

The 13th International Conference on Innovation in Urban and Regional Planning
Methods, Models and Technologies for Future Cities and Regions
8-9-10 September 2025



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Fostering Nature Based Solutions in Urban Planning: Results from a systematic literature review

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SESSION 09 | Impact Assessment of Nature Based Solutions
in Cities: Theoretical, Methodological, and Practical Perspectives

Pavia - September 9, 2025

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Title: "Nature for sustainable cities: planning cost-effective and just solutions for urban issue"



Acronym: NatSolis



Period: 24 months (from 2023 to 2025)



Project Number: 2022ZLE8HC



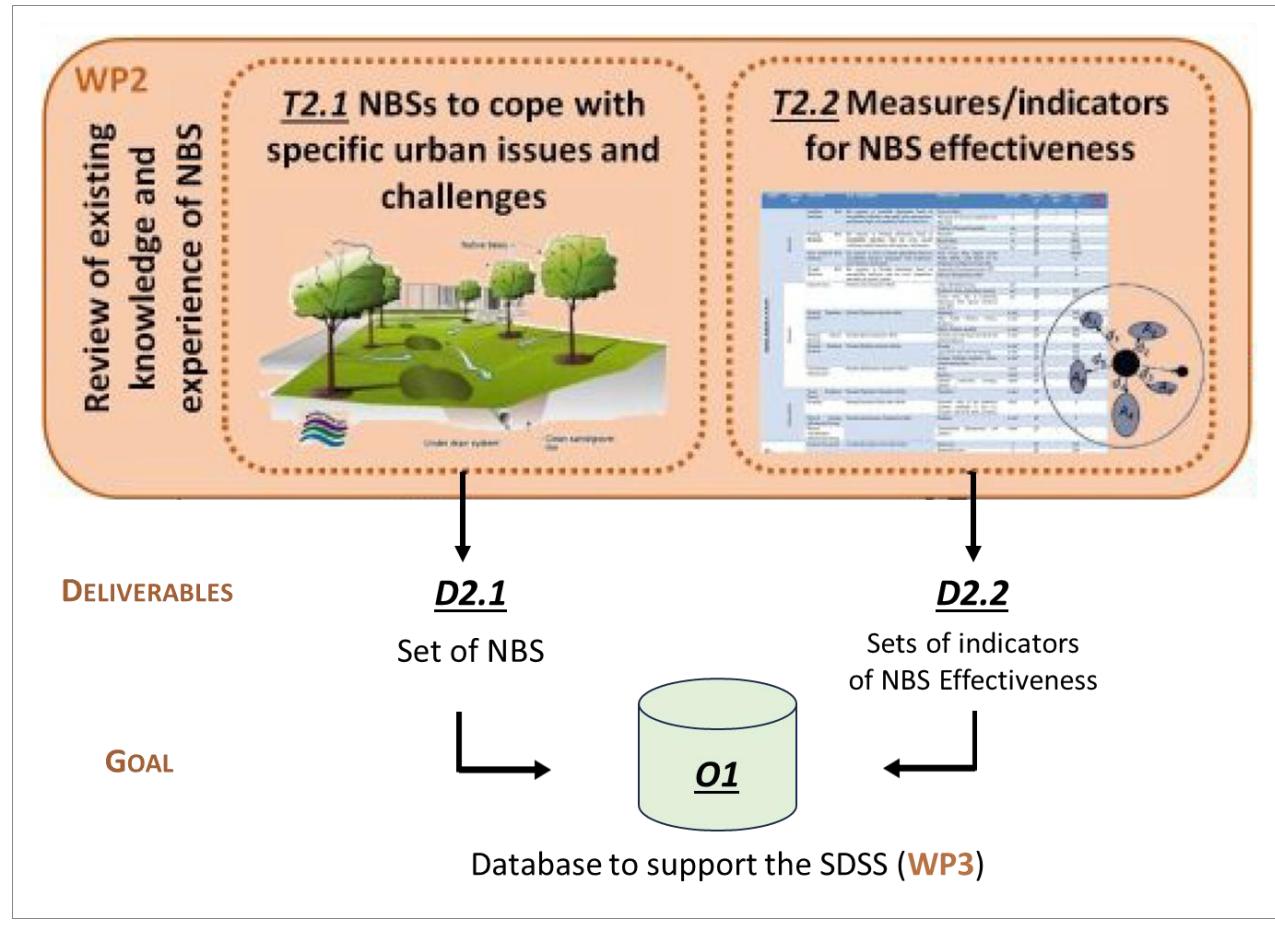
Grant: Research Programs of Great National Interest (PRIN)



Call: PRIN 2022



Funding Body: MUR (Next Generation EU)



Review of existing knowledge and experience of NBS

WP2

"Nature AND Based AND Solutions AND Urban AND Planning"

70 reviews
 (2016-2024)

"Nature AND Based AND Solutions AND Urban AND Planning AND Issues"

11 reviews
 (2019-2024)

From a previous review performed alongside the **WP2**, it emerged that NBS cost-effectiveness is not always investigated, let alone measured, threatening NBS implementation in urban planning (Marra & Grimaldi, 2024)

Aim of the study

With the aim of deepen the work done, this study concerns a systematic review of the academic literature, aimed at finding answers to relevant questions

Research Questions (QR)

QR1: Types of NBS discussed

QR2: Spatial scale of investigation

QR3: Benefits associated

QR4: How benefits are measured

QR5: Costs associated

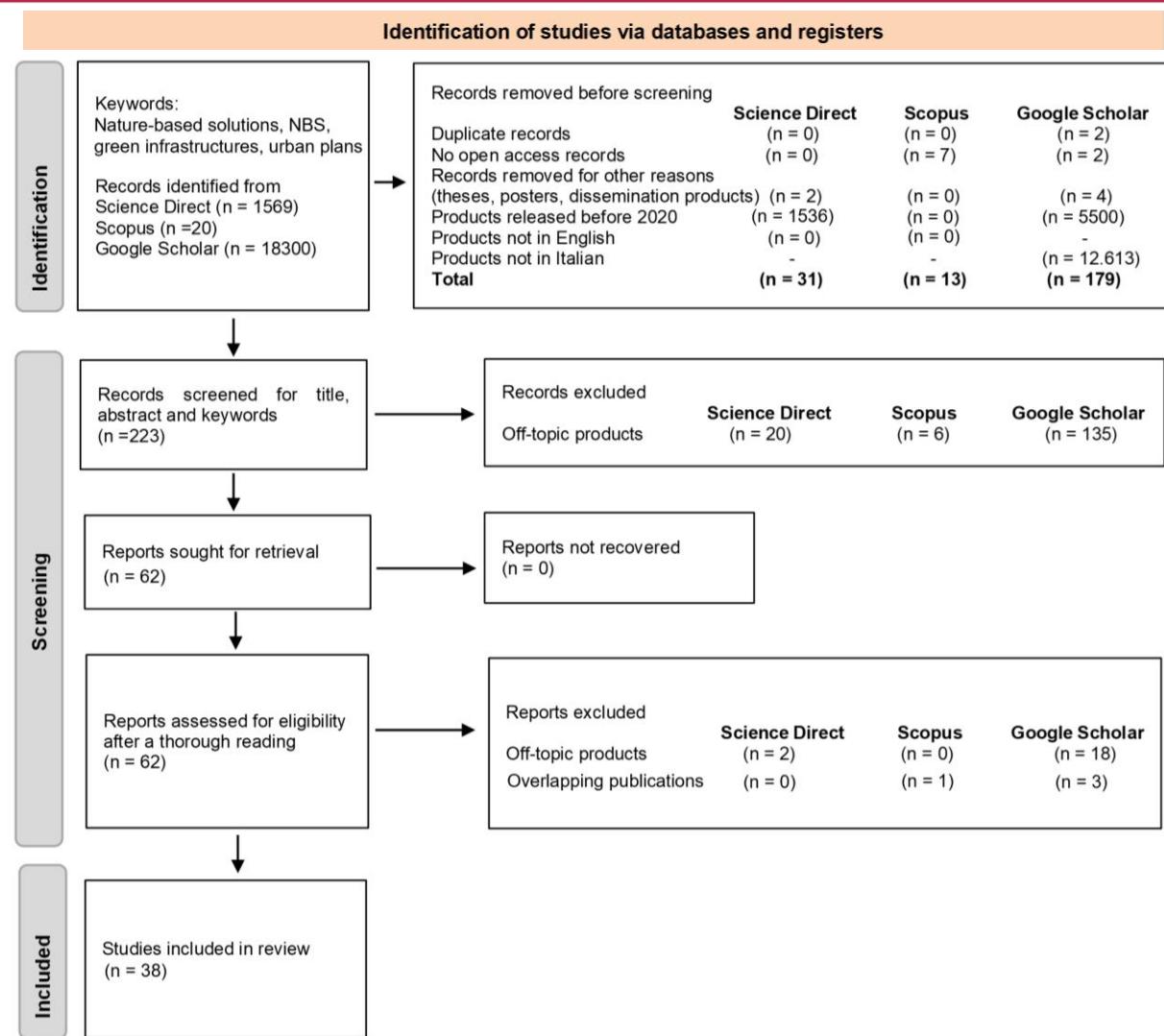
QR6: Methodologies adopted

QR7: Tools/software used

Search string used
 for Scopus and Science Direct:
 (“Nature-based solutions” OR
 NBS) AND “green infrastructures”
 AND “urban plans”

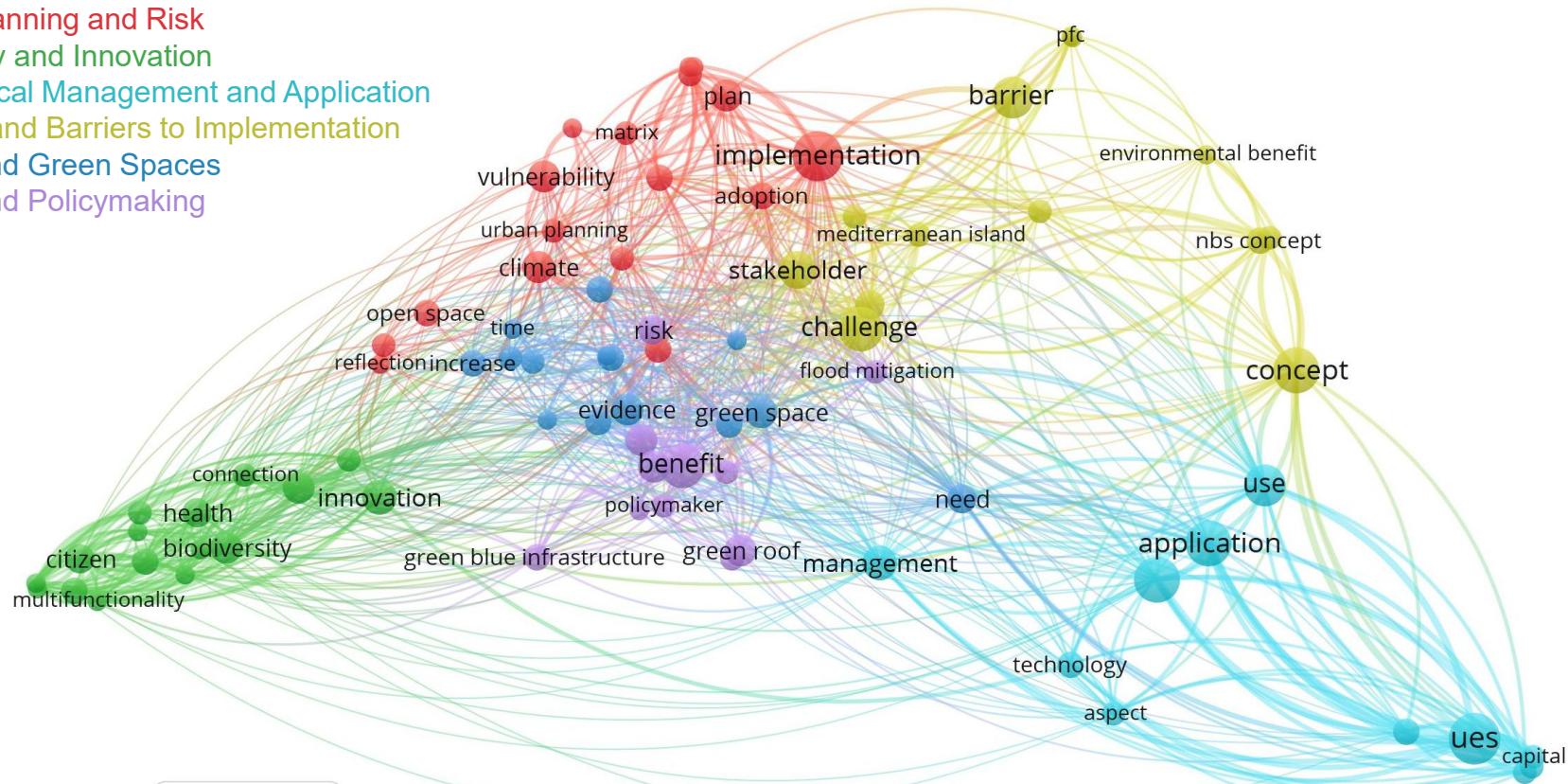
Workflow diagram according to the
 PRISMA protocol.

Source: own elaboration on the
 PRISMA 2020 diagram for the new
 systematic reviews that include
 database and registry searches
 (Page et al., 2021)



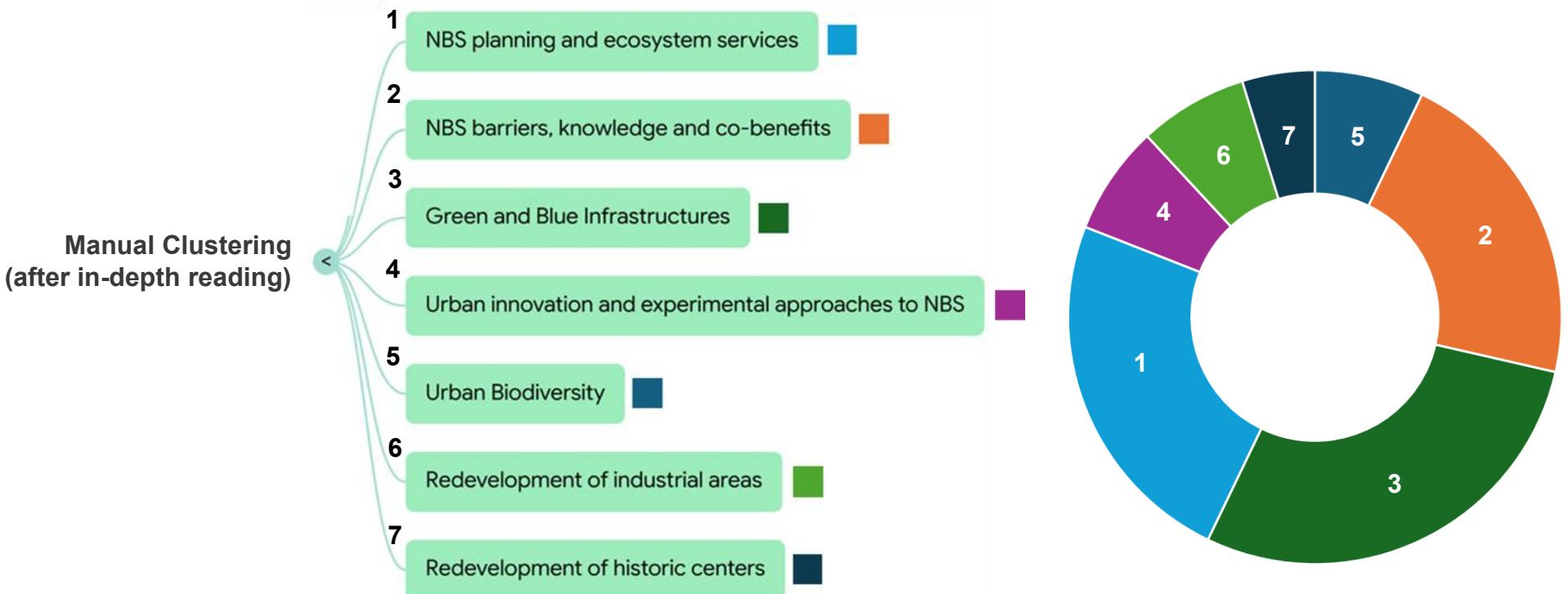
Preliminary Clustering (Title, abstract and keywords)

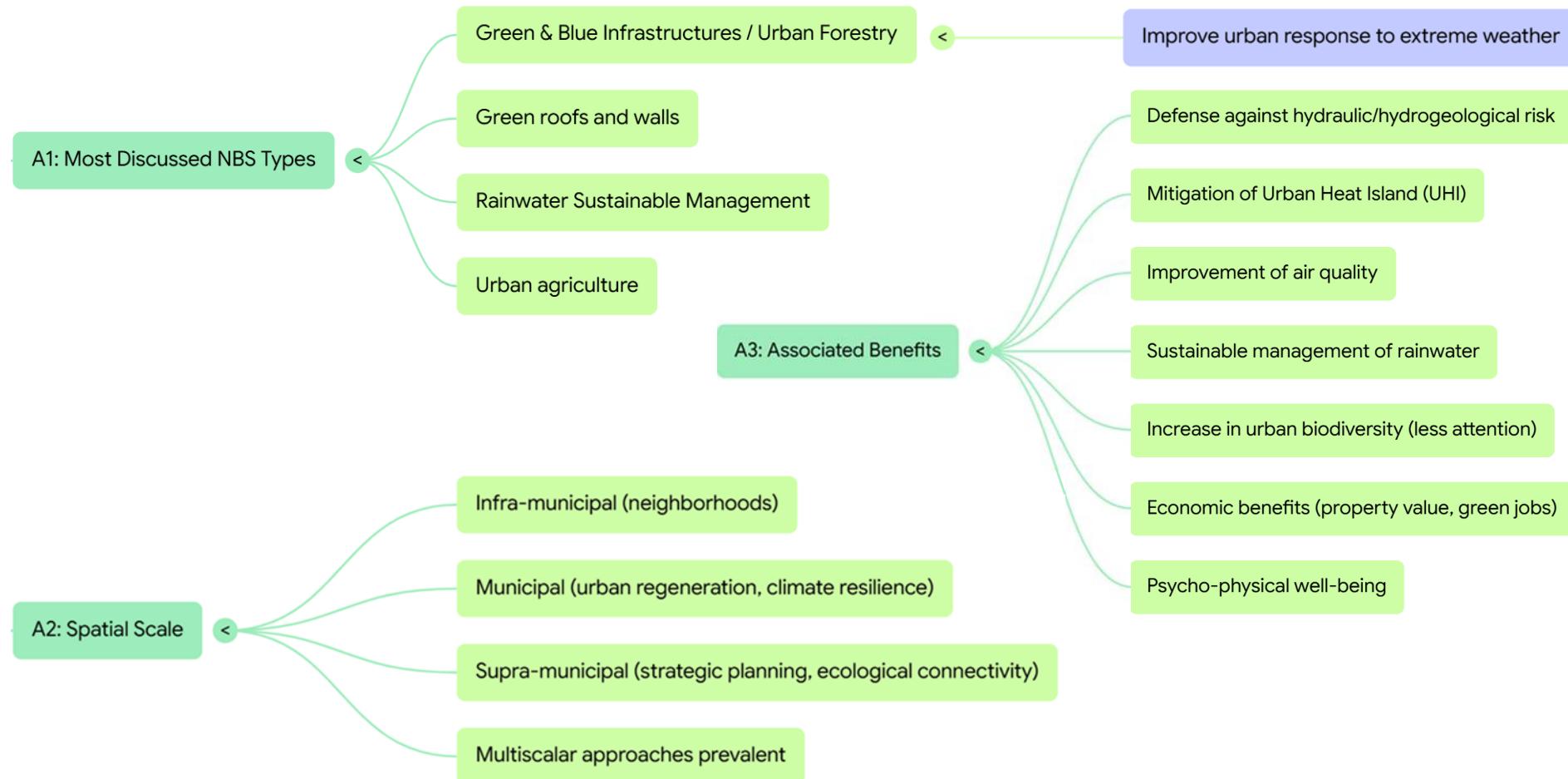
1. Climate Planning and Risk
2. Biodiversity and Innovation
3. Technological Management and Application
4. Concepts and Barriers to Implementation
5. Benefits and Green Spaces
6. Benefits and Policymaking

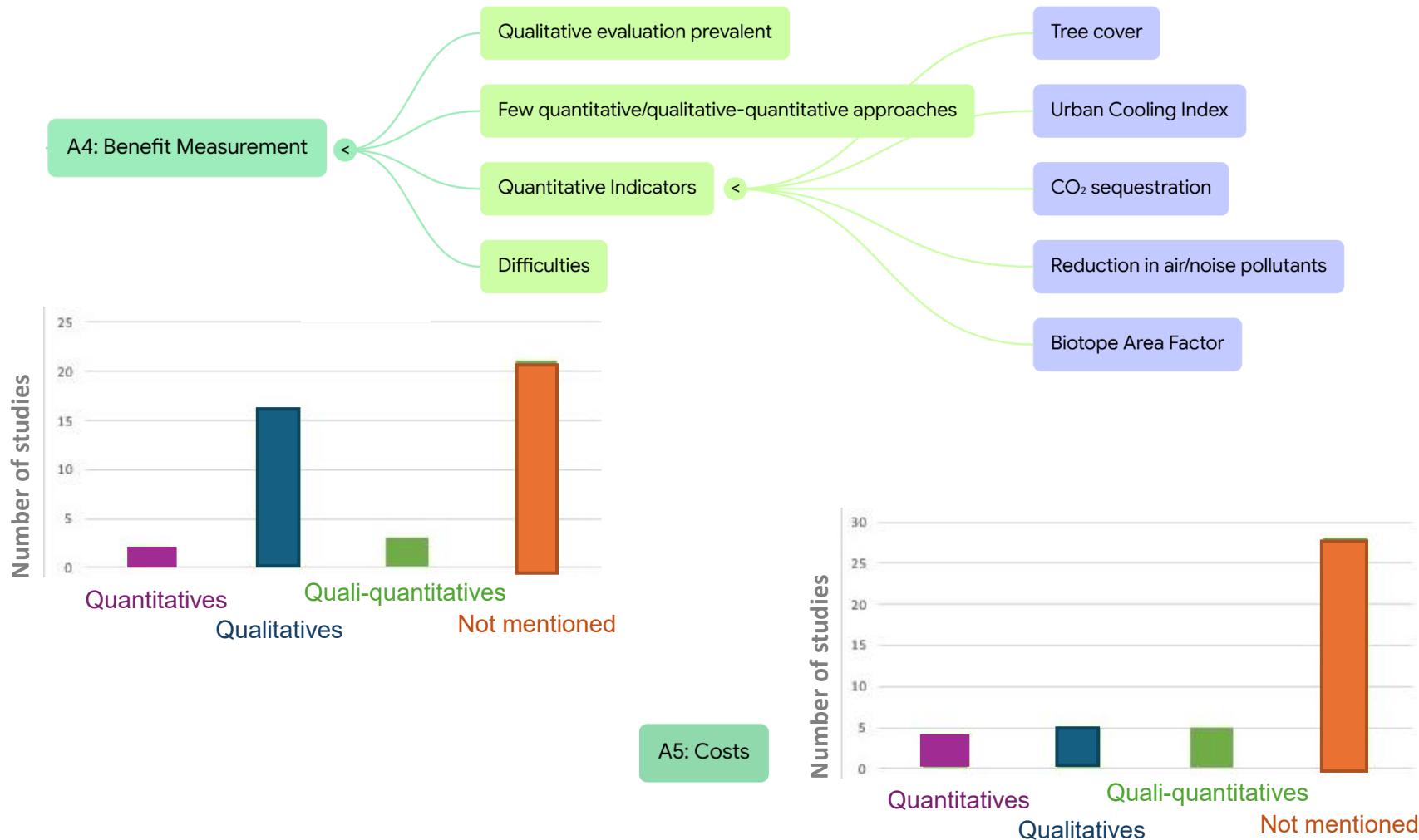


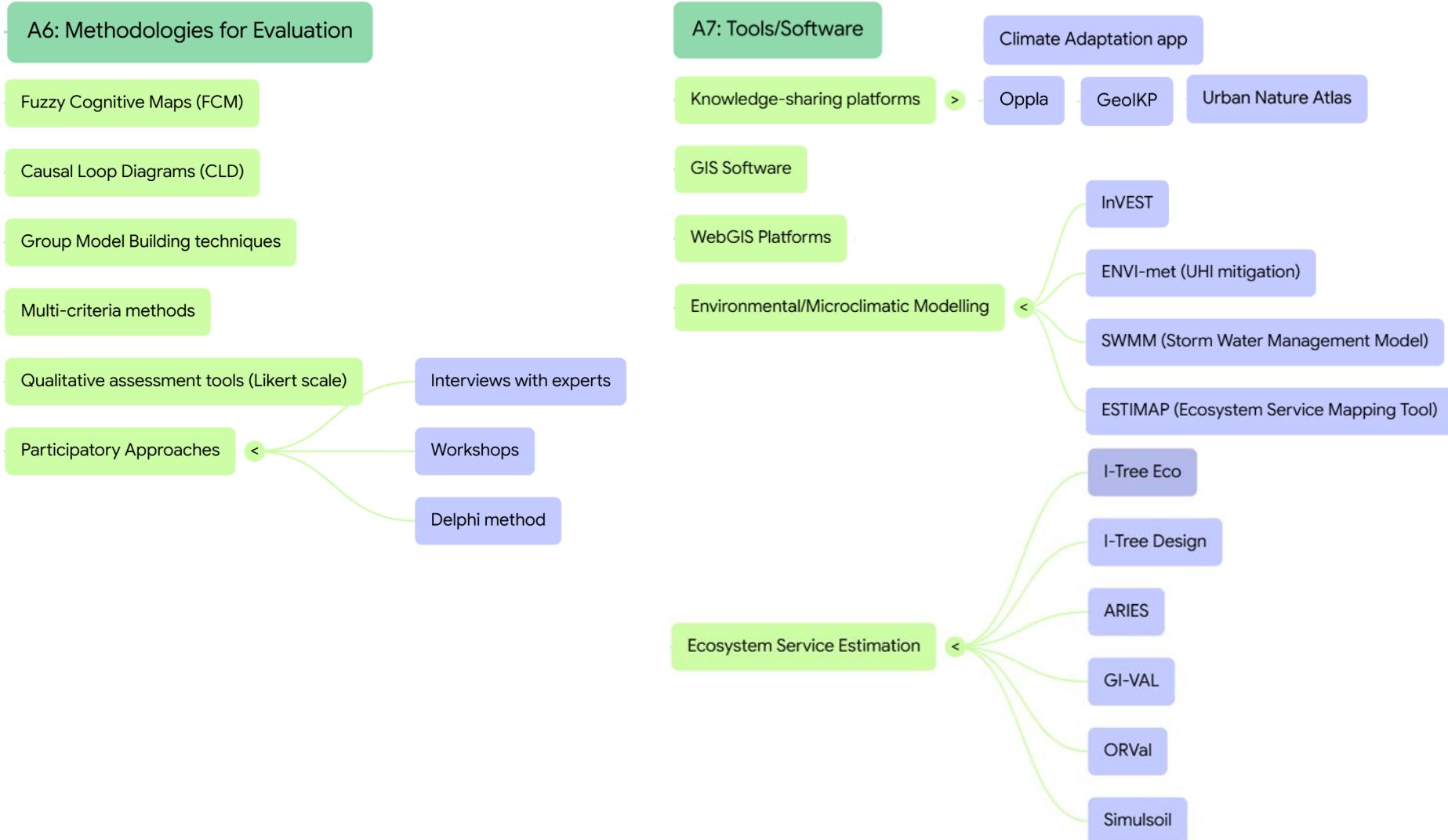
Co-occurrence Map











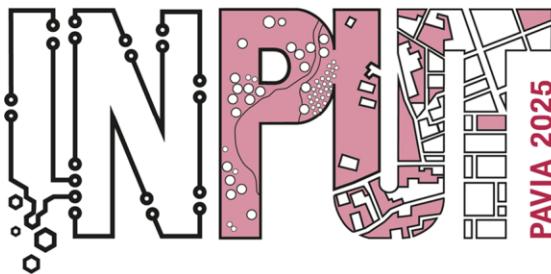
Results summary

Still few studies adopt quantitative approaches to assess the NBS potential benefits and even less of the costs associated with them. It is necessary to address the barriers behind this to foster NBS implementation in urban planning



Limitations and future research developments

- Pre-register the protocol or perform a quality assessment of the publications included in the final sample analysis
- The integration of academic literature with the 'grey literature' (Schöpfel, 2012)
- Focusing on biodiversity, understand how a Green Infrastructure Plan of an urban area affects the possible improvement of ecological connectivity



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Thank you for your kind attention!

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