

TITLE PAGE

Edited Book: Nature-based Solutions and Water Challenges: accelerating the transition to more sustainable Cities (provisional title)

Chapter 21 – What cities need to transform with nature-based solutions?

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PICTURE:



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Key Messages for Cities

- Urban planners need to acquire system's thinking and solutions-oriented thinking for identifying all co-benefits of nature-based solutions during the co-design and co-implementation phases.
- Urban planners need to invest in negotiation and collaboration skills for breaking open the silos in cities and plan nature-based solutions as urban living labs for learning-by-doing in achieving sustainability and urban resilience.
- For scaling up nature-based solutions, cities should create institutional spaces that enable collaborative learning through partnerships. Institutional spaces that enable collaborative learning include large-scale research programs, 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 being the forefronts for action for climate change, inequality and a shifting labor/work landscape. While there is lots of action and mobilisation of knowledge and social capital in cities, there 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 nature-based solutions (NBS) in cities. Nature-based solutions 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 nature-based solutions through an examination of policy needs. Blending the themes of knowledge, skills and partnerships in relation to NBS policy cycleⁱ, we discuss how to transition from science to policy and practice.

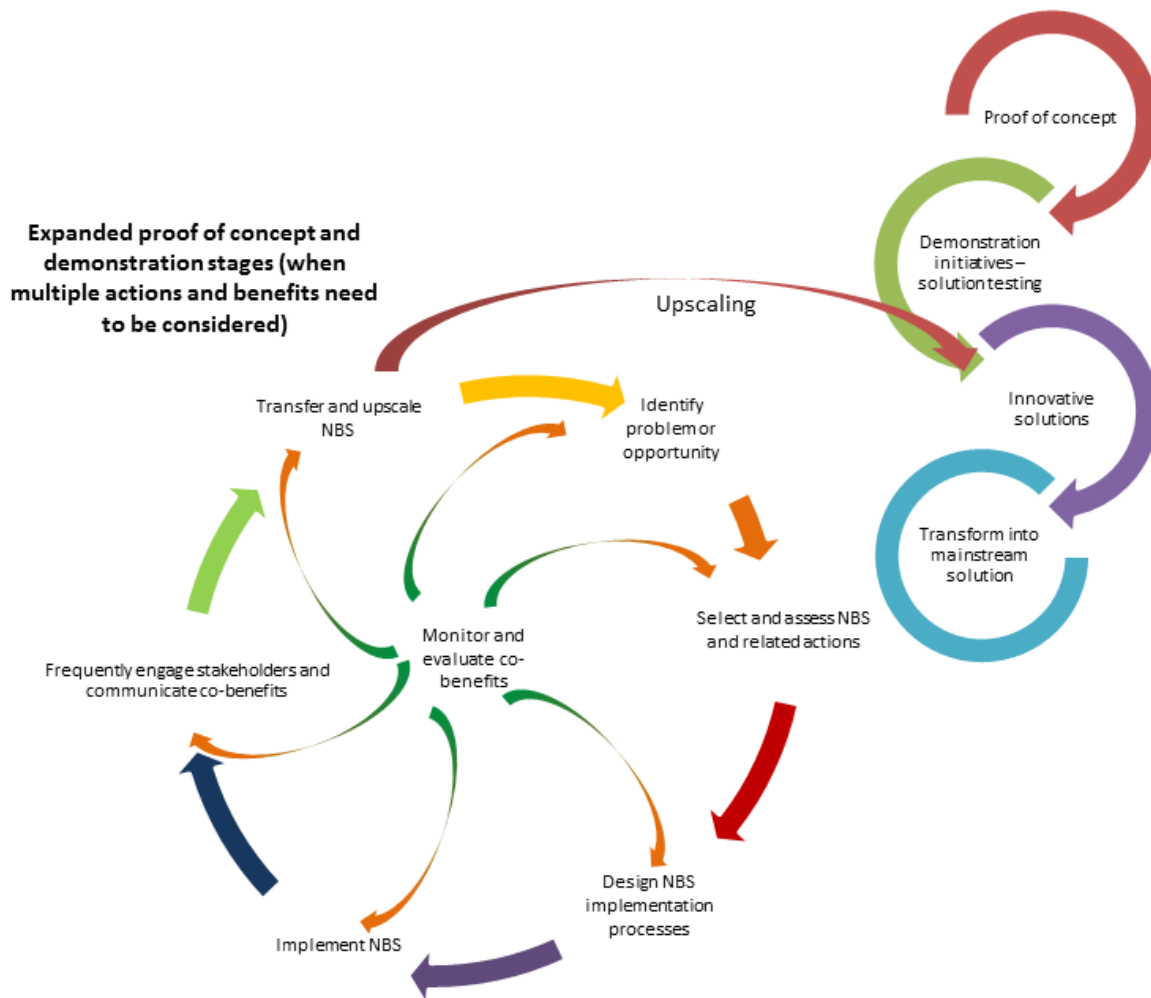


Figure1 : Raymond et al's NBS policy cycle.

Knowledge needs for implementing NBS

We identify two knowledge types that are required to implement NBS: *systems' thinking* knowledge as a basis to understand the complexity of nature-based solutions 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 on systems and on their susceptibility to change with NBS is important, as is their inherent adaptability.ⁱⁱ 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 and guide locally appropriate solutions and

associated institutional embedding to operationalise solutions-oriented thinking. This knowledge need is intensified by the existence of rich information about NBSⁱⁱⁱ and the need to have design frameworks that are evidence-based.^{iv}

- 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 largely needed^v 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 respectively NBS.^{vi}
- 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 on ways and approaches to think, design and operate a NBS as a valid business case is a known unknown to cities and also is an appealing perspective to any city, by turning an investment into a sustainable socio-economic impactful project.

Skills required for planning and implementing NBS 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 that have been identified as essential for specific phases include:

- For the phase of identifying the challenge or opportunity for NBS, planners require communication skills to engage with citizens and businesses in order to co-create the narratives, understandings and contextualized problem framings that will resonate the (co-) design of NBS.
- For the phase of selecting the type of NBS, it is important that urban planners have ecosystem literacy^{vii} and analytical skills to understand, compare and assess suitability of different types of NBS in relation to implementation opportunities in a specific location.^{viii}
- For the phases of designing and implementing NBS, institutional leadership skills are important together with negotiation skills so as to enable planners to navigate institutional complexity^{ix} and forge inter-departmental alliances.

Partnerships and collaborative governance needs for implementing NBS

Forging partnerships with civil society, local businesses and knowledge actors has been identified as a policy need for realizing NBS. With environmental, ecological, social and economic benefits all achievable through 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^x. The plurality of partnerships that bring nature-based solutions in cities is also explored in this book^{xi}, showcasing the importance of collaborative governance for initiating and implementing nature-based solutions

in cities. However, it is important to note that the type of partnership is of essence for addressing policy needs for NBS implementation. Partnerships that are co-opted, often temporary and location-specific, are also found as vital for progressing the practice of NBS.

Case study

Glasgow city's policy needs for realizing nature-based solutions

Glasgow is the largest city in Scotland (UK) (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 neighborhoods with significant levels of deprivation (Glasgow City, 2015). 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 sustainable drainage systems into new developments. Glasgow's approach to developing a scaled up NBS exemplar is underpinned by its Open Space Strategy (OSS), and accompanying Local Context Analyses. The OSS is a cross-cutting strategic document, intended to offer a coherent vision and co-ordinate 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 the policy and implementation level, to overcome some of the barriers to transitioning to large-scale implementation of NBS. A historic 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, quality open space and improved health outcomes. This implies new ways of working collaboratively both internally within the city administration and also with external stakeholders – and how to re-contextualize 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 up-scaled NBS and the implementation of context-specific interventions to achieve multiple benefits.

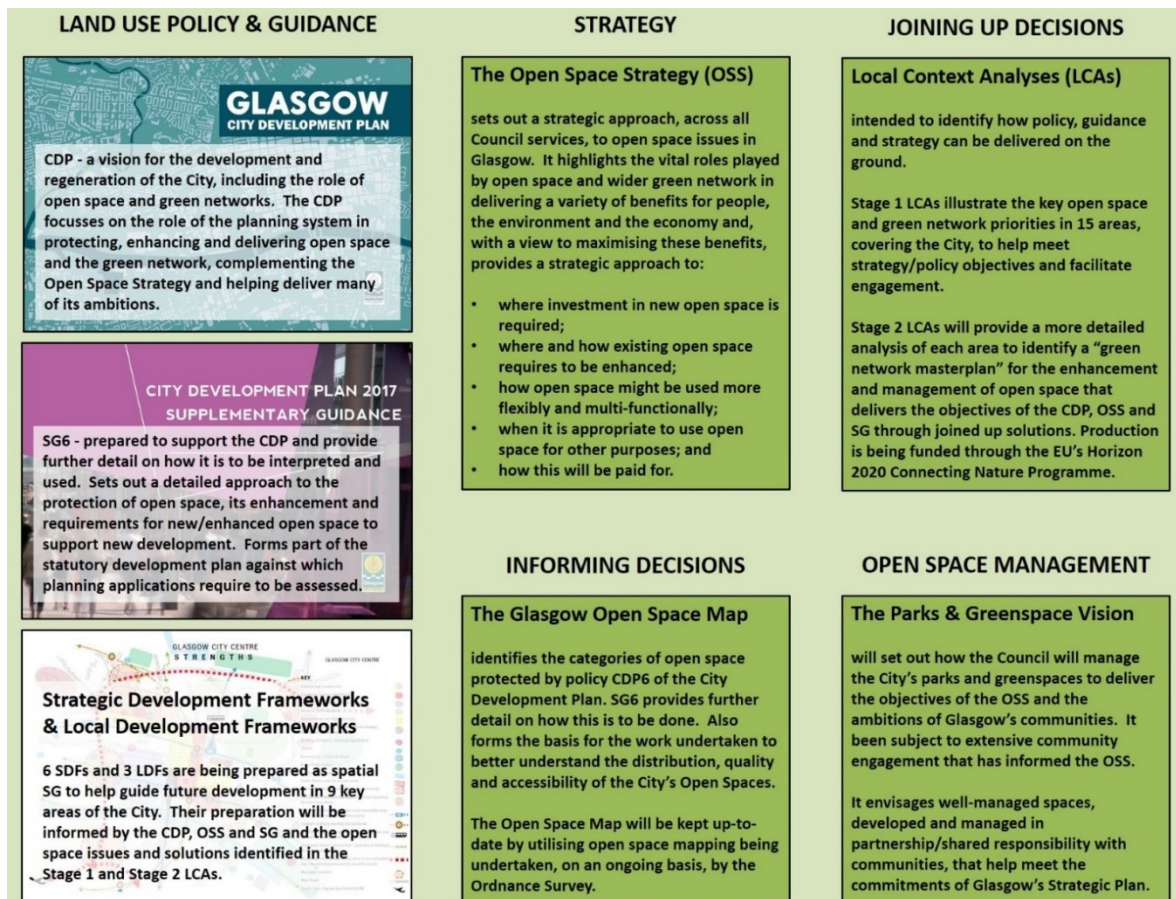


Figure 2: An overview of the different urban agendas that connect to the nature-based solution exemplar in Glasgow City.

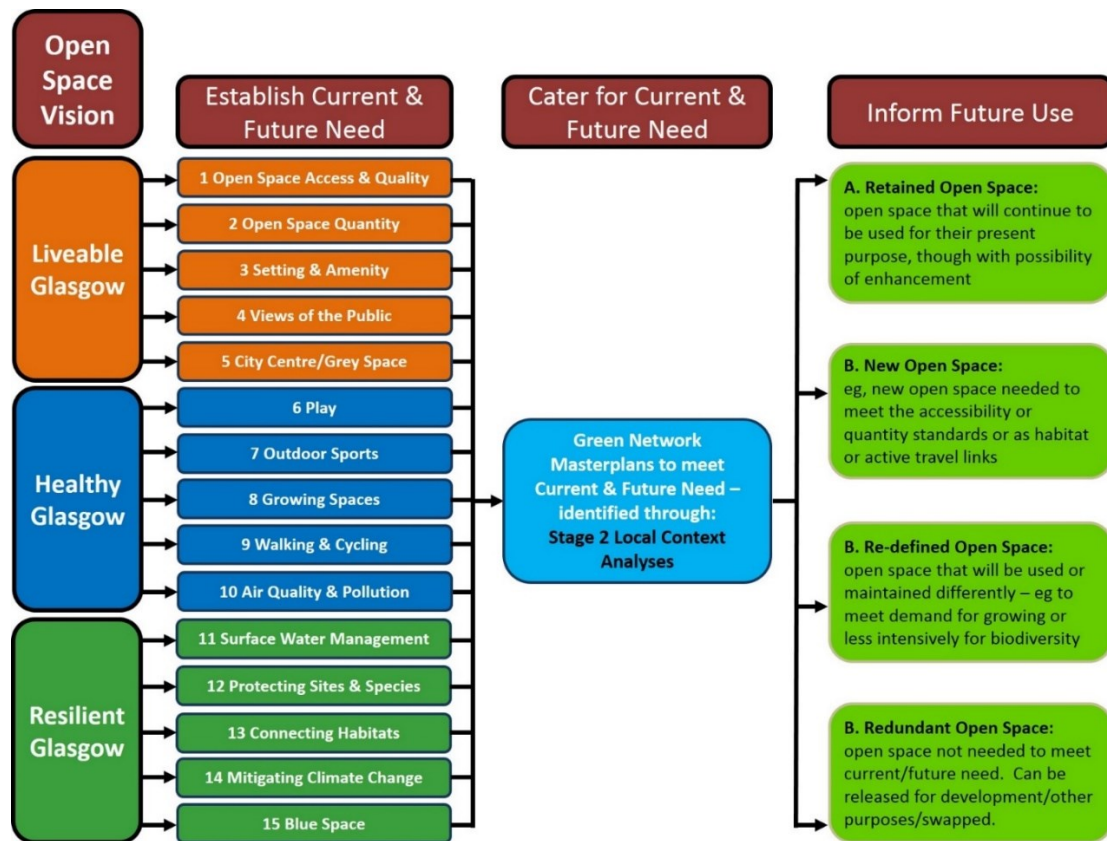


Figure 3: An overview of the different needs and future uses identified through a collaborative process with urban stakeholders to address the Open Space vision through the nature-based solution exemplar in Glasgow.

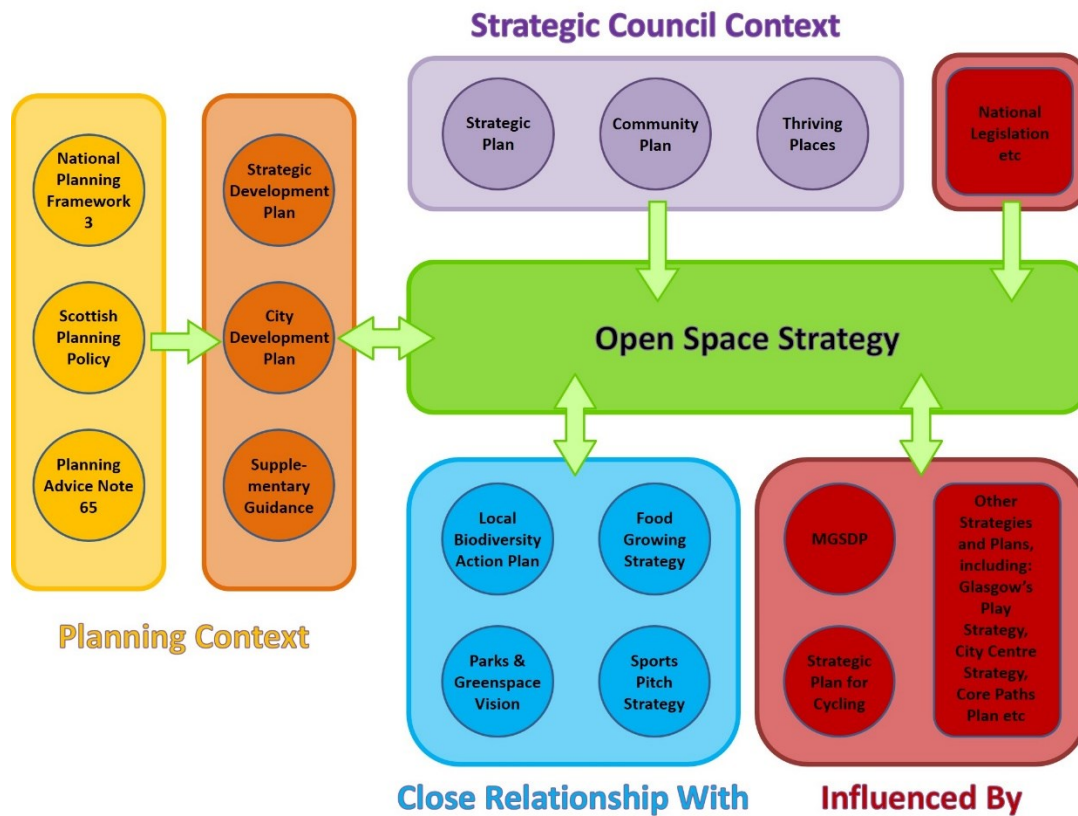


Figure 4: A strategic partnerships mapping that lay-outs the different contexts that the Open Space Strategy connects to for its implementation in Glasgow city.

Conclusions

Our analysis indicates that bridging processes or approaches are required that simultaneously address knowledge needs, required skills, establishing of partnerships and ensuring political commitment. We propose three such bridging processes as suggestions for the 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 programs are recommended. Urban intermediary actors such as ICLEI, C40, UCLG, IUCN that pioneer capacity building programs and urban charters for NBS are well-placed to tailor their programs to city needs.^{xii}

Second, we propose cities to create institutional spaces that enable collaborative learning through partnerships. Institutional spaces that enable collaborative learning include large-scale research programs^{xiii}, thematic city networks^{xiv} and knowledge sharing and advocacy platforms. These institutional spaces can turn the cities into a learning-driven urban living lab that connects and enables innovation with and through nature-based solutions^{xv}. In this way, the knowledge gaps of cities can be addressed through learning alliances or other knowledge-driven partnerships whilst simultaneously nurturing collaborative skills and communication skills for better planning and implementation of nature-based solutions.

Third, we propose 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, creating enabling space for innovation and for evidence to inform multiple urban agendas.

Most importantly, a future proposition for NBS is to accelerate institutional and governance innovations that support systemic 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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