



## DELIVERABLE 6.1 REPORT

**Data on SDG/NUA impacts/potentials linked with investment propositions uploaded to OPPLA**



**CONEXUS**

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# Executive summary

Nature-based solutions (NBS) are actions that aim to protect, conserve, restore, sustainably use, and manage natural and modified ecosystems. They provide benefits for biodiversity and support ecosystem services, while simultaneously generating integrated benefits for the sustainable development of societies and economies.

Building on the UN 2030 Agenda's Sustainable Development Goals (SDGs), in particular *SDG 11 'Sustainable cities and communities'* and the New Urban Agenda (NUA), CONEXUS aims to capture new evidence on the integrated benefits of urban NBS for sustainable development.

Task 6.1 (T6.1) of CONEXUS, 'Capacity-building', led by the European Urban Knowledge Network (EUKN), maps the local contributions of pilot NBS towards SDG targets and NUA goals, giving those two global frameworks local footing and place-based relevance.

This deliverable report presents the findings of T6.1's research, demonstrating the yet untapped potential of NBS as policy instruments to localise sustainable development commitments and address intertwined societal challenges, from the climate and biodiversity crises to rising inequalities and health emergencies. It is meant to accompany seven case studies and city fiches which contextualise the evidence collected on NBS-SDG links.

The research employed a qualitative methodology and a mixed-method approach which relied primarily on secondary research, complemented by action-research methods. It entailed different analysis stages and techniques, including:

- A review of literature, grey literature, white papers, internal CONEXUS documents and other projects' publications;
- The development of a Linking Matrix, whose main outputs are seven city fiches linking local Information Systems to the SDG and NUA frameworks;
- Two participatory workshops to gather feedback on the most exploitable and impactful way to collate findings;
- The co-production of city-specific case studies to contextualise data.

Some limitations of the research were identified in relation to the scope of T6.1 in the project as well as the nature of the topic, namely: a) the time and resources needed to measure and monitor impacts; b) the necessary relativity and partiality of findings; c) context-specificity; d) a missing overview on potential trade-offs of implemented NBS.

The findings presented, along with the developed case studies, attest the multifunctional essence of NBS, which can be summarised in four main points:

1. By using the SDG/NUA frameworks as benchmarks for holistic sustainability, it was possible to evidence the range of co-benefits NBS deliver, spanning policy sectors as well as scales of implementation. Gathered evidence from the real-life pilots creates scope for policy to uptake NBS and scale their integration (horizontally and vertically).



2. Flexible and place-based approaches to SDG localisation could be better promoted by ensuring that monitoring frameworks reflect the typology, objectives, and socio-ecological circumstances of implemented NBS. Most importantly, local NBS measures (i.e. related to biodiversity enhancement), can powerfully complement global ones such as those included in the SDG/NUA monitoring frameworks.
3. Inclusivity and justice concerns should inform the core of NBS intervention and be mainstreamed into all implementation phases, including measuring and monitoring. An important aspect which emerged from linking local Information Systems to the SDGs is that, in order to ‘leave none behind’, both *what* is measured and *how* it is measured counts.
4. Financing NBS upscale remains a critical challenge. More systematically mapping NBS-SDG links can unlock funding opportunities from both the public and private sectors in that: a) it demonstrates benefits for policy sectors which do not traditionally fund biodiversity-related actions, thereby opening possibilities for integrated funding models; b) by evidencing the potential of NBS to be scalable and more bankable.

Lastly, the report highlights four recommendations and areas for further development that could build on D6.1 findings to:

1. Enhance comparability and SDG reporting via NBS monitoring. By developing “living” databases which explicitly report NBS-SDG links, it would be easier to compare NBS impacts among cities (and projects), while also strengthening SDG reporting (i.e. via Voluntary Local and national Reviews).
2. Complement the work done by other CONEXUS tasks such as Task 6.2 *Learning* and T5.3 *Valorise* towards the development of innovative NBS business cases and investment propositions. In this regard, it will be important to map NBS funding sources available via targeting the SDGs as well as matching the results of this research with findings from the cost-benefit analyses of NBS pilots.
3. Integrate the analysis of trade-offs of NBS benefits (including for the SDGs). It is crucial to keep track of potentially negative externalities of NBS interventions and understand the conflictual interactions of SDGs as well as their synergies.
4. Consider the conditions that facilitate the mainstreaming of inclusivity and justice perspectives. Rather than an “afterthought”, these considerations should inform, inspire, and define the very core of NBS intervention from the onset.

In all, T6.1’s research has evidenced both the highly multifunctionality of NBS as well as the scalable nature of their impacts (local-to-global). By linking NBS co-benefits at the local level to integrated impacts for sustainability at the global one, it has recorded the (potential) contributions of CONEXUS pilots to the UN SDGs and NUA thus providing a common language to help Life-Labs a) widen the base for political support and incentivise integration into urban policy and planning; b) engage strategic stakeholders and expand partnerships; c) explore new funding and financing avenues, going beyond traditional NBS financing sectors and mechanisms, via Task 5.3’s businesses cases and investment propositions.

# 1. Introduction

Amid the globally interconnected climate and biodiversity crises, nature-based solutions (NBS) are increasingly being recognised as powerful tools to reduce the severe impacts of climate change, while restoring, protecting, and conserving biodiversity, thereby boosting human and ecosystems' adaptive capacities and overall resilience. Beyond providing critical ecosystem services and environmental benefits, NBS also deliver a series of **integrated benefits** (or *co-benefits*) for people and the economy (Raymond et al, 2017; Díaz et al., 2018; IPBES, 2019; Wild et al, 2020; World Bank, 2022).

In March 2022, the 5<sup>th</sup> Session of the United Nations Environment Assembly (UNEA-5.2) adopted a resolution on NBS (UNEA/EA.5/Res.5) which defines NBS as

actions to protect, conserve, restore, sustainably use, and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic, and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience, and biodiversity benefits (UNEP, 2022, p. 2).

This multilaterally agreed definition, used by UN conventions such as the *Convention on Biological Diversity* (CBD) and *United Nations Framework Convention on Climate Change* (UNFCCC), aligns with the definition officially adopted by the European Commission,<sup>1</sup> which underlines the fundamental role of NBS to 'bring more, and more diverse, nature and natural features and processes into cities, landscapes, and seascapes, through locally adapted, resource- efficient, and systemic interventions' thus benefiting biodiversity (n.d; El Harrak and Lemaitre, 2023).

2020 marked the *UN Decade of Action*<sup>2</sup> to meet the pledge of the 2030 Agenda to accelerate sustainable solutions to the world's biggest challenges, calling upon governments, civil society, businesses, and communities to make the global goals their own. A year later, the proclamation of the *UN Decade on Ecosystem Restoration 2021-2030*<sup>3</sup> highlighted the strong synergies between the restoration of ecosystems and human well-being. It underscored the need to scale-up efforts to prevent, halt, and reverse the degradation of ecosystems worldwide, warning that the objectives encapsulated in the 2030 Agenda are 'unlikely to be met unless ecosystem degradation is stopped and ecosystem restoration is undertaken at the immense scale of hundreds of millions of hectares globally' (UNEP, 2020, p. ii).

A key ambition of CONEXUS is to **capture new evidence on the integrated benefits of urban NBS for sustainable development** by using the framework codified by the UN 2030 Agenda in its 17 Sustainable Development Goals (SDGs), and, via *SDG 11 'Sustainable cities and communities'*, the UN New Urban Agenda (NUA). Demonstrating how NBS can meaningfully contribute to SDG targets and NUA goals, in turn, CONEXUS aims to give those global frameworks local footing and practical, place-based relevance (CONEXUS workplan, pp. 19-20).

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<sup>1</sup> [https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions\\_en](https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions_en)

<sup>2</sup> <https://www.un.org/sustainabledevelopment/decade-of-action/>

<sup>3</sup> See Resolution 73/284 of the United Nations General Assembly (UNGA Resolution A/RES/73/284), adopted on 1 March 2019. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N19/060/16/PDF/N1906016.pdf?OpenElement>

The critical objective of **Task 6.1 Capacity-building**, within *Work Package 6 Hubbing*, is to record the local contributions of cities to the UN SDGs and NUA via the implementation of NBS pilots in a way that is instrumental to:

- expanding the base for political support for NBS implementation and policy integration (at the local government level);
- creating opportunities for engaging strategic stakeholders and partnership-making (including with international institutions/networks and the private sector);
- opening new and innovative funding and financing opportunities, informing NBS business cases and investment propositions explored by *Work Package 5 Valorising*.

This deliverable report presents the research undertaken by Task 6.1, led by the European Urban Knowledge Network (EUKN) and supported by ICLEI Europe, ICLEI SAMS, and the University of Buenos Aires (UBA), in pursue of this scope. It accompanies *Deliverable 6.1 'Data on SDG/NUA impacts/potentials linked with investment propositions uploaded to Oppla'*, which takes the form of online city-specific case studies and fiches.<sup>4</sup>

## Who is this report for?

This report is intended for different audiences: the findings presented can help policymakers, NBS practitioners, as well as the general public to gauge the multifunctionality of NBS. The results of the Linking Matrix powerfully show the untapped potential of NBS to realise several sustainability dimensions as enshrined in the SDGs; at the same time, the fiches developed may be too specific for non-experts to grasp. They rather target NBS planners, offering a methodology for localising the SDGs via more integrated and locally-to-globally connected indicators frameworks, while maintaining flexibility and allowing for the context-specificity that is intrinsic to NBS.

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<sup>4</sup> The original title of Deliverable 6.1 has been rephrased to better reflect the format and content of the final research output. Due to delays and incompatible timelines of other Work packages' outputs on which Task 6.1 draw, the final deliverable of Task 6.1 consists of 7 city fiches showcasing potential links between local NBS pilots and SDG/NUA targets, accompanied by 7 online case studies contextualising the gathered data. It was also impossible to directly link findings to Work Package 5's investment propositions since the work of the responsible Task, *Task 5.3 Valorise*, had just started when this research was approaching its deadline. To constructively address this, an exchange with Task 5.3 was initiated to explore how this deliverable could in fact inform NBS propositions and business cases in the CONEXUS cities. This is further elaborated in the section: *Recommendations/areas for further development*.



## 2. Key concepts and frameworks

The global sustainability goals propelled by the UN via the 2030 Agenda, and at the urban level, the New Urban Agenda, can feel quite abstract and distant from peoples' everyday lives. This is why their operationalisation is important. The key concepts and frameworks used in this research are unpacked and given meaning in the context of CONEXUS.

### The Sustainable Development Goals (SDGs)

The UN Sustainable Development Goals (SDGs) are 17 thematic goals at the heart of the *2030 Agenda for Sustainable Development* adopted by the UN General Assembly in 2015 to provide a shared, global vision for prosperity, peace, and wellbeing for all people and the planet, urging a transition that leaves *no one behind* (UN, 2015). While not legally binding, the 17 goals provide a 'globally endorsed normative framework for change, leaving room for countries – and local stakeholders– to appropriate their principles and refit them to local contexts' (EUKN, 2020, p. 7).

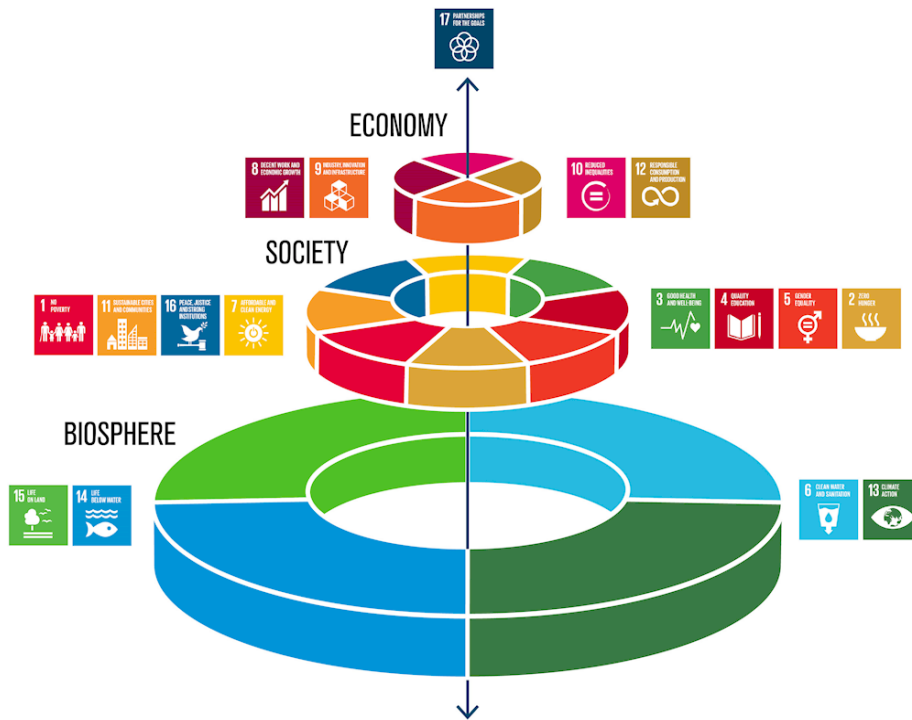


In this sense, they are **both a call for action and a global benchmark** to measure and monitor sustainability holistically. They unfold 169 targets and 231 unique indicators<sup>5</sup> to assess progress against the different, yet interlinked dimensions of sustainable development – environmental quality, economic growth, and social inclusion – according to five key principles, also known as the 'five Ps' of the 2030 Agenda: *people, planet, prosperity, peace, and partnership* (UN, 2015; OECD, 2020).

Since their launching eight years ago, several illustrations have emerged to typify the interrelations among the SDGs. The so-called 'wedding cake' model (Figure 1), developed by the Stockholm Resilience Centre (SRC) (2016a), layers socio-economic development and human well-being upon the health of the biosphere, adopting a planetary boundary<sup>6</sup> approach. By doing so it also positions the environmental SDGs (*SDG 14 'Life below water', SDG 15 'Life on Land', SDG 6 'Clean water and sanitation', SDG 13 'Climate action'*), as foundational to all other goals.

<sup>5</sup> The full list of SDG sub-targets and indicators is included in Annex C, as part of the city fiches. N.B.: the total number of SDG indicators in the global indicator framework is 248; however, 13 indicators repeat under two or three different targets. See: <https://unstats.un.org/sdgs/indicators/indicators-list/>

<sup>6</sup> A concept firstly introduced in 2009 by Rockström et al. to delineate the 'safe operating space' for human societies to sustainably develop and thrive while taking into account the capacity – and limits– of the Earth system and its ecosystems, ensuring their resilience and health.



**Figure 1. The SDGs wedding cake model. Source: Stockholm Resilience Centre, 2016a.**

Aligned to this vision, CONEXUS promotes innovation *in* and *via* urban NBS to restore ecosystems and spearhead societal transformations across policy sectors and scales of implementation (see Table 1 for the initial list of priorities identified by the cities).

**Table 1. Challenge areas and associated SDGs identified as important to the Life-Labs, clustered according to the intended scale for NBS implementation. Source: van der Jagt and Buijs, 2021; adapted from CONEXUS work plan, 2019.**

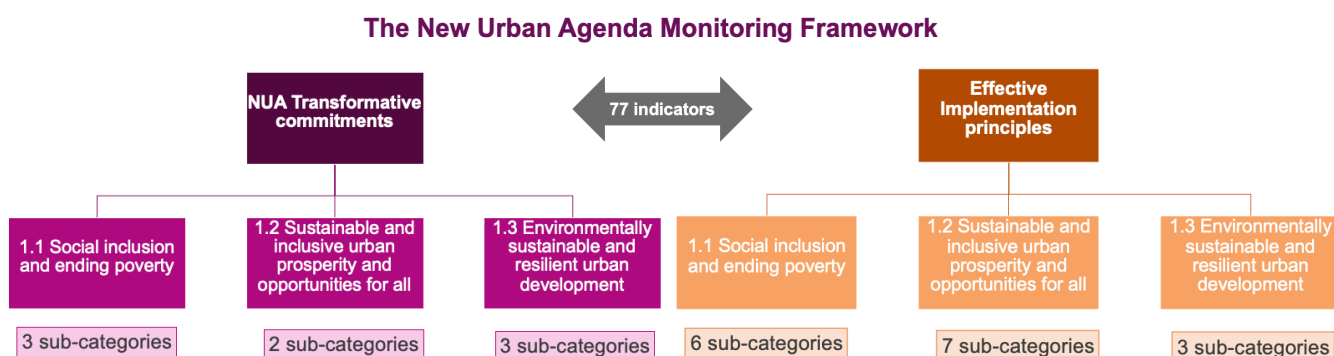
CONEXUS challenge areas, scales, cases & Life-Labs	Urban food & amenity	Urban water & river corridors	Urban heat & air quality	Biodiversity	Environmental justice
	SDG 2	SDG 6	SDG 11*/13	SDG 14/15	SDG 1/5/10
<b>Micro-scale</b>	Barcelona, Turin	São Paulo, Buenos Aires	Buenos Aires, Lisbon	All cities	All cities
<b>Meso-scale</b>	Bogotá, Lisbon	São Paulo, Santiago	Santiago, Bogotá	All cities	All cities
<b>Macro-scale</b>	Barcelona, Lisbon	Bogotá, Lisbon	Turin, São Paulo	All cities	All cities

\*When understood as an umbrella goal towards urban resilience, SDG 11 is relevant for all cities spanning thematic priorities, which is the case in Conexus.

## The New Urban Agenda (NUA)

Adopted at the 2016 United Nations Conference on Housing and Sustainable Urban Development (Habitat III), the New Urban Agenda (NUA) champions the importance of the urban dimension to make the 2030 Agenda a reality. Inspired by the ‘science of cities’ (UN, 2017), the NUA offers a shared, action-oriented vision for **locally adapting and implementing the SDGs**, departing from – yet going beyond – SDG 11 ‘Sustainable cities and communities’.

As a **roadmap for cities**, the NUA codifies three integrated and indivisible *transformative commitments* of sustainable urban development, namely, (i) sustainable urban development for social inclusion and ending poverty; (ii) sustainable and inclusive urban prosperity for all; and (iii) environmentally sustainable and resilient development (NUA §24), while spotlighting principles for their *effective implementation* and proposing 77 indicators<sup>7</sup> for monitoring implementation (UN, 2017; 2020). This holistic framework is illustrated in Figure 2.



**Figure 2: Structure of the New Urban Agenda Monitoring Framework (NUAMF). Source: EUKN, 2023, adapted from UN, 2020.**

In this research, we consider the NUA as somewhat subordinate to the wider SDG framework in that it originated itself as an instrument for *SDG localisation* in cities. Given the urban dimension of NBS co-created within CONEXUS, the NUA framework, as an instrument for directly implementing SDG 11, is relevant to all piloted solutions. For the sake of simplicity, we refer more broadly to SDG localisation since the localisation of the NUA practically involves the urban implementation of all goals.

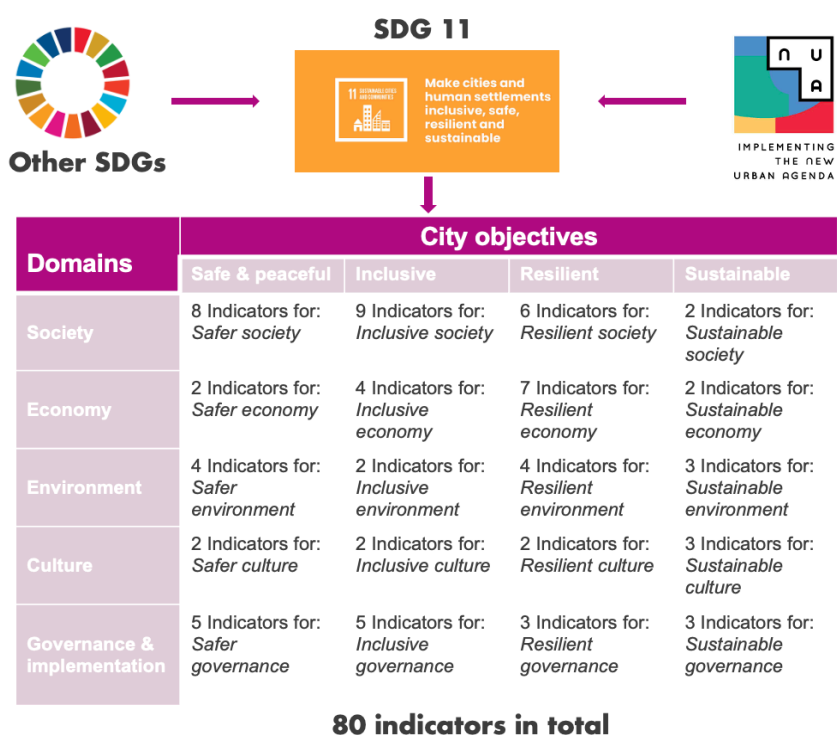
## The Global Urban Monitoring Framework (UMF)

In March 2022, in response to the overabundance and fragmentation of indexes and indicators frameworks used by cities and Member States to assess different dimensions of sustainable urbanisation, the United Nations Human Settlements Programme (UN-Habitat) has introduced a comprehensive framework that can be used to measure urban SDG targets and the NUA goals: the Global Urban

<sup>7</sup> The full list of NUA indicators is included in Annex C, as part of the city fiches. It is important to note that nearly 40% of the SDGs family indicators are part of the core indicators proposed for of the NUA Monitoring Framework. In other words, several sub-categories of the NUA transformative commitments are monitored utilizing indicators of corresponding SDG sub-targets. Other NUA indicators are derived from other global urban indicators' families such as the City Prosperity Index (CPI) and the Urban Indicators Database (UID).

Monitoring Framework (UMF). Harmonising existing urban indexes and tools, the UMF advances a **more “integrated” monitoring protocol** for the *SDG Cities*<sup>8</sup> programme as well as for the preparation of Voluntary Local Reviews (VLRs) and country-based assessments. It intends to facilitate data-driven policymaking, searching for greater coherence to measure progress and report on the urban dimensions of the SDGs.

It proposes 80 indicators, clustered according to a simple structure that matches five ‘urban system domains’ (*society, economy, environment, culture, and governance and implementation*) with the four objectives of SDG 11 (*safe and peaceful, inclusive, resilient, and sustainable*) – the foundational core of the UMF (Figure 3).



**Figure 3: The Global Urban Monitoring Framework (UMF) structure. Source: EUKN, 2023; adapted from: UN-Habitat (2022b).**

As the UMF is relatively recent, there is not much evidence stemming from its application. Nevertheless, it offers a useful instrument to filter and match SDG/NUA relevant urban indicators against the indicators used in CONEXUS to assess NBS impacts. Our approach is described in the *Methodology* section of this report.

### Localisation

We refer to *localisation* as ‘the process through which local stakeholders adapt, implement, and monitor the SDGs and their targets within local structures’ (EUKN, 2020, p. 6). As such, localisation involves the

<sup>8</sup> See: <https://www.sdg-cities.org>



**translation, adaptation, and appropriation of the SDGs into locally relevant goals**, thus ensuring that policies/programmes/actions resonate contextually – institutionally, socially, economically, environmentally – in the place of implementation. It entails a deep understanding of local socio-environmental fabrics, nuances, and expectations, and recognising that challenges and opportunities for sustainable development varies across geographies. In addition to SDG integration into local policies and plans, localisation calls for gathering data, and assessing and monitoring impacts too. A helpful instrument in this regard are *Voluntary Local Reviews*<sup>9</sup> (VLRs), namely, subnational reports prepared by local governments to assess the progress in achieving the SDGs in a way that strengthens synergies with national monitoring structures, without being prescriptive nor restrictive (Ciambra and Martinez, 2022).

But why do we talk about localisation in the first place? The urban dimension is the scale of implementation closer to people's lives as we witness an increasingly urbanising world. In 2021, cities were home to 56% of the world population and, over the next three decades, figures are projected to rise to 68% in 2050 (UN-Habitat, 2022a). Cities also generate about 80% of the world's economy and over 70% of global energy use and energy-related emissions (Seto et al., 2017).

In this sense, urbanisation is deeply intertwined with *existential* global challenges,<sup>10</sup> from the climate and biodiversity crises to deepening inequality and public health emergencies like the COVID-19 pandemic (UN-Habitat, 2022a). As critical organising mechanisms of society, **cities constitute catalytic nodes of physical as well as intangible infrastructure, services, knowledge, and both natural and human ecosystems**. In all their complexity, cities are in a unique position to lead sustainable development transformations.

Moreover, localisation creates opportunities to leverage citizens' participation and engagement in the governance of the SDGs, from the co-design to the implementation and monitoring of actions to attain them; it helps to address a critical – yet often overlooked – element of the 2030 Agenda: *leaving none behind*.

NBS can offer a wide range of responses to global challenges, harnessing the power of nature for driving sustainability transformations in cities and beyond. In this report, we position NBS as local-global solutions that hinge the sustainable development of societies and economies upon the protection, restoration, and conservation of healthy and resilient ecosystems.

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<sup>9</sup> The first VLR was submitted by the autonomous community of Valencia (Spain) in 2016 and the city of Deqing (China) in 2017 to complement national reviews, having a snowballing effect; by 2021, 114 VLRs had been submitted by cities in 33 countries different countries. See: Ciambra and Martinez, 2022.

<sup>10</sup> In a recent resolution adopted halfway the implementation timeline of the 2030 Agenda, the United Nations Habitat Assembly expressed deep concern regarding the cumulative and integrated effects of global crises, particularly on cities and human settlements threatening the reversal of years of progress and with disproportionate effects on the most vulnerable. See: Resolution 2/6: Localization of the Sustainable Development Goals (HSP/HA.2/Res6). [https://unhabitat.org/sites/default/files/2023/09/english\\_13.pdf](https://unhabitat.org/sites/default/files/2023/09/english_13.pdf)

### 3. Policy context for SDG localisation

CONEXUS brings together cities and stakeholders from Europe and the Community of Latin American & Caribbean States (CELAC) into transnational, multidisciplinary communities of learning. The policy context for the localisation of the SDGs in the two continents varies greatly and reflects the cultural, institutional, social, and spatial specificities of urbanisation processes shaping them.

#### European context

Since their adoption in 2015, several European cities have embraced the SDGs as a framework for urban development, enabling their meaningful application at the local level.

More than 120 cities and towns in Spain are integrating the SDGs and NUA goals into their urban policies and programmes through the implementation of 'Local Action Plans' under the *Spanish Urban Agenda*<sup>11</sup> (UN-Habitat, 2022c). In Finland, the city of Helsinki has anchored the SDGs across various policy areas of its City Strategy<sup>12</sup> fostering holistic sustainability as a blueprint for the post-covid recovery; in the Netherlands, Utrecht has declared itself a 'Global Goals City'<sup>13</sup> creating an enabling framework for experimentation towards the local translation of the SDGs into bottom-up initiatives, with a special focus on urban health (SDG 3 'Health and well-being' and SDG 11 'Sustainable cities and communities').

At the regional level, there are also numerous initiatives which support knowledge sharing and capacity-building on SDG localisation. A case in point is given by the European Commission's [KnowSDGs platform](#), which organises tools and knowledge on policies, indicators, methods, and data for the evidence-based implementation of the SDGs. Similarly, the LocalSDGs project<sup>14</sup> provides 'methodological support and inspiration for the design and implementation of SDG Voluntary Local Reviews' in EU cities and regions (JRC, n.d). As a cooperation between the Directorate-General for Regional and Urban Policy (DG REGIO) and the Joint Research Centre (JRC), this project informs the iterative development of the 'European Handbook for SDG Voluntary Local Reviews', with a view to guide local governments and stakeholders on how implement and monitor progress towards the SDGs at urban level.

Moreover, in May 2023, the European Union published its first 'EU Voluntary Review on the Implementation of the 2030 Agenda for Sustainable Development', demonstrating how firmly sustainable development is rooted in all aspects of EU policy and strategy. In fact, the SDGs are placed at the core

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<sup>11</sup> Adopted by the Spanish Government in 2019, the Spanish Urban Agenda is a strategic, non-regulatory document which serves as a national action plan and driver for locally appropriating the UN SDGs. For more information, see: [https://www.aue.gob.es/en/what-spanish-urban-agenda#:~:text=The%20Spanish%20Urban%20Agenda%20\(AUE,sustainability%20in%20urban%20development%20policies](https://www.aue.gob.es/en/what-spanish-urban-agenda#:~:text=The%20Spanish%20Urban%20Agenda%20(AUE,sustainability%20in%20urban%20development%20policies)

<sup>12</sup> See: [https://sdgs.un.org/sites/default/files/2021-07/Helsinki\\_VLR\\_From%20Agenda%20to%20Action%202021%20%281%29\\_0.pdf](https://sdgs.un.org/sites/default/files/2021-07/Helsinki_VLR_From%20Agenda%20to%20Action%202021%20%281%29_0.pdf)

<sup>13</sup> See: <https://utrecht4globalgoals.nl>

<sup>14</sup> For more information, see: <https://urban.jrc.ec.europa.eu/sdgs/?lng=en>

of the EU's *whole-of-government approach*,<sup>15</sup> covering all key political programmes, from the *European Green Deal* to an *Economy that works for people*, *Europe fit for the digital age*, as well as the *Recovery and Resilience Plans*, among others. In addition, the SDGs are mainstreamed in the main EU legal and financial frameworks, including the *Better Regulation* toolbox, and the fiscal and financial agreements with Member States (EU, 2023). Figure 4 shows the thematic priorities of the different strands of the EU strategy to deliver on the SDGs.



**Figure 4: The European Union's Strategy to deliver on the SDGs. Source: EU, 2023, p. 8.**

Although urban policy is not a competence of the EU level, the *Urban Agenda for the EU*<sup>16</sup> (UAEU) is positioned *de facto* as the implementation mechanism of the NUA in the EU. Its Thematic Partnerships<sup>17</sup> cover different dimensions of sustainable development, calling on cities to take action on the local dimension of all SDGs (Siragusa et al., 2020, p. 139).

<sup>15</sup> This concept refers to the comprehensive approach for the implementation of the 2030 Agenda, which combines several strands of EU policy. See: [https://commission.europa.eu/strategy-and-policy/sustainable-development-goals/eu-whole-government-approach\\_en](https://commission.europa.eu/strategy-and-policy/sustainable-development-goals/eu-whole-government-approach_en)

<sup>16</sup> The UAEU was established under the Dutch Presidency of the Council of the EU in 2016, just before the adoption of the New Urban Agenda at Habitat III. See the 'Pact of Amsterdam': [https://ec.europa.eu/regional\\_policy/sources/policy/themes/urban-development/agenda/pact-of-amsterdam.pdf](https://ec.europa.eu/regional_policy/sources/policy/themes/urban-development/agenda/pact-of-amsterdam.pdf)

<sup>17</sup> For more information on the UAEU and its Thematic Partnerships, see: <https://www.urbanagenda.urban-initiative.eu/urban-agenda-eu>

Within the governance framework of the UAEU, all governmental levels, from the local to the European level, as well as European programmes and networks, work together to improve knowledge and legal and financial aspects of the partnerships' priority themes based on negotiations between the European Commission, Member States, and cities. Currently, 18 Thematic Partnerships have been established, associated to a wide variety of SDGs. 13 of these Partnerships have come to an end, including one on Sustainable Use of Land and Nature-based Solutions, but new Partnerships have recently been established to build on the legacy of previous ones, tackling new sustainable development challenges. One of these new Partnerships is Greening Cities, partly continuing the work on NBS, while focusing on new political challenges like the local implementation of the highly anticipated proposal for an EU Nature Restoration Law.<sup>18</sup> Seen as a significant change-maker in the battle against climate change and the decline of biodiversity, this proposal introduces legally binding targets<sup>19</sup> for extensive-scale nature restoration, aiming to prevent further deterioration of protected habitats and species. Aligned to the SDGs, and in particular to SDG 14 'Life below water' and SDG 15 'Life on land', the Nature Restoration Law encompasses a broad spectrum of ecosystems, including urban ones, paving the way for NBS innovation in cities.

## CELAC context

Latin American and Caribbean countries do not share the same degree of political cooperation vis-à-vis the European Union, and the appropriation of the 2030 Agenda has mostly unravelled at the state-level, with important differences among countries. To date, the most comprehensive initiative on the localisation of the SDGs is the *Forum of Countries of Latin America and the Caribbean on Sustainable Development*,<sup>20</sup> instituted by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC; or CEPAL in Spanish and Portuguese) in 2016.

Primarily led by State governments and open to all CELAC, the Forum invites participation from the private sector and civil society, as well as ECLAC subsidiary bodies, development banks, United Nations agencies, and regional integration bodies. It hosts the 'Regional Portal on the 2030 Agenda' ([SDG Gateway](#)), which provides a space of information and resources on the implementation of the 2030 Agenda in Latin America and the Caribbean as well as a space dedicated to national statistical procedures, databases, and monitoring of SDG indicators.

While VNRs remain the main mechanisms for reviewing progress against the SDGs in the region, ECLAC launched a Community of Practice on VNR for Latin American and Caribbean (LAC) countries in 2019 in an effort to strengthen peer learning and regional cooperation. Counting with 188 regular members from the 33 LAC States, the Community of Practice is supporting national-level implementation and reporting: as of 2023, 31 of the 33 LAC States have submitted at least one VNR to the United Nations High-level

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<sup>18</sup>See: [https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law\\_en](https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en); for the latest text of the Law, see: [https://www.europarl.europa.eu/doceo/document/TA-9-2023-0277\\_EN.html#title1](https://www.europarl.europa.eu/doceo/document/TA-9-2023-0277_EN.html#title1)

<sup>19</sup> It proposed area-based restoration measures for a minimum of 20% of the EU's total land and sea areas by 2030, and to address all ecosystems in need of restoration by 2050.

<sup>20</sup> For more information see: <https://foroalc2030.cepal.org/2023/en>



Political Forum on Sustainable Development (HLPF),<sup>21</sup> including 16 countries that submitted their VNR more than once.<sup>22</sup>

Substantial intra-regional differences can be observed in terms of structures for SDG implementation and monitoring, with 15 countries creating *ad hoc* coordination structures and 18 designating already existing government bodies or public agencies with this task. ECLAC (2023) has uncovered important challenges related to technical and human capacity to articulate integrated strategies, especially in terms of overcoming territorial inequalities in the region. To date, 225 national policies aimed at reducing territorial inequalities aligned to the 169 SDG targets have been identified (ibid).

Representatives from civil society have actively participated in the HLPF and have autonomously set up the Civil Society Participation Mechanism in the Sustainable Development Agenda, influencing and informing the advancement of the CELAC sustainable development agenda *from the bottom up*.

Local and regional governments are also increasingly participating in VLRs,<sup>23</sup> reinforcing multi-level governance structures and institutional frameworks for SDG localisation. Most importantly, VLRs have expanded the database for policy to promote transformative actions, including NBS actions.

A recent study (Ozment et al., 2021) has identified 156 initiatives in LAC that utilise NBS, either on their own or in combination with traditional approaches (e.g. grey infrastructure), to address multiple socio-environmental objectives (e.g. water security, flood and landslide reduction, climate change mitigation, health enhancement, etc.) aligned with the SDGs, concluding that the region is 'on the verge of a transition from experimenting with NBS to adopting it on a much wider scale that can transform infrastructure planning and investments' (p. 11).

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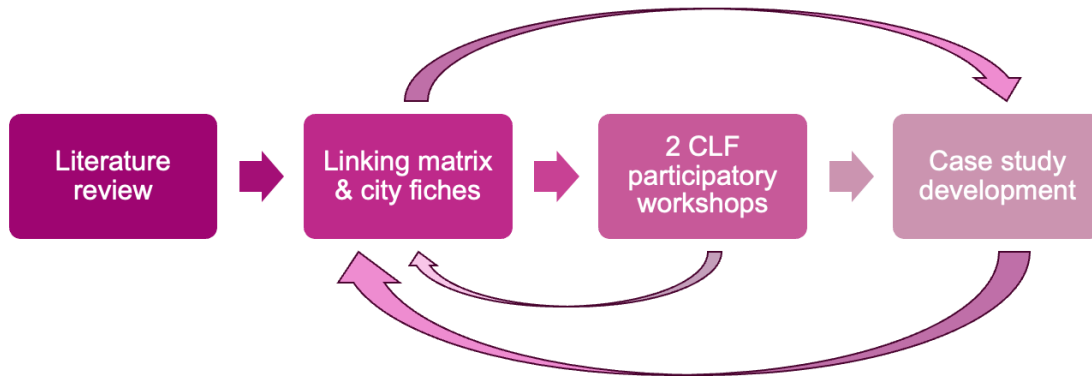
<sup>21</sup> See: <https://hlpf.un.org>

<sup>22</sup> See: <https://agenda2030lac.org/en/voluntary-national-reviews-vnr>

<sup>23</sup> In 2023, 64 LAC cities submitted a VLR, representing the 40% of the total VLRs submitted globally by subnational entities.

# 4. Methodology

Our study employed a qualitative research methodology and a mixed-method approach, which relied primarily on secondary research, complemented by action-research methods. It combined different analysis stages and techniques which are presented below.



**Figure 5: Iterative stages of Task 6.1 research methodology. Source: EUKN, 2023.**

## Literature review

An extensive review of literature, grey literature, white papers, and internal CONEXUS documents was undertaken to appreciate the state-of-the-art of SDG localisation via nature-based solutions' implementation.

Among the documents reviewed are:

- CONEXUS' cities Voluntary Local Reviews (if submitted);
- International organisations reports (i.e. UN, WWF, FPP, WRI, UCLG, etc.)
- Academic publications and scientific articles;
- Internal CONEXUS milestones and deliverables (i.e. D4.1 CONEXUS Assessment Framework, D2.2 Case Studies, D3.1 Life-Lab Action Plans, M14 'Protocol for data collection', M19 'Report on assessment of NBS processes, tripartite protocol and outcomes from the Learning Log 2', D4.2b Report from the Learning Log 3, etc.) and publications of other EU-funded projects and/or initiatives (i.e. the NBS Task Force 2 Handbook for practitioners,<sup>24</sup> the EKLIPSE's Impact Evaluation Framework, NATURVATION, etc.).

<sup>24</sup> The Handbook is the collaborative output of 17 EU-funded NBS projects and partner institutions such as the EEA and JRC, as part of the European Commission's [Taskforce for NBS Impact Assessment](#) (TF2). It comprises a robust set of indicators and methods to assess NBS impacts across 12 societal challenge areas: Climate Resilience; Water Management; Natural and Climate Hazards; Green Space Management; Biodiversity; Air Quality; Place Regeneration; Knowledge and Social Capacity Building for Sustainable Urban

## Linking matrix and city fiches

Our review confirmed that there is no standardised method to report on SDG attainment via NBS. While some NBS platforms such as [Oppla](#), [ConnectingNature](#), and NATURVATION's [Urban Nature Atlas](#) have introduced a classification of NBS based on an SDG-tagging system, a more robust methodology is needed that goes beyond a “ticking-the-box” exercise based on broad thematic association.

As an attempt for CONEXUS to fill this gap, we have developed an Excel ‘**Linking Matrix**’ (see Annex A for a template) that could allow us to – more or less directly – link pilots’ indicators to:

- a) the 17 SDGs (at the sub-target level whenever possible and relevant);
- b) the NUA goals as exemplified by its 3 transformative commitments and 3 effective implementation mechanisms;
- c) strategic urban agendas at the local and national levels as well as submitted Voluntary Local Reviews (VLRs).

The Linking Matrix built on the ‘Life-Lab Information Systems’ derived from Milestone 14 (‘Protocol for data collection for each Life-Lab’) which lists selected NBS performance and governance indicators by pilot, by city, and the challenge areas to which each indicator pertains (based on the CONEXUS Assessment Framework; van der Jagt and Buijs, 2021). It also indicates whether indicators were locally suggested<sup>25</sup> by the Life-Labs and thus were not included in the list originally comprised in the CONEXUS Framework.

We then added columns for mapping addressed SDGs and their sub-targets, NUA goals, and relevant policy agendas as well as a column to add any notes on the indicator in question.

Mapped links were established through a content analysis of the literature reviewed, thematically linked to, and cross-referenced against the specific descriptions and objectives of the CONEXUS pilots.

The first step to establish direct links to the SDG targets was a comparison between pilot indicators and the indicators of the Global Urban Monitoring Framework (UMF), by urban sustainability dimension. The second step was to retrieve SDG information via a review of the indicators included in the European Commission’s NBS TF2 Handbook (Dimitru and Wendling, 2021a and 2021b), drawing on the EKLIPSE Impact Evaluation Framework (Raymond et al., 2017). The information was collated by different H2020 projects. However, no clear methodology was detailed for the way in which links were established and some inconsistencies were found in terms of how different projects “tagged” SDG linkages for very similar indicators. This required a further filtering of SDG targets and indicators, based on a cross-check against CONEXUS pilots’ objectives, which also allowed us to map, when relevant, links to the SDGs at the sub-target level, which was not done by other projects. We applied the ‘localisation’ concept, translating to the extent possible global goals into local goals, including at the very micro-scale of implementation (e.g. at the street level in Turin and Lisbon or at the level of school gardens in Buenos Aires). Links to the NUA goals were identified following the same logic.

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Transformation; Participatory Planning and Governance; Social Justice and Social Cohesion; Health and Well-being; New Economic Opportunities and Green Jobs.

<sup>25</sup> These indicators were not clustered under a given NBS challenge area, which we ascribed during the research to better establish links between NBS challenge areas and specific SDGs.

Additionally, desk research and the review of Life-Lab Action Plans and cities' VLRs (whenever available), enabled us to identify clearly articulated connections to strategic policy agendas that are relevant to NBS upscaling both at the local and national level (e.g. climate action plans, green infrastructure plans, urban biodiversity strategies, neighbourhood recovery programs, urban regeneration plans, etc.).

After further processing of the master matrix, **seven city fiches** were developed, collating the main results of SDG/NUA localisation by city, at the pilot level. They are contained in Annex C (Excel).

## Co-learning Forum participatory workshops

A defining element of CONEXUS is the co-creation of NBS knowledge and practices through collaborative, action-oriented learning. The bi-yearly Co-learning Forums, a flagship activity of WP6 led by Living Cities Stockholm, provide a space for CONEXUS partners to exchange knowledge and learn across disciplines, geographies, and cultures, facilitating thematically scoped events to advance intended project impacts, milestones, and deliverables.

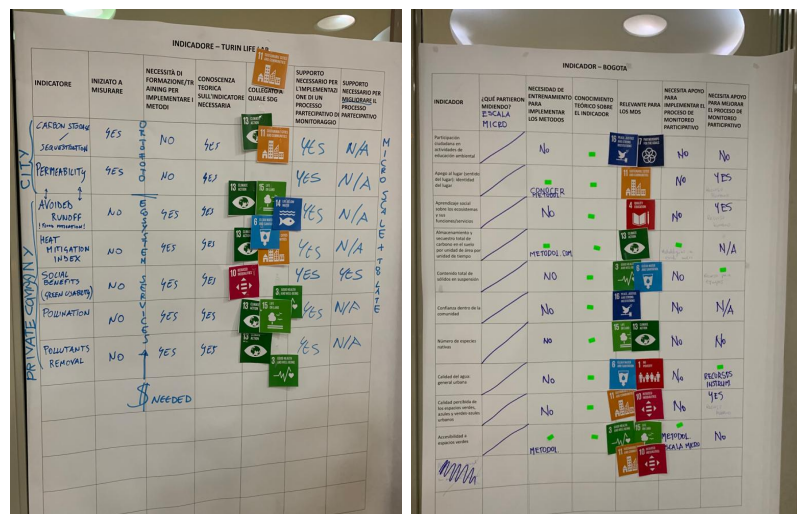
To both inform and qualify the development and results of the Linking Matrix, Task 6.1 **held two interactive sessions** during the 4<sup>th</sup> and 5<sup>th</sup> Co-learning Forums of the project, respectively on 26<sup>th</sup> May 2022 and 10<sup>th</sup> May 2023.

The first session, organised jointly with *Task 4.2 Analyse*, focused on 'learning cycles' around the implementation of performance and governance indicators pre-selected by the seven Life-Labs, with a view to identify gaps and training needs as well as links to the UN SDGs. It entailed an in-person workshop in São Paulo, Brazil, where Life-Lab participants were asked to brainstorm collectively and discuss which SDGs were relevant to their pilots.

The second session was held online in Zoom, and it made use of Miro as an interactive tool to facilitate and record exchanges. The activity built on and informed the development of this deliverable report; it included a short presentation of initial findings by EUKN, followed by a **participatory workshop** where CONEXUS participants were split into breakout rooms. The breakout rooms were set up to allow for multi-lingual and cross-city exchange, each facilitated by bi-lingual moderators and note-takers that could moderate and record contributions in English, Spanish, and Portuguese. The workshop was led primarily in English, with participants invited to express their opinions (both orally and in written form) in the language they felt most comfortable with.

The discussion in small groups invited critical reflections around the **usability and exploitability** of D6.1 results for the Life-Labs (see Annex B for a snapshot of inputs gathered in Miro).

The main goals of the two workshops were:



**Figure 6: Indicators' poster activity, São Paulo Co-learning Forum. Credits: Federica Risi, 2022.**



1. To promote *glocal* thinking and explore the potential of using the SDGs/NUA framework as measures of sustainability;
2. To promote cross-city exchange and collect feedback from the Life-Labs on the best and most *exploitable* format to present T6.1 findings;
3. To receive feedback from CONEXUS transdisciplinary teams, and especially from WP5, on how to link T6.1 results to NBS business cases and investment propositions.

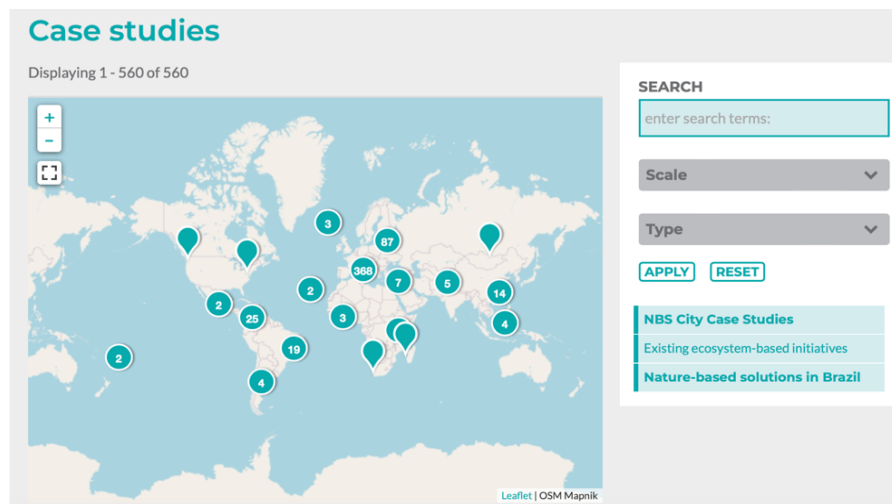
These two participatory activities helped us define the format that could best serve Life-Labs raise awareness around the multiple benefits of piloted NBS, engage strategic stakeholders, and stimulate partnership-making, that is, the development of **case studies**.

## Case Study development

According to the CONEXUS workplan (2019), Task 6.1 did not initially foresee the production of case studies, however, based on the workshop findings and reflecting the place-specificity of NBS and – therefore – of their impacts, we assessed the development of case studies would be an appropriate format to give context to the data on NBS-SDGs links.

Collaboratively with Life-Lab and pilot coordinators, we developed **seven online case studies**, each **accompanied by a downloadable city fiche**, which demonstrate and contextualise pilots' potential contributions to the global goals as well as to strategic urban agendas at the local and national levels.

The complete cases can be found on the [oppla.eu platform](https://oppla.eu) and include background information on the areas of intervention, Life-Labs' objectives, NBS pilot descriptions, SDGs contributions<sup>26</sup> via key performance indicators, and, whenever applicable, lessons learned and potential for transferability.



**Figure 7: Oppla's case study finder. Source: oppla.eu, 2023.**

<sup>26</sup> As we have previously introduced, we see NUA targets as subordinate to SDG ones as they are conceptualised as a framework for the implementation of SDG 11 at the urban level. For this reason, and due to space limits, the online case studies primarily report on SDG (sub-)targets addressed, while the city fiches include specific NUA goals tackled in terms of both transformative commitments and effective implementation.

## Limitations of the research

We qualify some limitations of this research which stem from both the nature of the topic and the scope of Task 6.1 in the project. They are as follows:

1. **Measuring impacts takes time and it is resource intensive.** A plethora of environmental and social data related to green spaces and green infrastructure were already being collected by city administrations before the CONEXUS pilots started; however, most indicators selected by the Life-Labs to assess success will need new knowledge, additional personnel capacity, and expertise. This aspect was initially underestimated, making contributions mapped at the time of this report potential and reliant on the ongoing implementation of CONEXUS' local Information Systems (see CONEXUS Milestone 19 for an overview on the status of indicator monitoring and Deliverable 4.2b for a synthesis of the learning cycles on NBS implementation and monitoring).
2. **Results are relative and dependent on the indicators selected** by the Life-Labs. While the indicators' selection process was aligned to Life-Labs' objectives and identified challenge areas, there might be other co-benefits delivered by piloted NBS that are not mapped due to lack of measurement/monitoring. For example, at the time of developing the CONEXUS' workplan, Life-Labs recognised different challenge areas as relevant to different scales of their pilots (micro, meso, macro, see Table 1), each thematically linked to one or more of the UN SDGs. Depending on the final selection of indicators for establishing Life-Lab Information Systems to measure and monitor NBS impacts, it was possible to map contributions to the SDGs only based on chosen indicators. Although SDG links were cross-referenced against pilots' objectives, the overall results shown in Table 2 might be missing out on other positive externalities brought about by implemented solutions which are not being measured/monitored.
3. **Linking impacts to specific SDG/NUA targets is highly context-dependent and relies on the self-assessment of NBS planners and implementers.** There is no standardised methodology for reporting on the local contributions of NBS to the SDGs. In principle, due to their multifunctionality and dimensions of implementation, NBS can play a role in advancing virtually all 17 SDGs (Mahmoud et al., 2022; WWF, 2019; 2020). Nevertheless, the selection of identical indicators for identical types of NBS implemented in different geographies, managed by different stakeholders, targeting different audiences, will yield different results. Similarly, results will vary depending on chosen methods for indicator measurement and data-set collection. For instance, in the case of what we call 'gender & EDI sensitive' indicators, collecting disaggregated data (by gender, age, ethnicity, and other social identity markers) and/or involving local communities and beneficiaries in data collection and impact assessment can support progress towards aspects of environmental justice (e.g. poverty reduction/SDG1, gender justice/SDG5, reduced inequalities/SDG10, etc.).
4. Lastly, **this analysis does not account for potential trade-offs of implemented NBS.** While we demonstrate, through the linking exercise, how piloted solutions could support the actualisation of several SDGs and their attached benefits simultaneously, we do not have a system for assessing potentially negative externalities and trade-offs. Recognising this goes beyond the scope of Task 6.1, we deem necessary for Life-Labs (and cities) to integrate this element into their assessment frameworks in the long run.

By appraising the above limitations in context, we intend to pinpoint gaps in NBS knowledge and practice where action is needed. We address these considerations later in this report, under *Recommendations/areas for further development*.

# 5. Findings: NBS' contributions to the global goals

In this section we focus on policy-relevant findings across and beyond CONEXUS cities.

## 1. Multifunctionality is at the heart of NBS

In a recent publication, Frantzeskaki et al. (2023) unpack two important aspects of NBS governance in cities; namely, the governance *of* NBS, that is how should NBS be designed, implemented, and managed, and governance *with* (or *through*) NBS, that is, what NBS can achieve as urban policy and planning instruments. In this second sense, the pivotal role of NBS to locally achieve the SDGs is explored, and they are presented as a means 'to bridge governance across sectoral agendas in cities' (p. 242).

The results of our Linking Matrix analysis substantiate this understanding, demonstrating the potential of NBS to simultaneously address complex societal challenges, providing benefits for citizens, economies, and environments. By using the SDG and NUA frameworks as benchmarks for integrated sustainability, it is possible to map local contributions to multiple policy sectors. Table 2 provides a panoramic snapshot of the goals addressed by all CONEXUS cities through their NBS pilots, summarising the Linking Matrix results.

**Table 2. CONEXUS Life-Labs' contributions to the UN SDGs. Source: EUKN, 2023.**





\*Blurred results map secondary benefits and SDG contributions of the NBS implemented in the seven cities. They are explained and contextualised in the (online) case studies.

As emerges from the in-depth case studies, multifunctionality is at the heart of NBS and there are multiple interdependencies (or co-benefits) between intended and realised impacts of CONEXUS pilots.

For example, in Bogotá, NBS actions to restore and rehabilitate water-regulating ecosystems such as the Aguas Doradas aqueduct and the Conejera wetland are being implemented with a view to ensure disadvantaged communities' water securities and resilience, allowing to map direct contributions to relevant SDGs such as SDG 6, 10, and 11, and their sub-targets:

	<ul style="list-style-type: none"> <li>6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials...;</li> <li>6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.</li> </ul>
	<ul style="list-style-type: none"> <li>10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.</li> </ul>
	<ul style="list-style-type: none"> <li>11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries;</li> <li>11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.</li> </ul>

Through the planting of native species collaboratively with local schools, the organisation of capacity-building and environmental awareness raising activities, the Life-Lab is also promoting progress towards SDG 13 and 15:

	<ul style="list-style-type: none"> <li>13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning;</li> </ul>
	<ul style="list-style-type: none"> <li>15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity...</li> </ul>

A critical finding that emerged from the analysis, cutting across the seven CONEXUS cities, is that co-created NBS can leverage multi-stakeholder participation, tackling a non-negotiable aspect of the SDGs: *leaving none behind*.

By promoting citizen engagement, collaboration and ownership, thus strengthening NBS governance mechanisms at multiple levels and making decision-making processes more inclusive, representative and responsive to people's needs, the 'real life-lab approach' employed in CONEXUS importantly contributes to SDG 16:





- 16.6: *Develop effective, accountable and transparent institutions at all levels;*
- 16.7: *Ensure responsive, inclusive, participatory and representative decision-making at all levels.*

The establishment of local and transnational communities of learning in and between cities can also advance several targets under the last SDG of the 2030 Agenda, SDG 17:



- 17.16: *Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources...;*
- 17.17: *Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.*

In all, the evidence collected makes a strong case for the systemic integration of NBS into urban policy and planning, spanning governance scales (vertical integration) and policy sectors (horizontal integration). On the other hand, more systematically tying NBS to the SDGs and/or NUA goals can help bring visibility their contributions to overall sustainability.

## 2. There is no *one-size-fits-all* approach to SDG localisation

In the context of CONEXUS, mapping NBS contributions to the global goals can be interpreted as a scalar process of localisation or a “localisation of localisation” in the sense that the co-designed NBS purportedly address sustainability objectives at the city level (as defined in the strategic urban agendas reviewed i.e. city resilience strategies, climate action plans, green infrastructure strategies, urban biodiversity strategies, neighbourhood regeneration programmes, etc.), which in turn locally translate national and international commitments to sustainable development such as the SDGs, the Paris Agreement, the Convention on Biological Diversity (CBD), etc.

It is important to note that there is no *one-size-fits-all* approach to localisation, even more so when this is done via NBS. Because of the context specificity of NBS, both the performance indicators and the chosen methods to measure them need to reflect their typology, objectives, and socio-ecological circumstances. Reflecting the intrinsic place-based nature of NBS, Conexus employed a participatory approach to select pilots’ indicators, validating them with stakeholders from the respective Life-Labs and pilots.<sup>27</sup> By doing so, it was ensured that Local Information Systems tailor to local challenges, needs, and aspirations, and recognise the plurality of ways in which NBS can locally deliver.

What emerged from the Linking Matrix analysis is that some of the indicators of CONEXUS’ local Information Systems closely relate to some of the indicators of the Global Urban Monitoring Framework,

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<sup>27</sup> More information on the participatory methodology used can be found in van der Jagt, S. and Buijs, A. (2021).

and thus of the SDG and NUA frameworks. These direct links could be mapped for each indicator via cross-checking against identical or corresponding indicators of the Global Urban Monitoring Framework.

Table 3 provides the list of Life-Lab indicators that can be used to locally measure and report on given SDG/NUA indicators and associated targets by city. And while identical indicators can be used to measure different NBS typologies and/or through different methods, such awareness when establishing NBS monitoring systems can help to record NBS multidimensional contributions to sustainability and generate important data on SDG measuring. This would certainly help to fill the data gap on Agenda 2030's implementation.<sup>28</sup> Not only can such a linking exercise support voluntary reviews at the city/regional level, but it can also feed into national reporting while leaving room for NBS' place-basedness.

**Table 3. Direct links between CONEXUS indicators and SDGs/NUA targets and indicators via the UN Global Urban Monitoring Framework. Source: EUKN, 2023.**

CONEXUS Indicator <sup>29</sup>	Challenge Area	Corresponding UMF / NUA / SDG Indicator(s)	Monitored by city
m <sup>2</sup> urban allotments/inhabitant or surface (locally proposed)	Green space management*	UMF Indicator 3.3.2. (UMF-47) 'Green area per capita', linked to: <b>NUA Indicator 27</b> (Green Area per Capita), adapted from the CPI	Barcelona
Security in green spaces (locally proposed)	Green space management*	UMF Indicator 1.1.6 (UMF-06) Neighbourhood Safety, linked to: <b>SDG 16.1.4</b> Proportion of population that feel safe walking alone around the area they live after dark	Santiago
19. Green space accessibility	Green space management	UMF Indicator 3.2.1 (UMF-44) Access to Open Public Spaces, linked to: <b>SDG 11.7.1</b> Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	Barcelona Bogotá Santiago Turin
29. Number of days during which air quality parameters	Air quality	UMF Indicator 3.1.3 (UMF-42) Air Quality, linked to: <b>SDG 11.6.2</b> Annual mean levels of fine	São Paulo

<sup>28</sup> As warned in the 2023 progress report on the SDGs (UN, 2023), at the midpoint of implementation, the world is not on track to meet most of the SDGs by 2030, in part due to a substantial data gap (insufficient, non-comparable). See: <https://unstats.un.org/sdgs/report/2023/The-Sustainable-Development-Goals-Report-2023.pdf>

<sup>29</sup> Numbered indicators refer to indicators selected by the Life-Labs from within the CONEXUS Assessment Framework's list; other indicators were locally proposed by the Life-Labs to measure and monitor aspects relevant to the local pilots initially not envisaged by the project.

exceed threshold values		particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	
39. Citizen involvement in environmental education activities	Knowledge & social capacity	UMF Indicator 3.2.2 (UMF-45) Education for Sustainable Development, linked to: <b>SDG 12.8.1</b> Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	Bogotá Buenos Aires Santiago Turin
40. Social learning regarding ecosystems and their functions/services	Knowledge & social capacity	UMF Indicator 3.2.2 (UMF-45) Education for Sustainable Development, linked to: <b>SDG 12.8.1</b> Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	Bogotá
43. Openness of participatory processes	Planning & governance	UMF Indicator 5.2.1 (UMF-67) Participation in Urban Planning and Management, linked to: <b>SDG 11.3.2</b> Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	Buenos Aires São Paulo Turin
Citizen engagement actions, public participation and collaborative processes	Planning & governance	UMF Indicator 5.2.1 (UMF-67) Participation in Urban Planning and Management, linked to: <b>SDG 11.3.2</b> Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	Lisbon

\*Values in red refer to challenge areas proposed by the authors of this research as they were not yet categorised by Life-Lab Information Systems at the time when we reviewed the data.

As shown in the city fiches (Annex C), other indicators used by the Life-Labs to assess NBS performances are tailored to the nature of the intervention in question, both in terms of governance scale and sustainability theme addressed. In this sense, rather than substitute for SDG/NUA indicators they can be regarded as complementary to them. This is the case for indicators monitoring impacts at the micro-scale of NBS intervention.

For example:		
SDG target	SDG Indicator	Complementary CONEXUS Indicator

SDG 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.	11.4.1 Total per capita expenditure on the preservation, protection and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal).	Conversion and requalification of abandoned areas.  (Locally proposed by the Lisbon Life-Lab)
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Complementarity holds true especially for indicators related to ‘biodiversity enhancement’, which is an intrinsic aspect of NBS, yet not typically included in most urban assessment frameworks. Even when looking at the indicators proposed by the UN to measure SDG15 ‘Life on land’, or the environmental transformative commitment of the NUA (1.3 *Environmentally sustainable and resilient development*), there is no explicit mention to increased levels of biodiversity.

For example:		
SDG target	SDG Indicator	Complementary CONEXUS Indicator
SDG 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.	15.5.1 Red List Index.	24. Number of native species.  (Used by Bogotá, Buenos Aires, and Lisbon Life-Labs)

### 3. Innovative NBS approaches that are not (fully) inclusive, are not innovative enough

There is ‘an urgent need to monitor environmental justice as a core societal challenge area across all NBS projects’ (van der Jagt et al., 2023a, p.59), as part of a larger effort to *politicise* NBS assessment, that is, to challenge the asymmetries of power in decision making while empowering conventionally under-represented communities.

Unless there is an ‘explicit integration of principles of equity, inclusion, reparation, and emancipation’, NBS can create or reinforce injustices in that ‘[NBS] are still subject to the systemic processes that reproduce or exacerbate inequalities’ (Tozer et al, 2023, p. 30; Toxopeus et al., 2020; Anguelovski et al., 2020). They should not be abstracted from the socio-political, cultural, and spatial contexts in which they are implemented but rather take note of existing environmental injustices and social disparities as a first step to act on them.

In this sense, both *what* and *how* we monitor matters.

## What we monitor

Certain aspects of NBS design, implementation, and assessment are more 'sensitive' to inclusivity and justice concerns. It is important for impact assessment frameworks to capture aspects that are not reflected in aggregated data. For example, differential access to green spaces can be the result of a combination of aspects (and identity markers) such as gender, age, socio-economic status, and ethnic background that can be monitored via collecting disaggregated data.

In the fiches, we identify those indicators that are 'gender & EDI sensitive',<sup>30</sup> suggesting that the collection of these disaggregated data could contribute to and monitor progress towards eradication of poverty/SDG 1, gender equality/SDG 5, and reduced inequalities and societal empowerment/SDG 10.

Depending on stakeholders' identity markers like sex, gender, class, age, and ethnicity, they hold peculiar positions within the urban society, and their experience of the city, its spaces, services, and opportunities can vary greatly. By capturing underrepresentation of certain groups or inequality in terms of use, access to and/or availability of green spaces, NBS assessment frameworks can point to areas of action that can help us better tailor interventions to the needs and interests of traditionally marginalised stakeholders.

## How we monitor

As argued in van der Jagt et al., NBS should 'build on local or traditional knowledge and be aligned with the needs, values and preferences of relevant sociocultural groups and place-specific communities' (2023b, p.6), and especially of traditionally marginalised groups.

When it comes to measuring and monitoring relevant biodiversity and cultural indicators, it is important to recognise and valorise community-based monitoring and information systems, ensuring that 'scientific knowledge is not prioritised over other ways of knowing' (van der Jagt, 2023a, p.58). This is compelling in European cities, but even more so in CELAC cities, where indigenous and informal communities have a special relationship with local landscapes and ecosystems, caring for their survival and in turn depending on them for their livelihoods.

The Local Biodiversity Outlooks<sup>31</sup> (LBOs) are a gripping example of on-the-ground initiatives led and data generated by indigenous peoples and local communities (IPLCs) in support of the implementation of multi-lateral sustainability agreements such as the Global Biodiversity Framework (GBF), the Paris Agreement on Climate Change, and the Sustainable Development Goals (WWF et al., 2023). In complement to the Global Biodiversity Outlook<sup>32</sup> (GBO), these outlooks provide a snapshot of the impressive contributions of local communities to the attainment and monitoring of SDG targets, showing IPLCs' inextricable material and cultural links to the environment (FPP, 2020, pp. 233-235).

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<sup>30</sup> For example: 'openness of participatory processes', 'citizen engagement actions', 'public participation and collaborative processes', 'number of active users in urban allotments', etc.

<sup>31</sup> Until now, two LBOs have been published as companion publications to the Global Biodiversity Outlook: LBO1 and LBO2. LBO1 was produced in 2016; LBO2 was released during the negotiations towards a post-2020 global biodiversity framework in 2020.

<sup>32</sup> The Global Biodiversity Outlook is the flagship publication of the Convention on Biological Diversity, providing 'a summary of the status of biological diversity and an analysis of the steps being taken by the global community to ensure that biodiversity is conserved and used sustainably, and that benefits arising from the use of genetic resources are shared equitably' (CBD, 2020).

As warned by the IPCC's 6<sup>th</sup> Assessment Report (2022), IPLCs are, and will continue to be, disproportionately impacted by climate change and environmental degradation if several SDGs are not met. They will suffer from the loss of livelihoods from ongoing deforestation (SDG 15.5), from unsustainable fishing practices (SDG 14.6), and they will bear negative health impacts from pollution and water insecurity (SDG 6 and 12.4). For this reason, integrating their knowledge by allowing for the use of community-generated data as part of the broader NBS implementation process should be encouraged where relevant. Community-generated data and monitoring systems can also 'provide valuable additional data regarding equity, human rights and biocultural rights' (WWF et al., 2023, *ibid*, p. 16). The [Indigenous Navigator](#) platform is a powerful example of a database *by* and *for* indigenous peoples that monitors the implementation of essential aspects of the 2030 Agenda.

Not all community-based data sources and monitoring systems are of course organised and institutionalised like the above example. Going forward, and probably beyond the project lifespan, it would be valuable for the cities to map first and then accommodate alternative, local sources of data to complement and weigh official, top-down approaches.

#### 4. Using the SDG framework can help unlock NBS funding

Financing remains a critical obstacle to scale NBS uptake, with the 'global financing gap towards protection of nature estimated at more than \$700 billion' (Gómez et al., 2023).

Studies show that NBS are traditionally financed through public sector and philanthropic funds, with only 14% of capital supplied the private sector (*ibid*). Moreover, NBS funding is usually sector-based, with the majority of funds coming from biodiversity financing, that is, financing from any sector that contributes to conservation, sustainable use, and restoration of biodiversity i.e. agriculture, fisheries, and forestry (OECD, 2020b).

By linking NBS impacts to the SDGs, it is possible to evidence concrete benefits for sectors other than biodiversity, from health to education, gender equality, water and sanitation, air quality, and climate adaptation, among others. While public sector funding is not self-evident and faces challenges of its own, i.e. in terms of budget coordination for joint investments within municipal departments, political changes and/or austerity, etc. (Toxopeus and Polzin, 2021), this widens the spectrum of thematic funds NBS planners can access at scale, and especially at the national and international levels. At the same time, it can also stimulate private sector buy-in by making NBS more 'bankable' and 'scalable' (Marsters et al., 2021).



# 6. Recommendations/areas for further development

Both the literature reviewed, data analysed, and conversations, exchanges, reflections had with CONEXUS partners point to areas for further developing this research. Key recommendations are presented below.

## 1. Developing living databases that can feed into SDGs reporting

The fiches developed provide a snapshot of the potential contributions of locally implemented NBS to the SDGs based on their indicators' framework. The Linking Matrix used to attain such results can be used by planners and implementers to evidence tangible links between urban NBS and global sustainability targets, helping to fill the data gaps on SDGs implementation (especially at the sub-national level).

Developing “living” databases of NBS indicators which explicitly report links to the SDGs could support comparability among cities (and potentially within cities, at smaller scales of implementation such as the neighbourhood level) and SDG reporting itself by gathering evidence that could be fed into Voluntary Local Reviews. An example of such a database is given by the [Cities Indicators Dashboard](#)<sup>33</sup> developed by two global sustainable urban development initiatives, [City4Forest](#) and [UrbanShift](#).

With the renewal of NetworkNature, there could be scope for the European Commission's NBS Task Force on Data and Indicators to bring together the knowledge and data from different projects to build a comparable platform.

Strengthening reporting mechanisms (including via VLRs) on the achievement of SDGs via NBS actions can substantiate evidence and give visibility to current achievements and gaps, supporting peer learning, while strengthening synergies with national policies and frameworks.

## 2. Complementing the CONEXUS 'NBS Funding Roadmap' with SDG-related information

In CONEXUS, *Task 6.2 Learning*, led by Living Cities Stockholm, has developed a 'Strategic Roadmap for Accessing Funding for Urban NBS Initiatives' that provides fund-seekers with a decision-tree survey to assess which funding sources and resources they can consider for their NBS initiative. The roadmap, currently internal to the CONEXUS project, will inform the NBS business cases and investment propositions developed by FAO and Conicet in *Task 5.3 Valorise*. As it stands the roadmap already includes potential funding sources for sustainable development (i.e. FAO, the Green Climate Fund, the

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<sup>33</sup> Indicator calculations were generated for cities of interest based on open-source data, using geospatial analysis and zonal statistics methods, making it possible to repeat, replicate, and scale similar analysis to other urban areas. The indicators help cities to measure themselves against national or global benchmarks, such as the Sustainable Development Goals, or against self-defined metrics. The technical note produced by the World Resource Institute (2023) discussing methods and data-sets used by the platform can be found at the following link: <https://www.wri.org/research/calculating-indicators-global-geospatial-datasets-urban-environment>.

UN Decade on Restoration, EIB, etc.). Further developing the roadmap, by including a question on SDGs addressed and by inputting SDG-related funding programmes, could support NBS upscaling in several ways. Firstly, by prompting NBS fund seekers, planners and interested parties to think about NBS-SDGs linkages from the onset and/or integrate them more structurally throughout the implementation phases; secondly, by using the SDGs as a “common language” to browse, filter, and access funding coming from other sectors, in addition to traditional NBS funding sectors such as biodiversity, and from international platforms (in addition to local and national ones); lastly, by informing the formulation of integrated NBS investment propositions and business cases which combine public and private sector funding.

To yield this last point, it is also relevant to match the findings of this research with evidence from the cost-benefit analyses of the NBS pilots in WP5, exploring whether NBS can *de facto* be positioned as cost-effective enablers of the SDGs.

### 3. Keeping NBS trade-offs in check before and throughout implementation

Several studies (a.o. Nilsson et al., 2016; ICSU, 2017; Nilsson et al., 2018; Weitz et al., 2018; Bennich et al., 2020; OECD, 2019; Pham-Truffert et al., 2020) on the interrelation between SDGs have determined that ‘actions or inactions toward specific goals positively or negatively affect progress towards other goals’ (Obrecht et al. 2021); in other words, there can be either synergistic interactions (*co-benefits*) or conflictual interactions (*trade-offs*) between different SDGs. A network analysis of the current state of knowledge on SDG interdependencies (Pham-Truffert et al., 2020) reveals that actions carried out towards the achievement of the two biodiversity-related SDGs, SDG 14 ‘Life below water’ and SDG 15 ‘Life on land’, foster progress towards delivering almost all other goals. Thus, by contributing to enhancing biodiversity and ecosystem services, NBS emerge as multipliers of co-benefits for other SDGs, while in turn buffering conflictual interactions (ibid). However, by having direct impacts on other goals (e.g. those related to natural resource use such as SDG 6 ‘Clean water’, SDG 7 ‘Affordable and clean energy’, SDG 12 ‘Responsible consumption and production’, or SDG 13 ‘Climate action’), they could indirectly trigger trade-offs with other goals (e.g. increasing urban green space in low-income neighbourhoods can drive rent prices up and contribute to gentrification) (Obrecht et al., 2021; McPhearson et al., 2023).

To achieve the full potential of NBS to bring about transformative, just outcomes, it is necessary to recognise the trade-offs and synergies of the co-benefits associated both prior to and throughout implementation phases (van der Jagt et al, 2023b; Frantzeskaki et al. 2023; Gómez Martín et al. 2020).

### 4. Structurally integrating inclusivity and justice perspectives

As discussed in Finding 4. ‘Innovative NBS that are not (fully) inclusive are not innovative enough’, it is key for NBS projects to integrate inclusivity and justice perspectives more structurally, including via monitoring impacts, both in terms of *what* and *how* it is monitored.

Space to explore these aspects of NBS implementation is being given to the Life-Labs via the iterative learning cycles of *Task 4.2 Analyse*, where pilot coordinators assess the progress and gaps/challenges related to the measurement of indicators, potential training needs, and the long-term sustainability of Life-Lab Information Systems. Similarly, the CONEXUS Gender & Equality, Diversity, and Inclusion (EDI)

committee is supporting topical exchange among cities, promoting lessons learnt and transferability of good practices.

Nevertheless, it is important to ensure inclusivity and justice concerns are not integrated after NBS interventions have already been designed; they should inform, inspire, and define their very core and should be mainstreamed into every aspect of implementation. Practical suggestions on how to mobilise transformative community engagement can be found in Task 4.2 learning cycles' reports, including for example allocating personnel exclusively in charge of community engagement and earmarking funding for such activities from projects' onset.

Research and Innovation agendas on NBS should also take into account that catalysing just socio-ecologic transformations takes time and is affected by institutional constraints and timeframes, making it difficult for projects lasting 3-4 years to assess the full impact of interventions on local communities.

# 7. Conclusions

Through the research undertaken in Task 6.1, led by the EUKN and supported by ICLEI Europe, ICLEI SAMS, and the University of Buenos Aires (UBA), CONEXUS has recorded the potential contributions of cities' NBS pilots to the UN SDGs and NUA in a way that links NBS co-benefits at the local level to integrated impacts for sustainability at the global one. In fact, by linking Life-Lab information systems to the sub-targets and indicators of the SDGs and the NUA as well as to strategic urban agendas and policies at the local/national level, this research has evidenced both the highly multifunctionality of NBS and the scalable nature of their impacts (local-to-global).

In relation to the interlinked objectives proposed by T6.1, the case studies and fiches produced as part of Deliverable 6.1 will be used instrumentally by Life-Labs to disseminate on NBS benefits using the common language offered by the SDGs, which can:

- widen the base for political support and incentivise integration into urban policy and planning by showing the concrete contributions of NBS interventions to policy objectives across multiple sectors;
- support efforts to engage strategic stakeholders and expand partnerships (including with international institutions/networks and the private sector);
- inform NBS business cases and investment propositions, via Task 5.3, helping to explore new funding and financing avenues, going beyond traditional NBS financing sectors and opening possibilities to access funding from international agencies and ethical investment from the private sector.

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Milestone 14 (M14) 'Protocol for data collection for each Life-Lab' (2022).

Milestone 18 (M18) 'Milestone report on baseline conditions and process design for social learning in Life-Labs' (2022).

Milestone 19 (M19) 'Feedback given for further enhancement of NBS across Life-Labs using indicators' (2022).

Milestone 26 (M26) 'Lessons learned on funding sources passed to WP5' (2022).

# Annexes

## Annex A. Linking matrix template

CITY LIFE-LAB X									
Pilot	Indicator	Challenge Area	CONEXUS Assessment Framework Indicator No.	Suggested by Life-Lab (Y/N)	SDGs	SDG targets (when applicable)	NUA goals (transformative commitments & effective implementation principles)	Link to city-level policies/programmes	Indicator notes
	Source: Protocol for data collection for each Life-Lab (M14)	Source: NBS TF2 Handbook; D4.1 CONEXUS Assessment Framework (D4.1); values ascribed by the researchers			Source: NBS TF2 Handbook (values filtered as not relevant to pilot in question); own research (content analysis/thematic linking)	Source: own research (content analysis/thematic linking)	Source: own research (content analysis/thematic linking)	Source: CONEXUS Case studies (D2.2), Life-Lab Actions Plans (D3.1), CONEXUS Pilot Factsheets (T4.3), own research	i.e.: correspondence to UMF Indicators, G&EDI sensitivity, any notable issues, etc.
Pilot 1									
Pilot 2									
Pilot 3									
CITY LIFE-LAB Y									
Pilot 1									
Pilot 2									
Pilot 3									







# Localising the SDGs and NUA goals via NBS implementation in cities: exploiting results & maximising impacts

## Group B

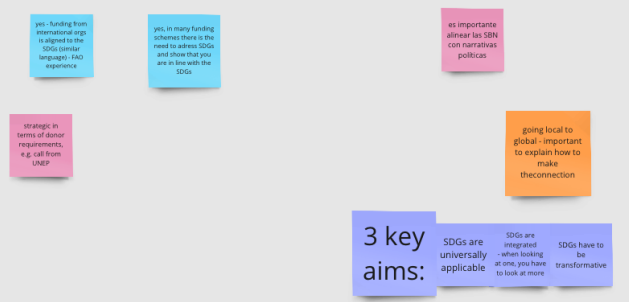
### RELEVANCE

### FORMAT & CONTENT



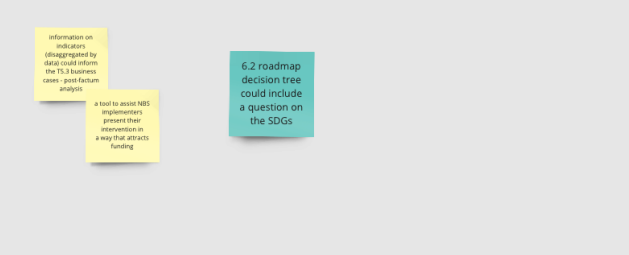
Is linking LL indicators to the global goals relevant/important? If yes/no, why?

What information should the case studies contain (in addition to the fichas)?



Would you use case studies to engage policy-makers and other stakeholders? If yes/no, why?

How can we use this information to inform investment propositions & business plans (WP5)?



USABILITY: POLICY & PARTNERSHIPS

USABILITY: FUNDING & FINANCE



# Project Partners



## CONEXUS

Urban nature connects us  
 Conectados por la naturaleza urbana  
 Conectados pela natureza urbana



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