

Technical Report

Activity A1.4: Training package development **Deliverable D1.4.2: CONE toolbox: knowledge transfer** **and exchange (NBS)**

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1. Introduction

The CONE Toolbox was developed to support partners, pilot cities, and Living Lab (LL) facilitators in strengthening their knowledge base and technical capacity for planning and implementing nature-based solutions (NbS). It translates the scientific and methodological content from Activity A1.4 (D1.4.1 Training of Trainers) into practical, accessible learning materials.

The Toolbox consolidates key knowledge required in WP2, particularly for the preparation of pilot actions and the participatory co-design processes in LLs. It includes videos, presentations, and curated literature supporting climate adaptation, NbS design, stakeholder engagement, and river basin management.

The Toolbox content is intended for continuous use throughout the project and will be updated with additional deliverables such as the Living Lab Protocol, Guidelines, and Pilot Manuals.

2. Structure of the Toolbox

The Toolbox consists of 11 educational films and presentations, each addressing a core thematic area relevant for pilot development, as well as an additional literature package supporting deeper learning.

Content is organised into 5 thematic clusters:

1. Climate change fundamentals
2. Nature-based solutions & urban resilience
3. Context assessment & co-design
4. Stakeholder engagement
5. Thematic NbS applications (Stormwater Management & Heat Stress Mitigation & River Basin and Embankment Management)

Each film corresponds to a topic delivered during the Training of Trainers workshops and is fully aligned with the needs of the Living Labs under WP2.

3. Detailed content of the Toolbox

Below is a synthesis of the Toolbox content, combining descriptions from both source documents.

Episode 1	Basics of climate change - Causes of climate change - natural and anthropogenic factors - Consequences of climate change - global and regional impacts Watch: Episode 1	Magdalena Gajewska, GUT
Episode 2	Adaptation and mitigation strategies for cities - NBS - definition and types - Benefits of NBS in urban environments + ecosystem services	Magdalena Gajewska, GUT

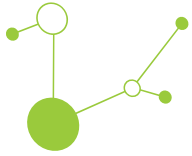


	- The role of NBS in climate change adaptation and mitigation Watch: Episode 2	
Episode 3	Collaborative research and context analysis - Urban planning and design for climate resilience - Methods for assessing local environmental and social contexts - Techniques for identifying local needs and barriers Watch: Episode 3	Dominika Wróblewska, GUT
Episode 4 & Episode 5	Stakeholder involvement - Identifying and engaging stakeholders (public, private, civil society, academia) - Techniques for effective stakeholder engagement - Co-creation and participatory design techniques Watch: Episode 4 , Episode 5	Dominika Wróblewska, GUT & Paulina Duch-Żebrowska, GUT
Episode 6	Case study - Case studies of successful urban adaptation and mitigation projects Watch: Episode 6	Asa Ode Sang
Episode 7	Heat stress mitigation - Urban Heat Island (UHI) effect - causes, consequences, and mitigation - Urban biodiversity and NBS: an integral design approach - Cooling with trees and vegetation - Urban forests, parks, gardens, playgrounds, streets, avenues, corridors) Watch: Episode 7	Marzena Suchocka, SGGW
Episode 8	Stormwater management - case studies - AWARD (https://www.awardproject.eu/): Sponge city in Metropolitan city of Milan - CARDIMED (https://www.cardimed-project.eu/): DEMO4 in Catania, Sicily Watch: Episode 8	Fabio Masi, IRIDRA
Episode 9	NBS towards adaptation and mitigation for cities - The role of NBS in climate change adaptation and mitigation - inspirations and case studies Watch: Episode 9	Magdalena Gajewska, GUT
Episode 10 & Episode 11	River basins and embankment management - Extreme events and their consequences in urban areas - How to prevent the phenomenon of urban stream syndrome - causes, prevention measures Watch: Episode 10 , Episode 11	Wojciech Szpakowski, Gdansk Water Company

4. Link with Activity A1.4 and WP2

The Toolbox builds directly on the two Training of Trainers workshops:

Workshop 1: Climate change, NbS fundamentals, context analysis, stakeholder engagement.



Workshop 2: Heat stress mitigation, stormwater management, river basin NbS, biodiversity, and monitoring methods.

This ensures methodological continuity from WP1 (LL Guidelines & training) to WP2 (Living Lab implementation).

The Toolbox acts as a “living” reference for:

- facilitators conducting local co-design sessions,
- municipal teams preparing pilot concepts,
- partners reviewing NbS solutions for feasibility,
- harmonisation of methodologies across countries.

5. Accessibility and format

Toolbox resources are available in accessible digital formats. Educational videos are published on the [CONE YouTube channel](#), while presentations and the Toolbox overview are available for download in the Media section of the CONE project website. The Toolbox overview also provides direct links to the videos and a curated list of additional literature and resources for further learning.

Presentations and the literature package are provided as downloadable files.

Toolbox content will be updated iteratively as WP2 progresses.

6. Impact and added value

The Toolbox serves as a core knowledge resource supporting:

- harmonised understanding of NbS across the partnership,
- improved design quality of pilot actions,
- increased competence of Living Lab facilitators,
- evidence-based decision-making in municipalities,
- long-term capacity building beyond the project duration.

It also strengthens cross-border cooperation by providing partners with shared terminology, assessment methods, and design principles.

7. Conclusion

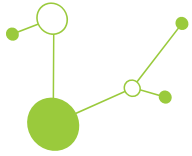
The CONE Toolbox consolidates scientific, methodological, and practical knowledge essential for implementing NbS within the project’s Living Labs. By combining videos, presentations, and literature, the Toolbox ensures accessible learning and supports partners in each stage of pilot design and implementation.

As the project progresses, the Toolbox will be expanded with additional deliverables (Protocol, Manual, Guidelines), enhancing its role as a long-term knowledge platform.



8. Relevant additional literature

- Almaaitah, T., Appleby, M., Rosenblat, H., Drake, J., & Joksimovic, D. (2021). The potential of Blue-Green infrastructure as a climate change adaptation strategy: A systematic literature review. *Blue-Green Systems*, 3(1), 223-248. <https://doi.org/10.2166/bgs.2021.016>
- Booth, D. B., Roy, A. H., Smith, B., & Capps, K. A. (2016). Global perspectives on the urban stream syndrome. In *Freshwater Science* (Vol. 35, Issue 1, pp. 412-420). University of Chicago Press. <https://doi.org/10.1086/684940>
- Calliari, E., Castellari, S., Davis, M., Linnerooth-Bayer, J., Martin, J., Mysiak, J., Pastor, T., Ramieri, E., Scolobig, A., Sterk, M., Veerkamp, C., Wendling, L., & Zandersen, M. (2022). Building climate resilience through nature-based solutions in Europe: A review of enabling knowledge, finance and governance frameworks. *Climate Risk Management*, 37. <https://doi.org/10.1016/j.crm.2022.100450>
- Ferdowsi, A., Piadeh, F., Behzadian, K., Mousavi, S.-F., & Ehteram, M. (2024). Urban water infrastructure: A critical review on climate change impacts and adaptation strategies. *Urban Climate*, 58, 102132. <https://doi.org/10.1016/j.uclim.2024.102132>
- Frantzeskaki, N., McPhearson, T., Collier, M. J., Kendal, D., Bulkeley, H., Dumitru, A., Walsh, C., Noble, K., Van Wyk, E., Ordóñez, C., Oke, C., & Pintér, L. (2019). Nature-based solutions for urban climate change adaptation: Linking science, policy, and practice communities for evidencebased decision-making. *BioScience*, 69(6), 455-466. <https://doi.org/10.1093/biosci/biz042>
- IUCN. (2020). Global Standard for Nature-based Solutions. <https://portals.iucn.org/library/sites/library/files/documents/2020-020-En.pdf>
- Jóźwik, R. (2020). Rainwater management solutions and their impact on shaping inner city areas undergoing transformation (case study of the ZAC clichy-batignolles area in Paris). *Journal of Ecological Engineering*, 21(3), 209-219. <https://doi.org/10.12911/22998993/118277>
- Kabisch, N., Frantzeskaki, N., Pauleit, S., Naumann, S., Davis, M., Artmann, M., Haase, D., Knapp, S., Korn, H., Stadler, J., Zaunberger, K., & Bonn, A. (2016). Nature-based solutions to climate change mitigation and adaptation in urban areas: Perspectives on indicators, knowledge gaps, barriers, and opportunities for action. *Ecology and Society*, 21(2). <https://doi.org/10.5751/ES-08373-210239>
- Kasprzyk, M. (2025). Nature-based solutions for urban stream restoration and water quality enhancement: A review. *Journal of Ecological Engineering*, 26(11), 135-157. <https://doi.org/10.12911/22998993/207410>
- Kasprzyk, M., Szpakowski, W., Poznańska, E., Boogaard, F., Bobkowska, K., & Gajewska, M. (2022). Technical solutions and benefits of introducing rain gardens - Gdańsk case study. *SCIENCE OF THE TOTAL ENVIRONMENT*, 835, 155487. <https://doi.org/10.1016/j.scitotenv.2022.155487>
- NICE HORIZON 2020 - Portfolio of NbS. <https://oppla.eu/product/32694>
- Oral, H. V., Carvalho, P., Gajewska, M., Ursino, N., Masi, F., van Hullebusch, E. D., Kazak, J. K., Exposito, A., Cipolletta, G., Andersen, T. R., Finger, D. C., Simperler, L., Regelsberger, M., Rous, V., Radinja, M., Buttiglieri, G., Krzeminski, P., Rizzo, A., Dehghanian, K., ... Zimmermann, M. (2020). A review of nature-based solutions for urban water management in European circular cities: A critical assessment based on case studies and literature. In *Blue-Green Systems* (Vol. 2, Issue 1, pp. 112-136). IWA Publishing. <https://doi.org/10.2166/bgs.2020.932>
- Oral, H. V., Radinja, M., Rizzo, A., Kearney, K., Andersen, T. R., Krzeminski, P., Buttiglieri, G., Ayrál-Cinar, D., Comas, J., Gajewska, M., Hartl, M., Finger, D. C., Kazak, J. K., Mattila, H., Vieira, P., Piro, P., Palermo, S. A., Turco, M., Pirouz, B., ... Carvalho, P. N. (2021). Management of urban waters with nature-based solutions in circular cities—exemplified through seven urban circularity challenges. *Water* (Switzerland), 13(23). <https://doi.org/10.3390/w13233334>
- Raymond, C. M., Frantzeskaki, N., Kabisch, N., Berry, P., Breil, M., Nita, M. R., Geneletti, D., & Calfapietra, C. (2017). A framework for assessing and implementing the co-benefits of nature-based solutions in urban areas. *Environmental Science and Policy*, 77, 15-24. <https://doi.org/10.1016/j.envsci.2017.07.008>
- The 3+30+300 principle HANDBOOK. <https://tzel.org.il/wp-content/uploads/2025/05/The-330300-Handbook.pdf>



Wang, F., Harindintwali, J. D., Wei, K., Shan, Y., Mi, Z., Costello, M. J., Grunwald, S., Feng, Z., Wang, F., Guo, Y., Wu, X., Kumar, P., Küstner, M., Feng, X., Kang, S., Liu, Z., Fu, Y., Zhao, W., Ouyang, C., ... Tiedje, J. M. (2023). Climate change: Strategies for mitigation and adaptation. The Innovation Geoscience, 1(1), 100015. <https://doi.org/10.59717/j.xinn-geo.2023.100015>