

**PERFECT**  
expert paper 6



# investment finance for green infrastructure



**By Dr Bruce Howard**  
Director, UK Ecosystems Knowledge Network

PERFECT project – Planning for Environment and Resource eFFiciency in European Cities and Towns

PERFECT Expert Paper 6: *Investment Finance for Green Infrastructure*

By Dr Bruce Howard

Dr Bruce Howard is Director of the UK Ecosystems Knowledge Network. The Ecosystems Knowledge Network is a UK-wide forum for shared learning about how to connect the environment with wellbeing and prosperity. Alongside work to share innovation in green infrastructure delivery, it has initiated the Natural Capital Investment Conference and runs an online Natural Capital Investment Forum – see <https://ecosystemsknowledge.net>

This Expert Paper has been prepared on behalf of the PERFECT project.

Copyright © Bruce Howard, the TCPA and the PERFECT project partners  
Published by the Town and Country Planning Association, January 2020

Cover photo of greenery in Glasgow. Eug Png/Shutterstock

PERFECT is co-funded by Interreg Europe – <http://www.interregeurope.eu/>

This Expert Paper reflects only the authors' views, and the programme authorities are not liable for any use that may be made of the information contained therein.

## About PERFECT

PERFECT (Planning for Environment and Resource eFFiciency in European Cities and Towns) is a five-year project, running from January 2017 to December 2021, co-funded by Interreg Europe. It aims to demonstrate how the multiple uses of green infrastructure can provide social, economic and environmental benefits. It will raise awareness of this potential, influence the policy-making process, and encourage greater investment in green infrastructure.

To find out more about PERFECT, visit <http://www.interregeurope.eu/perfect/>  
Or contact: Jessica Fieth, Project Manager – PERFECT,  
TCPA, 17 Carlton House Terrace, London SW1Y 5AS, United Kingdom  
e: [jessica.fieth@tcpa.org.uk](mailto:jessica.fieth@tcpa.org.uk) t: +44 (0)20 7930 8903  
Follow the project on Twitter: [#perfect\\_eu](https://twitter.com/perfect_eu)



# investment finance for green infrastructure

By Dr Bruce Howard

## Contents

- 2 Foreword
- 3 Introduction
- 4 Key terms
- 7 Key areas of activity
- 14 The future of investment finance for green infrastructure
- 16 Conclusions and next steps

# Foreword

From green walls to community woods, green infrastructure in and around where people live, work and play is a foundation for wellbeing and prosperity. It is integral to climate adaptation and vital for making places where people can thrive. Indeed, the multiple economic, social and environmental benefits of well designed green infrastructure are increasingly well understood. Tools to help quantify and value these benefits are available and applied by organisations spanning the public, private and third sectors.

However, a key challenge remains in securing finance for implementation from supporters and beneficiaries. For these reasons, detailed consideration should be given to new ways of financing green infrastructure. Economic evidence must be turned into innovative mixes of finance that are fit for purpose and reflect the multiple benefits of green infrastructure.

Across Europe, there has been lots of innovation in social finance over the last decade. It is time to innovate in finding new investment finance for green infrastructure. This Expert Paper outlines the possibilities and uses examples from around Europe to illustrate them. It will help those involved in making decisions about how to finance green infrastructure at the strategic scale.

**Bruce Horton**  
Director, Environmental Policy Consulting UK

# 1 Introduction

This PERFECT project Expert Paper examines the potential for diversification and blending of investment finance for green infrastructure – networks of natural features<sup>1</sup> that provide valuable benefits to people. The aim is to help turn economic analysis of the value of green infrastructure into innovative blended finance. While the term ‘green infrastructure’ applies in densely populated areas as well as in sparsely populated ones, the focus of this Expert Paper is on finance for projects in and around urban areas. More specifically, the focus is *investment* – where the organisation providing funding requires a return that benefits them directly through income or through costs avoided.<sup>2</sup>

During the last century, funding from the ‘green’ budgets of local, regional and national government has achieved much in conserving and building networks of natural features in and around urban areas throughout Europe. Grants from charitable, private and public sector sources to non-governmental delivery agents have also been important. Despite this activity, there is an increasing realisation that natural features in and around urban areas attract funding that is a very small fraction of the finance for infrastructure in general. Reductions in public finance over the last ten years now provide a strong motivation for exploring new models for financing green infrastructure.<sup>3</sup>

Economic analysis of the multiple benefits of green infrastructure projects now provides a rationale for a significant *increase* in funding for green infrastructure delivery and management. It also provides the rationale for the *diversification* of the sources of funding. For example, evidence for how environmental quality influences property value and rental income<sup>4</sup> prompts consideration of whether those who benefit monetarily (such as property owners) could be involved in financing green infrastructure.

Increased concerns about the need for urban areas to be adapted to a changing climate and resilient to extreme weather events also point to the involvement of sectors that have previously not participated in green infrastructure financing. This includes, for example, re-insurers and built infrastructure asset owners and investors.

This Expert Paper is intended for all involved in decisions about how to finance green infrastructure strategically. ‘Strategic’ refers to actions across whole settlements, or across areas of recognised regeneration potential or social need in cities and towns.

---

1 In this Expert Paper, the term ‘natural features’ includes spaces that are heavily modified or constructed, such as urban parks and water bodies

2 For a wider review of green infrastructure finance in general, see *Approaches to Financing Nature-Based Solutions in Cities*. Working Document. Horizon 2020 Grow Green project. Trinomics and IUCN, Nov. 2019. <http://growgreenproject.eu/approaches-financing-nature-based-solutions-cities/>

3 I Mell: ‘Financing the future of green infrastructure planning: alternatives and opportunities in the UK’. *Landscape Research*, 2017, Vol. 43(6), 751-68

4 See, for example, JAC Giraldo, L Ryan, M Prutthisathaporn, N Joshi and Y Sato: *Evidence of Economic Impact of Port Sunlight River Park*. Alliance Manchester Business School, University of Manchester, Nov. 2017. <https://thelandtrust.org.uk/wp-content/uploads/2018/02/Manchester-Business-School-MBA-Consultancy-project-Final-report.pdf>

# 2 Key terms

## Green infrastructure and related concepts

As explained in the first and second of this series of PERFECT Expert Papers,<sup>5</sup> the term 'green infrastructure' refers to networks of green spaces and features such as parks, green roofs, green walls, street trees and waterways (often called 'blue infrastructure') that deliver a range of benefits in society. Flood risk reduction and improved mental health are examples of these benefits. Maps, valuations and accounts are available to illustrate where these benefits are provided, where they are needed, and what they are worth in monetary terms.

In the above definition of green infrastructure, the term 'networks' is significant because the spatial arrangement of natural features often determines how big the benefits are. For this reason, green infrastructure is sometimes referred to as 'green networks' and 'green grids'.

The term green infrastructure is closely related to the natural capital concept, which is used by some governments and a growing number of businesses.<sup>6</sup> The 'natural capital' metaphor is used to promote an understanding of the natural environment in terms of the value and benefits it provides to people. As with green infrastructure, natural capital is a *configuration* of natural features working together to deliver value.<sup>7</sup> The natural capital metaphor is important because *natural capital finance* is an emerging theme within green finance.

*Nature-based solutions* is a term that is also gaining increasing prominence, and is the subject of a research and innovation policy agenda of the European Commission,<sup>8</sup> alongside a range of EU-wide research programmes.<sup>9</sup> The focus is on addressing societal challenges using natural processes, rather than on restoring the environment solely on the basis of its intrinsic value. Many aspects of green infrastructure can be considered as nature-based solutions. The European Investment Bank has a 'Natural Capital Financing Facility' that also uses the term nature-based solutions.<sup>10</sup>

- 
- 5 E Gianferrara and J Boshoff: *Health, Wealth and Happiness – the Multiple Benefits of Green Infrastructure*. PERFECT Expert Paper 1. PERFECT Project. TCPA, Jun. 2018. <https://www.interregeurope.eu/perfect/library/>; and P Massini and H Smith: *Planning for Green Infrastructure – the Green Space Factor and Learning from Europe*. PERFECT Expert Paper 2. PERFECT Project. TCPA, Dec. 2018. <https://www.interregeurope.eu/perfect/library/>
  - 6 See, for example, *This Is Natural Capital 2018*. Natural Capital Coalition, Nov. 2018. [https://naturalcapitalcoalition.org/wp-content/uploads/2018/11/22905\\_NCC\\_This-is-Natural-Capital\\_web.pdf](https://naturalcapitalcoalition.org/wp-content/uploads/2018/11/22905_NCC_This-is-Natural-Capital_web.pdf)
  - 7 I Dickie, P Cryle and L Maskell: *UK National Ecosystem Assessment Follow-on. Work Package Report 1: Developing the Evidence Base for a Natural Capital Asset Check: What Characteristics Should We Understand in Order to Improve Environmental Appraisal and Natural Income Accounts?* UNEP-WCMC, LWEC, UK, 2014. <http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=ALFqJld0K8o%3D&tabid=82>
  - 8 'Nature-based solutions'. Webpage. European Commission. <https://ec.europa.eu/research/environment/index.cfm?pg=nbs>
  - 9 See, for example, the Connecting Nature (Horizon 2020 Framework Programme) 'Bringing cities to life, bringing life into cities' webpage, at <https://connectingnature.eu/>, the GrowGreen project (Horizon 2020) website, at <http://growgreenproject.eu/>, and the ThinkNature project (Horizon 2020) website, at <https://www.think-nature.eu/>
  - 10 See *Investing in Nature: Financing Conservation and Nature-Based Solutions. A Practical Guide for Europe*. European Commission, and European Investment Bank, 2019. <https://www.eib.org/attachments/pj/nccf-invest-nature-report-en.pdf>

Key terminology in this Expert Paper can be summarised as follows:



### Investment and finance terminology

A wide range of terms are connected to finance for green infrastructure. These are described in a recent *Demystifying Green Finance* paper published by the Valuing Nature programme.<sup>11</sup> An important aspect of green infrastructure finance is the direct involvement of the financial services sector.<sup>12</sup> This is sometimes referred to as ‘financing the green’. It draws on the existing field of conservation finance, which has been focused on protecting areas of global nature conservation importance. A separate (and currently much larger) set of activities relate to ‘the greening of finance’ – ensuring that investment in traditional businesses and built infrastructure does not cause further decline in environmental quality.

*Environmental finance* is a term used to refer to both financing the green and the greening of finance. *Responsible investment* and *impact investment* are also terms around which much green finance activity is centred. The latter is centred on investment that provides competitive financial returns to the investors, as well as providing benefits that can be measured and valued in society.

Investment from the financial services sector can be categorised as follows:



11 E Ozdemiroglu: *Demystifying Green Finance*. Valuing Nature Paper. Valuing Nature Programme, Oct. 2019. <https://valuing-nature.net/demystify-green-finance>

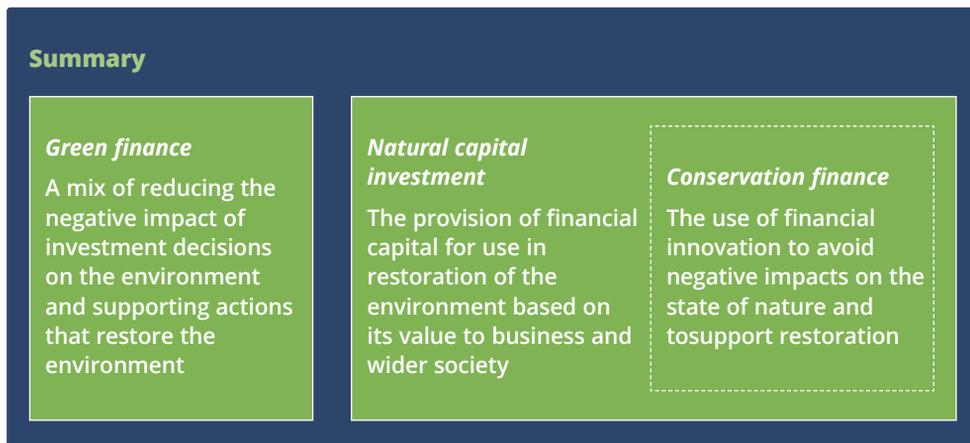
12 ‘Financial services sector’ refers to the broad group of public, private and NGO organisations that provide services such as banking, investing, and insurance

In the case of both debt and equity finance, the recipient of the investment must be able to demonstrate that it can generate the revenue necessary to pay the investor. For this reason, it may take many years for a green infrastructure project to become investment-ready.

While the financial services sector has access to financial capital often not available elsewhere, it is important to consider the capacity of other organisations to use funds that they already have access to in innovative ways. Some organisations have financial assets, or access to regular flows of public or private finance, that have potential for financing green infrastructure. The water industry is a prime example of this, whether in public or private ownership. Irish Water is one example of a water utility innovating in the use of wetlands to treat wastewater.<sup>13</sup>

Money paid to local government through the process of giving permission for built development may play a role in attracting investment. In the West of England region, the Natural Capital Trust model has been investigated as a means of pooling money paid by developers through the planning system so that it can be used more effectively on strategic green infrastructure projects.<sup>14</sup>

Green finance is a rapidly evolving set of approaches responding to concerns about nature and climate. It is currently dominated by a drive for low-carbon engineered technologies, especially transport that does not use fossil fuels, and solar and wind power. As realisation of the impacts of climate change grows, the financial services sector is likely to increasingly see the state of the environment in and around urban areas as a material consideration for its investments. This will particularly relate to flood risk, with many cities situated either on the coast or alongside rivers.<sup>15</sup>



**Integration with existing flows of finance – for example levies and grants**

13 See Irish Water’s ‘Wastewater treatment in wetlands’ webpage, at <https://www.water.ie/wastewater/wetlands/>

14 See the West of England Nature Partnership’s ‘25 Year Environment Plan – WENP’s Natural Capital Trust’ webpage, at <http://www.wenp.org.uk/2018/25-year-environment-plan-wenps-natural-capital-trust/>

15 *Flood Research Needs of the (Re)insurance sector: Collaborating to Improve Risk Understanding and Management*. Lighthill Risk Network, 2019. <http://lighthillrisknetwork.org/wp-content/uploads/Flood-Research-Needs-of-the-Re-in-surance-sector.pdf>

# 3 Key areas of activity



Transport for Greater Manchester

The 'living wall' at the Deansgate-Castlefield Metrolink tram stop in Manchester

## Partnerships

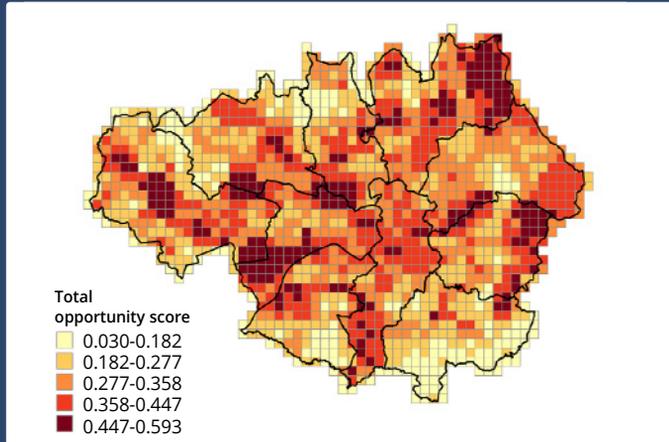
Over the last decade, a significant step towards investment finance for green infrastructure in Europe has been the formation of multi-sector partnerships across city regions. These harness the unique capabilities of the public, private, NGO and academic sectors, and are the starting point for the supply of investable projects.

Collaborations have provided a pathway for the development of innovative new green infrastructure finance plans, such as the Greater Manchester Natural Capital Investment Plan (published in 2019). In Greater Manchester, the collaboration process started with the formation of a Greater Manchester Natural Capital Group in 2012. It encouraged extensive dialogue between environmental NGOs, the environmental regulator, universities and businesses in the region in order to develop a common understanding of green infrastructure needs and opportunities.

The Natural Capital Group is supported by the Greater Manchester Combined Authority, which commissioned the Natural Capital Investment Plan. The Greater Manchester Combined Authority is a collaboration between the ten metropolitan boroughs in the Greater Manchester area. It also leads the Green City Region Hub, which is leading on the

Box 1

## Example of an output from partnership working – the development of the Greater Manchester Natural Capital Investment Plan



Indicative natural capital priorities and opportunity map for Greater Manchester

Source: Countryside, eftec, and Environmental Finance (extract from the Natural Capital Investment Plan)

The Greater Manchester Natural Capital Plan, the first of its kind for an urban area in the UK, was published in 2019. It takes a strategic view of opportunities for green infrastructure restoration around the city region and identifies three ways to attract new finance:

- *Place-based portfolio models*: This involves leasing public parks and other green or blue infrastructure assets to new organisations established to manage them for greater public benefit. These organisations would have greater capacity to attract new revenue than if the assets were managed by local government. Payments for prescribed health activities is one example of the revenue sources.
- *Habitat and carbon offsets*: This involves the sale of credits from additional actions that increase biodiversity or stored carbon to organisations that want to compensate for the impacts of built development or business operations that are considered to be unavoidable.
- *Sustainable drainage systems (SuDS)*: These could be linked to a reduction in the charge from the water utility for connection to the surface water drainage system.

The Natural Capital Investment Plan is supported by the IGNITION project,<sup>i</sup> funded through the European Regional Development Fund. IGNITION aims to develop innovative financing solutions for investment in Greater Manchester’s natural environment. Climate change adaptation is an important part of this. IGNITION involves a diverse partnership, including local universities, members of the Combined Authority, and Business in the Community. It is developing a prioritised list of projects that may become investable in future.

<sup>i</sup> See the IGNITION project website, at <https://www.greatermanchester-ca.gov.uk/what-we-do/environment/ignition/>

delivery of the Natural Capital Investment Plan, ensuring that work on green infrastructure is linked to carbon dioxide mitigation and adaptation needs. Box 1 provides further details. Delivering the Natural Capital Investment Plan has continued to require extensive dialogue between partners in the Natural Capital Group to develop novel finance solutions for green infrastructure.

## Box 2

### Example of a funding provider supporting green infrastructure sustainability

PICNIC is a £3.3 million (€3.8 million) social impact fund in the UK focused specifically on urban parks and green spaces.<sup>i</sup>

Through providing unsecured, unguaranteed loans of between £25,000 and £150,000 for projects and VCSEs (voluntary, community and social enterprises) associated with green spaces, PICNIC is seeking to increase the productivity of these spaces in a way that generates income, promotes sustainability, and delivers social impact. Loan terms are designed to be patient and include features such as capital repayment holidays and grant and interest terms driven by financial risk and social impact. Funding for PICNIC comes from the Heritage Lottery Community Fund (part of the UK National Lottery) and Big Society Capital. PICNIC is a partnership between:

- Environmental Finance Ltd., an environmental impact investment advisory and fund manager;
- the National Trust, an NGO that protects historic and natural assets around the UK; and
- Access – the Foundation for Social Investment, which works to make charities and social enterprises in England more financially resilient.

PICNIC is aligned with the Future Parks initiative, which is focused on helping local authorities think differently about the management and financing of their green assets, including involvement of the VCSE sector and community volunteers.

<sup>i</sup> Further information is available from the PICNIC website, at <https://www.picnicfund.co.uk/>

The work in Manchester has benefited from funding provided by several European projects, as well as from UK government recognition and funding towards the supporting evidence base.

### Social investment funds

Alongside local partnerships that create the conditions for blended investment finance, some initiatives are proactively seeking out and looking to grow the supply of investable projects with the objective of making green spaces more financially sustainable. One example of this is the PICNIC fund (see Box 2).

These funds are important in building capacity for revenue generation, and preparing for larger investments involving different parts of the financial services sector.

### Green bonds

A bond allows an institution to borrow money from multiple investors and then pay this money back over a pre-agreed period of time. The institution (the issuer) can be local or national government, or businesses inside or outside of the financial services sector. The institution must have a good credit rating in order to secure favourable terms for the loan.

Green bonds provide finance for projects or assets that deliver positive environmental outcomes (or refinance debt that supports these projects or assets). Climate bonds are a category within this, focused on climate mitigation and adaptation.

### Box 3

## European examples of the use of green bonds for green infrastructure

### Malmö

Malmö is Sweden's third-largest city. The city government announced its intention to issue green bonds in 2017. The first bond was worth Swedish Kr 1.3 billion (approximately €124 million). In recent decades, the municipality has been seeking to restore the environment following degradation due to industrial activity. Bond finance is being used to finance a set of projects to deliver climate change mitigation and adaptation, as well as protection of the environment. The categories of project for financing range from clean transportation to energy-efficient buildings. Notably, 'environmentally sustainable management of living natural resources' and 'sustainable water and wastewater management' are also included. In the first reporting year, these two categories represented 8% of the expenditure of bond funds. It included €4 million for woodland creation at Lindängelund, Malmö's new city park.

*Source: Grön Obligations – Rapport. City of Malmö, 2018.*  
<https://malmo.se/download/18.270ce2fa16316b5786cc79f/1526906486988/Gron+obligationsrapport+2018+final.pdf> (in Swedish)

### Paris

In 2015, the City of Paris issued a €300 million climate bond with an annual interest rate of 1.75% to finance climate and energy projects. Investors in the bond were insurers, pension funds, and asset managers. Of the €300 million raised, one-fifth was reserved for climate change adaptation measures. The bond is being used to finance the capital expenditure for planting 20,000 trees in the city and the creation of 30 hectares of green space in areas prioritised for climate adaptation needs. The green space provision costs €67 million, of which €45 million will be financed through the bond, with the remainder coming from the City of Paris' environmental budget. Reducing heat stress in the summer was one factor behind the inclusion of trees and green space in measures financed through the bond.

*Source: 'Climate bond financing adaptation actions in Paris'. Webpage. Energy Cities (European Association of Cities in Energy Transition). <http://energy-cities.eu/best-practice/climate-bond-financing-adaptation-actions/>, and 'Paris pour le climat'. Webpage. City of Paris, Oct. 2019. <https://www.paris.fr/pages/paris-pour-le-climat-2148/> (in French)*

Green bonds have grown exponentially in recent years, with over US \$500 billion (around €450 billion) of loans currently active.<sup>16</sup> Investors are typically institutional investors such as pension funds, banks and insurance companies. The majority of green bonds are intended for use in engineered technologies such as improvements in water treatment processes and renewable energy projects. Of greatest relevance to green infrastructure investment is the green bonds issued by local governments. Examples of these are shown in Box 3.

Investment in natural features is beginning to feature in the use of the proceeds of green bonds. However, this remains at a relatively small scale. No bond has been issued that is

16 See Climate Bonds Initiative's 'Explaining green bonds' webpage, at <https://www.climatebonds.net/market/explaining-green-bonds>

solely or principally for green infrastructure. This may be due in part due to the challenge of verifying expenditure on natural features, which are less well defined than engineered technology.

### **Environmental impact bonds**

Environmental impact bonds are bonds in which the returns to the investor are set according to the outcomes of an environmental project. These outcomes may, for example, be reductions in the use of a surface water drainage system.

Environmental impact bonds are sometimes referred to as a 'pay for success' approach. A pioneering environmental impact bond was issued by DC Water, the water services provider for Washington DC.<sup>17</sup> A combined sewer system in the city means that raw sewage and surface water drainage flow through the same pipes into DC Water's treatment facility. While a new tunnel system was implemented to prevent overflow of untreated water into Chesapeake Bay, DC Water recognised that green infrastructure such as rain gardens, permeable pavements and green roofs could play a major role in reducing the chance of overflow. DC Water turned to investment broker Quantified Ventures to model and advance this type of transaction. This resulted in a US \$25 million tax-exempt bond involving Goldman Sachs (a major bank) and Calvert Impact Capital (a social investor). Additional bonds are now in place for the US cities of Atlanta and Baltimore.

### **Investment crowdfunding**

Crowdfunding is a way of financing projects, businesses and loans through small voluntary contributions from a large number of sources. It is often viewed as a mechanism for securing donations for charitable causes, perhaps being combined with public funds, as in the case of the crowdfunding programme for climate adaptation in Ghent.<sup>18</sup> It can also be used as an approach to raising finance that provides a return for investors. Scoping research on the potential use of such investor-based crowdfunding for public infrastructure in the UK concluded that the public sector is yet to harness its potential.<sup>19</sup> This potential includes, for example, raising funds from businesses who benefit from green infrastructure, as well as from citizens for green space.

A major challenge for crowdfunding is that it can be perceived as a supplementary source of finance, rather than an alternative to taxation or charitable giving. This is a barrier to it being considered core green infrastructure investment.

### **Investment from operators of businesses and public buildings**

Research conducted at the University of Southampton in the UK examined the potential for businesses to fund the planting of trees in urban areas.<sup>20</sup> The work involved interviews with a diverse group of businesses operating in the city of Southampton. Among the benefits to the businesses considered were improvements in air quality, reductions in flood risk, and improvements to the appearance of business districts. The research found that voluntary payments towards costed projects in specific locations were preferred (as

---

17 See Quantified Ventures' 'DC Water: First ever environmental impact bond' webpage, at <https://www.quantifiedventures.com/dc-water>

18 See the City of Ghent's crowdfunding webpages, at <https://crowdfunding.gent/nl/>

19 M Davis and L Cartwright: *Financing for Society: Assessing the Suitability of Crowdfunding for the Public Sector*. Report. University of Leeds, 2019. <https://baumaninstitute.leeds.ac.uk/research/financing-for-society/>

20 HJ Davies, M Hudson, M Schaafsma, K Schreckenber, K Doick and G Valatin: 'Business attitudes towards funding ecosystem services provided by urban forests'. *Ecosystem Services*, 2018, Vol. 32, Part B, 159-69

#### Box 4

### Natural Capital Financing Facility in Athens

A €5 million loan has been made through the European Investment Bank (EIB) Natural Capital Financing Facility to support the integration of green infrastructure into various urban renewal projects in Athens. This includes restoration of habitat on one of city's landmarks, Lycabettus Hill. This will improve water management and enhance the tourism potential of the site.

The work is in support of implementation of the Athens Resilience 2030 Strategy, which is being supported by a €55 million loan from the EIB. This larger loan package is being used to improve transport infrastructure and improvements to the energy efficiency of public buildings. The Resilience Strategy states that the 'city aims at integrating natural systems into the urban fabric'.

For further information, see the EIB's 'NCF - Cities' webpage, at <https://www.eib.org/en/products/blending/ncff/cities/index.htm>

opposed to mandatory contributions applying over a larger area). It identified the importance of a clear business case in order to assure businesses that their funding contribution will provide benefits (return on investment) to them.

One option for future exploration is the use of levies (compulsory charges) on businesses who benefit from green infrastructure. The £21 million (approximately €25 million) Lower Don Valley Flood Defence project in the city of Sheffield in the UK has benefited from £1.4 million (€1.6 million) raised through a Business Improvement District levy.<sup>21</sup> (Business Improvement Districts are areas in which local government can charge levies in addition to local business tax, with the purpose of supporting commercial activity.) While this project was focused on engineered structures to reduce flood risk, others could, in principle, utilise green infrastructure to achieve flood risk reduction goals that result in costs avoided for businesses. Levies are, by definition, mandatory. Nonetheless, from the perspective of the business they could be considered to be an investment if there is a direct benefit to them.

Some cost-saving mechanisms for businesses and public buildings can be the starting point for investment finance for green infrastructure. One of the most active areas is incentivising the replacement of hard surfaces with permeable surfaces in urban areas. This is a key opportunity for sustainable urban drainage, which is a key part of green infrastructure.

In Greater Manchester in the UK, a SuDS (sustainable urban drainage systems) in schools programme is examining the potential for up to 1,000 schools to access investment finance to change hard surfacing to permeable 'green' features.<sup>22</sup> The incentive is a reduction in the amount that they pay to United Utilities, the water company in the area. The scheme is dependent on United Utilities' ability to charge non-domestic customers for wastewater in proportion to the area of hard surfacing on their property. Without an

21 See 'Lower Don Valley Flood Defence project & Business Improvement District'. Webpage. Sheffield City Council. <https://www.sheffield.gov.uk/home/planning-development/master-action-plans/lower-don-valley-flood-defence>

22 *Water Resilient Cities: The Business Case for Investing in Resilience in Greater Manchester*. Business in the Community, Jul. 2018. <https://www.bitc.org.uk/report/water-resilient-cities-the-business-case-for-investing-in-water-resilience-in-greater-manchester/>

investment mechanism, the schools may not be able to pay the upfront costs for SuDS. Consideration is also being given to the inclusion of other public buildings such as health facilities and prisons in the scheme.

### **Green loans from public institutions**

Public institutions have the capability to issue loans (such as bonds) as well as receive them. Pan-European mechanisms such as the Natural Capital Financing Facility (NCFF) are already available to support environmental restoration. The NCFF involves a mix of grants, loans and technical assistance to initiate projects that are scalable, funded by the European Investment Bank and the EU. In Athens, the NCFF has been used to supplement an existing loan for urban renewal (see Box 4). The example highlights the potential for green infrastructure finance to be integrated into finance for upgrading the built environment. Such finance should not be seen as being in mutual competition.

# 4 The future of investment finance for green infrastructure

## Challenges

At the core of raising investment finance for the capital element of green infrastructure is the need for long-term revenue streams. This is a particular challenge for local government, which has traditionally financed green space through tax revenue and money received from central or regional government. Budgetary pressures over the last decade have caused many local authorities to increase their revenue through use of parks as event spaces.

Nonetheless, additional sources of income are required in order to attract strategic investment in green infrastructure. Many sources of income are hard to access without the creation of national markets backed by strong regulatory frameworks. This includes, for example, the sale of carbon offsets, improvements to water quality, and flood risk reduction.

Current schemes that involve genuine investment in green infrastructure are very site-specific. They involve, for example, individual city landmarks or streets. For this reason, a major challenge is to raise finance to enhance green infrastructure at the strategic scale, focusing on the creation of resilient *networks* of natural features rather than a set of isolated elements. Collaboration between the public and private sectors is likely to be key to achieve the scale of investment required for this. Central government could play an important role in reducing the risks associated with investments that cover urban areas.

Investment-readiness is a long process that requires business and enterprise skills, along with local leadership. Local government and its partners in the private and NGO sectors lack the resources to deliver investment-readiness. The provision of access to technical assistance at the early stages of project development is likely to be crucial to investment finance becoming a routine part of green infrastructure delivery and management.

Involvement of the core parts of the financial services sector, such as institutional investors, requires a reliable pipeline of investable projects. The green infrastructure needs of urban areas vary according to their landscape setting and historical factors (such as the creation of public parks). For this reason, the packaging of investable projects across a region (or country) in order to attract private investors is a significant challenge.

## Opportunities

Green infrastructure plays an important role in the water cycle in and around urban areas. In particular, the costs associated with damage to buildings or built infrastructure due to flooding are significant. As a result, there is strong potential to attract investment in green infrastructure on the basis of its role in flood risk reduction. The re-insurance industry may find benefit in providing investment for the use of natural features such as wetland and sustainable urban drainage. Modelling support such as EcoActuary is already available to demonstrate the impact of green infrastructure on flood risk.<sup>23</sup>

---

23 See King's College London's 'EcoActuary' webpage, at <https://www.policysupport.org/ecoactuary>

Alongside water management, a few opportunities are worth exploration because of the likely revenue streams:

- The use of urban green spaces as sites for generating renewable energy. The ParkPower project in Scotland is assessing the role of green space in decarbonising the energy system. It includes assessment of the potential for micro-hydro schemes to generate electricity and ground source heat pumps to generate heat.<sup>24</sup>
- The use of trees around buildings to reduce the impact of summer heat episodes (and hence air conditioning costs), as well as to offset greenhouse gas emissions.

Other opportunities will arise only after a significant change in thinking about the delivery of public benefits arising from a high-quality natural environment. This is particularly the case in relation to green infrastructure and public health benefits. The prevailing assumption in public finance is that the wider determinants of health (social and environmental factors) are not the responsibility of those who control public health or healthcare budgets.

---

24 See 'ParkPower – a Scotland-wide programme for greenspace'. Webpage. Greenspace Scotland. <https://www.greenspacescotland.org.uk/Pages/Category/energy>

# 5 Conclusions and next steps

In attracting investment finance for green infrastructure, measurement and verification of outcomes is vital. While standards for green infrastructure provision, such as Building with Nature and the Urban Greening Factor, are in existence, they have not yet been tested in terms of how they support investment finance. Across Europe, it would be useful to provide clarity on the tools and standards that could help the financial services sector to become involved in green infrastructure finance.

Brokering, facilitation and partnership building are key to securing innovative finance for green infrastructure. Local government has a key role in this because of its strong tradition of working in with local communities, businesses, and NGOs. Organisations that support the work of local government across Europe need to take a proactive role in helping their members to blend existing finance with private sector finance.

Investment finance for green infrastructure is an emerging aspect of the broader challenge of diversifying funding for environmental enhancement in and around urban areas. Climate change will provide a strong impetus for change. While some innovative projects exist, investment finance for green infrastructure is affected by the traditional dependence on public finance. The lack of capacity in local government and other partners to develop investable projects also needs to be overcome.



# PERFECT

## a European partnership...

**The PERFECT project will demonstrate how the multiple uses of green infrastructure can provide social, economic and environmental benefits; and it will raise awareness of this potential, to influence the policy-making process and to encourage greater investment in green infrastructure.**

PERFECT aims to:

- spread awareness of the value of green infrastructure for the jobs and growth agenda among a wider audience;
- identify transferable good practice;
- improve investment and stewardship by engaging managing authorities and increasing the professional capacity of key stakeholders in delivering new projects; and
- help make places more economically, socially and environmentally viable by developing action plans to take advantage of the multiple benefits of strategic investment in green infrastructure.

The PERFECT project will work to identify the multiple benefits of green infrastructure investment through EU Structural Funds Operational Programmes and other policy instruments, in order to help formulate holistic and integrated approaches to the protection and development of the natural heritage.

The PERFECT partners are: Provincial Government of Styria, Department for Environment and Spatial Planning (Austria); Social Ascention of Somogy Development, Communication and Education Nonprofit Ltd (Hungary); Municipality of Ferrara (Italy); City of Amsterdam (Netherlands); Bratislava Karlova Ves Municipality (Slovakia); Regional Development Agency of the Ljubljana Urban Region (Slovenia); Cornwall Council (UK); the Town and Country Planning Association (UK).

