

While both private and public actors will opt for the options with the best value for money, outcomes can be different in both groups depending on if the value of (non-monetary) benefits to society and the environment are taken into account as well.

IMPACT-DRIVEN FINANCING AND INVESTMENT STRATEGIES FOR URBAN REGENERATION

Types of NBS financing sources

An increasing number of cities are utilising nature in urban planning and management processes as a tool to address wider societal, economic and environmental challenges and complement or replace traditional grey infrastructure solutions. This shift to ‘nature-based solutions’ (NBS) is driven by the need for cost-effective and holistic ways of addressing both societal and environmental challenges in parallel and recognizes the values multifunctional green areas can generate (e.g. recreation opportunities, improved health and wellbeing, increased property values).

Despite their multiple benefits, however, budgetary constraints often inhibit the implementation of such integrated solutions. This is in part due to the nature of traditional approaches and them fitting more easily into the short-term thinking commonly underlining decision making processes. Another central issue 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 committed to specific tasks, especially social expenditure. There is thus currently little room left for autonomous investments, such as those for NBS. 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. These are more difficult to translate into a cash payoff and many wider societal and environmental (non-monetary) benefits are not always considered, particularly in the case of private investment decision-making. In addition, the perceived risks associated with such innovative NBS, e.g. regarding return on investment or the status of research and development, can render NBS less attractive for some investors.

Private Sources

Private finance for sustainable NBS innovation faces two fundamental challenges: (1) payoffs are to some degree public, and can therefore not easily be reaped by investors; (2) payoffs are often long-term and perceived as being high risk due to their innovative character, making NBS less attractive than traditional solutions for investors. When projects are not only innovative but also sustainable, it becomes even more challenging to privately reap financial gains from the 'green' public goods that are created for the wider population. Infrastructural investments also suffer from their long-term character, as their provisioning and maintenance are seen as being the responsibility of public policy and public funds. For example, the health benefits and reduction of healthcare costs generated through NBS and its resultant improvements in air quality and recreation opportunities are enjoyed by the public rather than by the investor to the NBS. This means that the value of such green solutions are often not enjoyed by private investors and rather serve as 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 the contamination of sites and delay in planning schemes. In addition, urban regeneration projects are often perceived by private investors as being high risk due to a lack of information about the underlying value of the natural 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 - to be quite effective.

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. 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 landowners are able to realise the highest net benefits from development and will purchase rights and develop their land. However, if

such a system is to allow for a targeted protection of specific green infrastructure features, it has to be accomplished by land-use zoning.

Furthermore, financial institutions can help foster investments in forward-looking environmental technology and NBS. Green Bonds, for example, enable capital-raising and investment for new and existing projects with environmental benefits. They are not only becoming an attractive financing option for NBS, but also attracting project developers to raise capital for their projects, assets and other activities to showcase their responsible approach toward business. A growing number of leading businesses recognise the necessity to assess their relationship with nature and to evaluate whether solutions based around the utilisation of natural assets can provide a competitive advantage. Returns on investment can therefore be increased by supporting such businesses.

The Environmental, Social and Governance (ESG) Business Case Evaluator 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 has only in recent years 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, now offering investors a broad array of options regarding investment objectives and impact goals. When investing in the sustainable space, investors seek positive environmental or societal impacts 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 within the Working Group on Nature-based Solutions to Promote Climate Resilience in Urban Areas from the Centre for Ecology & Hydrology in Wallingford - as well as awareness raising regarding the value and (long-term) benefits of NBS would help to reduce risk aversion and increase private sector investment in NBS innovation.

Public Sources

There are multiple sources from the public sector which could be used to invest in NBS, some of which are outlined below. However, implementing NBS requires support from not only the direct municipal department responsible for delivery, but also from other departments that also benefit from the solutions.

Street trees, for example, may be provided by an environmental department or ministry, but also require financial and management support from the health and transport departments. Such broader structural changes and shifts in thinking present a significant challenge, but are necessary to increase NBS investment and succeed in its wider delivery.

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

While the multifunctional character of NBS is one of its greatest strengths, it can also be a challenge in terms of financing, since NBS can fall outside of existing 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. Furthermore, a single municipality may have insufficient resources to deliver NBS. If a portion of tax revenue would be distributed according to ecological criteria, this could establish incentives for providing NBS instead of or alongside grey infrastructure. In Brazil and Portugal, for example, ecological fiscal transfers provide municipalities with tax revenue for establishing and managing protected areas. 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 requires people who commission public services to think about how they can also secure wider social, economic and environmental benefits and serves as a good example of how to encourage public investment.



Public-Private Partnerships

While public actors need political support for their actions which hampers their risk appetite (e.g. for fear of losing the next election), private bodies have a higher incentive to provide traditional solutions with 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. In this form of cooperation between the public (municipalities) and private sector (private companies such as construction and property development firms, private banks, investment companies, etc.), 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 traditional grey infrastructure options. The PPP creates more favourable conditions for both parties for investing in NBS.

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 (NCF). THE NCF is a financial instrument that supports projects delivering on biodiversity and climate adaptation through tailored loans and investments, and is backed by an EU guarantee. 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 are eligible for funding 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 the complexity of actor composition, institutional factors and strategic choices of both public and private actors. In particular, the appetite for new (improved) solutions is not naturally high as public actors need political support for their actions. This in turn hampers their risk appetite (fear of losing the next election). At the same time, private bodies have a higher incentive to provide traditional solutions at reliable profits than to present innovative solutions.

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 a clear understanding of the values of different stakeholders as well as of the needs of the natural environment and surrounding local communities. This ensures that a balance can be struck between these diverse stakeholder needs and help ensure that expectations can be met.





ESG

The Environmental, Social and Governance Business Case Evaluator recognises green and socially responsible investments



GBP

Green Bond Principles are guidelines clarifying the approach for issuing Green Bonds



NCFF

The Natural Capital Financing Facility provides loans and investments for biodiversity and climate adaptation projects, backed by an EU guarantee.

STIMULATING INVESTMENT IN SPECIFIC TYPES OF NBS

Diverse financing strategies and challenges exist for different the ecological domains in which urban NBS occur. Variations also exist regarding 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 NBS feasibility and necessitate

the pursuit of new and creative paths ensure that the full potential of NBS can be reached. This includes, for example, implementing more PPP, crowd-funding initiatives, international grants, etc. Several key ecological domains in which urban NBS can occur are outlined as well as potential approaches for stimulating investments.

Buildings, Facades and Roofs

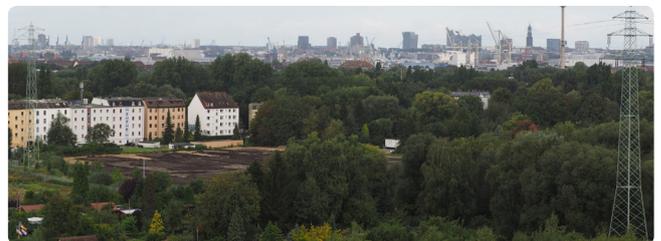
When NBS are connected to a building (i.e. green roofs, building-integrated agriculture), the investment decision takes place primarily at a decentralised level with the building/home owner or with the entrepreneur carrying out building-integrated agriculture. One strategy to stimulate upfront investment 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. To ease access to and knowledge of these type of public incentives, standardisation is recommended.

Urban Green Spaces, Parks and Urban Forests

The green space/tree cover type of NBS - either connected 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) and public investment (in public spaces). The 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 is most often used for assessing the 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.

Allotments and Community Gardens (including Urban Agriculture)

Urban community gardening can overcome financial constraints in several ways which tend to be more bottom-up. It has been shown that urban community gardening use embeddedness in networks to organise grassroots 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 or by organizing themselves without funds. Opportunities to overcome a lack of funding through bottom-up collective action using sustainable (urban) crowdfunding strategies are slowly arising in Europe.



Urban community gardening use embeddedness in networks to organise grassroots agriculture in spite of minimal funding.

Integrated Green and Blue Spaces

Some urban NBS have characteristics that are similar to larger traditional infrastructure projects. Sustainable drainage systems, for example, are set up to use and enhance natural processes and mimic predevelopment hydrology through a combination of grey and green infrastructure. 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 are to find alternative (sustainable) funding mechanisms, work in partnerships from the outset, improve education and the level of awareness of the local community (to put pressure on local government to choose a green-blue variant) and create multifunctional spaces as part of the investment, while highlighting the multiple benefits associated with the NBS.



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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 are valued and the ways in which investment can be secured and maintained over the long-term.
- Business models for NBS should be specified per NBS type and ecological domain.
- Assessing the multiple benefits provided by NBS and integrating these values into decision-making processes and systems is critical to fostering higher sustained investments in NBS across sectors. Greening fiscal policy opens the door for innovative fiscal reforms that can introduce new revenue streams for nature-based solutions.
- Shifts in thinking about where to seek the best return on investment are needed within public and private bodies alike, including identifying the direct and indirect contributions of NBS to social, economic and environmental objectives and mainstreaming these values 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 defining value capture options.

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