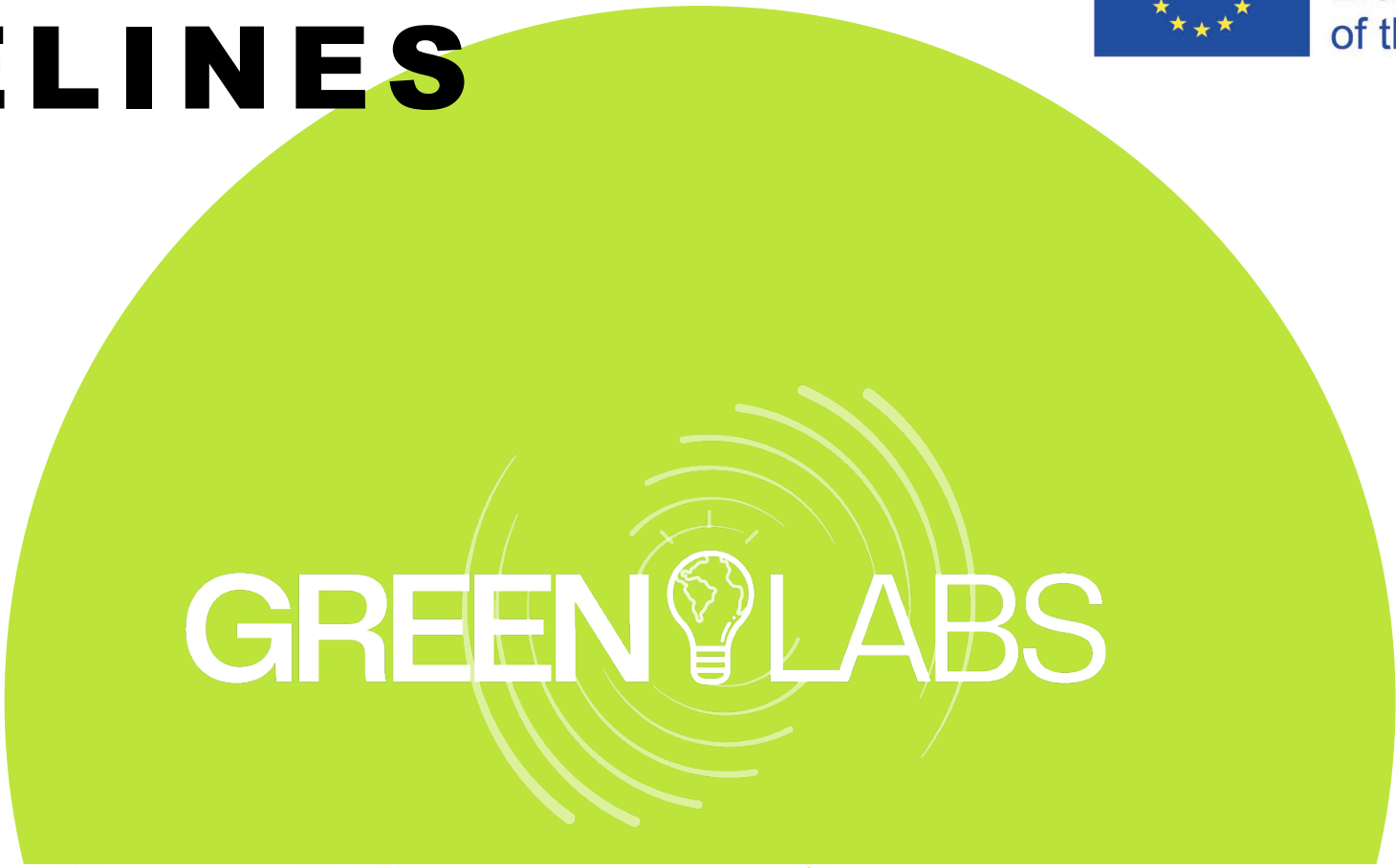


LIVING LABS GUIDELINES



Co-funded by the
Erasmus+ Programme
of the European Union

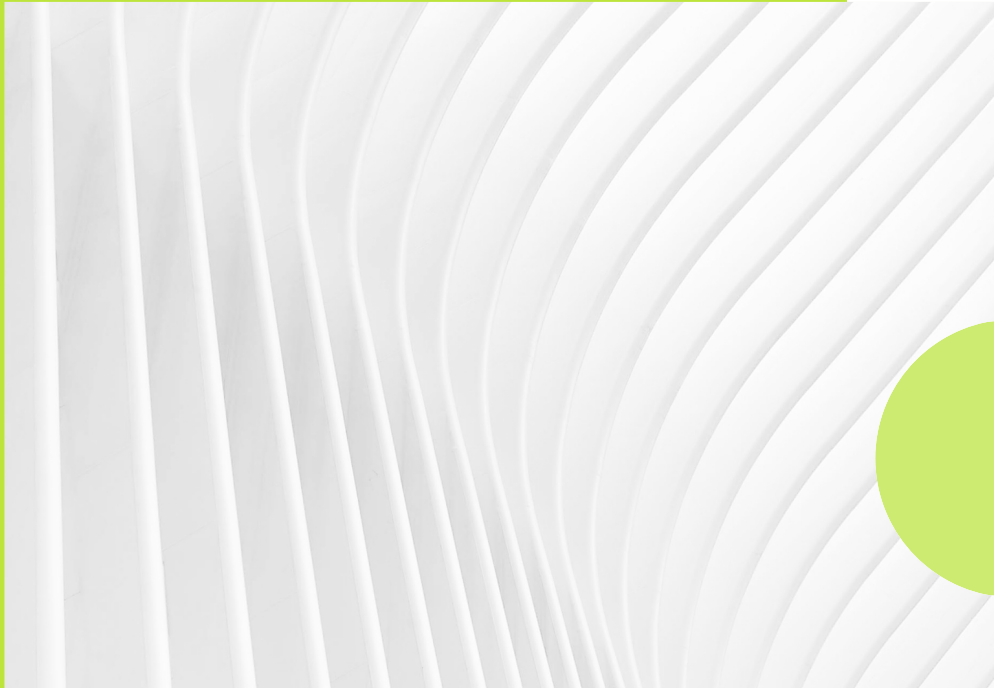
A large green semi-circle containing a white graphic of a lightbulb with a globe inside, surrounded by concentric white circles.

GREEN LABS

10-NOV-25



INTRODUCTION



GREEN LABS Project

A transnational EU-co-funded initiative that promotes eco-innovation and sustainable development by creating an international network of Living Labs. These real-world labs bring together citizens, researchers, businesses, and public authorities to co-create solutions that support the green transition.

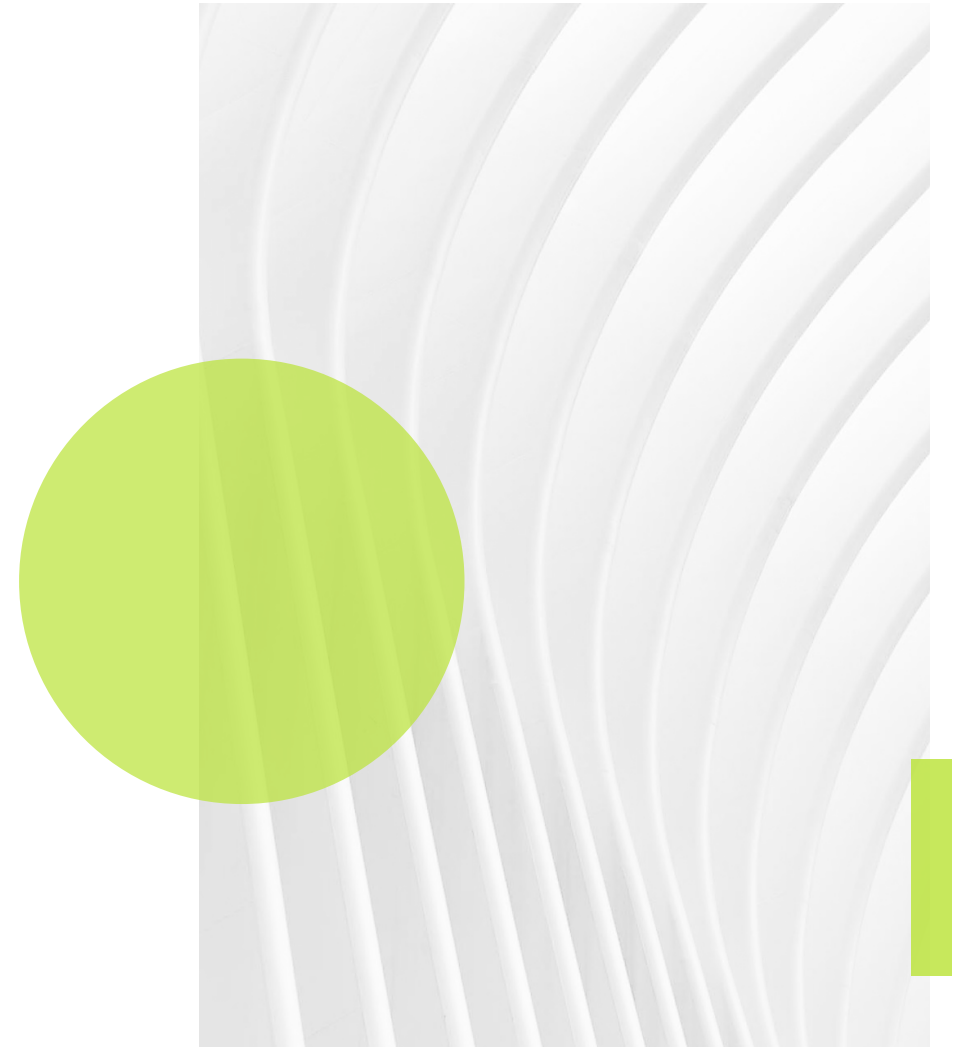


OBJECTIVES

1. Set up a network of living labs in all partner countries.
2. Launch the Green Labs network as an open innovation ecosystem for circular solutions.
3. Boost community engagement and co-creation for local eco-innovation.
4. Provide a digital ecosystem for collaboration and knowledge sharing.
5. Support EU goals by testing scalable models for sustainability and resilience.

LIVING LABS GUIDELINES

We are going to present a core framework for designing and operating an **international network of Living Labs** focused on green innovation. We will set out the **key principles**, methods, and governance structures needed to create and sustain collaborative, multi-stakeholder spaces that support co-creation and sustainable development.



KEY MESSAGES



MESSAGE 1

- Provide a **core framework for designing and operating Living Labs** focused on green innovation and sustainability.



MESSAGE 2

- Align all labs with the **quintuple helix model** (government, academia, industry, civil society, environment).



MESSAGE 3

- Set **clear guidelines for governance**, co-creation processes, and stakeholder engagement.

MESSAGE 4

- Offer tools to assess impact and ensure **long-term sustainability**.

MESSAGE 5

- Support **replication and scalability** of Living Labs across regions.

WHAT IS A LIVING LAB?

Living Labs are among the most successful approaches for developing innovations, functioning as real-world innovation ecosystems that enable **participatory design and testing**. In these environments, users, researchers, businesses, and policymakers collaboratively co-create, prototype, and validate solutions in real-life settings.

Within the GREEN LABS project, the Living Labs focus on green ecosystems, circular economy practices, and sustainable production and consumption models, serving as testing grounds for eco-innovation, new policies, business models, and green technologies.

T H E R E I S N O C O N S E N S U S O N
W H A T A L I V I N G L A B M I G H T B E



CORE PRINCIPLES OF LIVING LABS

User-Centric Approach

End-users help shape solutions, ensuring real needs are met and social acceptance is high.

Open Innovation

Stakeholders share data, insights, and methods, enabling faster iteration and better collaboration.

Co-Creation & Experimentation

Participants jointly design, prototype, and test ideas in real environments, building shared ownership.

Multi-Stakeholder Engagement

Brings together government, academia, industry, civil society, and the environment to enable broad, long-term collaboration.



LIVING LAB APPLICATIONS

- Urban sustainability (eco-city planning, renewable energy, sustainable mobility).
- Circular economy pilots (waste reduction, resource efficiency, eco-design, industry 5.0).
- Community environmental projects (green spaces, biodiversity, sustainable farming).
- Policy co-creation with public authorities, citizens & businesses.
- Education hubs offering hands-on training for future Green Innovation Managers.

→ **Living Labs bridge theory and practice, strengthening participatory governance and empowering communities.**



TARGET AUDIENCE

- **Policymakers & Local Authorities** – Municipalities, regional governments, and EU institutions seeking to integrate Living Labs into sustainability strategies.
- **Academic & Research Institutions** – Universities, think tanks, and innovation hubs aiming to harness Living Labs as **collaborative research environments**.
- **Businesses & Startups** – Companies involved in **green technology, circular economy solutions, and eco-innovation** that can benefit from real-world experimentation.
- **Civil Society & Community Organizations** – NGOs, grassroots movements, third-places and cooperatives working on **environmental and social sustainability** initiatives.
- **Funding Agencies & Investors** – Entities looking to support and scale up Living Lab initiatives through **public-private partnerships, grants, and crowdfunding**.

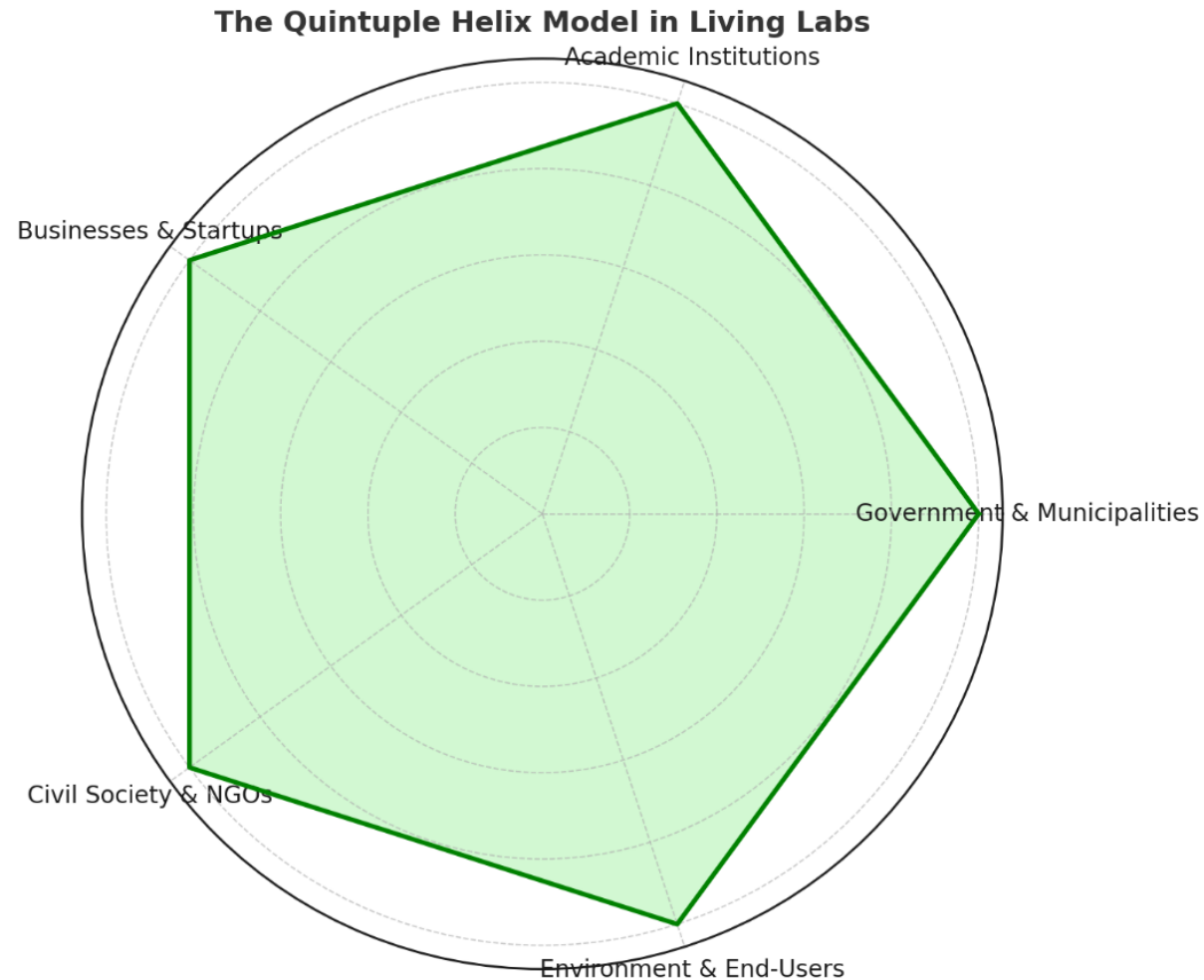


STAKEHOLDER ROLES

Stakeholder Group	Role in the Living Lab	Expected Contribution
Government & Municipalities	Policy development, funding, regulatory support	Provide policy frameworks, grants, and infrastructure support
Academic Institutions	Research, expertise, training	Contribute scientific knowledge, conduct impact assessments
Businesses & Startups	Solution development, piloting	Develop & test green technologies, provide funding
Civil Society & NGOs	Community engagement, advocacy	Ensure public participation, advocate for sustainability
End-Users (Citizens, Local Groups)	Testing, feedback	Provide real-life testing environments, suggest improvements



THE QUINTUPLE HELIX MODEL



LIVING LAB DESIGN

Step	Description	Expected Outcome
Needs Assessment	Identify environmental, social, governance and economic challenges to be addressed.	A well-defined problem statement and area of focus for each Living Lab.
Stakeholder Analysis	Map relevant actors (government, businesses, academia, civil society, end-users).	A structured engagement plan ensuring balanced representation.
Setting Objectives & KPIs	Define clear goals, success criteria, and performance indicators.	A measurable Living Lab roadmap for tracking progress.
Resource & Funding Considerations	Identify necessary resources (financial, human, technological).	A funding plan incorporating local & EU-level funding sources in a perspective of sustainability.
Ethical & Legal Considerations	Address data privacy, sustainability ethics, and compliance with regulations.	A compliance framework for ethical operations.



LIVING LAB IMPLEMENTATION

Prototyping & Experimentation

This stage involves developing small-scale test projects that support green transition goals. Local communities are engaged early to ensure participation and ownership, while continuous feedback enables rapid iteration and improvement.

Co-Creation Sessions & Workshops

Interactive sessions and workshops bring together businesses, researchers, and policymakers to design solutions collaboratively. These multidisciplinary exchanges strengthen creativity and ensure that decision-making remains participatory.

Testing & Iterative Development

Solutions are piloted in real-life conditions to validate their effectiveness before scaling. Continuous monitoring and stakeholder feedback guide refinement, while documenting key insights supports future replication and broader impact.



IMPLEMENTATION METHODS & TOOLS

Tool/Method	Purpose	Application in Living Labs
Design Thinking	User-driven problem-solving approach.	Used to identify and refine solutions through iterative feedback.
Agile Prototyping	Quick experimentation cycles.	Allows rapid testing of green innovations in real-world settings.
Community Workshops	Engage end-users in design & testing.	Facilitates local involvement and knowledge-sharing.
Digital Collaboration Tools	Support virtual engagement and coordination.	Enables remote co-creation & data sharing among stakeholders.



GOVERNANCE MODELS

Model	Key Features	Best Use Cases
Public-Private Partnership	Government-backed, industry-funded.	Large-scale urban sustainability projects.
Community-Led Model	Grassroots-driven, participatory decision-making.	Local environmental initiatives, social innovation.
University-Industry Collaboration	Academic-led innovation, industry-supported R&D.	Applied research on eco-innovation.



FUNDING SOURCES AND MODELS

Source	Examples & Notes
EU and National Grants	Horizon Europe, Interreg, Erasmus+, national innovation funds. Often used for launch and pilot phases.
Municipal & Regional Budgets	Local authorities can integrate Living Labs into urban development and climate plans.
Public-Private Partnerships (PPPs)	Collaboration with companies investing in R&D, sustainability, or CSR.
Crowdfunding & Community Financing	Involving local citizens and communities as financial contributors and co-owners.
Service Provision	Offering workshops, training, or consultancy to generate income (e.g., circular economy audits).
Membership Models	Fees from institutions, SMEs, or NGOs that benefit from lab activities or digital tools.
Philanthropic Foundations	Environmental, innovation, or social impact foundations supporting long-term change.



KEY RISKS AND MITIGATION

Risk Category	Description	Mitigation Strategy
Stakeholder Engagement Risks	Lack of participation from key stakeholders, resistance to change.	Early engagement, clear communication strategies, incentives for participation.
Financial Risks	Insufficient funding, delays in financial support.	Diversified funding streams (grants, sponsorships, revenue models).
Operational Risks	Poor coordination between partners, delays in project execution.	Strong governance model, clear roles & responsibilities, regular project reviews.
Technological Risks	Lack of access to technology, technical failures.	Use of open-source solutions, tech training for stakeholders.
Legal & Ethical Risks	Data privacy concerns, regulatory compliance issues.	Compliance checks, ethical review boards, transparent data policies.



MONITORING & EVALUATION

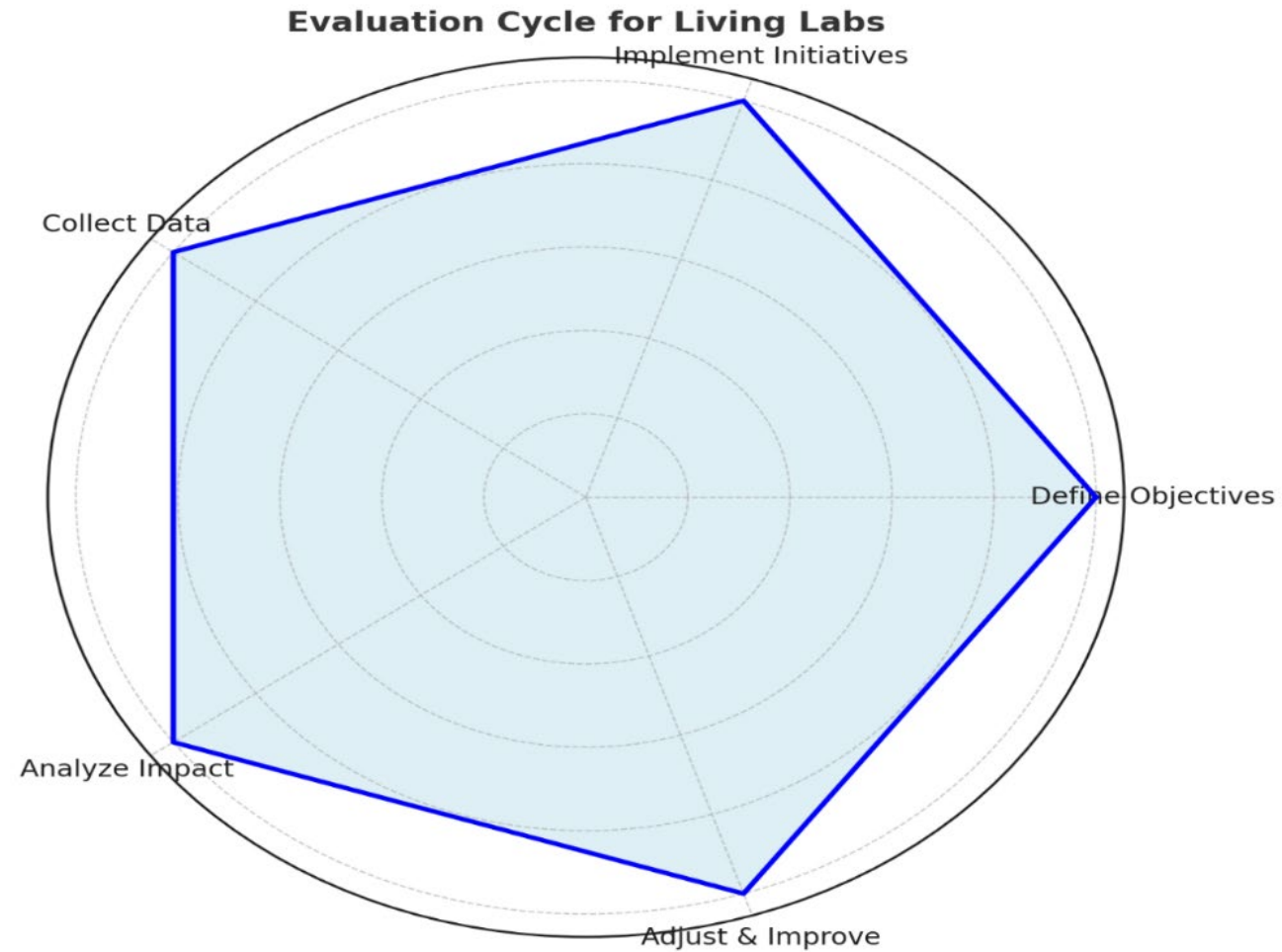
Effective Monitoring and Evaluation (M&E) in Living Labs is essential not only to measure results but to guide **iterative learning, stakeholder alignment, and adaptive decision-making**.

Key Elements of the M&E Framework

- **Input & Process Indicators** (e.g., resources mobilized, number of workshops held)
- **Output Indicators** (e.g., co-created tools, prototypes, policy recommendations)
- **Outcome & Impact Indicators** (e.g., behavioral change, environmental improvements, increased collaboration)



EVALUATION PROCESS



CASE STUDIES & BEST PRACTICES

EfeuCampus (Bruchsal, Germany)

Overview:

EfeuCampus is Germany's first research area focused on autonomous, emission-free last-mile logistics. Supported by EU and state funding, it develops smart urban mobility solutions, including delivery robots and future cargo drone operations.

Key Features:

- Autonomous delivery robots reducing congestion and emissions
- Planned integration of emission-free cargo drones
- Strong multi-stakeholder collaboration (research, industry, public sector)

Impact:

A leading model for sustainable, tech-driven urban logistics and efficient last-mile delivery.



CASE STUDIES & BEST PRACTICES

Fab Lab Barcelona (Spain)

Overview:

Founded in 2007 by IAAC, Fab Lab Barcelona is the first Fab Lab in the EU and a global reference in digital fabrication and maker culture. Located in Poblenou, it transformed an old factory into a vibrant innovation and education hub.

Key Features:

- **Distributed Design Platform:** Connects designers, makers, and markets across Europe.
- **Smart Citizen Project:** Community-driven environmental monitoring; awarded at the Smart City Expo (2013).
- **Education & Skills:** Wide range of workshops and courses in digital fabrication.

Impact:

Awarded the **STARTS Grand Prize (2021)** for “Remix El Barrio,” Fab Lab Barcelona continues to shape the global Fab Lab network and support sustainable, creative innovation.



CASE STUDIES & BEST PRACTICES

Smart Living Lab (Fribourg, Switzerland)

•Overview:

Established in 2014 in Fribourg's Bluefactory district, the Smart Living Lab is a Swiss research center focused on sustainable buildings, human comfort, and the digital transformation of the AEC sector. It is part of the Switzerland Innovation Park Network West EPFL.

Key Features:

- Interdisciplinary Research:** Collaboration between EPFL, HEIA-FR, and the University of Fribourg.
- Sustainable Building Projects:** Includes the award-winning *NeighborHub* solar pavilion (Solar Decathlon).
- Future Construction:** Developing an experimental building aligned with Switzerland's Energy Strategy 2050.

Impact:

Advances sustainable construction technologies and fosters interdisciplinary innovation for the future built environment.



DIGITAL TOOLS & APPLICATION

Category	Examples	Benefits
Open Source Tools	Nextcloud, Jitsi, Discourse, Mattermost	Customizable, transparent, community-driven, control over data
GAFAM Tools	Google Drive, Microsoft Teams, Zoom, Facebook Workplace	User-friendly, widely adopted, quick to deploy
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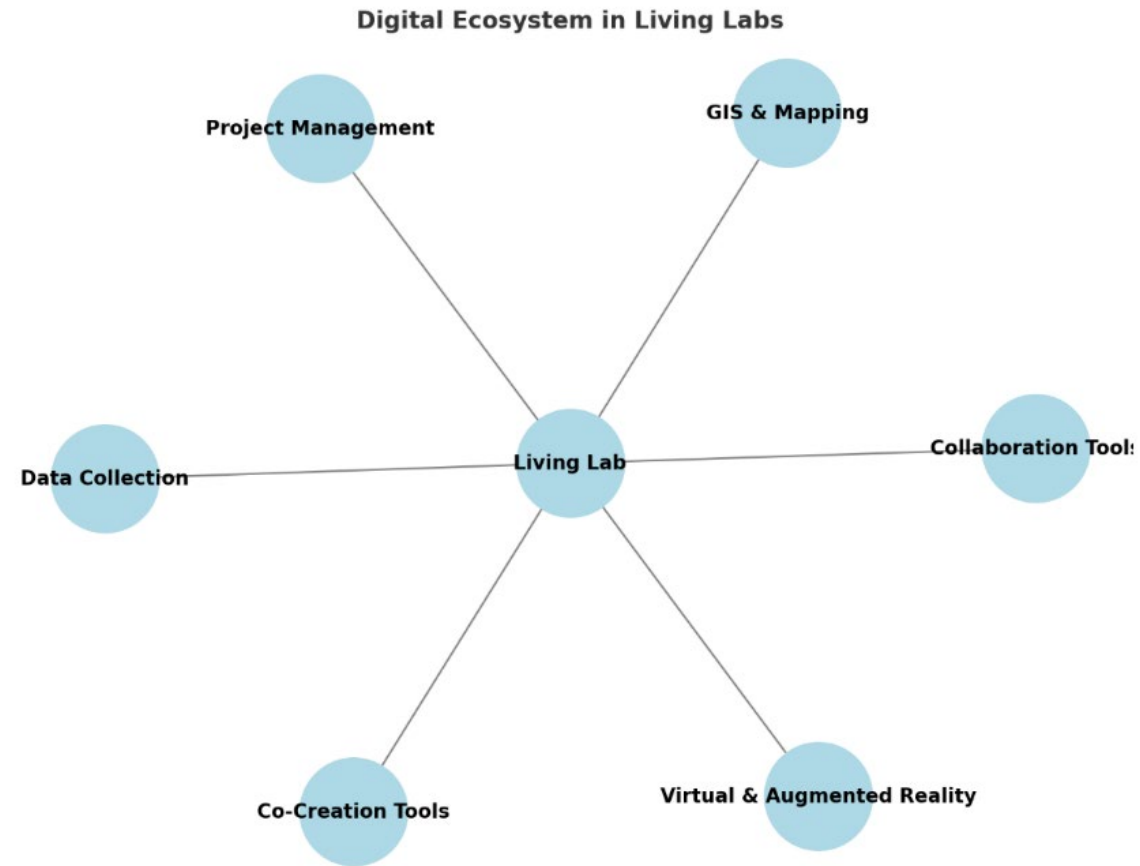


KEY TECH TRENDS IN LIVING LABS

Technology	Potential Application in Living Labs	Environmental & Social Impact Considerations
Artificial Intelligence (AI)	Predictive analytics, automated data collection, energy optimization	What is the energy cost of AI models? Are data sets ethically sourced? How do we prevent misuse or bias?
5G and IoT	Real-time environmental monitoring, smart city solutions	Do these require frequent hardware upgrades that generate e-waste? Can devices be reused or recycled effectively?
Blockchain	Traceability in supply chains, peer-to-peer energy transactions	What is the carbon footprint? Does the tech ensure equitable access or risk exclusion and concentration of power?
Digital Twins	Simulations for urban planning, ecosystem modeling	How inclusive is the data used? Are the models representative and respectful of community needs and privacy?
AR/VR	Immersive engagement tools for education and community dialogue	Are these tools accessible to diverse user groups? What is their environmental cost (hardware, electricity)?



DIGITAL ECOSYSTEM



SOCIAL & POLICY INNOVATIONS

1. Citizen Science & Participatory Governance

- Living Labs are shifting toward community-driven innovation, where citizens co-create, test, and govern solutions.

- Citizen-generated data for climate and urban monitoring

Example: Amsterdam's Smart Citizens Lab

- Transparent, decentralized decision-making (e.g., open-source platforms)

Example: Barcelona's Decidim participatory platform

- Participatory Action Research for co-designed sustainable practices

Example: REPERE in French viticulture

Impact: Greater trust, legitimacy, and social ownership of outcomes.



SOCIAL & POLICY INNOVATIONS

2. Circular Economy & Sustainable Living

- Living Labs act as testbeds for circular behaviors and sustainable urban lifestyles.
- Zero-waste initiatives and community prototyping
- Regenerative and nature-based design in planning and industry
- Co-created eco-labeling and sustainable product development

Example: Rotterdam & Ljubljana urban agriculture (hydroponics, aquaponics)

Impact: Local food production, reduced waste, and new circular habits.



SOCIAL & POLICY INNOVATIONS

3. Policy & Funding Evolution

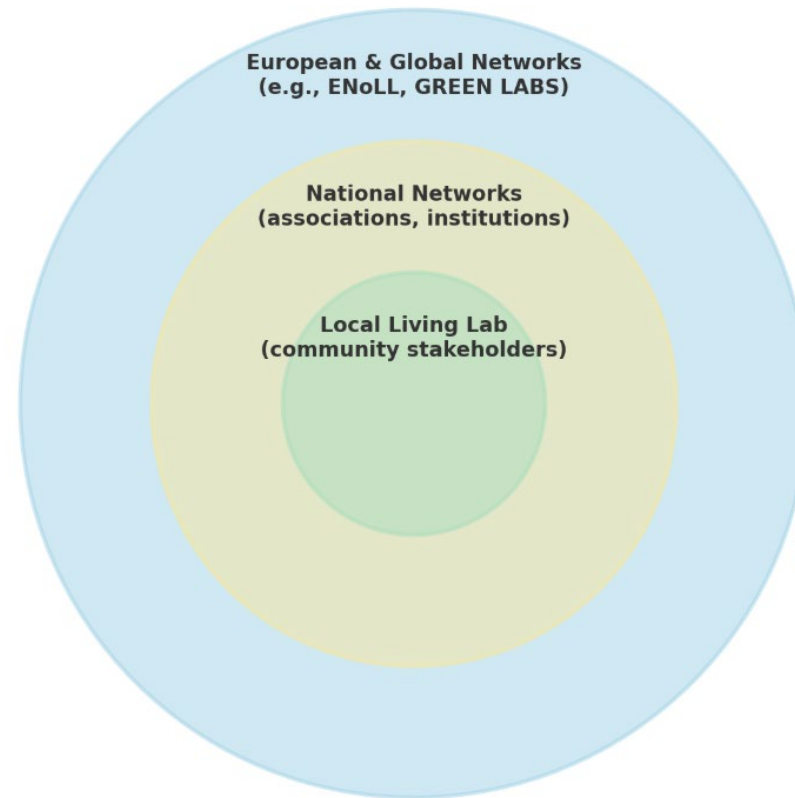
- Long-term sustainability requires policy support and diversified funding.
- Increased access to EU programs (Horizon Europe, LIFE, NetZeroCities)
- Public-Private-People Partnerships for co-investment and co-governance
- Integration of Living Labs into climate adaptation strategies

Example: NetZeroCities supports 100+ cities using Living Labs to reach climate neutrality



FUTURE LIVING LAB FRAMEWORK

Future Living Lab Framework
Multilevel Integration Model



FUTURE CHALLENGES AND OPPORTUNITIES

Challenges:

- **Data Privacy & Security** - Ensuring ethical and transparent use of AI & IoT-generated data.
- Scalability & Replication** - Adapting successful Living Lab models across diverse regions.
- Sustained Funding** - Reducing reliance on short-term grants and ensuring long-term financial stability.

Opportunities:

- **Integration with Smart Cities** - Embedding Living Labs in urban planning for resilience & innovation.
- Global Collaboration Networks** - Strengthening cross-border knowledge sharing & funding.
- Green Job Creation** - Supporting workforce development in sustainability sectors.



FUTURE CHALLENGES AND OPPORTUNITIES

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Opportunities (NOT EXHAUSTIVE):

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Green Job Creation - Supporting workforce development in sustainability sectors.



**THANK YOU FOR YOUR
ATTENTION!**



GREEN LABS PROJECT

The GREEN LABS project aims to support and stimulate the green transition by promoting innovation and greening of VET systems through internationalization, exchange of practices, and knowledge sharing among partners, in accordance with the Osnabrück Declaration of 2020 on vocational education and training for sustainable competitiveness, social fairness and resilience.

