4. TRANSITION TO SUSTAINABLE CITIES

4.1. WHAT CITIES NEED TO TRANSFORM WITH NATURE-BASED SOLUTIONS

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Key messages

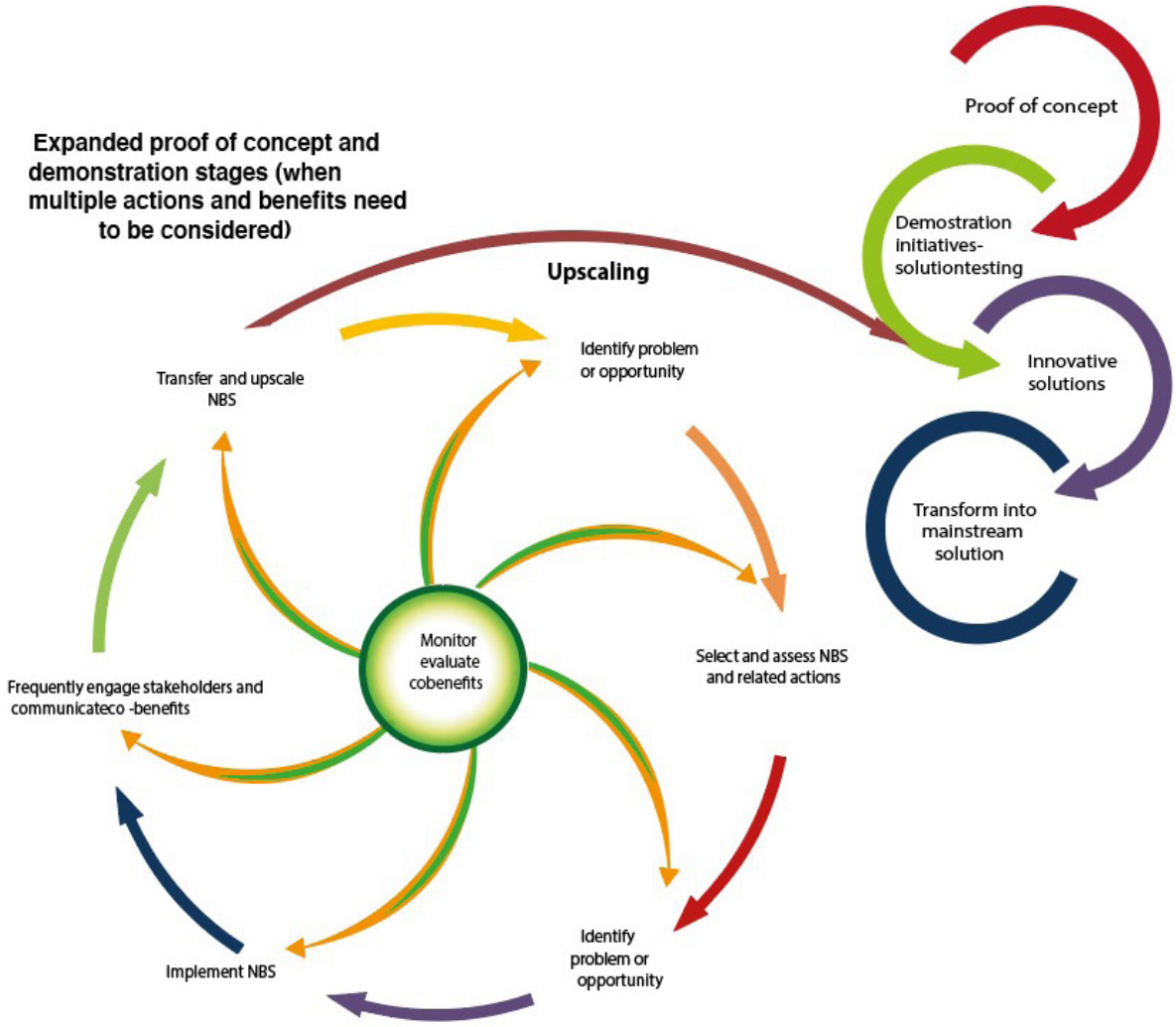
- Urban planners need to adopt system thinking and solutions-oriented thinking to identify all co-benefits of NBS during the co-design and co-implementation phases.
- Urban planners need to invest in negotiation and collaboration skills to break down the silos in cities and plan NBS as urban living labs for learning by doing in achieving sustainability and urban resilience.
- For scaling up NBS, cities should create institutional spaces that enable collaborative learning through partnerships. Institutional spaces that enable collaborative learning include large-scale research programmes, thematic city networks, and knowledge-sharing and advocacy platforms.

Introduction

Cities are the places where we will be able to speed up or to stall transformations to urban sustainability, as they are at the forefront of action on climate change, inequality and a shifting work landscape. While there is a lot of action and mobilisation of knowledge and social capital in cities, it is definitely not an easy battle to transform urban lifestyles, infrastructures and institutions. One approach being advocated to address multiple social, economic and environmental challenges is the scaled-up implementation of NBS in cities. NBS are systemic solutions that harness the power, flexibility and inherent innovation capacity of nature to restore, revitalise and sustain ecosystems in cities and regions, producing multiple benefits. However, solving contemporary problems with the use of NBS may require changes in previously applied approaches. This chapter explores what can be done to accelerate the diffusion and scale-up of NBS through an examination of policy needs. Blending the themes of knowledge, skills and partnerships in relation to the NBS policy cycle ([149]), we discuss how to transition from science to policy and practice (Figure 47).

[149] Raymond et al., 2017.

Figure 47 – NBS policy cycle (source: Raymond et al., 2017)



Knowledge needs for implementing nature-based solutions

We identify two knowledge types that are required to implement NBS: **systems thinking** as a basis for understanding the complexity of NBS and their multiple benefits; and **solutions-oriented thinking**, which requires a shift from analysing and identifying the problem to (co-)designing, monitoring and evaluating systemic solutions in practice. In every phase of the NBS implementation cycle, these two knowledge needs have different operational forms.

- During the first two phases of the NBS-planning cycle (identifying the challenge or opportunity and selecting the type of NBS), knowledge of systems and their susceptibility to change with NBS is important, as is their inherent adaptability ([150]). This also relates to the knowledge needed to select the type of NBS to better provide business opportunities.

- For designing the implementation of NBS, a knowledge need concerns overarching design principles for NBS that can be adapted to locally appropriate solutions, and guide them and associated institutional embedding

[150] Krauze and Wagner, 2019.

to operationalise solutions-oriented thinking. This knowledge need is intensified by the existence of rich information about NBS ([151]) and the need to have design frameworks that are based on evidence ([152]).

- Another identifiable knowledge need is in selecting appropriate monitoring and evaluation frameworks for the multiple impacts of NBS, to build the policy learning and social learning from the evaluation of multiple benefits of NBS compared with grey infrastructure. A weighted evaluation of NBS that also considers wider social benefits such as social cohesion and social justice is much needed ([153]). Recent research on ecosystem services evaluation has often neglected this knowledge gap and pointed to the conceptual or semantic challenges in valuing ecosystem services and NBS ([154]).

- For the transfer and upscaling of NBS, there is a lack of knowledge on how to transform NBS into business cases, which is creating a barrier to their mainstreaming. We infer that knowledge of ways to think about, design and operate a nature-based solution as a valid business case, and of approaches to doing so, is a known unknown to cities and is also an appealing prospect for any city, as it can turn an investment into a sustainable project with socioeconomic impact.

Skills required for planning and implementing nature-based solutions in cities

Research on urban governance and environmental management for NBS has underspecified what the required skills are for planning and implementing large-scale systemic urban solutions. We propose that two key skills are required throughout the planning cycle: negotiation and collaboration. These are essential for facilitating the initiation and maintenance of partnerships with diverse urban actors in every phase of implementing NBS. Additional skills have been identified as essential for specific phases:

- for the phase of identifying the challenge to or opportunity for NBS, planners require communication skills to engage with citizens and businesses in order to co-create the narratives, understandings and contextualised problem framings that will resonate in the (co-)design of NBS;

- for the phase of selecting the type of nature-based solution, it is important that urban planners have ecosystem literacy ([155]) and analytical skills to understand, compare and assess the suitability of different types of nature-based solution in relation to implementation opportunities in a specific location ([156]);

- for the phases of designing and implementing NBS, institutional leadership skills are important, together with negotiation skills, to enable planners to navigate institutional complexity ([157]) and forge interdepartmental alliances.

[151] Blau et al., 2018.
[152] Dryzek et al., 2013.
[153] Keeler et al., 2019.
[154] Small et al., 2017.
[155] Davies and Lafortezza, 2019.
[156] Albert et al., 2018.
[157] Santoro et al., 2019.

Partnerships and collaborative governance needs for implementing nature-based solutions

Forging partnerships with civil society, local businesses and knowledge actors has been identified as a policy need for realising NBS. With environmental, ecological, social and economic benefits all achievable through the appropriate design and management of NBS, partnerships across communities of interest and practice must be engaged. This includes such diverse actors as developers, local/regional authorities, ecologists, architects, landscape architects, governmental public bodies responsible for the natural environment, site managers and infrastructure managers ([158]). The plurality of partnerships that bring about NBS in cities is also explored in the present book ([159]), showcasing the importance of collaborative governance for initiating and implementing NBS in cities. However, it is important to note that the type of partnership is of the essence for addressing policy needs for the implementation of NBS. Partnerships that are co-opted, often temporary and location-specific, are also found to be vital for progressing the practice of NBS.

Case study: Glasgow's policy needs for realising nature-based solutions

Glasgow is the largest city in Scotland (United Kingdom) (population 590 000). As a result of post-industrial decline and previous housing policies, Glasgow has a large amount of vacant and derelict land within the city boundaries, and neighbourhoods with significant levels of deprivation. Glasgow has successful examples of local NBS, and there is a new strategic focus (in the Glasgow City Region) on surface water management through integrating SuDS into new developments. Glasgow's approach to developing a scaled-up NBS exemplar is underpinned by its open space strategy, and accompanying local context analyses. The strategy is a cross-cutting strategic document, intended to offer a coherent vision and coordinate the various open space responsibilities to ensure well-managed, well-located and well-connected open spaces that operate as part of a wider green network and deliver multifunctional benefits for climate protection and reconnection to nature. The innovation comes at policy and implementation levels, to overcome some of the barriers to transitioning to the large-scale implementation of NBS. A historical lack of community experience in socio-innovation has highlighted the need to find new ways to form and sustain partnerships with communities, especially in flood-prone areas, with a need to educate communities about the multiple benefits of NBS. There is also a need to build capacity in relation to innovation and entrepreneurship around NBS, to capture multiple opportunities such as increased biodiversity, high-quality open space and improved health outcomes. This implies new ways of working collaboratively both internally within the city administration and with external stakeholders – and recontextualising this latter group as partners in NBS development. This new collaborative approach is being developed in specific locations in the city, to bridge the strategic and systemic thinking associated with scaled-up NBS and the implementation of context-specific interventions to achieve multiple benefits.

([158]) Connop et al., 2016; Nesshöver et al., 2017; Lopez-Rodriguez et al., 2017.

([159]) See Chapter 4.2 on governance.

Figure 48 – An overview of the different urban agendas that connect with the NBS exemplar in Glasgow (source: figure 3, page 8 from Glasgow's Open space Strategy, Glasgow city Council 2020, reproduced with permission)

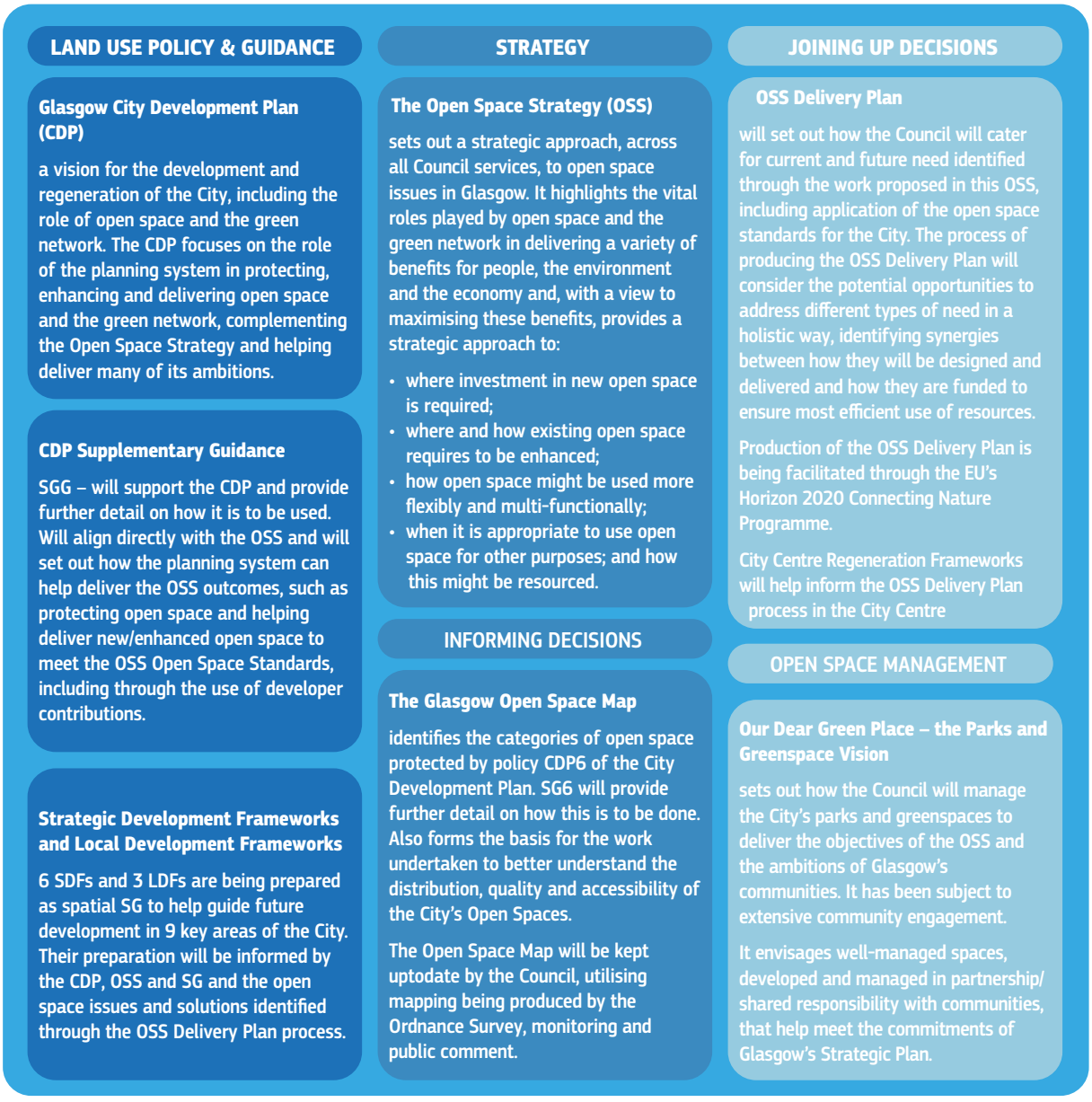


Figure 49 – An overview of the different needs and future uses identified through a collaborative process with urban stakeholders to address the open space vision through the NBS exemplar in Glasgow (source: figure 6, page 20 from Glasgow's Open space Strategy, Glasgow city Council 2020, reproduced with permission)

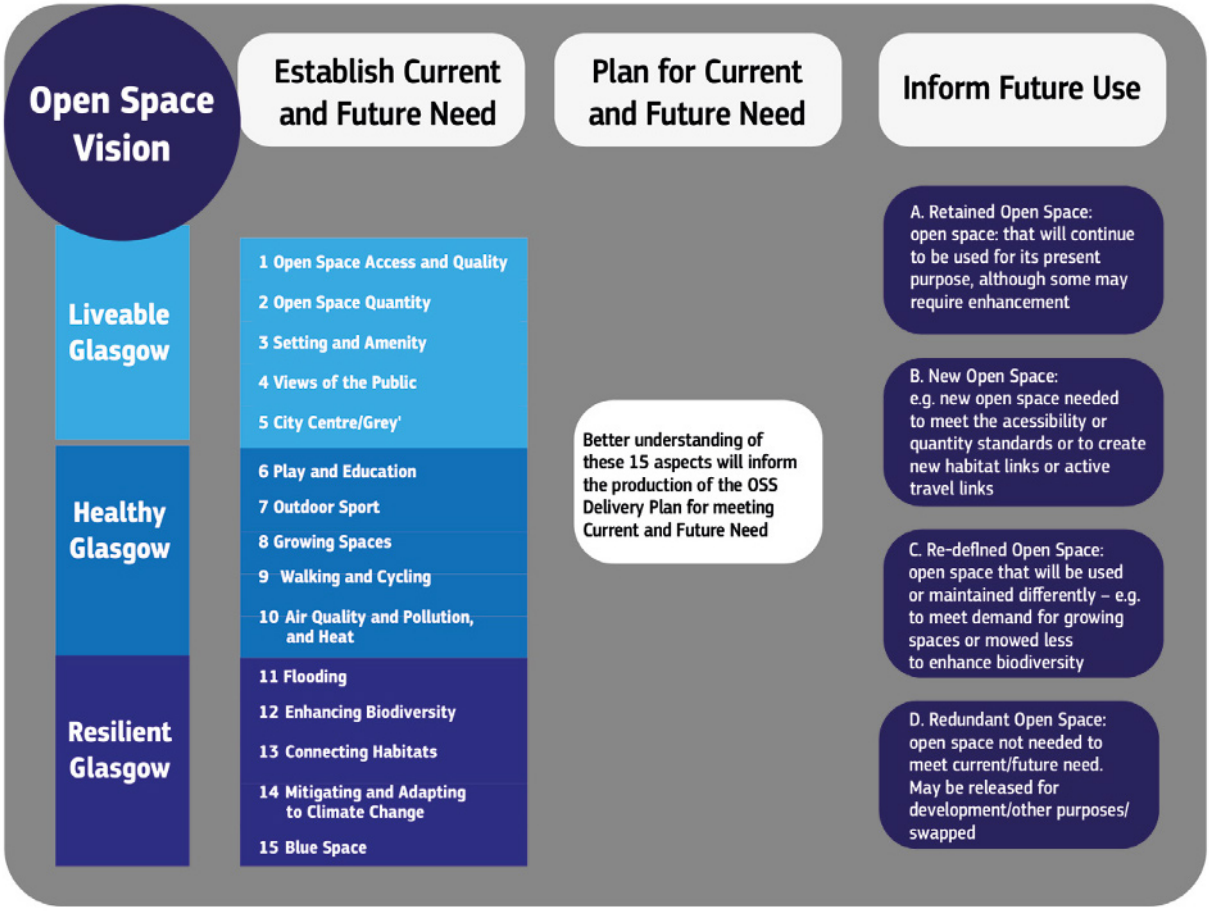
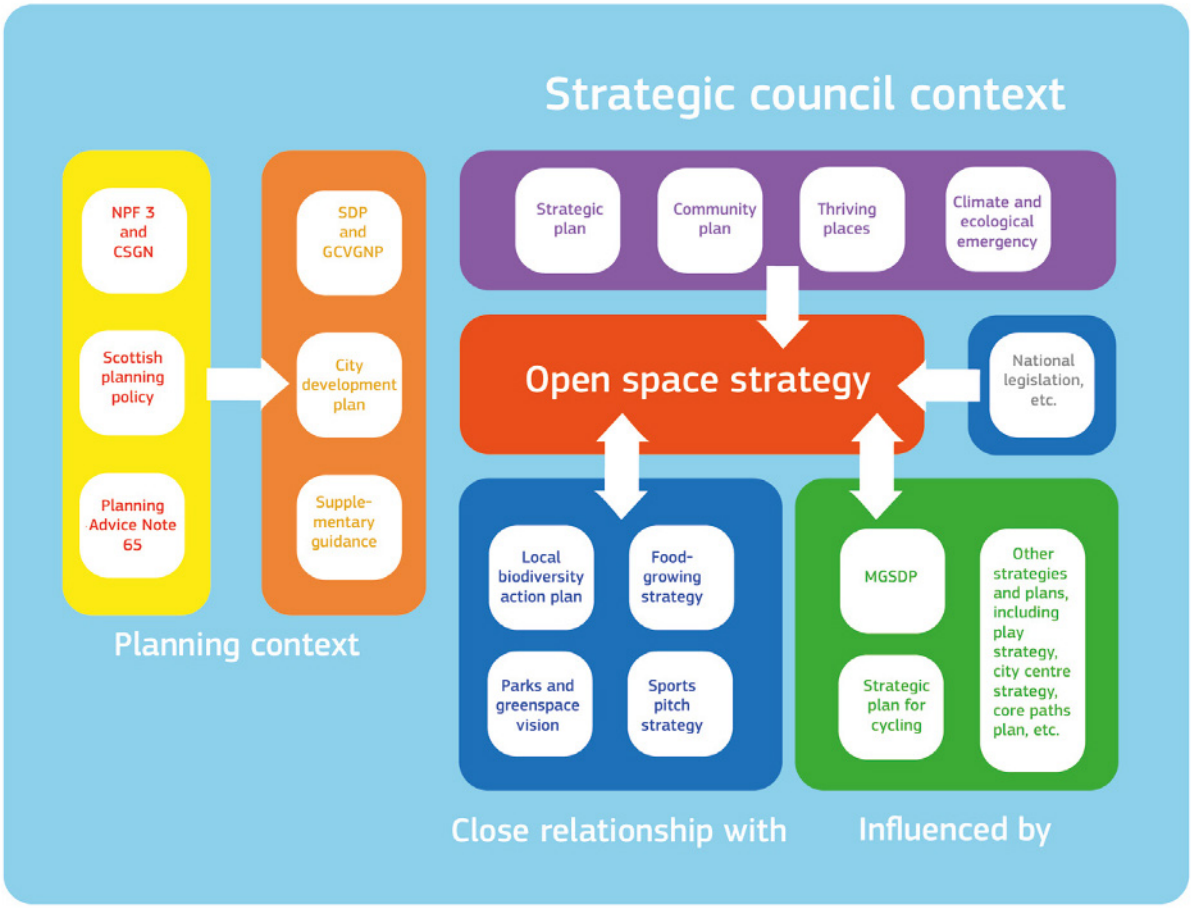


Figure 50 – A mapping of strategic partnerships that lays out the different contexts to which the open space strategy connects for its implementation in Glasgow (source: figure 4, page 9 from Glasgow's Open space Strategy, Glasgow city Council 2020, reproduced with permission)



Conclusions

Our analysis indicates that bridging processes or approaches are required that simultaneously address knowledge needs, required skills, establishing partnerships and ensuring political commitment. We propose three such bridging processes as suggestions for cities to address their policy needs.

First, to enrich cities' knowledge base for NBS and to advance their skills (vocational, professional and networking skills), establishing and investing in targeted and tailored capacity-building programmes are recommended. Urban intermediary actors, such as ICLEI – Local Governments for Sustainability, the C40 Cities Climate Leadership Group, United Cities and Local Governments, and IUCN, that pioneer capacity-building programmes and urban charters for NBS are well placed to tailor their programmes to city needs ([160]).

Second, we propose that cities create institutional spaces that enable collaborative learning through partnerships. Institutional spaces that enable collaborative learning include large-scale research programmes ([161]), thematic city networks ([162]), and knowledge-sharing and advocacy platforms. These institutional spaces can turn the

[160] Frantzeskaki et al., 2019
[161] Frantzeskaki and Kabisch, 2016.
[162] Frantzeskaki, 2019.

cities into a learning-driven urban living lab that connects and enables innovation with and through NBS ([163]). In this way, the knowledge gaps of cities can be addressed through learning alliances or other knowledge-driven partnerships while simultaneously nurturing collaborative skills and communication skills for better planning and implementation of NBS.

Third, we propose that cities accelerate institutional and governance innovations that promote evidence-based policy and urban planning by linking knowledge of NBS to political commitment and decision-making. To promote and accelerate institutional innovations for NBS, urban planners need to act as change agents or policy entrepreneurs, adopting bridging narratives, and creating spaces that enable innovation and the production of evidence to inform multiple urban agendas.

Most importantly, a future proposal for NBS is to accelerate institutional and governance innovations that support systematic evidence of the multiple benefits of NBS and mainstream them as social, economic, environmental and business solutions for sustainable and resilient cities.

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[163] See Section 5 on urban living labs.

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