BETTER Life

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BETTER Life Toolkit no.1
Supporting Interaction of Community, Science, and Governance

BETTER
Life

BETTER Life PARTNERS:

CESKA ZEMEDELSKA UNIVERZITA V PRAZE (CZU)
PIC 999912570, established in KAMYCKA 129 SUCHDOL,
PRAHA 165 00, Czechia

MARTIN-LUTHER-UNIVERSITÄT HALLE-WITTENBERG (MLU)
PIC 999871539, established in UNIVERSITÄTSPLATZ 10,
HALLE 06108, Germany

UNIVERSITÀ DEGLI STUDI DI CAMERINO (UNICAM)
PIC 999845737, established in PIAZZA CAVOUR 19F,
CAMERINO 62032, Italy

ACEEU GMBH (ACEEU)
PIC 896865008, established in WILHELM-SCHICKARD-STR 14,
48149, MÜNSTER, Germany

EESTI MAAULIKOOL (EMU)
PIC 999857280, established in KREUTZWALDI 1,
TARTU 51014, Estonia

DAUGAVPILS UNIVERSITATE (DU)
PIC 999830702, established in VIENIBAS STREET 13,
DAUGAVPILS 5401, Latvia

UNIWERSYTET PRZYRODNICZY W POZNANIU (PULS)
PIC 999880463, established in ULICA WOJSKA POLSKIEGO 28,
POZNAN 60 637, Poland

HELIXCONNECT EUROPE SRL (HELIXCONNECT)
PIC 893409868, established in 282A CAMERA 1,
BUCOVAT 307352, Romania

UNIVERZITET EDUCONS U SREMSKOJ KAMENICI

PRIVATNE USTANOVE (EDUCONS)

PIC 973147263, established in VOJVODE PUTNIKA 87,
SREMSKA KAMENICA 21208, Serbia

List of Abbreviations

Abbreviation	Definition
DCoE	Digital Center of Excellence
ECR	Early Career Researcher
EDS	Ecosystem disservices
EU	European Union
HEI	Higher Education Institution
(H)EIL	(Human) Ecosystem Integration Lab
LS	Life Sciences
NGO	Non-governmental organization
ORCID	Open Researcher and Contributor ID
SER	Socially Engaged Research
SME	Small and medium-sized enterprises
STEM	Science Technology Engineering Mathematics

1. INTRODUCTION AND DEVELOPMENT PLAN

The first section provides essential background information, outlines the methodology in use, and establishes key concepts. It also explores the toolkit's importance, shedding light on its development process by introducing target groups and their advantages. Furthermore, it outlines the three-step method, discusses anticipated results and critical success factors, and narrows down the tool's field of implementation.

1.1 Integration within BETTER Life toolkits

The BETTER Life project is grounded in the Quadruple Helix model of innovation, where the synergy between academia, research, industry, government, and civil society results in mutually advantageous collaborations. Its primary objective is to aid Early Career Researchers (ECRs) in planning and conducting research in cooperation with Quadruple Helix stakeholders. This underscores the significance of engaging ECRs in meaningful interactions with academia, industry, government, and civil society to amplify the impact of their research. By guiding ECRs through the Quadruple Helix model and furnishing them with essential tools, this project aims to empower them to produce research aligned with real-world requirements. It encourages community involvement in research and ensures that research initiatives effectively address pressing challenges, creating tangible and positive impacts.

BetterLife Toolkits: a toolkit is a modelized and guided way to implement and develop activities of SER in LS. It can assume different forms: from handbooks/guidelines to multi-player and virtual games, from trainings to online systems and platforms designed to support the research activities of early career researchers in LS. The purpose of the toolkits for SER in LS is to support the research activities of early career researchers in LS, fostering a collaborative approach to research that, starting from considering societal needs, aims in general to have a meaningful societal impact. In selecting the tools to be developed, we followed the findings from the examples of good practice and consultations. The following

factors emerged as challenges or successful strategies: communication, presentation, and involvement of the stakeholders of the Quadruple Helix.

The framework for socially engaged research in life sciences has four dimensions (numbered 1 to 4) and twelve sub-dimensions (with corresponding standards) as followed:

1. **Institutional Environment** standard with sub-dimensions of 1.1 Supporting structures, 1.2. Research capacities, and 1.3. Contextual knowledge,
2. **Stakeholders Engagement** standard with sub-dimensions of 2.1 Involvement of societal stakeholders, 2.2 Networking and collaboration, and 2.3. Shared power,
3. **Relevance** standard with sub-dimensions of 3.1 Contextual relevance, 3.2 Scientific relevance, and 3.3 Quality assurance measures,
4. **Impacts** standard with sub-dimensions of 4.1 Instrumental benefits, 4.2 Conceptual outcomes, and 4.3 Enhanced ecosystem capacities.

All four (4) standards and all twelve (12) sub-dimensions are represented in the proposed ten (10) toolkits:

1. Supporting Interaction of Community, Science, and Governance
2. Design Thinking for Co-design of Public Open Spaces
3. Promote Your Research Communication
4. Educative Boardgame / Roleplay Game
5. SER Self-reflection Tool
6. Visual Methodologies for Landscape Observatory
7. Mentorship Programme
8. (Human) Ecosystem Integration Lab
9. Academic Bridge
10. Stakeholder-specific Interactive Web-based Tool Using R Shiny App

The BETTER Life tools that are suitable for combination with the tool no. 1 Supporting Interaction of Community, Science, and Governance are: (i) Design Thinking for Co-design of Public Open Spaces, (ii) Visual Methodologies for Landscape Observatory, (iii) Mentorship Programme, (iv) (Human) Ecosystem Integration Lab, and (v) Academic Bridge.

1.2 Target groups and their benefits

The target groups for the application of this BetterLife tools include: (i) Early Career Researchers (ERC), (ii) University members, and (iii) Quadruple Helix actors specially those actors involved into the spatial planning process.

The benefits for the set target groups cover:

1. **Early career researcher (ECR)**
   A better understanding of the spatial planning process and how citizens could be involved to it in an inclusive manner. A better overview of how Quadruple Helix actors judge, engage with and address certain societal challenges.
2. **University members**
   A tool to interactively design a practical seminar during their lecture series. An engaging way to teach young students about various goals, agendas and individual targets among important and influential societal stakeholders involved to the spatial planning.
3. **Quadruple Helix actors**
   A tool supporting inclusive and engaging spatial planning, helping citizens to formulate their preferences regarding the quality of landscapes, and to the actors implementing the planning process to understand the preferences of citizens.

1.3 Three-step method

The methodology suggested for the BetterLife tool of community participation in the planning process partly drew from the experience of the EU COST action Smart-U-Green implemented in 2017-2021. That action specifically aimed at examining stakeholder viewpoints in policy disputes, dissecting policy controversies to grasp how local power dynamics either hinder or facilitate the use of local knowledge, and discovering innovative governance strategies for promoting livable and resilient urban environments. In particular, it brought up a three-step method complemented with results of a desk research approach setting the theoretical background.

The three-step method involves (adapted here for the purposes of the BetterLife toolkit development and deployment):

1. Step no. 1
   Collecting and adopting the methods for quantitative and qualitative evaluation of **perceiving the quality of urban environment by citizens** (such as suggested by

Hisschemoller et al, 2022, http://dx.doi.org/10.1016/j.cities.2022.104021 for urban landscapes, or by Skryhan and Shkaruba, 2022 http://dx.doi.org/10.1007/978-3-030-96985-1_8 for urban ecosystem services and disservices).

2. Step no. 2

   Implementing citizens' perception into spatial planning design by comparing the spatial conditions and spatial planning design to citizens' perception and needs that contribute to developing urban environment quality and the quality of life in urban, peri-urban, and extra-urban landscape, including through the methodology provided by the literature on ecosystem services and disservices.

3. Step no. 3

   Integrating citizens' perceptions and needs, spatial planning design, and governance policies for the enhancement of urban environment quality and the quality of life by confronting different perspectives of Quadruple Helix that actors judge, engage with, and address certain societal and development challenges.

These steps have been implemented through the following activities and with the support of the following resources:

1. **Writeshop and consultations with stakeholders**

   The concept and the first draft of the guidelines were produced by an expert group appointed within the BetterLife project; as a key step of the development process, a writeshop was envisioned where the developers would achieve major progress towards the first draft; once the guidelines have been finished, a consultation round with local stakeholders was run in order to get feedback firsthand.

2. **Testing round**

   The guidelines were tested in designated communities with ongoing planning processes.

3. **Feedback Surveys and Refinement**

   Once the trials have been completed and all the feedback was collected, the guidelines were refined and approved by the development group.

4. **Dissemination**

   Once a "final" version has been achieved, the guidelines have been made visible on the project website.

5. **Translations**

   To ensure the guideline's relevancy in each of the partner countries, it is considered to translate guidelines to the languages of partner countries. This was broader audiences can be reached through overcoming the potential language barrier, especially in countries where English is not in broad use.

1.4 Expected outcome(s) and key factors for success

Once the guidelines have been completed, they were disseminated to target actors and tested in a selected community with ongoing spatial planning process. Feedback surveys were conducted after disseminating and testing the guidelines. It is expected that the guidelines will contribute to the development of a transparent and inclusive planning process.

Key factors for success include: (i) Robust design of the guidelines based on the best available science, and careful search for relevant good practices in terms of the evaluation of urban environment quality by citizens, (ii) Iterative improvements of the guidelines based on users' feedback, previous exploitation rounds, taking into account the feedback and opinions of the users, and (iii) Carefully designed trial round and broad dissemination.

1.5 Implementation field

The implementation focuses on the field of spatial / urban planning to support the planning process based on understanding of citizens' perception of urban environment quality expressed in qualitative or quantitative terms. This guidelines further offers decision making trees designed to avoid various types of the issues identified by the citizens, and that need to be considered to the planning process in order to ensure that the planning process is inclusive. It is expected that the proposed procedure will find its application in bordering research and praxis fields as well.

The implementation includes steps that are applied in various stages of the spatial planning process and in the activites by BetterLife project:
- Trial round in a community with an ongoing planning process,
- Workshops with Project Partners,
- Workshops with Quadruple Helix Actors,
- University Lectures or University Seminars,
- Citizen Science projects.

2. THEORETICAL BACKGROUND

In order to explore the relationship of citizens and urban environments, and to translate it to urban planning support tools, we bring up the following two concepts:
- Ecosystem disservices, and
- Inclusive planning.

The incorporation of ecosystem disservices in the proposed guidelines is strongly advocated for several reasons. Urban nature has garnered widespread recognition as an indispensable component of building resilient and livable European cities. Various challenges linked to the process of urbanization, especially those intensified by climate change or directly attributed to it, are anticipated to be ameliorated or adapted to through the application of nature-based solutions (NBS) that are derived from ecosystems.

In the European Union, there has been a growing emphasis on the significance of NBS in addressing complex urban challenges. These solutions encompass a wide range of practices that leverage natural elements such as green spaces, wetlands, urban forests, and water bodies to address issues like flooding, urban heat islands, air pollution, and biodiversity loss. By integrating nature-based solutions into urban planning and development, city planning and management actors can promote sustainable urban environments that are both resilient to environmental pressures and conducive to a high quality of life for their citizens. This where the urban nature is coming into the picture, as the citizen recognise both positive and negative impacts it has on the quality of their life. If the negative ones prevail, urban ecosystems and biodiversity may be in risks, and therefore it is of paramount importance to reconcile the citizens and the nature, and to identify and implement planning, management and communication measures in order to achieve this.

By adopting a holistic approach that addresses both the positive and negative aspects of urban nature and NBS, city planning and management authorities seek to create more sustainable and balanced urban environments that effectively tackle the challenges posed by climate change and urbanization while enhancing the overall quality of life. We bring forward the concept of inclusive planning in order to create guidelines for managing

ecosystem disservices and integrating them to the planning process. The concept of inclusive city planning was traditionally applied to create urban environments that accommodate diverse populations, promote equitable access to resources, and address various community needs. The objectives typically addressed by the inclusive planning process were such as enhancing social inclusion, accessibility, and sustainability while fostering community engagement and participation in the planning process. The issues typically addressed were affordable housing, accessible transportation, public spaces, and social services to ensure that cities are more livable and responsive to the needs of all residents. By incorporating ecosystem disservices into the purview of inclusive city planning, these guidelines introduce an innovative approach that holds the potential to foster valuable synergies.

2.1 Origin and explanation of the key concepts

Functions and properties of ecosystems delivering discomfort to citizens, also known as ecosystem disservices (EDS) (Döhren & Haase 2015; Lyytimäki 2014) are fundamentally important in terms of interactions between people and urban nature (Dobbs et al. 2014; Escobedo et al. 2011; Lyytimäki 2014; Vaz A.S et al. 2017) and can be at least as important for citizens as ecosystem services (ES). This further leads to the call for the solutions whereas ES as well as EDS are integrated in planning designs delivering comfortable urban environment to citizens (Blanco et al. 2019; Vaz et al. 2017). This however represents a major challenge not only due to many trade-offs, such as choices between space and commercial development benefits vs. ES (Spyra et al 2020), but also due to conflicting perspectives and preferences of various stakeholder, epistemic and social groups on the very nature of EDS and ES (Shkaruba et al 2021). As discussed before, there are at least two reasons for EDS to be addressed by the planning process in its broad sense. This is for urban nature in order to survive, and for citizens in order to benefit from the ser-vices it provides. This needs to entail the formulation of multistakeholder consensus over EDS/ES, and ideally to consider the broadest possible variety of interest groups (including age and gender) and possible conflicting perspectives. Working to address this challenge, this guidelines focus on EDS in urban communities, and explore them in terms of inclusive planning. The EDS classification used in the guidelines is set in Table 1.

Inclusive planning stems from the policy concept of 'social inclusiveness' developed in order to recognise and consider in policies and management practices the diverse needs and abilities of people (Meyer and Hinchman 2007). Due to diverse perspectives on urban nature, this concept received attention of urban planners and managers seeking to ensure

accessibility and social acceptance of ecosystems incorporated to the fabric of sprawling cities (Van Herzele et al. 2005; Roth et al. 2017), and lately also ES and NBS (Nature 4 Cities 2020; Schaubroeck 2017; Van Herzele et al. 2005).

Table 1. A classification of ecosystem disservices (adopted from Skryhan and Shkaruba, 2022)

EDS group	EDS sub-group	EDS examples
I. Ecosystem attributes and functions	Ia. Ecosystem attributes	"Unacceptable" ecosystems (for example wetlands), invasive species
	Ib. Events generated by urban ecosystems	Floods, landslides, erosion, forest, grassland or pit bog fires
	Ic. Functioning of urban ecosystems	Harm from bird excrement on artificial surface, risks of falling old trees and branches, leaf litter, seeds and pollen and etc.
II. Human health	IIa. Risks related to human health	Allergies and diseases, hygiene and health problems, toxic species, biting animals and attacks by wild animals
	IIb. Nature related fears	Fear of wild animals, fear of darkness, fear of wild nature in general
III. Aesthetic issues	N/A	Loud voices of birds, dogs, and etc., excrement in green areas, unmanaged green areas, presence of gulls, mosquitoes, mugwort or nettle, unpleasant smell
IV. Restrictions and inhibition of urban planning and development	IVa. Restrictions caused by nature protection	Protected species and areas inhibit planning and construction
	IVb. Inhibition of activities	Crimes connected with urban parks, poor condition of unpaved pads, shade and visual obstacles from vegetation, block of transport connectivity

2.2 Theoretical background in service of target groups

The proposed guidelines address the whole range of actors involved to the city planning process, and its primarily aim is to converge the objective of the citizens to live in comfortable and resilient urban environments, one of decision makers and planning communities to ensure acceptance of planning decisions through inclusive and transparent process, and one of environmental activists and interest groups to preserve and promote urban nature. This guidelines will also hold empowering potential to early stage researchers who are working with city planning actors and seek to mediate their interests.
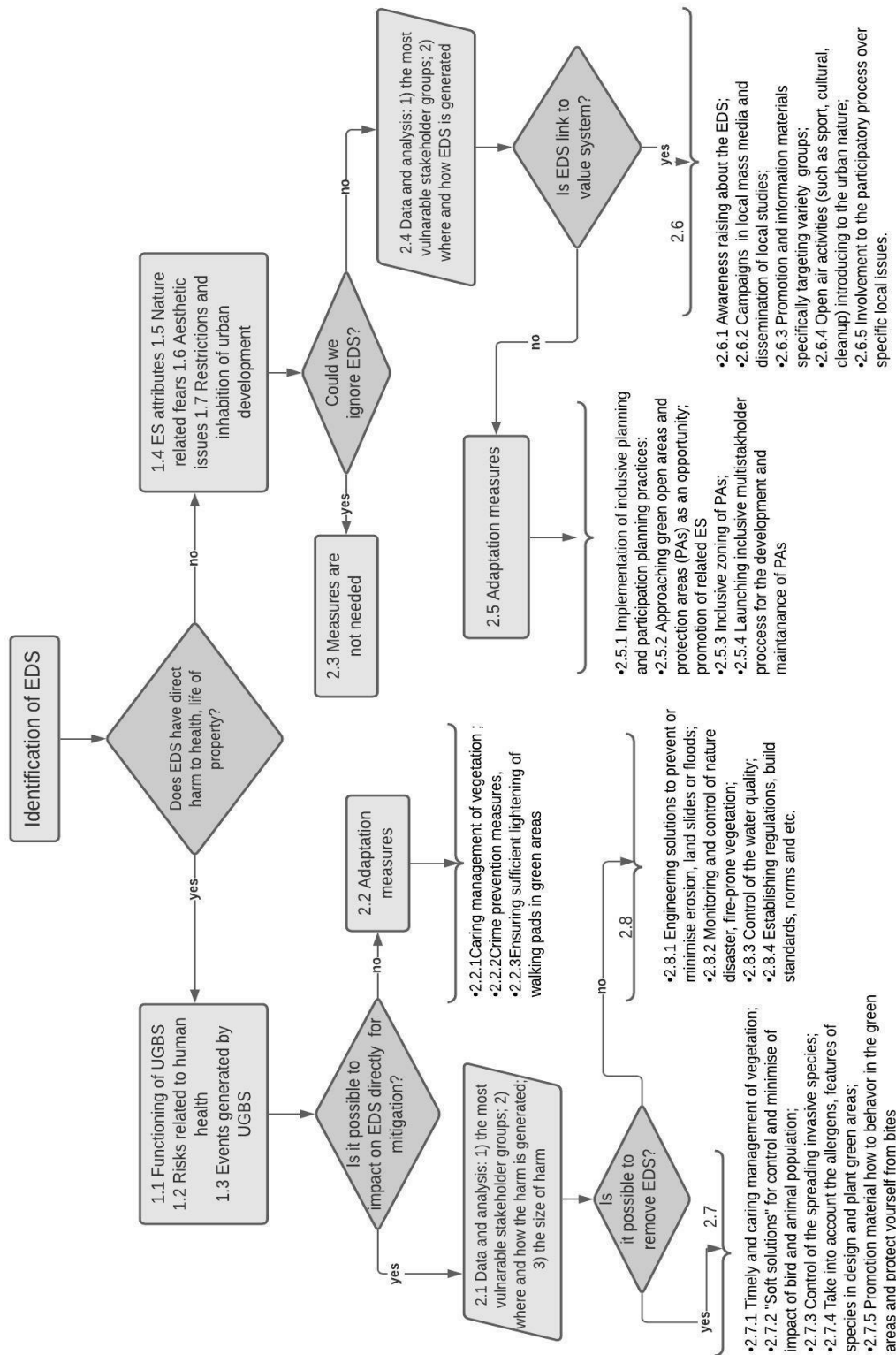
Fig. 1. The generic decision-making tree for the identification and management of EDS in cities (adopted from Skryhan and Shkaruba, 2022)

The key instrument deployed by this guidelines is the generic decision-making tree (Figure 1) that offers decision-making strategies for different types of ecosystem disservices (see Table 1). The tree as well as the EDS classification may require further revision and testing in a broader range of socio-cultural and biophysical conditions. Nevertheless, we deem them generic enough to use as a starting point for identifying and managing EDS. As the next step, the classification and the decision-making tree would need to be filled in with the details specific to the context of the case study.

2.3 Theoretical background in service of case studies

After the theoretical background is set and when proofing the methodology, it would be good to think about **which case studies would it be applied** – what are the methodological needs for the research / methodology application on those cases.

It is also important to set the **criteria for selection of case studies**. Here it can be focused on the selection criteria for cases that we want to engage within the BETTER Life project, but also to regard application of the tool to other research fields (regarded in subchapter 5 on general application guidelines).

2.4   Key messages and results

The framework and its application proposed in the guidelines underscore the importance of addressing ecosystem disservices (EDS) within urban planning, alongside ecosystem services (ES), in order to create comfortable and resilient urban environments for citizens. The complexity of this endeavor arises from trade-offs between development benefits and environmental concerns, as well as the diverse perspectives and preferences of stakeholders regarding EDS and ES. Nonetheless, there are compelling reasons to pursue this integration, driven by the need for urban nature to survive and for citizens to benefit from the services it provides.

Inclusive planning, a concept rooted in recognizing the diverse needs and abilities of people, plays a pivotal role in addressing these challenges. It aims to ensure accessibility and social acceptance of ecosystems within urban areas and we also suggest to extend it to encompass ES and Nature-Based Solutions (NBS). The proposed guidelines are designed to engage a wide range of actors involved in the city planning process, with a primary focus on aligning the objectives of citizens, decision-makers, and environmental

activists to create comfortable and resilient urban spaces. Early stage researchers working with city planning actors can also benefit from these guidelines.

The central tool within these guidelines is the generic decision-making tree, which offers strategies for managing different types of EDS. While the tree and EDS classification may require further adaptation and testing in diverse socio-cultural and environmental contexts, they provide a valuable starting point for identifying and addressing EDS. The next step involves customizing these tools to the specific context of individual case studies, allowing for more effective management of EDS and the integration of EDS and ES into inclusive planning.

4. CONCLUSIONS

The objective of this report was to describe the toolkit '*Supporting Interaction of Community, Science, and Governance*', and provide guidelines for its use. This toolkit has been developed as a part of a larger effort of developing socially engaged research in life sciences within the scope of the BETTER Life project. The toolkits were identified and elaborated through a comprehensive approach that integrated desk research of possible examples and references with a collaborative two-stage methodology featuring co-creation workshops conducted among consortium partners.

Each toolkit is matching one or more standards and will provide ECR and Quadruple Helix actors with a set of informative and interactive tools to implement impactful research, promote communication amongst the actors involved and thus foster engaging and responsible social research in life sciences. Digital centres of excellence will be established in the research regions through which the various toolkits will be developed, managed, and implemented in cooperation with relevant stakeholders in the region.

The toolkit 'Supporting Interaction of Community, Science, and Governance' plays a vital role in fostering citizen engagement within the inclusive city planning process. It achieves this by facilitating the assessment of ecosystem disservices and collaboratively identifying management and planning options to address them. Moreover, the toolkit presents an alternative approach, proposing a methodology grounded in quantitative assessments of citizens' perceptions regarding the quality of urban landscapes. This dual functionality equips urban planners and stakeholders with versatile tools to enhance community involvement and ensure a comprehensive understanding of urban dynamics for more effective and inclusive city planning.

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