Impact-driven financing and investment strategies for urban regeneration

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Executive summary

Nature-based solutions can help overcome urban sustainability challenges by providing services, creating benefits and offering value for different urban actors. However, the development of nature-based solutions is hampered by several barriers that relate to the challenge of conveying the value of natural capital and ecosystem services in economic terms. This factsheet, which was drafted as an output of the CLEVER Cities H2020 project, explores the various private and public financing sources for NBS as well as the existing strategies for fostering investment in the most common types of NBS. The deliverable also includes reflections on key outcomes and lessons that can be learned from these challenges, which can help support the CLEVER Cities approach.

The information presented was gathered through a desk-based literature review, focusing on scientific and grey literature relating to the valuating of NBS and challenges to financing, business models and delivery at the European level. Reviewed documents include information on the barriers to uptake and implementation of NBS, as well as wider challenges to the delivery of innovative solutions. As much of the scientific NBS literature focuses on technical feasibility and sustainability assessment (with some recent exceptions and reviews), the research also included outputs from other European NBS-focused research projects.

This factsheet is complemented by the CLEVER Cities factsheet ‘Green market opportunities and business policies for urban nature-based solutions’ (D1.1.2).

1. Setting the scene

The challenges of rapid and increasing urbanisation combined with climate change mean that cities are facing growing sustainability pressures, with resultant impacts on quality of life, natural resources and the economy. Yet amidst these challenges, opportunities exist to create more resilient, prosperous and healthy cities for urban populations and to prepare cities for future challenges through sustainable solutions inspired by nature. These so-called 'nature-based solutions' (NBS) utilise blue and green elements of natural systems to achieve environmental, social and economic goals.

The societal, economic and environmental benefits of implementing NBS in urban areas is receiving increasing attention in the scientific community, and slowly within planning and decision-making processes. Nevertheless, there remains a gap between the potential for implementing NBS and its current uptake. This is in part due to the challenge of sustainably financing these solutions: while there is a growing interest in different forms of 'green' finance, there is a limited evidence base about how these resources can be leveraged to support nature-based solutions and the instruments and business models needed to support the financing of nature-based solutions. There is indeed the challenge of conveying the value of natural capital and ecosystem services in economic terms. Even in cases where attribution is possible, the value may go unassisted or unaccounted for in decision-making, particularly as NBS can be difficult to compare to alternative and traditional grey solutions.

This factsheet aims to address these challenges and contribute to an improved awareness and understanding of impact-driven financing and investment strategies for urban regeneration in relation to NBS. To do so, an overview is provided of typology of existing financing strategies, challenges, opportunities and outlines valuable take away messages that can utilised within the CLEVER Cities project activities. This factsheet is complemented by the CLEVER Cities factsheet 'Green market opportunities and business policies for urban nature-based solutions'.

2. Methodological approach

The information presented was gathered through a desk-based literature review, focusing on scientific and grey literature relating to the valuating of NBS and challenges to financing, business models and delivery at the European level. Reviewed documents include information on the barriers to uptake and implementation of NBS, as well as wider challenges to the delivery of innovative solutions. As much of the scientific NBS literature focuses on technical feasibility and sustainability assessment (with some recent exceptions and reviews), the research also included outputs from other European NBS-focused research projects. A core information source was a literature review conducted within the Horizon 2020 project NATURVATION, which reviewed innovation, urban studies and sustainable business model literature and applied these to NBS in order to learn various lessons at the European level (Toxopeus, H and Polzin, F, 2017). The NATURVATION product also included global reviews of innovation in financing, governance and partnership models for NBS in urban areas (e.g. Kabisch, N. et al, 2017) as well as included examples of European financing instruments, such as from the European Investment Bank.

The present factsheet applies the gathered knowledge to the CLEVER Cities context in order to explain challenges, opportunities and lessons learned which can help support the CLEVER Cities approach and the work being conducted by the case study cities. A full reference list is provided at the end of the document.

3. Typology of NBS financing sources

An increasing number of cities are integrating nature into urban planning and management, as a tool to address wider societal, economic and environmental challenges and a complement or alternative to purely grey infrastructure solutions. This shift is driven by the need for cost-effective and holistic ways of addressing environmental challenges, while recognizing the wider societal and economic benefits that can be produced in parallel by multifunctional green areas (e.g. recreation opportunities, improved health and wellbeing, increased property values).

However, budgetary constraints can get in the way of integrated nature and urban planning solutions. In many cases too few financial resources are available for the implementation of NBS as the finances are mainly used for traditional approaches which fit better into the short-term thinking that underlines decision making.

Another central issue in this context is the structure of municipal revenues, which stem from either municipal tax revenues, fees for municipal services, or fiscal transfers from other governmental levels. Many of these revenues are however committed to specific tasks, especially social expenditure; thus, there is little room left for autonomous investments, such as those into NBS). It is certain that NBS can be a useful tool to be implemented with the use of fees for municipal services - a shift in mindset about what kinds of activities can be funded under public funds is therefore needed.

An additional challenge is that the benefits of NBS and resultant return on investment can also be long-term in nature, particularly for infrastructure investments which are more difficult to translate into a cash payoff and the benefits of which can be outside the perspective of a private investment decision. It can be twenty years, for example, before the value of NBS for buildings such as green roofs will be realised. In addition, the risk associated with innovation, for example in the technologies being employed or the status of research and development, can render NBS less attractive for investors.

This section provides an overview of the financing sources within the private, public or joined sectors that can be utilised for implementing and maintaining NBS. Each category also presents key challenges for generating investment for NBS implementation.

3.1. Private sources

In private and public financial decision-making, options with the best value for money are most likely to be opted for. However, in public sector the issue of ‘value for money’ can be defined differently since value includes non-monetary benefits to society and the environment as well.

This section will describe the challenges for private financing of NBS as well as tools, approaches and reasons that private investors should invest in NBS and will also showcase the main sources of private funding.

Private finance for sustainable innovation in general faces two fundamental challenges: (1) payoffs are for some part public and therefore cannot easily be reaped by investors, and (2) payoffs are often long term and high risk due to their innovative character, making it less attractive for investors. When projects are not just innovative but also sustainable, this adds the difficulty to reap a private payoff from 'green' public goods that are created or, on the flip side, ease with which environmental costs can be externalized (Carter & Keeler, 2008; Faber & Frenken, 2009). Furthermore, infrastructural investments are likely to suffer from their often-long term, illiquid character and are therefore traditionally seen as the domain of public policy into which private investors do not enter naturally (Campiglio, 2016). For example, the health benefits and potential reduction of healthcare costs from improved air quality and recreation opportunities from green space benefit the public. This means that the value of NBS is not always reaped by private investors, creating a barrier in terms of motivation to invest.

Other challenges for private investors in urban regeneration are operational and bureaucratic challenges related to real estate and infrastructural investments, such as conflicting tax and grant schemes, uncertainty regarding contamination of sites and delay in planning schemes. In addition, urban regeneration projects are often perceived by private investors as high risk due to a lack of information about the underlying value of assets. Furthermore, volatile rental markets create insecurity regarding expected profits. In reaction to these challenges, researchers have found evidence of risk reducing measures such as public loan guarantee schemes.

Incentives and/or disincentives for the implementation of NBS through economic instruments have the potential to address the aforementioned NBS-specific challenges. Price instruments like municipal fees for water services, for example, can be a valuable tool in this context. Also, in contrast to price-based approaches, quantitative instruments directly limit activities impacting natural areas, e.g. by setting a cap on the maximum amount of greenfield land to be developed. Within the scope of the cap, development rights will be auctioned or allocated for free among potential developers. By making development rights tradable, a cost-efficient allocation of development can be assured as those landowners are able to realise the highest net benefits from development and will buy up rights and develop their land. However, if such a system is to allow for a targeted protection of specific green infrastructures, it has to be accomplished by land-use zoning.

Furthermore, financial institutions can help society and their clients to invest in forward-looking environmental technology and nature-based solutions. It is in this context that a coalition of major international financial institutions created the Green Bond Principles[1] (GBP). Updated as of June 2018, they are voluntary process guidelines that promote integrity in the development of the Green Bond market by clarifying the approach for issuance of a Green Bond. Green Bonds enable capital-raising and investment for new and existing projects with environmental benefits - they are not only becoming an attractive financing option but also attracting project developers to raise capital for their projects, assets and other activities to showcase their responsible approach toward business. The GBP are intended for

[1] https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp

broad use by the market: they provide issuers guidance on the key components involved in launching a credible Green Bond; they aid investors by ensuring availability of information necessary to evaluate the environmental impact of their Green Bond investments; and they assist underwriters by moving the market towards standard disclosures which will facilitate transaction. A growing number of leading businesses recognise the necessity to assess their relationship with nature and to evaluate whether solutions based on nature provide them a competitive advantage. Returns on investment can therefore be increased by supporting these businesses.

The Environmental, Social and Governance (ESG) Business Case Evaluator[2] is an alternative tool developed to recognise green and socially responsible investments. ESG factors are often used as a measurement of risk. In the private markets, investors analyse the ESG footprint of a company to help manage risk. For instance, a coal-fired power plant may face additional regulatory risks going forward as cleaner alternative energy sources are encouraged. Similarly, private fund managers evaluate the treatment of workers across an entire supply chain to reveal future legal and social challenges as a company grows. There is growing evidence that inclusion of ESG analysis can have not only social and environmental benefits but can improve financial returns and help minimise reputational risk.

Another level of sustainable investing shifts from an exclusionary emphasis to an inclusionary one: rather than exclude problematic products or services, investors seek to include companies that score well on environmental, social or governance considerations. Environmental, social and governance analysis touches on a broad array of company dynamics, from energy efficiency to supply chain dynamics, to corporate governance.

The notion of sustainable or impact investing has existed for decades, but only in recent years has it become more mainstream. Sustainable investing was once considered “concessionary capital”, often associated with sacrificing investment returns in order to fulfil philanthropic goals and ideals. The sustainable investing space has developed significantly over the years, and today it offers investors a broad array of options regarding investment objectives and impact goals. When investing in the sustainable space, investors seek positive environmental or societal impact while generating competitive financial rates of return.

Finally, the use of a valuation framework for the assessment of NBS interventions and their impacts - like that developed in the frame of the Working Group on Nature-based Solutions to Promote Climate Resilience in Urban Areas from the Centre for Ecology & Hydrology in Wallingford[3] as well as awareness raising regarding the value and benefits of NBS would help to reduce risk aversion and increase investment in innovation from the private sector.

3.2. Public sources

This section will give an overview of the public sources of finance for NBS and detail approaches for how to motivate increased public investment in the green market.

There are multiple potential sources for public NBS investment. Implementing NBS requires support from not only the direct municipal department responsible for delivery, but also from other municipal departments

[2] https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp
[3] www.eklipse-mechanism.eu

that benefit from these NBS. For example, street trees may be provided by an environmental department, but support from health and transport departments is also required. It may be challenging to change existing investment patterns and dependencies to succeed in this delivery. A clearer return on investment is more likely to increase investment in new or innovative ways.

Municipal fees and charges for public services are a substantial source of revenues and could play a role in financing NBS. However, their scope is limited by the need to calculate fees based on cost recovery of the service and to directly link spending to the underlying service and its costs. For example, water prices could be based on investment and environmental costs but could not be spent beyond the water management sector.

The multifunctional character of NBS can be a challenge for financing, since NBS can fall outside of municipal financing structures and the holistic value of implementation may not be evident if only some of the ecosystem services reaped from the NBS are considered. A single municipality may have insufficient resources to deliver NBS. If a portion of tax revenue would be distributed according to ecological criteria, this may set incentives for providing green infrastructures and NBS. An example may be the ecological fiscal transfers implemented in Brazil or Portugal, where municipalities receive tax revenue for hosting protected areas (Kabisch et al. 2017).

Fiscal policy is an important consideration for NBS. Greening fiscal policy can lead the way to innovation and the introduction of new revenue streams for NBS. For example, the social value act in the UK[4] requires people who commission public services to think about how they can also secure wider social, economic and environmental benefits. This is a good example of how to encourage public investment.

3.3. Public-private partnerships

Public actors need political support for their actions which hampers their risk appetite (e.g. for fear of losing the next election), whereas private bodies have a higher incentive to provide standard solutions at reliable profits than to present innovative solutions

Public-private-partnerships (PPP) in urban development can be best defined as a true partnership of public officials and private developers who have development ambitions that they could not complete alone (Better Government Programme for Ernst & Young Polska 2010[5]). In this form of public (municipalities) and private sector (private companies such as construction and property development firms, private banks, investment companies, etc.) cooperation, the aim is usually to accomplish a public task or a project by funding and/or operating on the basis of a partnership in which the financial risks of the public sector are to be reduced. PPPs are mainly driven by limitations in public funds to cover investment needs and by efforts to increase the quality and efficiency of public services. Collaboration can create and catalyse synergies by pooling resources, skills, knowledge and institutional capacities sharing the financial burden. This can support delivery of NBS particularly where an NBS is too costly or complex for one party to bear, or to overcome the risk of an innovative NBS over typical options. The alliance creates more favorable conditions for both parties in terms of investing in NBS.

[4] https://www.gov.uk/government/publications/social-value-act-introductory-guide
[5] https://tinyurl.com/y7j47dzn

One example of a European level PPP is provided by the European Investment Bank and the European Commission, which have partnered to create the Natural Capital Financing Facility[6] (NCFF): a financial instrument that supports projects delivering on biodiversity and climate adaptation through tailored loans and investments, backed by an EU guarantee. The NCFF offers funding to projects that promote the conservation, restoration, management and enhancement of natural capital for biodiversity and adaptation benefits, including ecosystem-based solutions to challenges related to land, soil, forestry, agriculture, water and waste inside the EU.

Although long term cooperation between public and private parties are generally set up to allow for efficient risk, cost and benefit sharing, successful partnerships are often restrained by complexity of actor composition, institutional factors and strategic choices of both public and private actors. In particular, the appetite for new (improved) solutions, such as potential urban NBS, is not naturally high. Public actors need political support for their actions which hampers their risk appetite (fear of losing the next election), whereas private bodies have a higher incentive to provide standard solutions at reliable profits than to present innovative solutions (Klijn & Teisman, 2003).

It is also important to use common language and have a clear understanding of expectations of partners involved and their feasibility. For partnerships with the private sector to be successful, a shared understanding of landscape, land use, ecosystem relationships, investment benefits, development strategies, policies, legal frameworks and responsibilities over resources is required. There is also a need to be clear on values of different stakeholders as well as needs of natural environment and local communities. This ensures that a balance can be struck and there is a better opportunity for needs to realistically be met.

4. Strategies for stimulating and driving investment in specific types of NBS

This chapter will highlight challenges, potential opportunities and financing and investment strategies for four common types of NBS (combining some due to similarities and leaving out others due to lack of literature). The focus will be on the financial players which are involved in financing a specific NBS and on the related challenges and opportunities.

There is evidence of different financing strategies (and challenges) for different ecological domains in which urban NBS occur. The differences in financing strategies seem to vary along with the extent to which private value can be captured from the NBS approach, as well as with the scale (investment amount and longevity) of the investment.

Financial constraints determine feasibility and new and creative paths to finance are needed in order to reach NBS's full potential, including e.g. more PPP, crowd-funding, international grants, etc. and once again highly differentiated due to local conditions.

[6] http://www.eib.org/en/products/blending/ncff/index.htm

4.1. Buildings, facades and roofs

When NBS are connected to a building (i.e. green roofs, building-integrated agriculture), the investment decision takes place primarily at a decentralised level with the building/home owner or with the entrepreneur carrying out building-integrated agriculture. One strategy to stimulate upfront investment at a consumer level is using a tripartite model in which costs and benefits are shared equally between citizens, government and businesses/developers. Clear communication of the benefits to both society and the individual customer may drive adoption of NBS such as green roofs. Some studies have calculated the expected cash flows (NPV) from investing in a green roof and found that incentives such as municipal subsidies can potentially be highly effective in increasing the returns of green roof investment to trigger larger scale green roof adoption. The private benefits do not in themselves make a green roof an attractive enough investment (NPV-positive), therefore public subsidies (such as those in Flanders or Rotterdam) or storm water tax cuts (found in some regions in Germany) can stimulate private investment into green roofs[7]. To ease access to and knowledge of these type of public incentives, standardisation is recommended (Carter & Keeler, 2008).

4.2. Urban green spaces, parks and urban forests

The green space / tree cover type of NBS, either related to grey infrastructure (such as playgrounds, street trees) or in the form of urban forests and parks appear to profit from citizen investment (trees in private residential grounds), real estate developer investment (in urban development projects) as well as from public investment (in public spaces). Economic valuation of urban forest benefits, such as assessing citizen willingness to pay, can stimulate investment in urban forest construction and management, as well as prevent loss of urban forests to urban development projects. The contingent valuation method (CVM) is most often used for assessing total value of urban forest benefits. This is a simple, flexible non-market valuation method that is widely used in cost–benefit analysis and environmental impact assessment. Shadow pricing of rainwater collection or treating trees as fixed assets to calculate life cycle costs are ways to make the added value of urban forests measurable. Finally, tree cover / parks were shown to have a positive correlation with house prices in empirical studies in The Netherlands and the US, which can allow municipalities to recoup some of their public investment in trees through higher levels of real estate taxation and ground sales. The potential of increased house prices can also motivate home owners to contribute financially to local community forest projects.

4.3. Allotments and community gardens (including urban agriculture)

Urban community gardening can overcome financial constraints in several ways which seem to be more bottom-up. It has been shown that urban community gardening use embeddedness in networks to organise grassroot agriculture in spite of minimal funding (often consisting of in-kind donations and/or grants). This can be compared to how small firms overcome a lack of funding through bootstrapping, using internal funds

[7] https://www.ecologic.eu/8458

or by organizing themselves without funds. Opportunities to overcome a lack of funding through bottom-up collective action using sustainable (urban) crowdfunding strategies are slowing arising in Europe.

4.4. Integrated green and blue spaces

Some urban NBS have characteristics which are more similar to larger urban infrastructural projects, such as sustainable drainage systems, which are set up to use and enhance natural processes and mimicking predevelopment hydrology (Perales-Momparler et al., 2016). In such cases, securing funding for initial investments and long-term maintenance can serve as one of the main barriers. Some key ways to overcome the funding (and other) barriers were to find alternative (sustainable) funding mechanisms; working in partnerships from the outset; improved education and awareness raising of the local community (to put pressure on local government to choose a green-blue variant) and creation of multifunctional space as part of the investment while clarifying the multiple benefits associated with the specific green-blue infrastructure, such as improved air quality.

5. Lessons learned for the CLEVER Cities approach

- The implementation and mainstreaming of NBS to address urban sustainability challenges is highly dependent both on how they come to be valued and the ways in which they can secure investment over the long-term.
- Business models for NBS should be specified per NBS type and urban domain.
- Importance for the decision-making entities of assessing the multiple benefits that NBS provide and integrating this into decision-making processes and systems.
- Greening fiscal policy opens the door for innovative fiscal reforms that can introduce new revenue streams for nature-based solutions.
- Cities need to think differently about where to seek the best return on investment. They should identify the direct and indirect contributions of nature-based solutions, such as the economic value of ecosystem services, and mainstream this into policy and decision-making on infrastructure investment and development.
- Finance for NBS can be enabled by creating scale through syndication between similar projects.
- Public and private actors need to leverage conventional sources and unlock novel mechanisms for financing such as green bonds, adaptation funds, taxes and fees, public-private partnerships to implement nature-based solutions.
- There is a need to create scale for NBS by increasing collaboration and partnerships between many similar projects. Interested stakeholders should find intermediary parties that coordinate such collaboration that can help in attracting larger scale funds and define value capture options.

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