of financing for biodiversity enhancement. [11] In the UK, habitat banking projects are at a relatively early stage in their development due to the emerging policy in this area. Standardisation of policy, tools and methods across all planning authorities would provide greater certainty for developers and investors to encourage upfront investment in land for conservation. Rigorous monitoring and reporting of activity are critical to ensure that the envisaged benefits are achieved over the long-term.

Case study: Leveraging developer funding to deliver large-scale habitat creation

Ashill Habitat	
Location	Devon
Status	Operational (generating revenues/cost savings)
Main environmental and social benefits	• Habitat restoration • Biodiversity enhancement
Sources of revenue	• Biodiversity offsets
Barriers	• Certainty of revenue • Negotiating commercial loan terms • Availability of land • Potential fall in land values
Key stakeholders	• RSPB • Local authority

Overview:

The cirl bunting is a farmland bird that has been under threat from agricultural intensification, and more recently, housing expansion. As a S41 Biodiversity Action Plan species and in accordance with the English National Planning Policy Framework, Teignbridge District Council (TDC) adopted a local plan policy requiring developers to make provision to offset habitat loss as part of their project, or to make an 'in lieu' S106 payment to enable the Council to make compensatory provision elsewhere, to ensure development does not affect the conservation status of the species within the local authority area. The timing of payment is specific to each S106 agreement. Pooling contributions means that a larger block of land can be purchased which can be more cost effective to manage whilst creating the opportunity to secure a self-sustaining population on the site. Other biodiversity and public benefits are also likely to arise. RSPB identified the opportunity to deliver compensatory habitat by purchasing part of an operational farm, acquired with charitable income in parallel with a legal agreement with TDC guaranteeing phased payment of land purchase and set-up costs, linked to predicted S106 income.

This allowed RSPB to refinance its use of donative income with a commercial loan from Lloyds Bank, repayable over 6 years. Management of the land has been contracted back to the farmer. The interest payments are partly covered by the rental income from the farmer. Once repaid, this income will cover RSPB staff costs in relation to management of the land, including species monitoring.

Key takeaways

Policy and revenue certainty – A mandatory net gain requirement would lead to greater demand from planning authorities for habitat conservation to enable this model to be replicated in other regions. Scaling this model depends on commitments from local authorities, land availability and visibility over income streams from development projections to increase investor confidence to deliver upfront investment.

Replication and scale – With local authority commitment in place, the model developed is highly replicable and could be scaled to create habitats across the UK. Investors could be engaged to finance large-scale upfront habitat creation, receiving interest payments based on income flows from developer compensation, unlocking funding from within conservation organisations to achieve their wider objectives.

5.5.Urban green space and infrastructure

Barriers	Enablers	Sources of Funding	Revenue Streams
- Revenue uncertainty - Communication and cultural issues - Data and evidence base	- Technical assistance to develop proven business case for enterprise and infrastructure - Leadership to obtain buy-in from cross-sectoral stakeholders - Data and evidence to support potential revenues	- Utilities - Infrastructure developers - Property value uplift - Pension funds - Health providers - Public sector - Trusts and Foundations - NGOs	- Payments for water quality and NFM outcomes - Place-based enterprise and infrastructure - Payments for health outcomes

The latest statistics on the UK population unveiled that 83% of the population lives in an urban environment.[12] Changes to urban ecosystems affect large portions of the general population.

Urban green infrastructure is the network of green spaces, water, and other natural features within an urban environment. Green infrastructure can often provide similar functions to conventional grey infrastructure, such as water management and flood risk alleviation, but also delivers health and biodiversity benefits from the additional green space created.

This theme comprised approximately 8% of the total number of projects. Projects were spread across some of the UK's major cities including London, Manchester, Newcastle, Glasgow, and Leeds.

Green infrastructure is being implemented to improve water quality and mitigate flood risk.

Given the increasing pressure on urban sewage systems and associated flood risk, several projects concentrated on implementing sustainable drainage systems (SuDS). In Birmingham, SuDS has been given significant consideration for future developments. Arcadis, a private sector engineering and project design company, led the creation of a SuDS masterplan for the development of the Smithfields site. The site, forming part of River Rea's catchment area required careful planning for management of flooding, biodiversity, water quality and on-site run-off.

Case Study: Use of green infrastructure in large-scale urban developments

Birmingham Smithfields	
Location	Birmingham
Status	Operational (pre-generation of revenues/cost savings)
Main environmental and social benefits	• Flood mitigation • Alleviation of urban heat • Health and well-being • Cultural heritage and civic pride • Urban wildlife
Sources of revenue	• Avoided cost of water management
Barriers	• The size and complexity of the development project • Wide range of stakeholders to appease • Cultural barriers to green infrastructure
Key stakeholders	• Arcadis • Birmingham City Council

Overview:

Birmingham City Council has plans to deliver a £1.5 billion redevelopment site across 42 acres with a strong emphasis on green infrastructure. The development plan initially focused on being a zero-carbon site, but the City Council pushed for this to be broadened to integrate natural capital. Within the masterplan, the vision includes a focus on greater climate resilience through onsite management of energy and water. Green infrastructure, including green walls, green and brown roofs, and habitat features, are planned to be used prominently.

Photo: Birmingham Smithfield Masterplan (2016)

Key takeaways

Achieving stakeholder buy in – Obtaining buy-in across many cross-sectoral stakeholders proved challenging. Ensuring that all parties understood the purpose of green infrastructure was crucial to bringing everyone on side. Natural capital concepts were used to make the case for natural features within the development, however, this initially resulted in a communication challenge over misunderstood terms. Further outreach and capacity building are needed to raise the profile of natural capital to the level achieved in 'zero carbon' framing. The case for climate and social resilience using SuDS and the city's ambitions to be an exemplary sustainable city, including its status as a Biophilic City, helped motivate those involved.

Array of benefits – Deploying SuDS across the site will save costs by reducing the volume of discharge and making better use of greywater. SuDS provide several less well quantified benefits such as contributing to resident health and wellbeing and creating an attractive area for a workforce and businesses.

Focused pilot projects have made the case for larger scale innovation funding.

Through the Water Resilient Cities (WRC) programme in Manchester, Business in the Community investigated the potential cost-savings that could be achieved through retrofitting SuDS to manage surface water. Motivated by United Utilities' surface water charging policies for non-domestic customers, feasibility and pilot studies were launched to gauge the viability of SuDS retrofit in schools and NHS sites. The results of the feasibility studies demonstrated that a programme across 598 sites could save £800k per annum through bill savings, and £83 million of social and environmental benefits could be delivered.[13]

Following this successful pilot, IGNITION was set up to develop urban climate change adaptation financing and delivery models in Greater Manchester. The Greater Manchester Combined Authority (GMCA) and partners secured funding from the EU's Urban Innovative Actions initiative to establish innovative mechanisms for funding and delivery of urban green infrastructure.

Case Study: Large-scale roll out of urban green infrastructure

IGNITION	
Location	Greater Manchester
Status	Operational (pre-generation of revenues/cost savings)
Main environmental and social benefits	• Climate regulation • Flood prevention • Air quality • Biodiversity • Health and well-being
Sources of revenue	• Cost savings for businesses and other beneficiaries of green infrastructure
Barriers	• Developing suitable contracting and strategic delivery mechanisms
Key stakeholders	• GMCA • 11 other key partners

Overview:

The Water Resilient Cities initiative demonstrated the potential for financing the retrofit of green infrastructure in Greater Manchester. Based on the success of this pilot, the implementation of green infrastructure in the Manchester area gained traction. The GMCA and its partners have secured £4 million in funding over 3 years from the EU-backed Urban Innovative Actions to find financing and delivery solutions for green infrastructure projects and support an overall increase in capacity for the city-region to deliver green infrastructure. Greater Manchester is targeting a 10% increase in urban green infrastructure coverage from a 2018 baseline over a 20-year period to adapt to the impacts of climate change.

Key takeaways

Engagement across multiple stakeholders – The IGNITION project includes stakeholders from business, the NGO community, regional and national government. The engagement across so many high-profile organisations is helping to push urban green infrastructure into mainstream consciousness.

A living laboratory – The University of Salford plans to act as a 'living laboratory' for urban green infrastructure and nature based-solutions to climate change. Across the University's campus and buildings, green roofs, walls, gardens and SuDS infrastructure will be delivered. The large-scale delivery of such projects will help inspire and encourage the widespread use of green infrastructure, while serving as an example to other projects.

Policy alignment – Policy alignment across EU, regional, and municipal targets has helped focus national and international attention onto the project. IGNITION's ambitions fall neatly into the government's 25-year Environment Plan and as part of the EU's Urban Innovative Actions lab has boosted the projects profile on a regional basis.

Innovative ideas are being tested to protect urban parks and greenspaces.

Green spaces provide multi-functional civic spaces whilst enhancing biodiversity and habitats. Management and improvement of parks in urban areas has been uncertain over the past decade of public funding cutbacks. Interest in improving and encouraging new operational models for long term management and funding have been central to protecting urban green spaces. The Heritage Lottery Fund and the National Trust have joined forces to launch the Future Parks Accelerator to find sustainable solutions to protect the UK's public parks and greenspaces. With grant funding and support from experts, the programme offers the opportunity to catalyse innovation and facilitate learnings on a wide variety of funding solutions to protect urban greenspace.

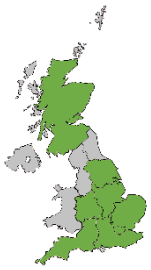
Greenspace Scotland, a social enterprise funded by Scottish Natural Heritage and The New Opportunities Fund, was set up to improve access to greenspace and explore the social and health returns from investment in parks. The social enterprise runs ParkPower, a Scotland-wide programme focused on realising the potential for parks for energy generation and de-carbonisation of the environment. Opportunities for the installation of renewable energy infrastructure are being explored to generate new income for upkeep of parks in Scotland.

There are limited emerging funding opportunities to achieve better urban air quality and health outcomes. Additional resources are needed to explore the set of green interventions that could attract public health and local authority outcomes payers.

Key project facts: Piloting innovative ideas in urban parks and greenspace

Future Parks Accelerator	
Location	UK-wide
Status	Operational (pre-generation of revenues/cost savings)
Main environmental and social benefits	• Protection and enhancement of urban parks and green spaces • Community cohesion and engagement • Employment, training and education • Health and well-being
Sources of revenue	• Place-based enterprise and infrastructure
Key stakeholders	• National Trust • Heritage Lottery Fund • Local Authorities / city stakeholders

Overview:



The National Trust and Heritage Lottery Fund have committed £10 million towards the Future Parks Accelerator (FPA) for 8 council areas. The green space covers 22,000 hectares and ranges from parks, woodlands, cemeteries, allotments, playing fields and nature reserves. FPA aims to secure the long-term future of parks and green spaces by backing innovative funding and management solutions for green spaces. Piloting new ideas and sharing of experiences across the councils will also build national capacity to lead further developments on how public spaces can be used more effectively.

5.6.Coastal

Barriers	Enablers	Sources of Funding	Revenue Streams
- Policy and regulation - Capacity and expertise - Revenue uncertainty - Complexity - Data and evidence base - Communications and culture	- Funding for feasibility studies, development and delivery plan - Upfront capital costs - Site specific evidence for benefits of interventions - External advice on development of new funding mechanisms	- Infrastructure bodies and developers - Coastal businesses and homeowners - Water utilities - Public bodies - NGOs	- Biodiversity offsets - Ecotourism - Payments for water quality / NFM outcomes - Agri-environment schemes - Carbon offsets - Reduced capital and maintenance costs for hard defences

The UK's 17,820km of mainland coastline comprise a diverse range of valuable habitats, providing critical benefits to society including coastal flood defence, biodiversity, carbon storage, food and tourism opportunities. Coastal areas are increasingly susceptible to flood risk from the ongoing degradation of natural flood defences and the risk of rising sea levels from climate change. This also leads to a significant increase in the cost of maintaining and upgrading hard defences. The insufficient levels of investment being deployed to restore these crucial habitats threatens further degradation.

Seven projects were seeking to deliver a range of coastal restoration measures, including saltmarsh restoration, and creation of coastal wetlands and saline lagoons. Schemes are typically funded by limited sources of public grants, agri-environment schemes and compensatory offset payments from coastal developments. Coastal habitats are often managed by community groups and charities, which are engaged in developing business models to access alternative funding sources for habitat restoration but are limited by resource constraints.

Dredged sediments could be used to address the poor state of the UK's coastal habitats.

Large quantities of dredged sediment are excavated each year from ports and harbours, and most is currently dumped at sea.[14] In the US, dredged sediment has proven to be highly effective in restoring mudflats and saltmarsh, and creating wildlife-rich islands.[15] Potential UK-based projects are hindered by a complex licensing process and the cost of delivering beneficial uses of this material.

The UK's largest coastal wetland creation project at Wallasea Island in Essex, whilst not using dredged sediments, showcases the potential for use of waste materials using similar techniques. This project was enabled through a partnership between public and private organisations, where RSPB used its own funds to acquire 670 hectares of land, with additional funding sourced through compensation funding from intertidal habitat loss from a port development, and excavation material available from the Crossrail construction process. Despite its success, the long timescales, large risk funding requirement and complexity involved in delivering this project restrict potential for replication.

The flood mitigation benefits achieved from coastal habitat restoration is a key potential source of funding.

Coastal charities and local authorities have been pooling limited grant-sourced funds to build an evidence base for the broad array of benefits and potential revenue streams available for coastal restoration projects. The Deben Estuary Partnership is seeking to draw in stacked funding

opportunities to restore the significantly degraded saltmarsh habitats at an estuary scale in Suffolk. The partnership has been building up the evidence base and identified potential funding sources from coastal businesses and landowners for the mitigation of coastal erosion and flood risk. A successful pilot was delivered in the Alde and Ore estuary in Suffolk, where the local Internal Drainage Board took out a public works loan funded by a levy on private landowners that were subject to flood risk. The partnership is seeking to scale these projects, with a longer-term opportunity to capture other revenues from tourism, carbon sequestration and fisheries restoration.

Other NGOs are investigating opportunities to enable schemes that otherwise would not be delivered by matching public funding with community funding, where communities threatened by flood events could buy into an NFM scheme through a Community Benefit Society structure. The lack of confidence that coastal restoration will deliver natural flood defence benefits currently restricts upfront funding being provided to implement these schemes.

5.7.Marine

Barriers	Enablers	Sources of Funding	Revenue Streams
- Policy and regulation - Revenue uncertainty - Complexity - Data and evidence base	- Policy changes to support new funding opportunities - Research and data evidencing benefits of the marine environment - Dedicated governing body - Key stakeholders encouraged to participate	- Predominantly public sector and philanthropic grants - Limited other sources	- Sustainable fisheries / aquaculture - Ecotourism - Place-based enterprise and infrastructure - Carbon credits - Biodiversity offsets

The marine environment delivers benefits upon which businesses and communities depend, including biodiversity, carbon sequestration, food production and tourism. Growing demand for the UK's marine resources threatens the environment through overfishing, pollution and climate change. The UK has designated more than 24% of the UK seas within marine protected areas (MPAs)[16], which are designed to safeguard important habitats and species, and ensure sustainable use of resources. Most UK MPAs have few restrictions in place and lack sustainable and long-term funding to ensure effective management.

Few stakeholders reported on emerging funding opportunities for marine conservation activities, limiting the trends that can be gleaned from within this sector. In total, four projects were classified within the marine category. The results show it is particularly difficult to access new funding sources for conservation of the marine environment.

Conservation activities are focused on incentivising sustainable management of fisheries and shellfish stocks.

Marine conservation efforts have historically relied on government resources and short-term grants. Stakeholders are increasingly recognising that these sources are not enough for effective marine protection. The Essex Native Oyster Initiative, which conserves native oysters within a marine conservation zone, is seeking to increase the long-term security of its MPA management model by investigating the potential introduction of oyster take zones and low impact fishing. There are

significant challenges involved in developing this future business model, including gathering data to evidence sustainable stock levels, mitigating the risk of disease and difficulty negotiating licenses for experimental restoration at scale. Due to the slow rates of species recovery and maturity, there are likely to be long timescales until revenues could be realised.

Certification standards for sustainable management of fisheries and shellfish stocks are incentivising conscientious fishing practices. The Marine Stewardship Council (MSC) has been operating for over 20 years setting the certification standards. Record volumes of MSC labelled fish were sold across the UK in 2018, with nearly one-third of all seafood bought in the retail sector bearing the label.[17] Alternatively, the Blue Marine Foundation (BLUE) is focused on sustainable models of fishing for small scale operations. BLUE has helped to create the 'Reserve Seafood' brand to support local fishermen in achieving premium prices for seafood in Lyme Bay, Devon.

There is an opportunity to develop a range of innovative funding opportunities for marine projects.

WWF is exploring innovative funding opportunities for UK MPAs to develop a model of MPA management that ensures the long-term viability and success of protected marine ecosystems. They have identified opportunities to expand funding through payments for the ecosystem services provided by marine assets. This includes marine-based biodiversity and carbon offset payments, and the use of charges levied on those who economically benefit from a healthy marine ecosystem. Whilst these mechanisms are increasingly being adopted overseas, there is limited use within a UK context. A policy shift would be required to develop these new markets, including the incorporation of marine developments within the biodiversity net gain obligations and the development of a blue carbon code equivalent to the UK woodland and peatland code.

Accessing a portion of revenues from sustainable usage of the marine environment could become a substantial source of funding for marine conservation activities. An array of enterprise activity is carried out in the wider marine environment, but revenues from these are rarely captured for conservation. Targeted investment in a broad range of environmentally sustainable businesses within the marine and coastal environment could generate surpluses to fund conservation activities.

Case Study: Sustainable financing for Marine Protected Areas

UK SEAS	
Location	North Devon
Status	Operational (pre-generation of revenues/cost savings)
Main environmental and social benefits	• Marine management, protection and enhancement • Development of a sustainable Blue Economy • Community engagement
Sources of revenue	• Sustainable marine and coastal businesses
Barriers	• Relatively immature business models • Governance and policy complexity • Lack of marine research and data
Key stakeholders	• WWF • DEFRA's Marine Pioneer

Overview:

WWF and Sky Ocean Rescue are working together to stimulate ocean recovery and safeguard the many benefits it provides. The partnership is assessing the viability of supporting the protection and sustainable management of the UK's seas through the implementation of a Blue Impact Fund. This would strategically invest in enterprises that benefit the marine and coastal environment, whilst generating financial surpluses to support MPA management and ocean recovery initiatives. Extensive stakeholder engagement has been conducted in North Devon as a case study area, and more broadly across the UK and overseas, to identify viable investment opportunities.

Key takeaways

Evidence-based approach – Direct consultation with a broad range of stakeholders throughout the scoping process has led to the identification of a range of marine business activities which could support sustainable growth of the Blue Economy and provide funding for MPAs. The Blue Impact Fund is being structured based on identified funding requirements from partners engaged in the consultation process. The evidence-base developed through this approach could be applied on a local, national or regional scale.

Maturity of business models – Environmentally sustainable marine businesses are typically at an early stage of development and require innovation funding for business development support, particularly in more localised areas. Across a broader geographic spectrum, there is greater opportunity to build a pipeline for a Blue Impact Fund and generate more substantial returns to support MPAs.

Governance – Governance of the marine environment is complex due to the range of stakeholders involved in using and managing the marine environment. A dedicated governing body is needed to perform key governance, oversight and coordination for the fund to collate multiple funding sources as they become available and make decisions over funding allocations to maximise marine benefit.

5.8. Market Infrastructure

Environmental markets are highly dependent on supportive market infrastructure, where public policy, certification codes and dedicated funds can unlock emerging funding opportunities. Most of the schemes classified under this theme have already been discussed within other sections of the report due to their important role in catalysing the development of funding opportunities.

Verification codes

Carbon codes have been developed to provide a common standard to monitor the carbon sequestration benefits of woodland creation and peatland restoration. By providing a high quality, robust standards and independent validation, the codes aim to attract funding from carbon buyers.

Verification codes have catalysed the development of projects seeking to harness these new potential funding opportunities. However, they remain relatively novel, requiring further development and testing to reduce complexity and a more supportive regulatory framework to harness their potential.

Policy frameworks

A policy and regulatory framework which supports the development of environmental markets has the potential to encourage far greater investment in the natural environment. If the government's ELMS system replaces the £2 billion per annum currently spent on land management in England under the EU Common Agricultural Policy, this could become a significant element of the market. DEFRA is starting to test and trial components of a new system of environmental land management, aiming to design a system that supports innovative approaches and can facilitate complementary private sector investment. However, whilst the market could provide additional funds for environmental restoration, it will not replace the need for significant public funding to restore the natural environment, given the difficulty in placing a monetary value on outcomes, such as biodiversity.

Blended and aligned impact investment funds

An increasing number of investment funds are in development dedicated to funding projects that can improve the natural environment and generate returns to test whether a broader range of investors can contribute. Many funding models are seeking to make use of blended or aligned finance. Blended finance refers to when public or philanthropic funds are provided to support project development and reduce risk to stimulate private investment. Alternatively, aligned funding structures enable investment and grant programmes to be run in parallel with a combined objective to ensure that the priorities of both the investor and grant-funder are achieved, and the delivery of environmental outcomes is maximised.

Launched in June 2019, PICNIC is the first impact investment fund focused specifically on delivering social and environmental benefit through urban parks and green spaces. It forms a funding partnership between the National Trust and the Access Foundation, which blends funding from Big Lottery Fund and Big Society Capital. PICNIC was established to provide patient, affordable and flexible funding, offering a blend of loans and grant funding to enhance social and environmental impact. By investing in impactful community-scale organisations operating in parks and greenspaces, PICNIC aims to create a self-sustaining funding model.

DEFRA is exploring the potential to develop a Natural Environment Investment Fund, which would seek to use public capital to leverage private sector investment into fulfilling the objectives set out in the 25-Year Environment Plan. Alongside a technical assistance fund to provide the capacity and skills required to develop investable business models, a dedicated investment fund could kickstart environmental markets and draw in private finance.

Blended finance approaches focused on international conservation efforts have led to aggregate financing of $3.1 billion.[18] In Europe, the Natural Capital Finance Facility combines finance from the European Investment Bank and the European Commission, backed by an EU guarantee, to provide tailored investments and technical assistance grants to revenue-generating projects that contribute to biodiversity enhancement and climate adaptation. The fund has been deployed across Europe to support the management of conservation sites for habitat protection, the restoration of green space to improve climate resilience in urban areas, and the development of nature-focused businesses to protect threatened wildlife species.[19]

6. CONCLUSIONS AND RECOMMENDATIONS

Funding markets for the protection and restoration natural environment are underdeveloped but rapidly emerging.

The multiple contributing factors of declining public spending, limited philanthropy, and the scale of funding needed to solve the conservation challenge facing the UK have meant project developers are actively seeking emerging funding opportunities. When combined with greater private sector interest in providing funding to protect and restore nature, and policy shifts to support market-based mechanisms, this funding market is primed for significant growth.

Experience in other impact markets suggests there is opportunity for considerable growth in new funding models for environmental impact.

Market-based funding approaches for the UK's natural environment are less developed when compared to other impact markets. The UK's social investment market has expanded significantly since its inception in the early 2000s to reach £2.3 billion by 2017.[20] The market has benefitted from a wide range of interventions, including socially focused lending funds, technical assistance funds and policy incentives. Successes have usually been highly dependent on supportive policy and regulation. Critically, there have been many approaches within the social investment sector that have not worked or that have been associated with unintended consequences. If similar approaches are to be applied to improve environmental outcomes it is critical that lessons are learnt from what did not works as well as what did.

Conservation investment is growing dramatically overseas – in the two years to 2015, the total global private capital committed to nature conservation increased by 62% to $8.2 billion.[21] In the US, key enabling factors, such as development funding, laws and tax incentives, have triggered the development of conservation finance markets. Greater numbers of public and philanthropic organisations are providing grant funding to enable or incentivise private investment channelled towards positive environmental impact. For example, the White House of Social Innovation grant funded the development of the Washington DC Water Bond, which raised $350 million to finance green infrastructure to address storm water runoff.[22] In addition, US laws and tax incentives have catalysed markets for mitigation banking. Legally enforced protection of wetlands, the focus on landscape scale offsets, and requirements to ensure funding for long term site management have led to nearly 1,500 habitat banks nationwide.[23] Lessons learned from interventions delivered to grow this market could support the expansion of funding opportunities for the UK's natural environment.

Most projects identified in the UK are at a relatively early stage in their process towards establishing long term revenues and funding streams.

Notable projects have been identified across all environmental sectors, where highly innovative methods are being used to draw in new sources of funding. Stakeholders working to partner with beneficiaries of natural interventions in their locality have achieved the greatest success in sourcing funding. However, most projects do not meet the requirements of traditional private investors for both environmental and financial returns. The multiple benefits delivered by the natural environment create both challenges and opportunities. Accessing a large number of markets for benefits delivered from natural interventions is highly complex. Project developers are constrained by a lack of internal capacity and expertise to develop and deliver schemes and have limited examples of successful models to follow.

Government support is vital in catalysing the development of market mechanisms for environmental protection and restoration.

Putting new regulation in place has catalysed market mechanisms, for example, in protection of water environments. Reliance on voluntary private sector involvement has restricted the size of funding markets, particularly evident in the limited take up for projects validated by voluntary carbon codes. Increased political pressure and regulation, coupled with stronger private sector incentives for zero-carbon growth, could contribute to an increase in the scale of funding sources for conservation.

6.1. Results by environmental theme

An evaluation of each environmental theme provides insight into the state of activities underway in different habitats, and where interventions could be applied to further develop activity.

Catchment

The success experienced to date in catchment schemes has been dependent on the strong collaborations achieved between multiple stakeholders to deliver locally driven solutions. Regulatory interventions have kickstarted markets in the management of the water environment by driving water companies to deliver water quality improvements through a catchment-based approach. However, regulatory uncertainty remains a challenge, inhibiting water utilities from committing to long term schemes and trialling interventions with uncertain benefits. Increased regulatory flexibility is critical to enable testing of natural approaches to catchment management.

The multiple benefits delivered from catchment interventions offer the opportunity to access a blend of funding sources. Catchment projects are complex due to the difficulty in attributing and measuring direct benefits of interventions. Proof of concept models have been developed based on long-term contracts for ecosystem services, but additional work is required to develop a governance and investment structure that can connect multiple benefits with outcomes payers and enable contracts with delivery partners.

Peatland

Peatland restoration projects are looking to complement existing funding sources with private sector funds for carbon credits verified by the Peatland Code. Organisations are keen to share experience and lessons learned from implementing projects to facilitate better replication of peatland restoration projects across the UK. A stronger domestic offsetting policy would improve the financial viability of peatland projects. Land managers require greater incentives for peatland restoration to compete with traditional land management practices. Given the relative complexity involved in restoring peatland and difficulty conveying benefits, a key barrier to accessing more funding is the lack of capacity within organisations to enable partnerships and engagement.

Woodland

Woodland creation and management projects offer a mix of established business models, such as timber production, agroforestry and other woodland product sales, and emerging opportunities to secure funding for the wide range of social and environmental benefits delivered. The potential for revenue stacking is compelling given the variety of activities which can be developed, but exploration of these opportunities is still at an early stage in the UK.

Key barriers to woodland creation include securing land for woodland planting, uncertainty over policy support for carbon prices and the mismatch of project timescales to funder requirements. Policy

changes to increase demand for carbon credits or certainty of revenue would improve the commercial viability of woodland creation. An inability to capture the non-market benefits of increased biodiversity, access or the landscape value of woodlands will continue to make commercial conifer plantations outperform native woodland in terms of financial returns even if its value to society is significantly less.

Habitat conservation

The recent policy commitment to make biodiversity net gain a mandatory requirement should result in an expansion of funding available for biodiversity conservation. Organisations are aiming to use developer planning obligations more strategically to support large-scale creation of habitats.

There will remain practical challenges from the inconsistency of approaches across local planning authorities, preventing replication of pilots. Project developers and local authorities have limited awareness of best-practice, and lack capacity and expertise to procure suitable providers and leverage funding to deliver schemes. Monitoring, reporting and contractual governance will be critical as new policies are put in place to ensure that schemes deliver intended outcomes. Availability of land for conservation could become a material issue if demand increases, requiring stronger incentives for landowners to deliver conservation measures over long periods.

Urban greenspace and infrastructure

Green infrastructure is being given significant consideration in urban developments to support climate change resilience. Pilot initiatives in Manchester have evidenced that retrofitting green infrastructure offer cost savings for water management, providing an opportunity for large scale financing of urban green infrastructure. Development of a contracting and delivery mechanism is needed to enable pilot initiatives to be rolled out across urban areas.

New operational and funding models for long term management of urban parks and greenspace are being considered in the face of public funding cutbacks. Enterprise models that provide benefits to local communities have promise to support a self-sustaining funding base for parks and greenspace, as demonstrated in the US. Dissemination of learnings from the wide range of activity underway exploring emerging funding models for parks and greenspaces could catalyse further innovation.

Coastal

Coastal restoration projects are restricted by the relative weakness of coastal economies and insufficient funding available for coastal partnerships at the scale required to implement schemes. Although an array of potential revenue streams has been identified, these remain underdeveloped with few case studies showing successful implementation. There is a lack of recognition of the value of coastal benefits and certainty of delivering outcomes, particularly flood mitigation and carbon sequestration, remains unproven. Coastal partnerships require more resources to build capacity and expertise to enable commercial deliverability.

Marine

Limited activity was seen from stakeholders working to source new funding for the marine environment. Governance of marine areas is complex with no single management authority and uncoordinated decision making. With increased policy support to develop carbon markets and biodiversity net gain in a marine context, additional revenues could be captured. A strong governance structure is critical to interface between the broad mix of stakeholders, enable collation of a range of funding sources and ensure effective delivery of funding into marine management.

6.2.Recommendations for philanthropic funders and impact investors

There is considerable opportunity to expand markets for funding the natural environment. Based on the review findings, key areas which would benefit from interventions and options for philanthropic funders and impact investors include:

Enterprise-scale – development support

Building the evidence base

- Proof-of-concept models
- Technical assistance to build expertise

Target strategic pilot projects to deliver proof-of-concept models – Funding for internal resources remains crucial to enable project developers to identify opportunities, develop and scale up pilot projects. There is currently limited funding to support the development of pilot projects, which are risky by nature, that explore new funding markets. Funding should be strategically targeted to deliver proof-of-concept models that can act as demonstrators for sources of revenue, investment models, and ability to replicate and scale. Funding provided into proof-of-concept models should prioritise dissemination of shared learning. In the US, considerable development funding was made available to build the DC Water Bond model and this has since catalysed substantial activity to replicate approaches.

Provide access to technical assistance and training – Project developers reported a lack of expertise to deal with additional complexity of developing business models and managing new contracting structures. Project developers require training and technical support to have the strategic, financial and operational capabilities to raise and manage new sources of funding.

Macro-scale – creation of the market

Strategic use of funds to develop emerging funding opportunities

- Aligned funding programme for the natural environment
- Funding collaborations with the public and private sector
- Incentivise greater public and private sector funding

Development of market infrastructure

- Project aggregators and brokers
- Intermediaries and advisors
- Standardisation of tools, metrics and processes
- Platforms and networks

Catalyse market innovation through an aligned funding programme – A funding programme dedicated to support innovative funding approaches could catalyse project developer innovation. An aligned grant and investment programme could be run in parallel to provide tailored capital in accordance with project developer needs. An aligned funding programme, by separating the commissioner of impact from the financial incentive, enables the investor and grant provider to work in partnership to achieve their objectives. An example of this

approach is by Power to Change in their Community Owned Renewable Energy (CORE) programme, consisting of a £40 million investment fund that facilitates community ownership of solar farms, alongside a £4.5 million grant programme delivered to ensure community groups have the skills to maximise benefits from the assets.[26] There could be a role to stimulate innovation through competition. For example, Nesta has made use of challenge prizes to stimulate innovation in the social sector, by offering funding prizes to support the development of the best ideas.[27]

Align funding between the public and private sector – By using grant and social investment to top up other sources of public and private investment, projects could be unlocked that would otherwise be unviable. Specifically, water utilities reported that they are restricted from funding projects that are not cost-effective for customers. Funding alongside water companies could allow expenditure above regulatory standards. Endowment funds could be used strategically to enable the philanthropic funders to be a cornerstone investor in environmental impact funds. The Natural Environment Impact Fund in development by DEFRA provides an opportunity for blended or aligned funding collaborations between the public, philanthropic and private sector to fulfil environmental ambitions.

Provide first-loss capital for environmental funds – The review identified funds in development seeking to provide tailored capital to projects achieving environmental outcomes. The multiple benefits delivered from the natural environment may be attractive to a range of funders. By providing first-loss capital into these funds, private co-investors could be encouraged to participate. For example, within the social investment market, several impact investors, including Esmée Fairbairn Foundation and Access Foundation for Social Investment, have used grant funding as first loss capital to catalyse blended funding programmes to provide suitable finance to the needs of charities and social enterprises.[28]

Provide guarantees against investor losses – Guarantees could be provided to assure investors that their financial requirements will be covered. Funds would only be needed in the case of losses and by reducing investment risk, this could stimulate increased funding from a wider investor base.

Support project aggregators and brokers – Organisations involved in packaging projects and benefits to meet funder demands are key to developing funding markets. Resources to enable project brokers and aggregators to commercialise services offered and support collaborations across NGOs, and the public and private sector, could enable pilot projects to be replicated and scaled.

Support intermediaries and advisors – Funding intermediaries to facilitate financial transactions could support the development of replicable solutions and structures and reduce the need for one-off specialist expertise within organisations. Intermediaries had a key role to play in the development of the social investment market. For example, specialist financial and other support provided through the Investment and Contract Readiness Fund enabled £233m in private investments and contracts from £13.2m grants.[29]

Advance the standardisation of tools, metrics and processes – Inconsistency of outcomes measurement and reporting was conveyed as a key barrier to emerging funding. Insight into data evaluation methods to deliver proxies for outcomes and reporting techniques that would satisfy funder requirements could support more consistent reporting across projects. The development of online tools, commercial templates and contractual forms would help to reduce transaction and due diligence costs as the market develops.

Support platforms for sharing case studies – Channels such as the Ecosystem Knowledge Network could provide a centralised platform for information and case studies to be kept up

to date and shared. The platform could be used to provide networking, resources and training to keep momentum in sustainable funding approaches. Platforms such as Good Finance have been used effectrively to improve access to information on social investment for charities and social enetprises.[30] In the US, the Coalition for Private Investment in Conservation has been used as an umbrella network to share blueprints and provide enabling conditions for increasing investment in conservation.[31]

Non-financial support

Research and shared learning

- Enabling factors for successful pilot projects
- Insight into more-developed markets
- Networks and shared learnings
- Resources and training

Policy and advocacy

Facilitate networks, convene stakeholders and support access to resources and training – Project developers reported that they are keen to learn from other innovative projects. By facilitating sharing of best practice and model approaches, this could support developers to pursue opportunities.

Understand enabling environment for funding models – The review has highlighted examples of wide variety of successful pilot projects, each with specific factors for success. The scope of the project did not allow exploration of the detailed enabling factors that resulted in successful models. To facilitate learning for how development, financing and delivery can be managed effectively, additional research and dissemination of findings is required to gain an in-depth understanding of project-specific factors of success. Research to understand how the project developers identified as particularly active in the sector have built their expertise would enable further insight into capacity building interventions needed.

Share insight into the social impact investment market – Philanthropic funders and impact investors with experience in the social investment market should share insight into where funding can be most effectively applied and the outcomes that can be achieved through market mechanisms.

Research into the conservation investment market – Insight into more developed markets overseas may inform the trajectory of UK opportunities. Detailed assessment of international conservation markets would help to identify the enabling factors that led to these successful interventions.

Advocate for policy – Policy commitments and regulations have significant capacity to spur the development of new markets. Pro-active engagement with policymakers is needed to provide market signals on policy needed to attach revenue to environmental outcomes.

6.3.Prioritisation of interventions

There are a wide variety of interventions and roles that philanthropic funders could take to stimulate the development of emerging funding models for the natural environment, with varying degrees of financial and non-financial participation. The immediate priorities include:

1	***Support the development of proof-of-concept models and exemplar pilot projects***
2	***Provide technical assistance and infrastructure to support organisations to raise and manage emerging funding sources***
3	***Use funding strategically to catalyse a greater range of public and private capital into protecting the natural environment***

APPENDIX: GLOSSARY

Term	Definition
Beneficiary	Any individual or organisation who gains an advantage (monetary or non-monetary) from something.
Biodiversity offsets	Compensation payments for the restoration, improvement or creation of new habitats areas linked to losses elsewhere.
Capital	Money invested in a business or activity.
Conservation Investment	Investments intended to return principal or generate profit while also resulting in a positive impact on natural resources and ecosystems. Interchangeably used with natural capital investment and environmental impact investment.
Cross-sectoral	A combination of public, private and third sector stakeholders or organisations.
Debt	A sum of money that is borrowed by one party from another.
Due diligence	Conducting an appraisal of a business or activity to evaluate its commercial potential and financial, environmental or societal risk.
Ecosystem services	The benefits provided by the environment to society, such as carbon sequestration, flood prevention, water purification, or the supply of goods such as timber and food.
Ecotourism	Responsible tourism that takes place as a result of biological or geological interest that involves conservation of the environment
Emerging funding	Long-term sources of funding accessed through revenue generation; excludes grants.
Environmental markets	The quantification of economic values of the natural environment to enable them to be sold and/or traded to achieve environmental goals.
Funders	Includes all types of funders from any sector, including public funding, philanthropic donors, and investors seeking market returns.
Funding	Includes all types of funds include grants and funding from those seeking market returns.
Grey infrastructure	Human-engineered infrastructure for water resources such as water and wastewater treatment plants, pipelines, and reservoirs.
Impact Investment	Investments made into companies, organisations, and funds with the intention to generate a measurable, beneficial social or environmental impact alongside a financial return.
Investment	Monetary contributions with the expectation of repayment.
Investors	Providers of repayable capital funding.
Monetise	Converting an asset into a source of revenue.
Natural capital	The elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land,

	minerals, the air and oceans, as well as natural processes and functions.
Natural environment	Living and non-living things which occur naturally, including wildlife, vegetation, bodies of water, soils and forests and urban green spaces.
Nature conservation	Preserving, protection and/or restoration of the natural environment.
Net gain	Achievement of net improvement in environmental outcomes arising from the approval of development projects.
Philanthropic funding	Funding provided aiming to achieve societal benefits with no expectation of any financial return.
Place-based enterprise and infrastructure	A network of enterprises or infrastructure within a defined area.
Private investment	Investment made by companies or financial organisations rather than government or third sector.
Profit	Financial benefit that is realised when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity.
Project developer	Organisations or individuals pursuing initiatives with aims to protect, enhance, or restore the natural environment.
Public goods	An environmental service that benefits everyone without them paying for it.
Revenue	Project outcomes (i.e. benefits) that can be monetised; including costs savings which would have otherwise been incurred.
Stakeholder	A person with an interest or concern in a project or outcome.
Urban green infrastructure	Network of green spaces, water and other natural features within urban areas to deliver multiple functions, such as reducing the risk of flooding and cooling high urban temperatures.

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