



How to stage and assess processes of co-creation in Living Labs: A Design Ethnographic approach

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Abstract

Urban Living Labs (ULLs) operate in dynamic environments, often facing challenges in assessing social impacts due to the complexity and diversity of urban contexts. Overall, this research-in-progress paper underscores the importance of integrating qualitative methods to complement traditional assessments, ensuring that the social dimensions of urban innovation are adequately addressed. Specifically, it explores the application of a design ethnographic approach to staging and assessing co-creation processes in ULLs. It details the implementation of this methodology in the Horizon Europe GREEN-LOG project, which aims to develop sustainable urban and periurban delivery solutions through a series of ULLs across Europe. The authors argue that design ethnography, with its emphasis on participatory research and deep engagement with stakeholders, provides a richer, more holistic framework for process-oriented assessment of social impacts. This approach involves evaluators actively participating in co-creation from the outset, fostering iterative feedback loops that refine both the ULLs processes and future interventions.

Key words

Design ethnography, social impact, impact assessment, urban living lab, co-creation



Introduction

Despite the recent increase in studies exploring the notion of impact assessment in Living Labs (e.g. Engels et al., 2019), assessing the social impacts generated by these projects remains challenging (Ballon et al., 2018; Hodson et al., 2023). Paskaleva and Cooper (2021, p. 8) argue that the operationalization and outcomes of Living Labs remain poorly understood primarily due to a lack of focus on implementing and reporting performance evaluations. The complexity arises because Urban Living Labs (ULL) operate in urban spaces characterised by high levels of social diversity, and contextual uncertainty, where countless activities and behaviours occur, making it challenging to predetermine and scale social synergies and interactions (Aquilué et al., 2021, p. 6). Additionally, as suggested by Ballon (2018), ULLs involve an iterative and interactive cycle of activities, hence, the social impacts and learning insights emerge without clear pre-definition.

This iterative, participatory and messy nature of ULLs requires a continuous and situated approach to analysing, predicting, evaluating, reflecting on, and – consequently – managing the intended and unintended consequences of planned interventions & solutions and the social change processes they invoke (Vanclay, 2002, p. 190). Global indexes like the Lisbon Ranking and Digital Economy & Society Index include social indicators but miss nuances captured by social impact assessments. Drawing from the work of Gupta et al. (2019), the evaluation of social impacts using quantifiable indicators tends to oversimplify complex phenomena, since it obscures the situated, contextual, and qualitative nature of these impacts, which are often unintended, intangible, subjective, and context-dependent. In addition, competing priorities—such as enthusiasm for opportunities generated by smart technologies (Trivellato, 2017, p. 338) or strategic objectives (e.g., the ones set in the Grant Agreement of the EU projects) (Cerinšek et al., 2022)—can overshadow social goals and marginalize the perspectives of certain stakeholders, especially the marginalized groups.

With this in mind, we argue that design ethnography (Pink et al., 2022) is particularly well-suited for assessing social impacts in ULL contexts, and aligns with the key principles of Living Lab methodologies, which sit at the nexus of user-centred and participatory design (Dell’Era & Landoni, 2014). Design ethnography is a research approach that combines principles from anthropology and design to immerse and understand how people interact with products, services, and environments. The methods include (but are not limited to) site visits, open-ended interviews & discussions, participant observation, co-creation workshops, photo and video documentation, sensory walks. Our approach implements ethnography-based participatory research and multi-faceted engagement with the stakeholders involved in the ULL to build up empathic understanding of the complexity



of urban spaces, while collaboratively discovering and analysing their practices, routines, needs, desires, barriers, success factors, and potential unknowns. Compared to conventional practices that primarily rely on quantitative social impact assessments (see Hodson et al., 2023), the key distinctive added value of the design ethnographic approach is that evaluators are not merely independent "arm-chair" observers. They directly engage in iterative co-design from the very beginning, making the formative assessment a natural and integral part of the overall ULL development process. By focusing on both, expected and unexpected implications of living labs processes, social impact analysis as a co-creative practice can help ULLs to understand the possible and uncertain futures (Pink et al., 2022; Akama et al., 2019) and fully capture how diverse stakeholders experience and value ULL interventions.

Staging and assessing social impacts in GREEN-LOG urban living labs

Our design ethnographic approach, initially developed through the AHA I (2018) and AHA II (2020) projects, is now being advanced to include a process-oriented methodology for assessing social impacts in the Horizon Europe co-funded GREEN-LOG project (2022). In short, this project aims to deploy a co-creative and collaborative approach to develop Logistics-as-a-Service platforms for interconnected city logistics, automated delivery concepts utilizing autonomous vehicles and delivery droids, cargo-bike-based innovations for sustainable micro-consolidation, and multimodal parcel deliveries that integrate public transportation. The approach is deployed and validated in five Urban Living Labs: Athens, Barcelona, Flanders (Ghent, Leuven, and Mechelen), Oxfordshire and Ispra. In relation to envisioned social impacts, the GREEN-LOG qualitative social impact assessment will focus on three key categories: (1) increased public awareness of sustainable urban delivery solutions; (2) acceptance of sustainable urban delivery solutions; and (3) improved neighbourhood life quality.

The initial steps of facilitating the set-up of the GREEN-LOG ULLs were organised so that we could engage in in-depth understanding of the ULL social, physical, and societal contexts, as well as explore and define who the primary users of the delivery solutions would be. This was staged to create a qualitative baseline for coming assessments while scoping the ULL aims and identifying the core teams and key stakeholders. Figure 1 illustrates the overall methodological framework for staging and assessing co-creation processes in urban living labs, with design ethnographic methods being integrated at its core.

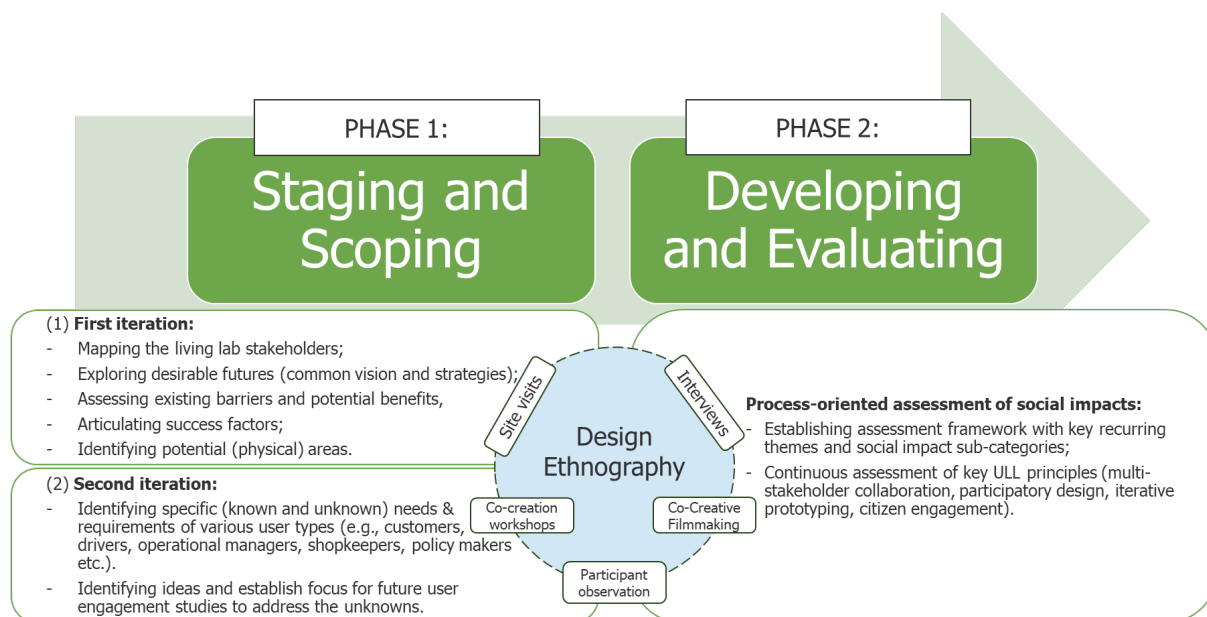


Figure 1. Methodological framework for staging and assessing co-creation processes in urban living labs. The following section outlines the two phases of the methodology more in detail. Phase 1 has already been completed, spanning from January 2023 to June 2024 (18 months). Phase 2 represents ongoing research, beginning in July 2024 and continuing until May 2026 (27 months).

Phase 1: Staging and Scoping

Phase 1 activities involved two iterations of establishing the participatory design framework, akin to what Smith and Iversen (2018, pp. 10–11) define as "scoping." The first iteration involved engaging with Living Lab stakeholders and facilitating co-creative activities to jointly articulate local requirements, barriers, and opportunities; exploring potential futures; synthesizing diverse goals, interests, and agendas into a common vision; and develop strategies aligned with the objectives and aspirations of the GREEN-LOG ULLs (see Figure 2). It also implied the crucial task of identifying the core project team stakeholders, the involved team, and the informed team in each ULL, as well as pointing out the physical areas in which the delivery solutions would be developed (see Figure 3). This first iteration involved conducting interviews with ULL leaders and core teams, setting up digital co-creation workshops both within and across ULLs to identify specificities and similarities within and between ULLs.

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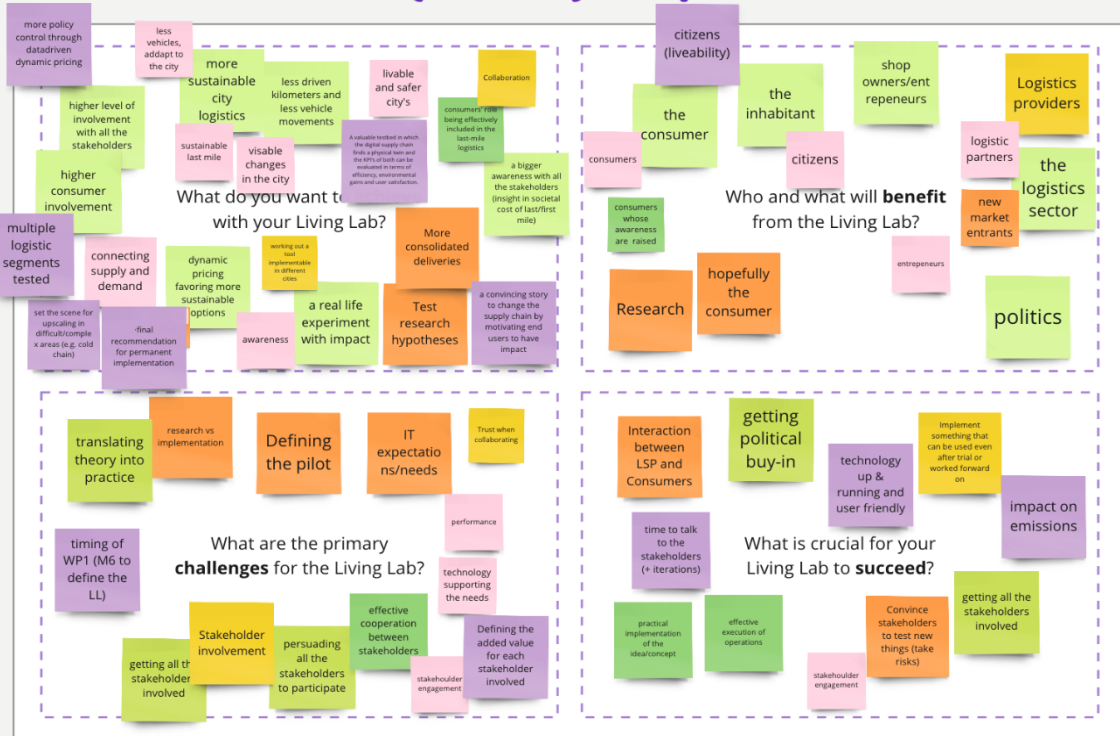


Figure 2. One of the very first scoping activities from digital workshop with ULL Flanders core team in March 2023 (Month 3 of the GREEN-LOG project)

3.1 Mapping stakeholder engagement

Move sticky-notes to engagement map

Give examples below on how you imagine a collaborative structure within LL

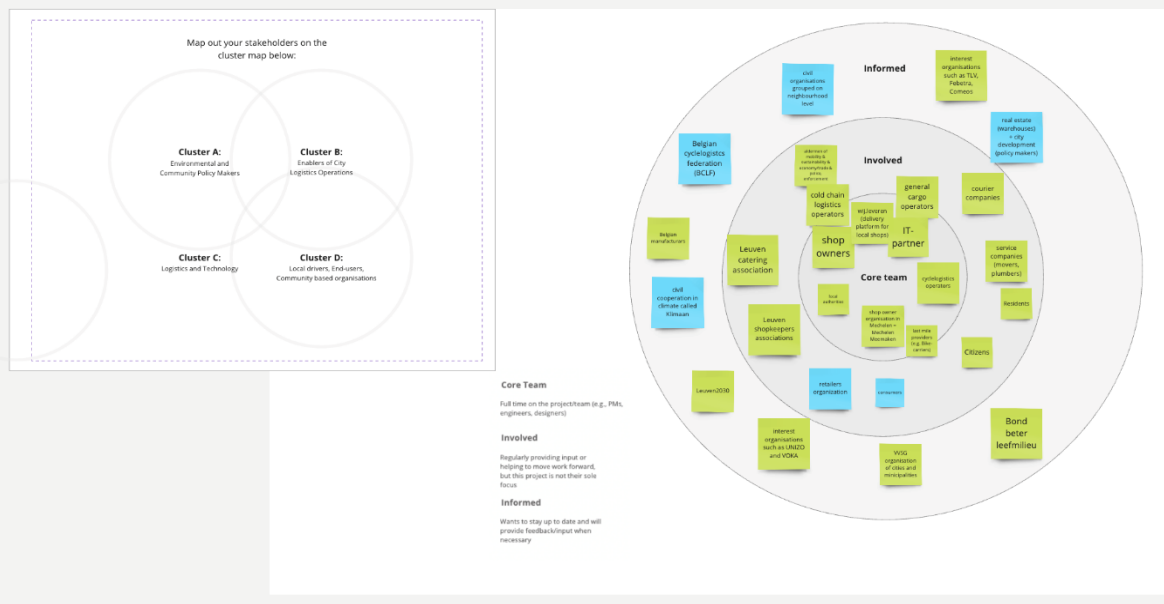


Figure 3. Identifying the stakeholders and organising them into teams in digital workshop with ULL Flanders in March 2023 (Month 3 of the GREEN-LOG project)

Overall, this first set of co-creative activities established a qualitative baseline for discussions with technology developers involved in the project. Through these discussions, the ULLs were able to tweak and develop their delivery solutions in response to the opportunities provided by the project. While the first co-design iteration focused on assessing the existing barriers and seizing opportunities within the ULLs, the second iteration identified the specific requirements of various user types involved in the use case scenarios for delivery solutions in each Living Lab, including customers, drivers, operational managers, shopkeepers, policy makers, and the broader citizens (Figure 4). In addition to detailing Living Lab users and their (un)known needs, the second iteration results aim to describe contextual specifics (also in Figure 4), and to identify ideas and establish focus for further user engagement studies addressing the unknowns (Figure 5).

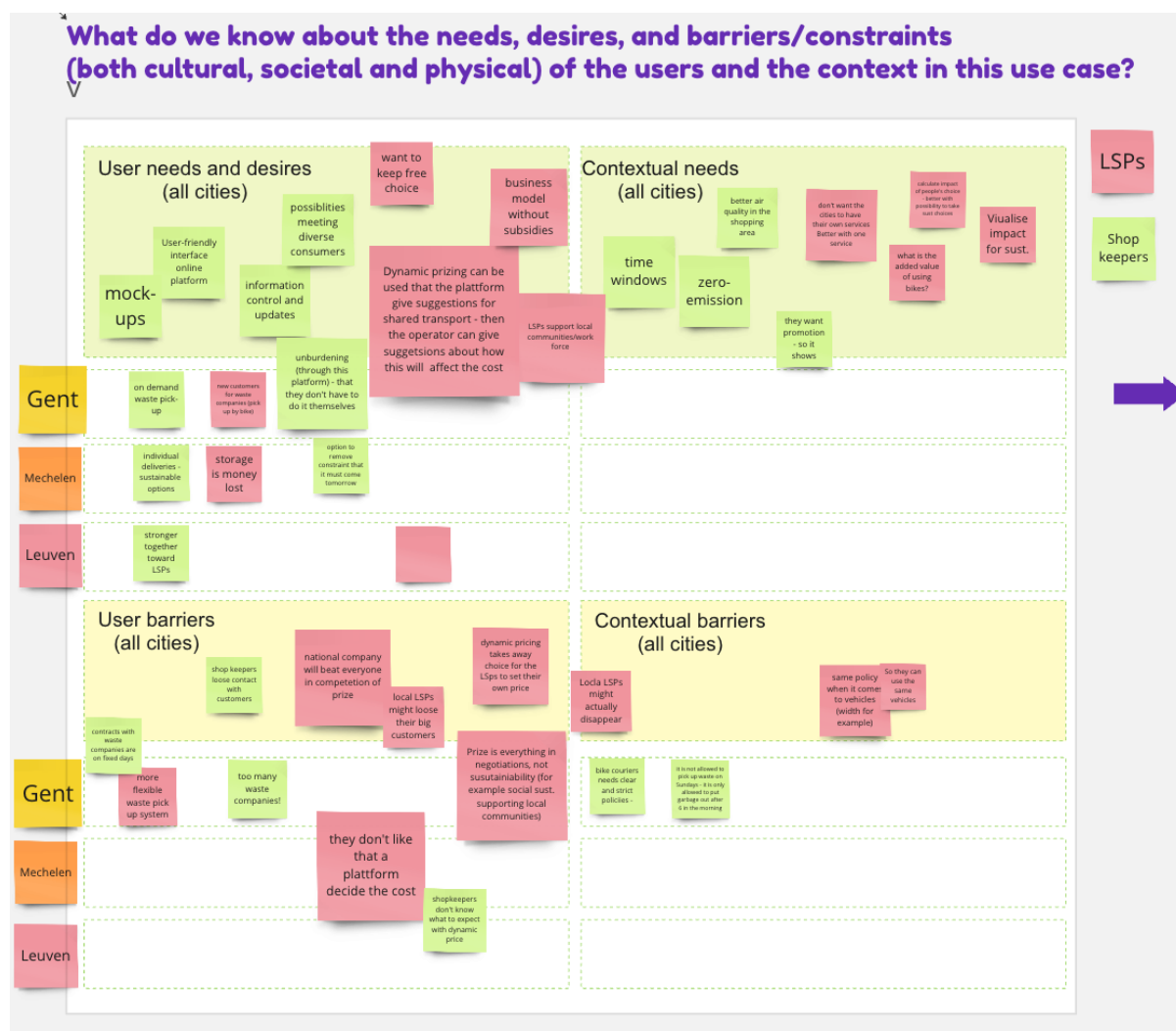


Figure 4. Screenshot of digital co-creative exercise with LL Flanders in the second iteration of ULL requirements in March 2024 (Month 15 of the GREEN-LOG project)

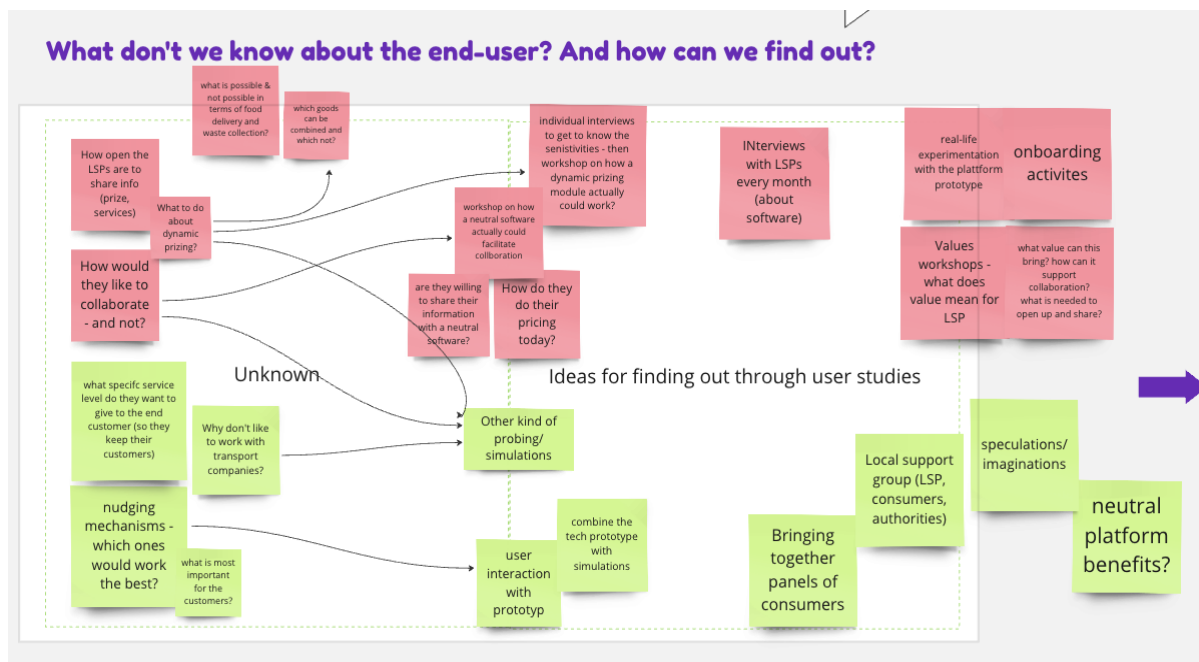


Figure 5. Co-creative exercise with LL Flanders to identify unknowns to establish focus in coming user engagements in March 2024 (Month 15 of the GREEN-LOG project).

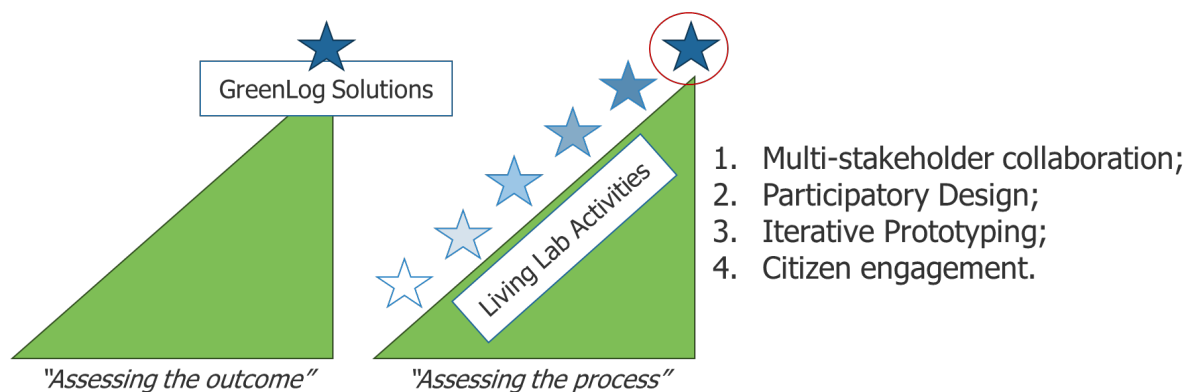
This second iteration produced a list of key requirements for each ULL, along with a list of common, more general friction points encountered in implementing these types of delivery solutions. As a baseline, these results will inform the assessment framework in the second phase, aiding to identify key recurring themes, issues, and specific social impact sub-categories, as well as understanding contextual differences and similarities between ULLs.

Phase 2: Developing and Evaluating

The Phase 2 suggests that to effectively assess and understand the social impacts, the evaluation methodology should not only assess the outcomes but also examine the processes within the ULLs themselves (see the top part of the Figure 6, which indicates that in addition to GreenLog solutions we also need to concentrate on the processes and activities that lead to these solutions). Therefore, in addition to evaluating the impacts of living lab delivery solutions, the methodology should include assessment of key living lab principles as implemented in the different GREEN-LOG ULL pilot sites during demonstrations, namely the level of interdisciplinary & multi-stakeholder collaboration; user- centric participatory design; iterative prototyping, and citizen engagement (see Figure 6) – providing iterative feedback loops into the development processes.

The method will involve continuous interaction with Living Lab core teams and identified users, primarily through open-ended interviews and co-creation workshops, as well as local fieldwork in living lab pilot sites. The latter will be based on participant observation

of user/citizen-engagement activities organized by Living Lab core teams, interviews, and co-design activities such as co-creative filmmaking with Living Lab stakeholders and user communities (Balaguer & Alberich-Pascual, 2024).



Solution-oriented assessment			Process-oriented assessment	
Social Impacts	Quantitative Measurement	Quantitative Methodology	Qualitative Measurement	Qualitative Methodology
Increased public awareness of sustainable urban delivery solutions	Percentage of people who are aware of sustainable delivery solutions	Survey Analysis	The level of user/citizen engagement activities in the Living Lab settings.	Interaction with primary users identified by Living Lab core teams (interviews & co-design activities).
Acceptance of sustainable urban delivery solutions	Percentage of people who show acceptance of the delivery solutions		The level of user-centric design & iterative prototyping in Living Labs.	Interactions with Living Lab core teams (interviews & co-design activities).
Improved neighbourhood life quality	Change on the citizens' satisfaction score of living in the neighborhood compared to base scenario		The level of user/citizen engagement activities in Living Labs.	Local fieldwork in Living Lab pilot sites (participant observation, interviews, collaborative video documentation).

Figure 6. Solution-oriented and Process-oriented Assessment of Social Impacts in GREEN-LOG Project.

Conclusion

In this Research-In-Progress paper, we draw from concepts of social impact assessment (e.g. Hodson et al., 2023; Aquilué et al., 2021; Trivellato, 2017; Vanclay, 2002) and design ethnography (e.g. Pink et al., 2022; Smith & Iversen, 2018) to argue that these perspectives are necessary for urban living labs to be socially inclusive, equitable, sustainable, and responsive to citizens' needs. We observe that overall, there is a lack of evaluation of both, living lab processes and social impacts, and argue that all these approaches—subjective and objective, qualitative and quantitative, studying what is directly and indirectly linked to projects and including a variety of stakeholder perspectives—are needed to understand the effects of ULL projects on the people involved. In addition to more widely used quantitative, solution-oriented evaluation, we believe that the proposed process-oriented design-ethnographic approach has the potential to generate rich, context-specific data for understanding the social impacts, and building “narratives of change” for ULL projects. These narratives describe,

conceptualize, and communicate how change occurs within a specific ULL context, thereby helping to make sense of the complex processes and dynamics that lead to social, organizational, or individual transformation.

Finally, we anticipate that the assessment insights will create learning opportunities – helping designers, planners, and tech developers to understand and make informed decisions in a co-creative manner within the established “protagonist community” (Smith & Iversen, 2018, p. 32). This is the community of key ULL stakeholders that plays a central role in initiating, driving, and experiencing change or transformation within a particular ULL context. This involves discussions, alignment activities, and strategies within the project that are uncertain, complex, and beyond the immediate scope of the core research focus or strategic objectives set in the Project Proposal or Grant Agreement.

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References

1. AHA I Project. (2018). Future Urban Mobilities: A Human Approach. <https://aha.hh.se/>
2. AHA II Project. (2020). Design Ethnographic Living Labs for Future Urban Mobility. <https://aha2.hh.se/page/2/>
3. Akama, Y., Sumartojo, S., & Pink, S. (2019). *Uncertainty and Possibility: New Approaches to Future Making in Design Anthropology* (Reprinted). Bloomsbury Academic.
4. Aquilué, I., Caicedo, A., Moreno, J., Estrada, M., & Pagès, L. (2021). A Methodology for Assessing the Impact of Living Labs on Urban Design: The Case of the Furnish Project. *Sustainability*, 13(8). <https://doi.org/10.3390/su13084562>
5. Balaguer, J., & Alberich-Pascual, J. (2024). Collaborative modes of audiovisual media: Literature review and conceptual proposal. *Studies in Documentary Film*, 18(2), 91–107. <https://doi.org/10.1080/17503280.2023.2272772>
6. Ballon, P., Van Hoed, M., & Schuurman, D. (2018). The effectiveness of involving users in digital innovation: Measuring the impact of living labs. *Telematics and Informatics*, 35(5), 1201–1214. <https://doi.org/10.1016/j.tele.2018.02.003>
7. Cerinšek, G., Arko, S., & Podjed, D. (2022, July 29). *Stuck with buzzwords? A critical review of living lab experiments in higher education projects*. EASA2022: Transformation, Hope and the Commons, Belfast, Northern Ireland.
8. Dell’Era, C., & Landoni, P. (2014). Living Lab: A Methodology between User-Centred Design and Participatory Design. *Creativity and Innovation Management*, 23(2), 137–154. <https://doi.org/10.1111/caim.12061>
9. Engels, F., Wentland, A., & Pfothner, S. M. (2019). Testing future societies? Developing a framework for test beds and living labs as instruments of innovation governance. *Research Policy*, 48(9), 103826. <https://doi.org/10.1016/j.respol.2019.103826>
10. GreenLog. (2022). Grant Agreement of the GreenLog Horizon Europe Project (Project 101069892, HORIZON-CL5-2021-D6-01).
11. Gupta, P., Chauhan, S., & Jaiswal, M. P. (2019). Classification of Smart City Research—A Descriptive Literature Review and Future Research Agenda. *Information Systems Frontiers*, 21(3), 661–685. <https://doi.org/10.1007/s10796-019-09911-3>
12. Hodson, E., Vainio, T., Sayún, M. N., Tomitsch, M., Jones, A., Jalonen, M., Börütecene, A., Hasan, M. T., Paraschivoiu, I., Wolff, A., Yavo-Ayalon, S., Yli-Kauhaluoma, S., & Young, G. W. (2023). Evaluating Social Impact of Smart City Technologies and Services: Methods, Challenges, Future Directions. *Multimodal Technologies and Interaction*, 7(3), 33. <https://doi.org/10.3390/mti7030033>
13. Paskaleva, K., & Cooper, I. (2021). Are living labs effective? Exploring the evidence. *Technovation*, 106, 102311. <https://doi.org/10.1016/j.technovation.2021.102311>
14. Pink, S., Fors, V., Lanzeni, D., Duque, M., Sumartojo, S., & Strengers, Y. (2022). *Design Ethnography: Research, Responsibilities, and Futures* (1st ed.). Routledge. <https://doi.org/10.4324/9781003083665>
15. Smith, R. C., & Iversen, O. S. (2018). Participatory design for sustainable social change. *Design Studies*, 59, 9–36. <https://doi.org/10.1016/j.destud.2018.05.005>
16. Trivellato, B. (2017). How can ‘smart’ also be socially sustainable? Insights from the case of Milan. *European Urban and Regional Studies*, 24(4), 337–351. <https://doi.org/10.1177/0969776416661016>
17. Vanclay, F. (2002). Conceptualising social impacts. *Environmental Impact Assessment Review*, 22(3), 183–211. [https://doi.org/10.1016/S0195-9255\(01\)00105-6](https://doi.org/10.1016/S0195-9255(01)00105-6)

