



MAINSTREAMING NATURE-BASED SOLUTIONS

Economic
Regeneration

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Led by Durham University, NATURVATION involves 14 institutions across Europe working in fields as diverse as urban development, innovation studies, geography, ecology, environmental assessment and economics. Our partnership includes city governments, non-governmental organisations and business. We will assess what nature-based solutions can achieve in cities, examine how innovation is taking place, and work with communities and stakeholders to develop the knowledge and tools required to realise the potential of nature-based solutions for meeting urban sustainability goals.

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SERIES INTRODUCTION

Cities are increasingly seen as a key arena for governing global environmental, social and economic challenges. Nature-based solutions – such as green roofs, parks or sustainable urban drainage – are gaining traction as a promising approach to sustainable urban development. They are a cost-effective and efficient strategy that can address multiple challenges in cities simultaneously.

The mobilisation of nature to enhance urban sustainability is taking place through various experimental projects. But such solutions have yet to be widely adopted and implemented. In order to realise their potential, there is an important need to develop our understanding of how to generate promising pathways for mainstreaming nature-based solutions.

Nature-Based Solutions (NBS) are defined by IUCN as actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

Drawing on extensive research in the UK, Sweden, Germany, the Netherlands, Spain, Hungary and at level of the EU, we have identified 20 actions – stepping stones – that can build the potential for mainstreaming nature-based solutions. Rather than seeking universal pathways for mainstreaming nature-based solutions, diverse combinations of stepping stones can support their uptake to address different sustainability challenges and under diverse urban, financial and policy conditions.

This series of five reports presents promising pathways for mainstreaming nature-based solutions to address: climate change; biodiversity; economic regeneration; social inclusion and the sustainable development goals agenda. Each report asks: how can the mainstreaming of nature-based solutions be supported through this agenda? And what in turn can working with nature-based solutions do to ensure that sustainability challenges are mainstreamed at the urban level? We find a variety of complimentary pathways that can help to foster more sustainable cities for the future.

EXECUTIVE SUMMARY

This report specifically addresses the mainstreaming of urban nature-based solutions for economic regeneration. We understand economic regeneration to be about the improvement and reinvigoration of urban areas. Nature-based solutions have the potential to encourage economic regeneration through improving *economic vitality* and providing *attractive places to live and work*. To mainstream nature-based solutions and to fully utilise their potential to economic regeneration, this report draws on extensive empirical research in European cities and summarises four promising pathways:

Pathway 1: Policy measures to increase stakeholder awareness and the creation of partnerships

Economic regeneration is one of many co-benefits of urban nature-based solutions, yet nature-based solutions are rarely implemented for this purpose by decision-makers. One explanation for this is the lack of collaboration across disciplines concerned with economic development, public health and urban greening. We identified various policy measures that help improve partnership working and co-funding of urban nature-based solutions aimed at economic regeneration. The introduction of visions, strategies and authoritative guides can increase awareness the value of nature-based solutions to economic regeneration among a broad range of stakeholders.

Pathway 2: Develop data, evidence and valuation models to encourage investment

The development of evidence, data sets and valuation tools can encourage investment into urban nature-based solutions based on their (evidence-based) contribution to economic regeneration. Not all possible contributions of urban nature-based solutions to economic regeneration can be assessed in a straightforward way. Furthermore, economic regeneration impacts often materialise over long time horizons, adding to the difficulty of measuring and attributing impacts to nature-based solutions interventions. Various examples show that applying valuation metrics and developing evidence can help inform stakeholders about the co-benefits of urban nature-based solutions, which could increase support for them and available funding.

Pathway 3: Seize opportunities for implementing urban nature-based solutions as part of related policy paradigms

Policy ambitions around climate adaptation, the circular economy, sustainable housing and mobility agendas – all linked to economic regeneration – are likely to receive significant investment in the years to come given their prominent role on the urban agenda. By highlighting the synergies of nature-based solutions with these diverse ambitions, and showing that nature-based solutions provides co-benefits in cost-effective ways, additional investment in urban nature-based solutions could be unlocked. Capitalising on these ambitious agendas could therefore increase the contribution of nature-based solutions to economic regeneration.

Pathway 4: Stimulate, and respond to, increased market demand for urban nature-based solutions

Demonstrating and emphasising the potential contribution of nature-based solutions to the attractiveness of a city for working or living is important to increase demand for nature-based solutions. Increased demand incentivises investment, both by private (business and individuals, like homeowners) and public actors. To demonstrate these values, there is a need for increased knowledge sharing with the urban development industry and better integration of nature-based solutions in certification schemes for real estate.



			
Provide a public mandate	Regulate for No Net Loss	Include in contractual requirements	Align with strategic priorities
The mainstreaming of NBS can benefit from policy-makers and investors giving a clear mandate for NBS to be included in urban development through tender and procurement policies, policy instruments (e.g. land use planning guidance), and where possible mandatory regulation.	No net loss / net gain regulation for urban nature (biodiversity) has the potential to generate greater interest in NBS across Europe. Developing harmonised regulation across Europe with strong monitoring and sanctioning to increase effectiveness has the potential to support NBS mainstreaming	Utilities (e.g. water, waste, energy) and network service providers (e.g. road and rail authorities, waterway authorities) are either publicly owned or operate on long-term contracts that are bound by regulatory requirements for service provision. Including NBS as required for the delivery of mandated functions (e.g. water quality treatment) or for the upkeep of land-holdings (e.g. train sidings, roadside verges) provides an important avenue for mainstreaming.	Positioning urban NBS as generating benefits for prioritised policy goals through generating narratives and evidence (i.e. climate change mitigation & adaptation, circular economy and healthy urban living) can widening their relevance and community of practice.
			
Create intermediaries	Generate partnerships	Establish demonstration projects	Engage insurance sector
In order to overcome institutional silos within both public and private sector organisations, new organisational forms that work across these divisions are required. Intermediary units can either be established within organisations or outside (by external bodies) and provide co-ordination between departments as well as platforms for innovation.	Stimulating partnerships between public, private and third sector organisations for the co-design, development and maintenance of urban NBS is critical for generating initial action on the ground and increasing support for mandatory urban greening policies.	Demonstration or pilot NBS projects, often involving research, can create shared learning and knowledge development as well as providing tangible demonstrations of how NBS can work in practice, creating confidence amongst partners about their potential.	Engage the insurance sector to support upscaling of urban NBS based on their risk reduction needs and damage cost expertise

			
Facilitate community-based action	Provide economic incentives	Develop markets	Build co-financing arrangements
Facilitate and support community-based action for local urban NBS through improving citizen awareness and support	Provide economic incentives (tax cuts, subsidies) for integrated delivery of urban NBS as a component of urban sustainable development.	Positioning NBS as a sustainability solution offering wide societal and reputational benefits can support the development of demand for NBS projects which in turn can stimulate supply.	Build governance arrangements between the public and private sectors to enable co-funding for NBS development and maintenance
			
Work with investment cycles	Stimulate institutional investment for risk reduction	Target areas of low land value	Improve data & monitoring
Integrating urban NBS into infrastructure projects and renovation cycles to increase their (multi)functionality and can save costs by reducing the need for additional outlay and drawing on existing budgets	Institutional investment for urban NBS is likely to be forthcoming based primarily on their climate risk reduction value (adaptation and mitigation), and specific data/modelling may be required to realise this potential.	NBS can face competition from other land-uses which return a higher rate on investment. Using urban space with a lower value can suit some forms of NBS and provide a more cost-effective means of urban greening (e.g. street green, pocket parks and building-integrated green)	Mainstreaming NBS will require the development of evidence on their performance urban NBS, through the use of 'big data' and new assessment tools that can support effective monitoring, evidence-building and assessments of their effectiveness in addressing key urban goals.
			
Advance valuation models	Grow practitioner expertise	Incorporate in green investment products	Promote certification schemes
Making the case for NBS requires that we develop and disseminate valuation models that specify the different (monetised) benefits and costs of NBS, to facilitate public and private investment decisions.	Make practitioner-oriented expertise on urban NBS available to facilitate integration of NBS in the actual urban development process (i.e. practitioner guides and collaborative design).	Include urban NBS into (existing and new) green / impact / sustainable investment products in order to enable projects to access this source of finance.	Integrate urban NBS criteria into green certification schemes, in particular for buildings, based on recognition of NBS the contribution NBS can make towards sustainability goals.

URBAN NATURE-BASED SOLUTIONS FOR ECONOMIC REGENERATION

Research in the NATURVATION project demonstrates the value of nature-based solutions to economic regeneration, among multiple other sustainability goals. Economic regeneration is a very broad concept encompassing activities varying from supporting tourism to repurposing derelict land and creating local jobs. An important caveat is that such developments need to take place in a *balanced* and *inclusive* way across the city. Since nature-based solutions can contribute to economic regeneration in many different ways, possible contributions of nature-based solutions to economic regeneration often remain unnoticed. Therefore, a first step in the analysis was to provide an overview of the possible ways in which nature-based solutions could contribute to economic regeneration. We categorised these actions in two broad categories: efforts at boosting **economic vitality** and at providing **attractive places to live and work**, based on existing typologies (Audit Commission, 2006; Forest Research, 2020; Metropolitan Borough of Wirral, 2003).

Economic vitality

At a macro level, economic regeneration is concerned with improving the liveability of an area and the regeneration of areas that have experienced a socio-economic downturn, for example due to a decline in manufacturing industries. Integration of nature-based solutions to uplift a neighbourhood is a form of inward investment that can open up new economic opportunities for businesses and real estate developers. Processes of urban renewal increase the confidence of businesses to invest in such an area, thus leading to new economic opportunities and entrepreneurial activity (and possibly tourism as well). Such processes are likely to increase property values, but it is vital to ensure that housing affordability is maintained.

Attractive places to live and work

At the micro level, economic regeneration is about the improvement of the socio-economic situations of individual citizens through 'creating places in which people want to live and work' (Forest Research, 2020). For example, nature-based solutions can provide opportunities for local jobs and practical skills development, in particular for citizens who are long-term unemployed, low skilled and/or suffer mental health problems. In this way, the realisation and maintenance of nature-based solutions can help to tackle deprivation and economic disadvantage. Nature-based solutions also improve quality of life by making environments more attractive and healthy to live and work in.

MAINSTREAMING NATURE-BASED SOLUTIONS FOR ECONOMIC REGENERATION

How can urban nature-based solutions be mainstreamed into cities for economic regeneration? Drawing on an extensive study on current practices across six European countries and at the EU-level, we identified four key pathways. Each of these have the potential to contribute to economic vitality and attractive places to live and work. They are further broken down into stepping stones, providing insight into concrete actions that decision-makers can take to help activate the pathways.

PATHWAY 1: Policy measures to increase stakeholder awareness and the creation of partnerships

The employment of various measures – voluntary, economic and regulatory – can encourage the formation of coalitions to co-fund and -implement urban nature-based solutions for economic regeneration. Furthermore, strategies, visions, authoritative guides and pledges can showcase the potential contribution of nature-based solutions to economic regeneration.

This pathway responds to persistent challenges to nature-based solutions mainstreaming identified in our case studies, such as the existence of disciplinary silos within different kinds of public and private organisations and the difficulty of setting up partnerships across different sectors benefiting from nature-based solutions in various ways. Although more collaboration between different types of actors could stimulate investment in nature-based solutions, there is also a danger of such efforts having a counterproductive effect if interests of stakeholders fail to align. For example, for some actors the value of a square meter of real estate is always higher than that of a square meter of nature. Therefore, voluntary measures such as new partnerships often need to be complemented by external funding and regulation in order to boost investment in nature-based solutions for economic regeneration.

While the value of urban nature-based solutions for wellbeing and health, and associated with that the productivity and economic performance, of urban populations is broadly recognised (Tzoulas et al., 2007), urban greening is rarely funded through public health budgets. One way to address this is to create new organisational forms allowing for more collaboration and exchange between municipal officials dealing with water management, public health, local business climate, and biodiversity. Another route is provided through the engagement of non-government organisations with a social and/or health function. This includes health insurance companies, housing corporations and foundations. In addition to generating co-funding, engaging such organisations could also help spread the message of the health value of nature-based solutions. A similar effort can be carried out regarding other benefits of urban nature-based solutions, such as their climate resilience value. For example, the insurance industry can invite other stakeholders to co-invest in nature-based solutions and bring these stakeholders together, building public-private or public-civic partnerships. Additionally, by campaigning and sharing data (about damage costs and nature-based solutions impact for instance), insurers could raise awareness about the value of nature-based solutions (Kaiser, 2019), including for economic regeneration.

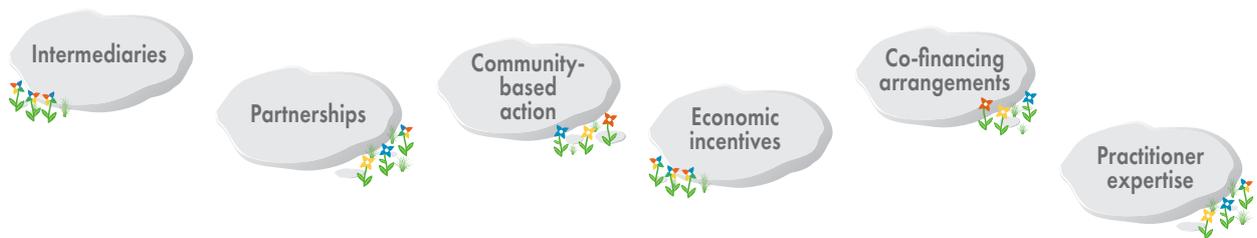
Multiple instruments and measures are available to the government for supporting economic regeneration through improved partnership working and coordination between different types of organisations across different sectors. These include, but are not limited, to the following:

- Employ economic instruments for integrated development of urban green infrastructure, particularly in areas of multiple deprivation (e.g. ERDF green infrastructure funds in Scotland and in NRW or the programme 'Future Urban Greenspace' in Germany), inviting match-funding by other organisations;
- Encourage partnerships between different types of organisations and sectors using voluntary instruments (e.g., City Deals or Green Deals in The Netherlands) around innovative governance, business models or technologies supporting nature-based solutions development;
- Introduce new regulation targeting the urban development sector to provide more equitable access of citizens to high-quality urban greenery (e.g. green space accessibility benchmarks or Green Space Area factor);

- Update public procurement or tendering regulation to reward proposals that deliver (multiple) social/sustainability value(s) and/or specifically require the integration of urban nature-based solutions.

In addition to these approaches, governments can introduce visions, strategies, authoritative guides or white books, and pledges outlining the potential of nature-based solutions to economic regeneration. These can come in different shapes and forms. For example, Sweden introduced a 'National Urban Development Strategy on Liveable Cities', calling for the efficient use of land where people and greenery need to be prioritised. In Germany, an authoritative guide was published on Urban Green Spaces listing a broad range of ambitions, including integrated planning and improved environmental justice, along with a range of potential actions to help achieve this (e.g. portals for knowledge sharing). The city of Barcelona involved the private and third sector by developing a joint pledge to sustainable development (Barcelona's Citizen Commitment to Sustainability 2012-2022), including targets relevant to effective coordination, renaturalising the city and an economy accounting for social and environmental costs. At the EU level, there is potential in introducing nature-based solutions as part of the requirements of the ERDF Operational Programmes and in the European Green Deal.

WHAT IS NEEDED TO ACTIVATE THIS PATHWAY?



NRW Green Infrastructure funding in Germany



In the 2014-2020 period, a German federal state and the largest metropolitan area of the country (North Rhine Westphalia - NRW), provided a €88 million funding package for urban green infrastructure development, drawing on European (joint ERDF, EAFRD and ESF 'Strong Quarters - Strong People' call) and state funding. The fund is specifically targeted at employing urban green infrastructure to combat poverty and social exclusion. The 11 winning projects within the state all prepared 'integrated action plans', resulting in the planned development of green infrastructure in urban areas that are socio-economically disadvantaged and suffer from a negative stigma. Eligible applicants included municipalities and regional associations, providing match funding to a level which is set based on their financial circumstances.

(Photo credit: Hade Dorst)

PATHWAY 2: Develop data, evidence and valuation models to attract investment

The development and analysis of data sets along with valuation tools can support the investment in urban nature-based solutions based on their evidence-based contribution to economic regeneration. Some types of evidence for economic regeneration, such as number of jobs created, level of private investment attracted or housing prices can be obtained quite easily, whereas aspects such as quality of life or reduced stress levels are much harder to measure (Hemphill et al., 2004). Moreover, it is challenging to isolate the impact of nature-based solutions on economic regeneration from that of other interventions and such impacts may materialise only over long time horizons.

To address these challenges, we propose the development of evidence, (big) data and valuation models to improve the assessment of urban nature-based solutions for economic regeneration. We suggest a focus in particular on the multiple values offered by urban nature-based solutions in relation to investment in buildings and grey infrastructure. Initiatives aimed at collecting evidence to improve the climate resilience of cities are promising in this regard. For example, the regional Investment Bank in Berlin (IBB) developed green roof subsidies to address excessive heat and flooding. The targeting of these subsidies is based on data that shows which regions in the city are most exposed (disadvantaged) due to these climate effects.

Likewise, our research identified a LIFE project in Spain that aims to demonstrate how school greening contributes to combating excessive heat. This project (LIFE-My building is Green) develops evidence through monitoring of how building-integrated greening for schools can combat the heat island effect. Such knowledge could be used to support economic regeneration as minorities and poorer citizens are often hit hardest by excessive heat in cities, resulting negative effects on health and productivity (Goodman et al., 2008).

The insurance industry could act as a key stakeholder in developing and applying valuation metrics and evidence for the benefits of urban nature. In doing so, they could better protect their portfolio against the risks of climate change. For example, the Dutch insurance firm Achmea co-developed BlueLabel, a model showing flooding vulnerability down to property level (see example in box below). Insight into such damage data could legitimise investment in nature-based solutions for disadvantaged/affected areas.

An example of a valuation tool for urban nature-based solutions is the 'Green Benefit Planner' (GroeneBaten Planner), which was developed in The Netherlands.¹ It provides an estimate of the monetary value associated with nature-based solutions, making it easier to include these into investment decisions. When city planners and investors are informed about these added benefits, they could be more likely to support and initiate nature-based solutions, especially in a dense city with high opportunity costs for green space.

WHAT IS NEEDED TO ACTIVATE THIS PATHWAY?



¹ <https://www.atlasnatuurlijkkapitaal.nl/nieuws/waarden-in-groen>

Providing evidence of climate risk through BlueLabel



BlueLabel is a digital climate vulnerability scan created by the Dutch insurance firm Achmea, together with Royal HaskoningDHV and Nelen & Schuurmans. It provides detailed information about the risk of heat, drought and flooding at a building, street and infrastructure level. Climate change increases the risk of flooding and water stress in the Netherlands. BlueLabel identifies and measures risks associated with floods, drought and heat and thus supports making better risk assessments to drive decisions around investment management and capital expenditure.

Through BlueLabel, the insurance firm Achmea shares their damage cost data to support intelligent risk reduction investments, identifying urban areas that are disadvantaged from a flood risk perspective. Through improved awareness, the potential value of urban nature-based solutions for flood-prone, disadvantaged areas could increase. Nature-based drainage systems could increase the resilience of these disadvantaged areas.

(Photo credit: <https://bluelabel.net/En/>)

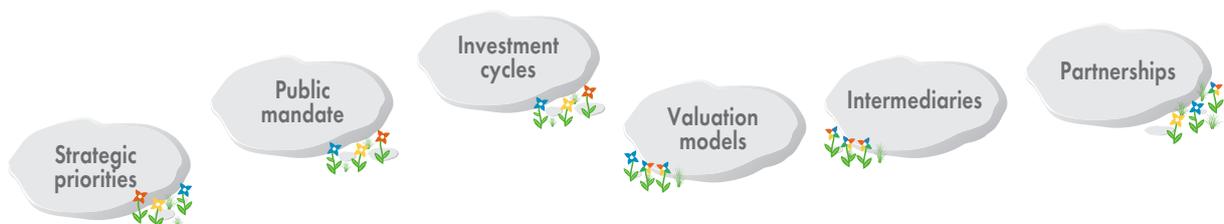
PATHWAY 3: Seize opportunities for implementing nature-based solutions as part of related policy paradigms

In future years, significant investment in urban sustainability measures relevant to economic regeneration is likely to be made as part of policy ambitions around climate adaptation, the circular economy, sustainable housing, public health and mobility. Nature-based solutions provide various benefits and therefore could deliver upon multiple of these policy goals simultaneously in a cost-effective way. Doing so, investment in nature-based solutions for economic regeneration could be leveraged from different policy domains at the same time.

For example, areas with lower resilience to climate change are likely to be disadvantaged through lower house prices and quality of life. Increasing the climate resilience of such high-risk areas through urban nature-based solutions can also improve their economic vitality. Synergies between policies can also be observed in the Barcelona Superblocks plan, as illustrated in the text box below, addressing issues of mobility along with public health and biodiversity. Furthermore, nature-based solutions could be positioned as a way to make housing projects more affordable (e.g. regarding energy saving, water retention, health, etc.). A key challenge is, however, that a strong policy emphasis on affordable housing without sufficient prioritisation of nature-based solutions could lead to a situation where new housing comes at the expense of urban nature.

To alert stakeholders to the opportunity of investing in nature-based solutions for economic regeneration as part of related policy goals, it is important to emphasise the multi-functionality of nature-based solutions. This can be done by developing better evidence through valuation tools (Pathway 2) or improving awareness through information sharing, new organisational forms bridging institutional silos and improved public-private partnership working (Pathway 1). It is therefore important for such efforts to be aimed at highlighting the cost-effectiveness of nature-based solutions through avoided costs, improved site functioning, reduced climate risk, and increased property value.

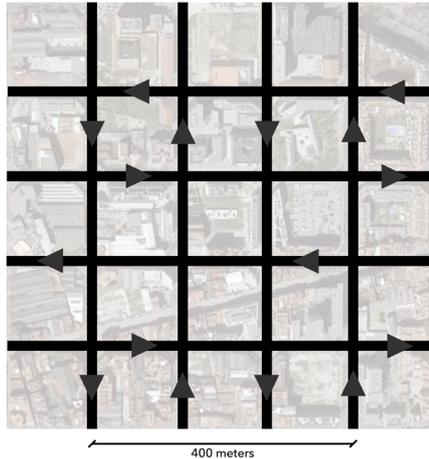
WHAT IS NEEDED TO ACTIVATE THIS PATHWAY?



Barcelona Superblocks

Road hierarchy in the new Superblock model

CURRENT SITUATION

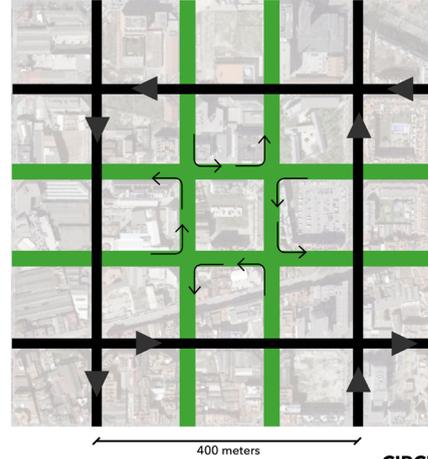


Basic network: 50 km/h



SOLE RIGHT IN STREET SPACE: MOBILITY
HIGHEST AIM: PEDESTRIAN.

SUPERBLOCK MODEL



Local network: 10 km/h



EXERCISE ALL THE RIGHTS THAT THE CITY OFFERS.
HIGHEST AIM: ACTIVE CITIZEN.

**CIRCULATING
VEHICLES DO
NOT PASS
THROUGH**

In response to increasing concern about public health and well-being in the expanding city of Barcelona, the 'Superblocks' (*Superilles*) programme was introduced in 2016. The programme, part of the city's Urban Mobility Plan, sought to change current traffic routes by restricting through traffic to the major roads around neighbourhoods. A key effect of the plan is that it freed up space for urban greening and public meeting places such as playgrounds, which benefit resident health and wellbeing along with social cohesion. It also provided new spaces for local economic activities such as shops and cafés. The plan is also expected to increase property prices in the areas closed off for through traffic. The urban ecology agency (BCN Ecologia) in Barcelona, bringing together the expertise across domains such as biodiversity, urban planning, participation and mobility played a crucial role in developing the plans for the Superblocks.

(Picture credit: BCNEcologia)

PATHWAY 4: Stimulate, and respond to, increased market demand for urban nature-based solutions

There is great potential in engaging more industry stakeholders to support the development of nature-based solutions for economic regeneration. Industry stakeholders – primarily private firms – do not tend to proactively implement nature-based solutions due to scepticism about their benefits and technical feasibility. This is partly due to a lack of knowledge of, and experience with, urban nature-based solutions, matched with a tendency to look for technical solutions to sustainability problems.

The key to more industry investment is to emphasise relevant values that nature-based solutions generate, both to the industry itself and to potential buyers of real estate. Demand can be increased by developing new neighbourhoods including nature-based solutions providing qualities such as recreation, aesthetics and quality of life desired by potential homeowners and other relevant stakeholders. In order to help facilitate change in the urban development industry, there is a need for demonstration and knowledge sharing around the potential of urban nature-based solutions for urban regeneration and, along with that, increasing the value of land and real estate. Stakeholders that could take up this role are NGOs, stakeholder and sectoral networks (e.g., Rooftop Revolution in the Netherlands). Certification schemes (see example of the ‘Building with Nature’ scheme below) can also contribute to increased demand for nature-based solutions in urban development.

The effectiveness of knowledge sharing efforts targeting different stakeholders in the urban development industry hinges on a good understanding of what drives them. For instance, housing associations are semi-public entities with the mission to serve the public social and economic interest. In that role, they receive tax discounts and can develop real estate at lower cost than commercial real estate developers. Nature-based solutions are likely to improve the quality of life of their tenants, which tend to be people with lower incomes. For that reason, they are likely to show an interest in nature-based solutions when presented as an intervention for improved liveability, health and well-being, and the provision of local jobs. A commercial developer, however, is likely more sensitive to arguments focusing on customer demand for particular qualities associated with nature-based solutions that are in high demand, which may increase property value.

There is some evidence suggesting that the increased demand for nature-based solutions and the values these generate is stimulating their supply. For example, the Hungarian start-up Biopolis is developing nature-based sewage treatment systems across Europe, while a coalition of players within the Dutch roofing sector is actively exploring market opportunities around green roofs. If a green reputation makes ‘business sense’ because of local demand (or demand-stimulating policy measures such as tax reforms), this could lead to more industry actors specialising in nature-based solutions development, possibly leading to more local jobs, a healthier living environment and economic prosperity.

WHAT IS NEEDED TO ACTIVATE THIS PATHWAY?



The 'Building with Nature' accreditation scheme for developing nature-based solutions markets



Building with Nature is a new accreditation scheme for green infrastructure in urban development used across the United Kingdom. Developed by Gloucestershire Wildlife Trust and the University of the West of England (Bristol), with support from Innovate UK (UK Research and Innovation, sponsored by the Department of Business, Energy, Innovation and Industrial Strategy) and the Natural Environment Research Council, it delivers a framework of quality standards for urban greening, an assessment and accreditation service, and a national award to recognise the design and delivery of high quality green infrastructure. The scheme has been designed to be applicable to both physical development – developers can apply to have their development assessed and accredited; and strategic planning documentation - planners can apply to have their policy documents assessed and accredited. Although it is a voluntary standard, local governments have in some cases been requiring a Building with Nature Accreditation for new urban development, thus stimulating demand. Some building companies have also turned to the scheme to achieve a competitive advantage. Doing so they are more likely to meet green infrastructure regulation, which reduces planning uncertainty and may accelerate the process of getting planning permission.

(Picture credit: Building with Nature)

CONCLUSION

Nature-based solutions have clear potential to contribute to economic regeneration, both in restoring economic vitality and providing attractive places to live and work. In this report we identify four promising pathways, and stepping stones to activate these, to stimulate the mainstreaming of nature-based solutions for economic regeneration.

Pathway 1: Policy measures to increase stakeholder awareness and the creation of partnerships

Pathway 2: Develop data, evidence and valuation models to encourage investment

Pathway 3: Seize opportunities for implementing nature-based solutions as part of related policy paradigms

Pathway 4: Stimulate, and respond to, increased market demand for urban nature-based solutions

These pathways reinforce each other and include some core interventions that are fundamental for building strong pathways for nature-based solutions, such as the creating of partnerships and improving data and monitoring. No one pathway will be sufficient on its own for mainstreaming nature-based solutions, rather they offer complimentary routes that can be taken together to enable economic regeneration.

While the relevance of these pathways to specific urban contexts will vary, the underlying stepping stones can be applied in diverse settings. We encourage you to use these resources to explore how working with stakeholders and communities you can take the next steps together for mainstreaming economic regeneration through action at national and local levels.

We end with the note that the relationship between nature-based solutions and economic regeneration is not by a positive one. For example, nature-based solutions can compete for space with other vital urban functions. We found that nature-based solutions development could be at odds with the provision of affordable housing that sometimes accompanies economic regeneration projects; nature-based solutions and housing were seen to compete for the same, increasingly scarce, urban space. Second, urban greening can in some cases lead to (green) gentrification and the displacement of vulnerable citizens instead of balanced inclusive economic growth (Anguelovski et al., 2018). A third concern is that positioning nature-based solutions as an economic asset might invite greenwashing strategies, which comes at the expense of social and ecological co-benefits of nature-based solutions. Therefore, investing in economic regeneration should always be accompanied by an effort to increase equity of citizens' access to nature-based solutions and other types of amenities and services (e.g. housing, health centres), the balance of which needs to be monitored over time.

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Mainstreaming Nature Based Solutions

Promising Pathways for Sustainability Goals



The NATURVATION project uncovered specific pathways that advance Nature Based Solutions and address challenges as diverse as climate change, biodiversity, social inclusion, and economic regeneration. Each pathway is made up of stepping stones, which are summarised in a set of 20 briefing cards. The stepping stone highlight actions in the realms of either policy, finance, or urban development, as well as real-world examples collected during research in the UK, Sweden, the Netherlands, Germany, Spain, Hungary, and at the EU level. Policymakers and others interested in pursuing Nature Based Solutions may select a pathway that aligns with their particular context, and use the designated stepping stones to learn about key actions that will advance that pathway.



Mainstreaming Urban Nature-Based Solutions

Work with investment cycles

Integrating nature-based solutions into building developments and renovations expands the functionality of that infrastructure and reduces costs by drawing on existing budgets. One approach is to identify strategic partners for large green infrastructure projects, as Rooftop Revolution in the Netherlands did with housing corporations planning roof renovations. Roofing firms may also opt to work with homeowners associations to increase the scale of the green roof investment. Water utilities provide a similar opportunity in the UK, where there is increased investment in sustainable drainage systems and flexibility in the financing of infrastructure investments. Public infrastructure providers can require greening or water management in agreements with developers. The Swedish Transport Administration developed guidelines that articulate the integration of ecosystem services into transportation investments.



Municipal investment in urban infrastructure in Sweden offers a substantial opportunity for synergies and cost savings through multi-functional infrastructure that delivers on climate adaptation, mitigation, and ecosystem services. The government articulated that urban greenery and ecosystem services must be integrated into the planning, building and administration of Swedish cities by 2025. Significant investment in transportation, public housing, culture, and recreation flows through local governments, supported by revenue from taxes. Green streetscapes can be pursued through transportation budgets, for example, rather than environmental protection budgets. Overcoming the perceived conflict between policies that promote dense urban infrastructure and policies on urban greening will help unlock public infrastructure investment for nature-based solutions.



Mainstreaming Nature Based Solutions

Promising Pathways for Sustainability Goals



Climate Change

With the race to reach 'net zero' targets and build back resilience, nature-based solutions are increasingly seen as a critical tool for responding to climate change. Whether by cooling cities and reducing energy demand or providing new ways of managing flooding, nature-based solutions are gaining support globally. We identify four pathways through which mainstreaming is taking place: recognising their potential as a climate solution; investing to reduce climate risk; integrating climate action with other sustainability goals; and learning through practical experience on the ground.

Biodiversity

As the world seeks to develop a transformative agenda for biodiversity over the next decade, we explore how mainstreaming nature-based solutions can enable cities to conserve, restore and thrive with nature. Four pathways are identified based on regulating for 'no net loss' of biodiversity, developing co-governance arrangements for public-private finance, integrating biodiversity with existing sustainability priorities, and integrating biodiversity into urban development and the built environment.

Social Inclusion

Nature Based Solutions such as new parks, rooftop gardens, and tree-lined streets play an important role in improving wellbeing and enhancing community spaces. However, the potential for gentrification and displacement of lower income groups means that these solutions must actively foster social inclusion and tackle inequalities. We identify three pathways that strengthen social inclusion: broadening community participation, securing genuine political commitment and policies that support social inclusion, and pursuing social inclusion measures as a way of achieving health and wellbeing.

Economic Regeneration

Nature-based solutions can create economic regeneration through increasing economic activity and employment and by improving the quality of life. Nature-based solutions both directly contribute to economic vitality and well-being, and leverage new forms of economic activity in cities that generate opportunities. Mainstreaming for economic regeneration takes place through developing partnerships for investment, increasing our knowledge of their economic value, seizing opportunities emerging from other sustainability initiatives, and stimulating market demand for nature-based solutions.

Sustainable Development Goals

To achieve the SDGs, urban development must prepare for growing populations while also creating sustainable and inclusive cities. Nature Based Solutions can address a range of sustainability goals from climate resilience to health to economic development. For example, green space provides cooling, reduces pollutants, and encourages physical activity. Pathways that engage urban Nature Based Solutions to address SDGs include: involving diverse actors, strengthening local engagement, addressing multiple sustainability objectives simultaneously, establishing institutional arrangements that integrate sustainable development, and monitoring and assessing sustainable urban transformation.



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