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A harmonized assessment method and KPIs for evaluating Living Labs

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Abstract: Currently, Living Labs are evaluated in multiple different ways which is hampering comparison. This paper proposes a harmonized method combining various elements (6 chapters, 15 criteria and 34 KPIs), mainly based on the standardized evaluation framework developed by Vervoort et al. (2022) for evaluating the diverse types of Living Labs. Such a harmonized approach will help to simplify evaluation processes and will allow to compare the stability and maturity of LLs in a uniform manner. The premise is that creating a harmonized assessment method will increase the sustainability of Living Labs by providing them a method that allows comparison of the maturity of multiple types of Living Labs without losing sight of the particularities of individual Living Labs within their specific contexts.

Keywords: Living Labs, evaluation, assessment, KPIs, harmonization,

1. Problem

The Living Lab (LL) approach to tackling wicked problems through open innovation systems and user centered co-design approaches is now a global phenomenon and has been so successful it has been strongly adopted by the European Commission, requesting the participation of open innovation experiments and LLs in many calls. This has led to the creation of many LLs in the EU funded projects. To tap into this pot of opportunities, many research entities and collaborations opportunistically call themselves 'Living labs' to attract funding, without adhering to the basic principles of LL . In such cases their legitimacy as LLs may be questioned.

Within the spectrum of LL diversity (e.g. Urban LL, Water-oriented LL...) there is a deficiency in the understanding of standardized Key Performance Indicators (KPIs). This gap pertains to the application of a unified assessment framework, as delineated by Vervoort (2022), for evaluating LLs at the macro, meso (the individual project level) and micro levels, following Schuurman's three-layered approach in 2015 (see Figure 1).

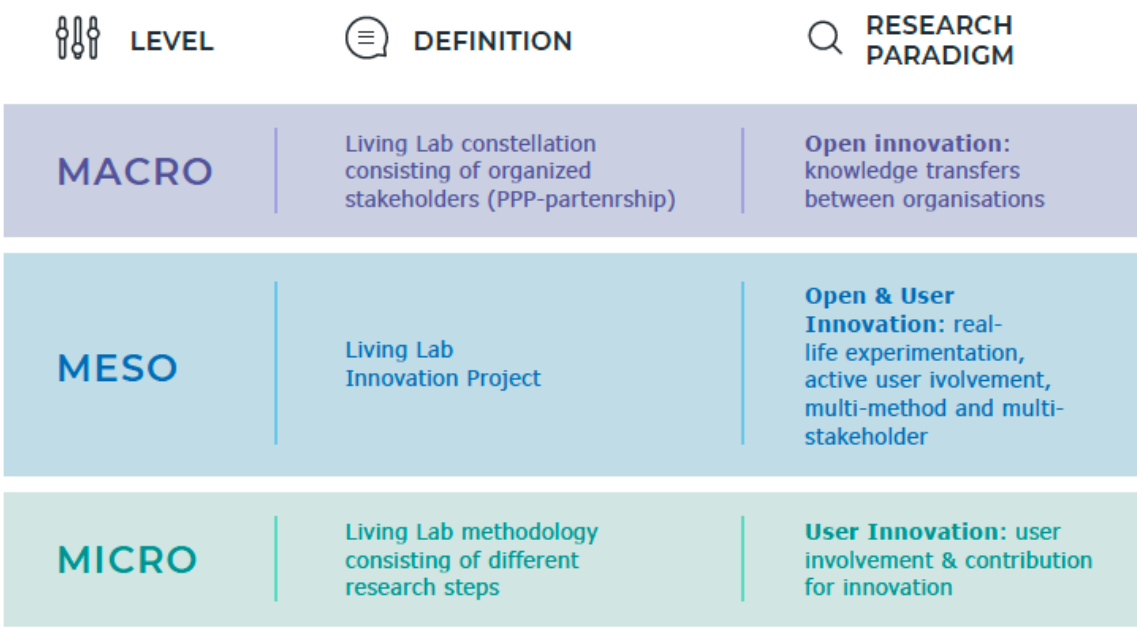

Figure 1 The 3-layered model of a Living Lab introduced by Schuurman (2015) taken from the handbook of the Rewaise[8] project

The adoption of a harmonized structure to evaluate LLs, considering all three levels of a Living Lab (macro-meso-micro), will support the evaluation and assessment of all LLs to help them become more impactful & sustainable.

[8] https://rewaise.eu/wp-content/uploads/2022/05/REWAISE-LL-online_handbook.pdf

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2. Current understanding

Living Lab literature shows that currently a harmonized evaluation structure is lacking although many different authors such as Mulder et al. (2007), Salminen et al (2011), Ståhlbröst (2012), Mastelic (2015), Van Geenhuizen (2018), Santonen (2018), Bronson et al (2021), Dekker et al (2021), and Vervoort et al (2022) indicate the importance of such an evaluation approach to support the sustainability of LLs.

Evaluation frameworks serve multiple purposes. They can provide deeper insights into strengths and weaknesses, identifying areas in which support and cooperation are needed, evaluate progress, identify barriers and development needs and benchmark. Where previous evaluation data is available, trends and movements can be recognised. Evaluation frameworks can be considered as an accelerator for deepening the understanding of the three layers of a LL and individual LL organizations,

Poorly structured evaluation frameworks hamper the development of a sustainable Living Lab movement and potentially constrain the possible innovations at the architectural levels for building a sustainable, impactful, and effective Living Lab structure.

At a practical level the current use of multiple separate assessment methods by different LL networks such as ENoLL[8](European Network of Living Labs), Water Europe[8] and EU-funded projects makes comparison difficult.

This paper aims to develop and propose a harmonized method combining various elements, based on the standardized evaluation framework developed by Vervoort et al. (2022) for evaluating the diverse types of Living Labs. Such a harmonized approach will help to simplify evaluation processes and will allow the stability and maturity of LLs to be compared in a uniform manner.

3. Research Question

The main aim of this research paper is to define a set of general Living Lab KPIs to assess LLs at macro,-meso- and micro-level to enable benchmarking and comparison of the different types of Living Labs and to translate these KPIs issued from different works into a harmonized assessment method to support growth and sustainability.

The premise is that creating a harmonized assessment method will increase the sustainability of Living Labs by providing them a method that allows comparison of their maturity without losing sight of the particularities of individual Living Labs within their specific contexts.

Therefore, the harmonized assessment method focuses on the general Living Lab building blocks and criteria, more than on the practical, contextualized implementation of

[8] https://www.enoll.org

[8] Https://watereurope.eu

it within different sectors. However, the harmonized assessment method provides a solid framework for translating these LL principles within specific sectors.

The paper aims to answer two key research questions (RQs): RQ1 - What are the main KPIs for assessing the stability and maturity of LLs? RQ2 - Which unified assessment method is best suited for evaluating LLs?

4. Approach

A multi-method research approach (Brewer and Hunter et al, 2006) was employed, composed of i) literature review and desktop study, ii) collaborative validation exercises, iii) co-creation workshops, iv) online validation exercises and v) piloting with ENoLL LL members and LLs involved in EU-funded projects to develop a set of 34 general Living Lab KPIs and to co-create a harmonized assessment method for evaluating Living Labs based on 34 questions.

4.1 Literature review and desktop study

First, from February 2023 onwards, a comprehensive literature review (n=175) was conducted, encompassing academic literature focusing on Living Lab evaluation and maturity via Academia, Google Scholar, ResearchGate and the internal ENoLL paper archives.

Starting with the general search terms "KPIs, evaluation and maturity" in combination with the term Living Labs, the scoping of the papers to be included was aligned with the six chapters and fifteen criteria of the harmonized evaluation framework (Vervoort, 2022). Table 1 here below present the search terms included from the harmonized evaluation framework.

Table 1 Search terms included from the harmonized evaluation framework

Chapter	*Criteria*
Strategy	Governance
	Business Model
	Culture
Operations	Human Resources
	Equipment
	Infrastructure(s)
Openness	Innovation process
	Innovation partnerships
	Ownership of results
Users & reality	User centricity
	Iterative process
	Real-life settings
	Participatory tools & methods

Value & Impact	(Co-created) values
	Impact(s)
	Infrastructure(s)
Stability & Harmonization	Stability
	Sustainability
	Scale-up
	Harmonization

The search on the included search terms resulted in a spreadsheet (xls. format) of 175 indexed papers. A traffic light principle using colours in the index was used, by reading all included abstracts of the papers, to define the final list of papers to be included in the literature review:

- 60 green coloured: to be read into depth to identify essential KPIs
- 59 orange coloured: to be scanned thoroughly later to refine KPIs due to their specific sector dependency
- 56 red coloured: excluded from further reading based on analysis of the abstracts

An additional desktop review was made concerning included KPIs and definitions within all past and present ENoLL projects (n=7). In addition, KPIs used by other (LL) networks and/or external organizations to assess Living Labs were collected, in total 13 external frameworks were included.

All the outcomes of the literature review and desktop study were indexed in a spreadsheet and used as basis for a clustered and prioritized KPI longlist, resulting in a clustered final selection of 50 general Living Lab KPIs (Table 2) to be validated by LL practitioners and experts, based on the frequency of mentioning KPIs in the longlist.

Table 2 Clustered final selection of 50 general Living Labs

Chapter	*Criteria*	*KPI*
Strategy	Governance	% of involvement of different stakeholders in the vision/mission (e.g., all quadruple helix represented is 100%)
		% of involvement of different stakeholders in the governance, supported by the necessary partner agreements (including clear actor roles)
		Presence of SMART goals and decision-making processes (responsibilities)
	Business Model	Presence of a business model (canvas), including customers, value proposition, resources, revenues, and costs (e.g., LIAISON)
		Presence of a service portfolio covering (all) phases of the lifecycle approach
		Presence of partner agreements/arrangement for co-innovation

		% Who's paying/contributing with what (private & public funding, revenues service portfolio)
	Culture & Collaboration	Internal & external relation management process/strategy in place (including client contracts)
		Frequency of internal communication & results sharing
		Number of regional, national & international (long-term) collaborations
Operations	Human Resources	Implementation of clear internal roles and responsibilities
		Amount of qualified (internal/external) staff (Full-Time-Equivalent)
		% of Role flexibility within the organization (i.e., how many (different/multiple) people can execute (different/multiple) roles)
	Operations	Number of (finished) living lab projects and/or activities/ 3 year
		Quality of internal monitoring framework (strategic, financial, equipment & infrastructure, policy, project outcomes)
		Frequency of monitoring the living lab and its main activities
	Equipment & Infrastructure	Presence of facilities
		Presence of hard- and software
		% of time availability of equipment and infrastructure to the living lab
Openness	Innovation partnerships, projects & processes	Level of reflective & iterative approach to transdisciplinary collaboration
		Transparency of project roles, selection & execution (including accessible and understandable information)
	Ownership of results	Presence of an ethical approach (e.g., regulatory requirements, data protection needed)
		Presence of strategy & processes for ownership of the rights & profits (including data) of collaborative outcomes
		Presence of rules & regulations regarding the use, sharing & licensing of intellectual property (prior to the project)
		Presence of user agreements (data, intellectual property, rights, liabilities)
Users & reality	User centricity	Diversity of profiled end users
		(% of the) Role of end users according to the levels of involvement
		Level of permanence of the user panel beyond living lab projects
	Lifecycle & real-life	Number of users involved in the different phases of the innovation cycle
		Concreteness of real-life settings enabling users to

		participate in their natural environments
		% of time of user involvement within real-life settings
	Participatory tools & methods	Proof of a structured & transparent approach/strategy for active user involvement throughout the innovation cycle
		Range tools & methods for the different phases of the innovation cycle
		Proof of a transparent (concept, background, process, outcomes & results) communication approach/strategy tailored to the different types of stakeholders
Value & Impact	(Co-created) values	% Satisfaction of users/stakeholders (from the whole value chain) concerning their involvement/influence
		Frequency of knowledge sharing (including results) with relevant (internal & external) stakeholders from the value chain
		Number of (open) educational resources (including datasets) shared/provided for relevant stakeholders
		% Satisfaction of users/stakeholders concerning knowledge sharing & capacity building (learning materials & infrastructures)
	Impact(s)	Presence of an impact assessment framework & procedures
		Frequency of impact assessments
		% of improvement of organizational excellence (e.g., working procedures/processes, desired knowledge & skills)
Stability & Harmonization	Stability	% Increase of relationships with a reliable partner network and customers
		Level of financial maturity based on a balanced & diversified set of funding & revenue streams
		Number of living lab value propositions, flexible to adapt to eventual new needs
	Harmonization & scale-up	% Increase of partners committed to scale up products/solutions/services
		Number of products/solutions/services (able to be) scaled-up
		% increase of influence on and/or collaboration with other (networks of) living labs
		Number of transferred living lab infrastructures, standards, skills, methods, tools, processes & services to other (networks) of living labs and/or relevant actors
		Number of adopted harmonized living lab infrastructures, standards, skills, methods, tools, processes & services
		Number of (cross-border/cross-sectoral) initiatives/projects based on common processes

4.2 Collaborative validation exercises

Following the literature review and desktop study, from June to September 2023, multiple online validation sessions via the collaborative tool MIRO were organized with different types of Living Lab stakeholders to refine the clustered selection of 50 general Living Lab KPIs of the Table 1. The LL practitioners and experts involved (n=51) were invited via five different groups:

- academic Living Lab experts defined in the literature review (n=6)
- LL practitioners from the Vitalise[8] project (n=23)
- LL practitioners from the WATER-MINING[8] project (n=6)
- members of the executive board of ENoLL (n=15)
- practitioners of ENoLL office and member organizations (n=26)

All stakeholder groups participated in separate online validation exercises in which they needed to indicate in relation to the proposed 50 KPIs from the clustered final selection (see Table2) each specific KPI was clear/unclear (green/red post-its) and/or hard to measure (orange post-its). Moreover, they could add clarifications on the selected post-its. Figure 2 here below shows a screenshot of one of these online validation exercises.

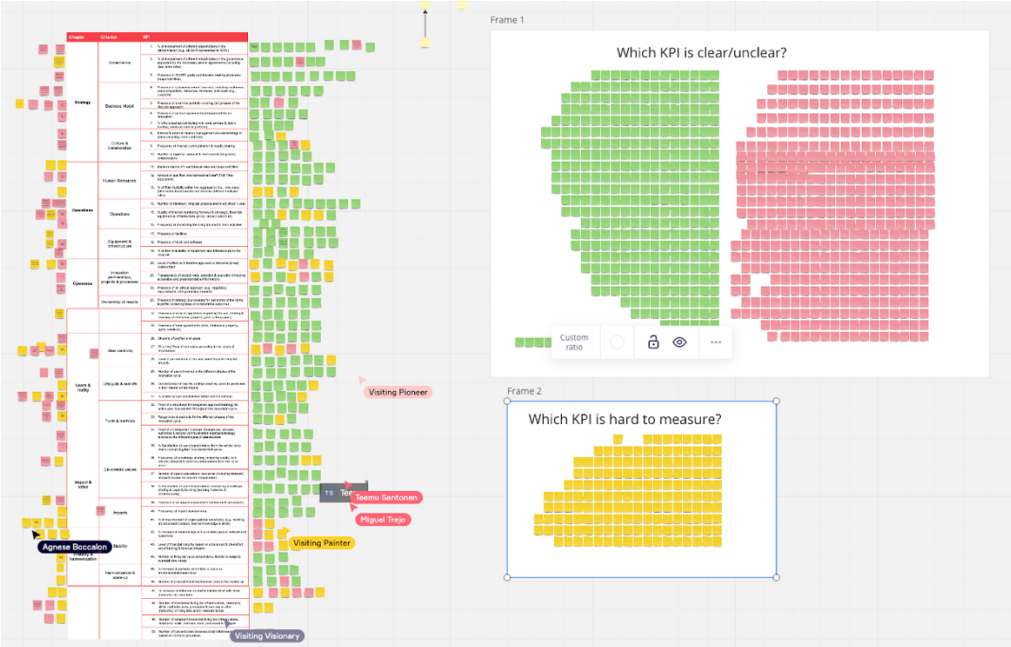

Figure 2 Screenshot from the MIRO validation exercise with LL practitioners from the Vitalise project

[8] https://vitalise.project.eu

[8] https://watermining.eu/

An analysis took place of clear/unclear KPI's and KPI's hard to be measured, based on all inputs from the different stakeholders participating in the validation sessions (n=51) for defining which KPI's needed to be iterated.

To do so, following rules were considered:

- every KPI with a score<80% of clarity was reinvestigated to iterate the wordings
- every KPI with a score >80% of clarity was considered ready for implementation without iteration in the wording of it
- every KPI with a score above 25% of hardness to measure was reinvestigated to better scope the measurement

This analysis of the 50 KPIs showed:

- 22 KPI's needed to be reinvestigated concerning their clarity and iterate the wordings of them
- 18 KPI's needed iteration concerning their hardness to measure to better scope their measurement
- 28 KPI's could be considered ready for implementation without iteration in the wording of it

After this, the comments from the participating stakeholders were used to iterate all KPIs. This process led to a refined, reduced and final set of 34 general Living Lab KPIs which is presented in Table 3 in the next chapter (findings) of this paper.

Finally, based on the feedback from the participating stakeholders, together with input from the 59 orange-coloured papers from the literature review, 13 KPIs, describing different types of impacts (societal, environmental, economic, regulatory, academic, technological), were added to enable diversification between the different types of impact Living Labs are aspiring, which is presented in Table 4 in the next chapter (findings) of this paper.

4.3 Co-creation workshops

From September to December 2023, starting from the final set of general Living Lab, a harmonized assessment method to evaluate diverse types of Living Labs was co-created together with Living Lab experts involved in the WATER-MINING & Vitalise project (n=10), and together with members of the Labelling & Certification committee from ENoLL (n=4).

This harmonized assessment method exists out of:

- a quantitative self-assessment focusing on the general KPIs, supporting the main 6 building blocks and 15 criteria of every type of Living Lab, and,
- a qualitative assessment concerning all the criteria of a Living Lab to translate the general quantitative part to the specific context of a specific Living Lab, and
- a feedback report providing individual insights for the assessed LL and establishing a benchmark with other LLs

The feedback report is built upon the scoring and the feedback from Living Lab expert evaluators performing the qualitative assessment in a three blind peer review approach.

Simultaneously, definitions for each of the six chapters and fifteen criteria, based on the general set of 34 Living Lab KPIs were defined to increase common understanding about the key aspects of a Living Lab. Later onwards these definitions were integrated into the assessments to construct them in a user-friendly way, increasing the understanding of the participating Living Labs.

Next, questions were co-created for both assessments, resulting in 34 quantitative questions linked to the KPIs for the self-assessment and 15 questions linked to the LL criteria for the qualitative assessment.

Finally, two sets of scoring tables for each of the fifteen criteria were constructed to assure the general Living Lab KPIs were used to measure the maturity of Living Labs concerning the different criteria. Different sets of scoring tables were built for the self-assessment and the qualitative assessment since in the self-assessment they needed to support the general aspects of a Living Lab while in the qualitative assessment they needed to support contextualization to a specific context of a specific Living Lab.

4.4 Online validation exercises

After the definitions were compiled, we validated them with different types of Living Lab stakeholders from the WATER-MINING and Vitalise project, together with ENoLL members, via an online Microsoft form. For each criterion, two possible definitions were proposed to choose from, allowing additional comments and feedback to further enrich common understanding. In total 24 LL practitioners participated in this online validation exercise.

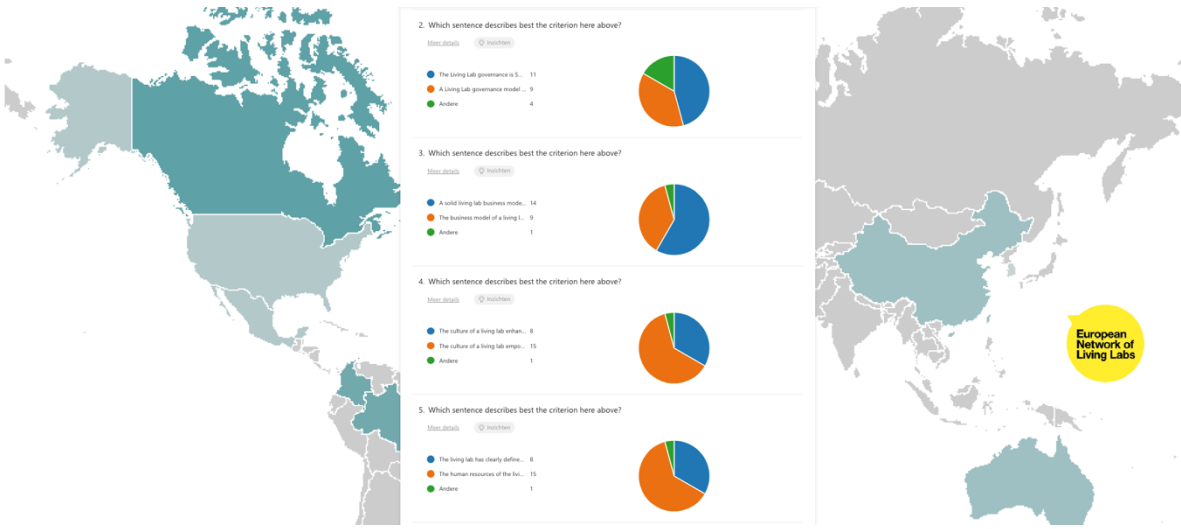

Figure 3 Screenshot from the Microsoft Form validation exercise with LL practitioners concerning the definitions of the criteria

Following this, the iterated definitions were presented to the different stakeholders again.

Once the definitions were validated, we started to validate the questions for the self-assessment with different groups of stakeholders (n=54) from five different groups:

- academic Living Lab experts (n=12)
- LL practitioners from the Vitalise project (n=13)
- LL practitioners from the WATER-MINING and other projects (n=19)
- members of the executive board of ENoLL (n=11)
- practitioners from ENoLL member organizations (n=18)

All stakeholders participated in an online validation exercises (Microsoft Form) in which they needed to indicate for each of the developed questions and the included answering possibilities of these question if they were clear/unclear and/or hard to measure. Moreover, they could add additional feedback on the questions and answering possibilities.

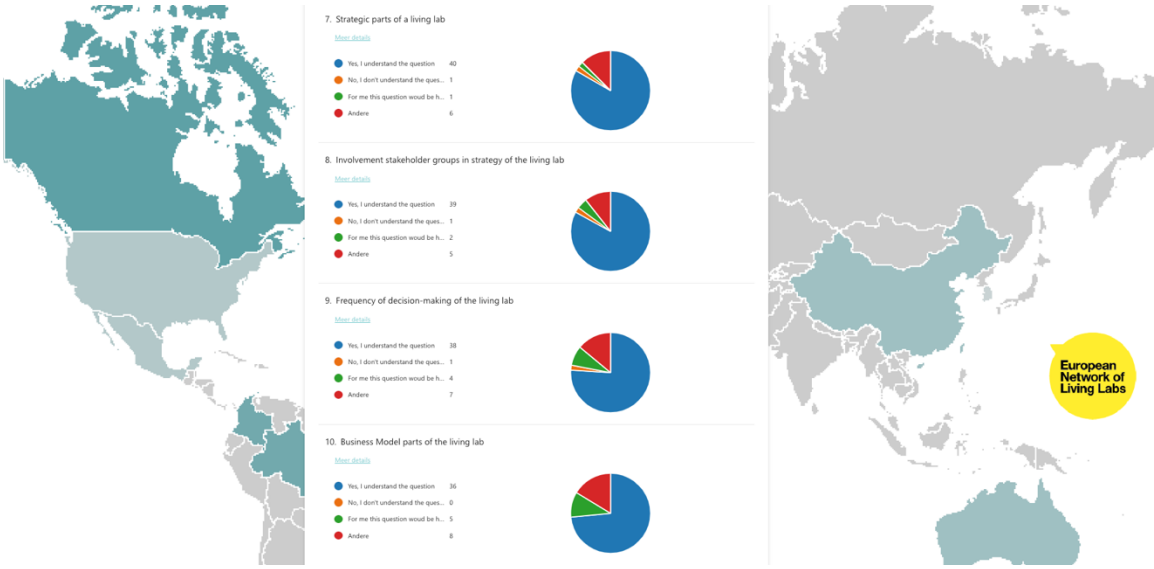

Figure 4 Screenshot from the Microsoft Form validation exercise with LL practitioners concerning the questions of the self-assessment

The feedback from the participants (=46) was analysed and the questions were iterated. When more than 10% of the participants indicated not to understand the question, the question was rephrased to improve common understanding. Additionally, answering possibilities were adapted, added or deleted based on the feedback of the participants. Last, answering scales (e.g. frequencies of monitoring, communication...) were adapted to become clearer for respondents.

As a result, a self-assessment tool was built, hosted via Sogolytics[8], a survey software. Following this a calculator for creating visualizations of the six chapters and the fifteen criteria was developed. Finally, guidelines for the completion of the survey were created and published on the website of ENoLL.

Figure 5 Screenshot from the first question of the quantitative self-assessment hosted in Sogolytics software.

4.5 Piloting

From January until the end of March 2024, multiple Living Labs (n=5) went through the harmonized assessment method to investigate the validity of the outcomes of the quantitative and qualitative process and to identify possible points for further improvement of the questions, the scoring tables and the feedback report. The participating Living Labs from the WATER-MINING project (n=2) were interviewed after completion of the harmonized assessment method to collect user feedback first handed.

Next to this, ENoLL started using the harmonized method to support the application process for their network. A total of three applying organisations went through the assessment method. Currently, these three Living Labs were not yet interviewed to capture first hand feedback around the process.

Finally, early 2024, ENoLL made publicly available the 34 self-assessment questions[8] focusing on the realms of strategy, operations, openness, users and reality, value and impact and stability of Living Labs to increase common understanding and to support organisations applying to the network.

[8] https://www.sogolytics.com
[8] https://enoll.org/wp-content/uploads/2024/02/self-assessment-questions-enoll.pdf

5. Findings

This study presents the theoretical underpinnings of general LL KPIs for evaluating LLs. This contribution is grounded in an extensive review of existing literature and LL projects/frameworks.

Next to this, it introduces a practical, harmonized assessment method that encompasses both quantitative and qualitative dimensions, providing a comprehensive evaluation framework covering all levels of a LL, and it provides a detailed description of the steps taken to ensure the user-centric focus of the harmonized assessment method, enhancing the practical utility and relevance of the assessment,

Additionally, it offers a theoretical and practical foundation for analysing and comparing the strengths and weaknesses, as well as differences and synergies, of LLs across diverse regions and sectors, contributing to a broader understanding of the contextual variations in LL performance.

5.1 General Living Lab KPIs

The literature review, desktop study and collaborative validation exercises led to the formulation and classification of 34 general Living Lab KPIs, aligned with the six chapters and fifteen criteria of the harmonized evaluation framework developed by Vervoort et al. (2022).

Table 3 34 general Living Lab KPIs

Chapter	*Criteria*	*KPI*
Strategy	Governance	% of (active) involvement of a balanced and diverse group of stakeholders in the development of the vision/mission of the Living Lab (e.g., all Q4 represented is 100%)
		% of participation of a balanced and diverse group of stakeholders in the governance of the Living Lab (strategic & operational roles and decision-making processes)
		Presence of partner agreements/arrangements for co-innovation
		Completeness of a strategic roadmap for the Living Lab (SMART goals, responsibilities, and decision-making processes)
	Business Model	Completeness of the described business model approach (value proposition, problems & solutions, activities & resources, key stakeholders, customers, users, costs & revenues, metrics & impacts)
		Number of (different) services offered by the Living Lab (e.g. stakeholder engagement) covering (all) different phases of the innovation lifecycle

	Culture & Collaboration	Presence of internal & external business & client relation management process/strategy (including contracts) Frequency of internal communication & results sharing to keep partners informed & aligned Number of regional, national & international collaborations beyond the scope of an individual Living Lab project
Operations	Human Resources	% of implementation of needed internal roles and responsibilities within the operational Living Lab team in a flexible way (are all roles sufficiently attributed depending on the size of the operational Living Lab team)
	Operations	Time spent within successfully completed projects and/or activities related to the Living Lab (how many weeks/months/years of experience does the Living Lab has in running projects and or activities) Completeness & frequency of internal self-monitoring processes (how often is the Living Lab essential parts of their organization: strategic, financial, equipment & infrastructure, policy, project outcomes)
	Equipment & Infrastructure	% of accessibility in time to facilities (e.g. offices, co-creation spaces, test facilities...) % of accessibility in time to hard- & software (e.g. co-creation materials, computers, wearables, interaction software, polling/survey software...)
Openness	Innovation partnerships, projects & processes	% of implementation needed processes to safeguard a reflective and iterative approach to transdisciplinary collaboration % of implementation of needed processes to safeguard an ethical approach (e.g. regulatory requirements, data protection needed etc.)
	Ownership of results	% of implementation of needed rules & regulations regarding the use, sharing & licensing of data and IP of collaborative outcomes % of implementation of user agreements (data, IPR, rights, liabilities)
Users & reality	User centricity	% of diversity of stakeholders involved as end-users in Living Lab projects and/or activities Degree of influence end-users exert on the different phases of the innovation lifecycle (from informing to empowerment)
	Lifecycle & real-life	Degree of involvement of end-users in the different phases of the innovation lifecycle (e.g. problem space, solution

		space, implementation space)
		Degree of use of real-life contexts of users in the different phases of the innovation lifecycle
	Tools & methods	Degree of appropriateness of tools & methods used for the different phases of the innovation lifecycle
		Frequency of external communication & results sharing to keep end-users and external stakeholders informed and engaged
Value & Impact	(Co-created) values	% of satisfaction of users/stakeholders (from the whole value chain) concerning their involvement/influence on the innovation lifecycle
		% of satisfaction of users/stakeholders concerning knowledge sharing & capacity building (learning materials & infrastructures)
		Number of relevant (open) educational resources (including datasets, trainings) shared/provided for relevant stakeholders
	Impact(s)	Completeness and frequency of impact assessments (how often is the Living Lab monitoring different types of impacts they are generating: societal, environmental, economic, regulatory, academic, technological)
Stability & Harmonization	Stability	% of increase in number of relationships (with a reliable partner network and customers)
		Level of financial sustainability based on a balanced & diversified set of funding (structural vs. project-based) & revenue streams
		Number of living lab value propositions, flexible to adapt to new circumstances
	Harmonization & scale-up	% of increase in number of partners committed to scale up products/solutions/services
		Number of products/solutions/services (able to be) scaled-up
		Number of participation in (cross-border/cross-sectoral) initiatives/projects based on harmonized Living Lab infrastructures, standards, skills, methods, tools, processes, or services

5.2 KPIs for different types of impact

To safeguard diversification between different types of Living Labs concerning the impacts they are aspiring, in addition to the general Living Lab KPIs, 13 KPIs were distilled and suggested to cover the different types of impacts (Table 4).

Table 4 13 KPIs for the different types of impacts generated by Living Labs

Type of impact	*KPI*
Societal	% of positive increase in changing mindsets
	% of positive behavioural change and/or well-being of relevant stakeholders/users
	Number of implemented solutions responding to local challenges & opportunities
Environmental	% of increase awareness environmental issues addressed by the Living lab
	% of positive increase of use of (natural) resources
Economic	Number of (new) business created/supported (e.g. spin-offs/start-ups)
	Number of patents/licenses awarded % of reduced development risks & costs
Regulatory	Number of adapted/implemented policies and/or directives
	% of increase of common understanding/dialogue between political representatives & the (innovation) ecosystem
Academic	Number of scientific papers and/or publications/articles
	Number of awarded and/or highly referred publications
Technological	% of increase in TRL of innovated technologies
	Number of technologies implemented in the market

5.3 A harmonized assessment method

The harmonized assessment method with the quantitative self-assessment and the qualitative assessment delivers higher quality for all the users involved in the evaluation process, LL organizations going through the process as well as LL experts reviewing the evaluation materials.

Both types of users indicated that the harmonized questions made it easier to understand what was asked and how to answer or evaluate them. Moreover, completing the self-assessment helped participating LL organizations to prepare better for the second part of the qualitative assessment since both assessments have the same structure. Therefore, while answering the more context specific qualitative questions, the answering possibilities on every question in the self-assessment supported them not to forget important aspects in the qualitative assessment form.

LL experts reviewing expressed the overview of answers given on the self-assessment to be helpful to understand the given answers and increase the quality of the given answers in the qualitative form. On top of this, the LL experts were grateful for the provided visualizations from the self-assessment since they provided insights in the self-assessed maturity of the LL organizations.

Figure 6 Example of visualization of chapters of the self-assessment

The LL organizations being evaluated really appreciated the feedback report focusing on recommendations for growth. The feedback report is built upon the scoring and the feedback from Living Lab expert evaluators performing the qualitative assessment in a three blind peer review approach.

6. Conclusions and next steps

The study pioneers a ground-breaking universal set of KPIs tailored for LLs, addressing a significant void in the current landscape, with the aim of establishing a harmonized excellence across diverse sectors.

For LLs, the assessment method and its associated KPIs offer a practical and strategic tool. LLs can leverage this framework to engage in self-assessment, enhancing their effectiveness and impact. Stakeholders and funders stand to benefit from the research by

gaining valuable criteria for decision-making regarding the utilization of LLs in various contexts.

The streamlined evaluation process facilitated by the assessment method ensures a clear and standardized approach for LL evaluators, contributing to a more coherent and reliable evaluation process. The data generated through this process becomes a valuable resource for identifying the strengths and weaknesses inherent in different types of LLs, allowing for meaningful comparisons within and across sectors and regions,

The assessment method sets standards and supports the certification process by entities such as ENoLL, enabling the development of tailored capacity-building activities, ensuring that LLs meet established benchmarks.

The research opens avenues for seamless practical integration. The proposed KPIs and assessment method can be incorporated into existing and future funded LL projects, fostering a consistent and standardized approach over time, and across sectors and regions.

From this year onwards, ENoLL will use the harmonized assessment method based on the general set of KPIs not only to support the certification of new applying members but also to benchmark all members of their network.

Next to this, ENoLL will introduce the harmonized assessment method in multiple funded projects concerning the evaluation of LLs included in the description of actions of these funded projects. Doing so, will help to increase common understanding across different sectors and regions about the evaluation of Living Labs and will support the further development of contextualized approaches of the harmonized assessment method and KPIs within specific sectors with the aim of creating harmonized approaches sector by sector.

Furthermore, a research working group with LL academic experts from the ENoLL network and beyond will deepen the understanding concerning the impact related KPIs developed to strengthen the general set of KPIs with more outcome focused KPIs with the aim of creating a harmonized longlist of impact KPIs for LLs to allow them to measure the actual success of their Living Lab organization.

Finally, we acknowledge that currently this study is focusing only on the Living Lab approach, which does not allow comparison with other open innovation ecosystems and research approaches. However, in the future, the collected data from LL organizations can be used to investigate the synergies and differences between LLs and other innovation approaches.

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