

Implementation of indicators for Nature-based Solutions: How to organize it?

Indicators were implemented in each CONEXUS Life-Lab through a participatory approach to gather evidence of the multiple benefits of Nature-based Solutions (NbS) within unique local contexts. The process of implementation was closely followed to track progress and to collect experiences. The key learnings from this process are summarized in five key messages in this factsheet.

Background

In CONEXUS, we used the European Union Practitioners' Handbook for Evaluating the Impact of Nature-based Solutions (Dumitru and Wendling, 2021) as a first source for indicators for different NbS challenges. Through a participatory approach, local actors could select indicators (van der Jagt et al., 2023), which allowed an indicator selection that is place-based and better addresses the peculiar challenges

occurring in each Life Lab. The implementation process of the selected indicators and its relevance for NbS impact assessment was registered through learning logs, while they also allowed project partners to reflect on their experiences in the process. Based on these learning logs, we identified the opportunities for improving the monitoring and implementation process of NbS indicators.

Key Facts



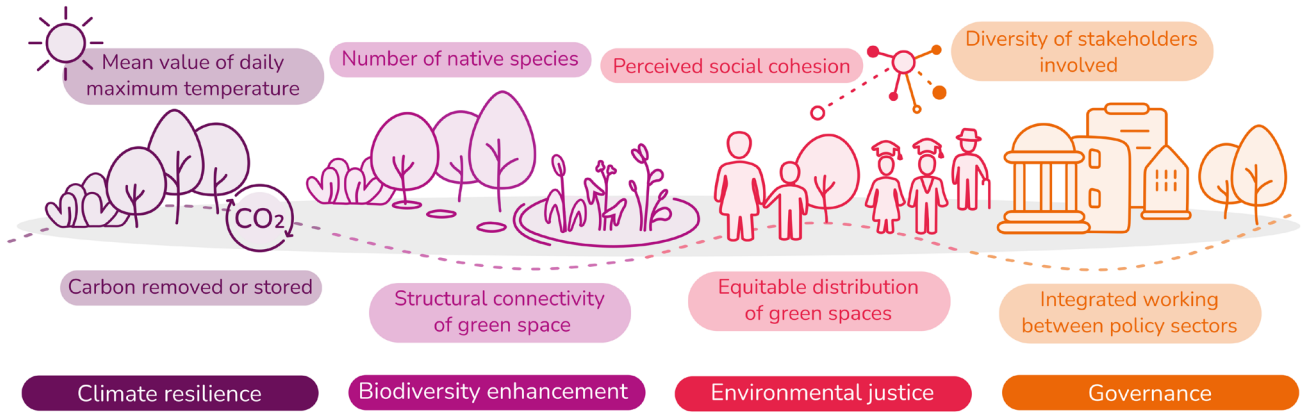
1. The Life-Labs chose between 3 to 10 indicators to be implemented.
2. The most commonly indicators were related to regulating and cultural ecosystem services.
3. Participatory indicator implementation was seen as challenging.
4. Lack of personnel and budget dedicated to indicator implementation.
5. Lack of insights on the logistics on the indicator implementation process.

Monitoring
A continuous process to track at various stages the implementation of NbS, the onward improvement and/or the performance or impact of NbS through the

Indicator
The subject what can be assessed to understand the effectiveness or impact of NbS interventions

- Benefits of monitoring & indicator implementation**
- Measuring the effectiveness of NbS
 - Providing evidence base for informed decision-making
 - Tracking progress
 - Demonstrating the value and benefits of NbS
 - Offering opportunity to adapt to changing conditions
 - Improving local capacity on NbS

Examples of indicators



Innovative approach used at CONEXUS pilot and projected NbS benefits

Assessment of NbS indicators can support providing evidence on how NbS can address social-environmental challenges, evaluating solutions, identifying change of state at different spatial-temporal scales, and integrating multiple stakeholders' preferences resulting in a place-based evaluation. Despite these advantages, NbS indicator assessment still faces many challenges in practice and there is little reflection on the practical implications of its implementation. Based on the experiences within the process of indicator implementation in the CONEXUS Life-Labs, we share the lessons learned, which can be considered at the start of any indicator implementation.

The **purpose** of indicators should be established from the beginning. To reflect the

socio-environmental challenges of the Life-Labs, the indicator selection was validated by a diversity of stakeholders. However, the intention for selecting these various indicators was not clarified at the start of the process. Deliberately agreeing on the purpose(s) for indicators in general and for specific indicators within the participatory process for indicator selection could have resulted in better implementation.

The process for indicator selection can be supported with the following lessons:

1. Identify the scale of the indicator

The spatial and the temporal scale of indicator assessment should be defined beforehand, as scale is linked to the purpose of the indicator and to the necessary resources for its monitoring. The selection of the indicators should be informed by the impacts on spatial scale: micro (local),

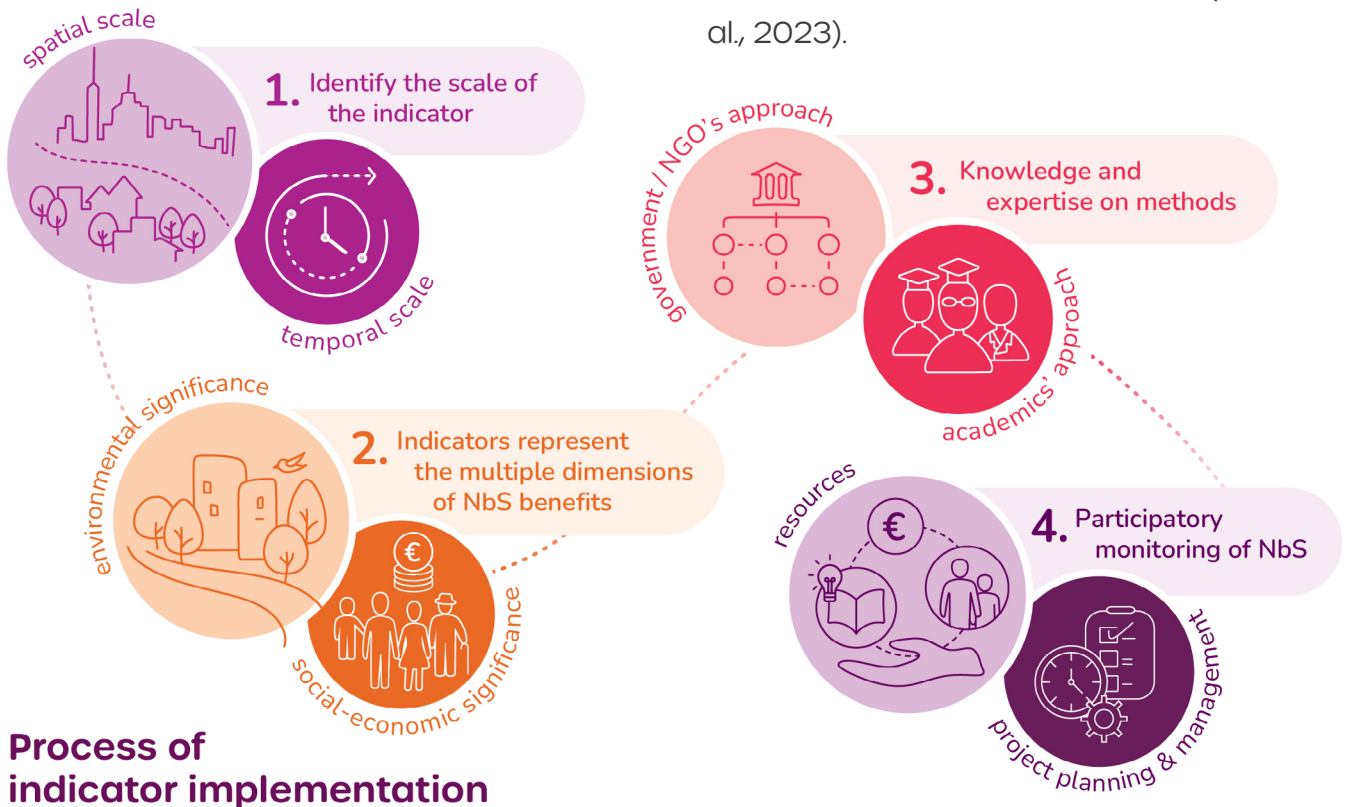
meso (city), and macro (global) scales; and on temporal scale: short (<5years), medium (5 to 10 years), and long term (more than 10 years). The spatial scale of the indicators may mirror the scale of the implemented NbS, but can be redefined, if desired, based on resources or priorities. In establishing the temporal scale of monitoring, the time needed for the implemented NbS to reach its potential is a key factor.

NbS impacts depend on spatial and temporal scales, and monitoring should be aligned to these.

For instance, the impact of tree planting on temperature regulation might require several years before realization. Yet, establishing long-term monitoring of NbS impacts could help obtain evidence from a multiplicity of benefits and, hence, a balance should be found (Odongo et al., 2022).

2. Indicators represent the multiple dimensions of NbS benefits

Most CONEXUS Life-Labs selected only indicators within one dimension of benefits; focusing on either regulating or cultural services, while only two Life-Labs incorporated biodiversity aspects. However, evidence on multiple benefits of NbS is necessary to promote their mainstreaming, especially in less developed countries. In places with lower budgets for nature, benefits to human health and cultural values are equally important as to biodiversity and ecological functions, as such benefits can give a stronger social significance to NbS implementation. For example, obtaining longer-term data on the impacts of wetland restoration on increased potable water availability and flood risk reduction. More evidence on the benefits of NbS for communities, including informal settlements, are needed (Wolff et al., 2023).



3. Knowledge and expertise on methods

Indicating who is measuring the indicators, helps to identify the feasibility of implementing indicators and related methods within the existing resources, expertise, and budgetary constraints. For example, in the CONEXUS Life-Labs led by academics included more complex and more expensive methods to assess regulating services, while several Life-Labs lead by government institutions hired consultants or NGO's for monitoring indicators. The selected methods also determine the possibility of long-term monitoring. Some methods depend on a certain expertise or leadership or require larger budgets. Such methods are more likely

to be impacted by institutional changes. Therefore, successful implementation of indicators requires institutional commitment to secure long-term budgets and personnel time for NbS monitoring.

4. Participatory monitoring of NbS

Participatory monitoring of NbS can be determined and should be aligned to the purpose of the indicator. In case of participatory monitoring, for example through citizen science, this should be budgeted for and organized during the project planning phase. This will help avoid the mismatches between complex methods for indicator and community capacity regarding time and expertise to monitor it.

Key messages



1. Establish the purpose for your indicator(s).
2. Consider the impact on spatial and temporal to select adequate indicators.
3. Include indicators that assess multiple dimensions of benefits from NbS.
4. Choose methods adequate to your local reality in terms of expertise, time, and budget.
5. Set up a purpose, budget, and time for a participatory implementation process.

References

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