Letter

JIM
ISSN: 2183-0606
(CC BY 4.0)

Vol. 12, 4 (2024)
p. X-XXI

Living Labs for Innovation in Agriculture: Where Does the Approach Go From Here?

Chris McPhee[1] and Gerald Schwarz[2]

[1]Agriculture and Agri-Food Canada | *chris.mcphee@agr.gc.ca*
[2]Thünen Institute of Farm Economics | *gerald.schwarz@thuenen.de*

Abstract

In this open letter, we examine the recent surge of international attention and implementation for living labs for innovation in agriculture, particularly those ultimately aiming to address complex agri-environmental issues or foster system-level transformations with agroecology. We recognize the first International Forum on Agroecosystem Living Labs as a key milestone in the conceptual development of the approach and in the exchange of implementation experiences from around the world. As the community prepares for the upcoming 2nd International Forum in October 2025, we take this opportunity to propose some key questions for discussion in the hopes that we may build on what has been accomplished so far, recognize remaining challenges, and chart a path forward together, as an international community.

Keywords: living labs, innovation, innovation management, agriculture, agroecosystem, agroecology.

Cite paper as: McPhee, C., Schwarz, G., (2024). Living Labs for Innovation in Agriculture: Where Does the Approach Go From Here? - Letter, *Journal of Innovation Management*, 12(4), X-XXI.; DOI: https://doi.org/10.24840/2183-0606_012.004_L002

1 Introduction

In October 2023, in the overtly urban environment of downtown Montreal, delegates of the first International Forum on Agroecosystem Living Labs gathered at the Palais des Congrès to discuss a growing trend that has taken root in agriculture over the past 5 years since the introduction of the "agroecosystem living lab" concept. This moment, with the nearly 250 delegates and presenters from 17 countries bearing witness to the explosion of interest in this new approach to agricultural innovation, marked 5 years of progress but also pointed to a further scaling up of the approach to tackle major international social, economic, and environmental issues across the globe. Although living labs are not new, they are being used in new ways and in new domains, with new challenges and opportunities emerging, especially as the approach is applied to the agricultural domain. For this reason, it may be worth considering the emergence and evolution of the living lab concept in light of why, paradoxically, it has been so widely appealing while also being perceived as stubbornly resistant to clarification. Furthermore, as a community, we must ask: how exactly should the living lab approach to innovation in agriculture evolve if we wish to build on its progress and high level of international interest?

2 The Alluring Promise of Living Labs

The "living lab" is no longer a new phenomenon in innovation management theory or practice. Although slightly earlier examples exist, William Mitchell's work at MIT in the early 2000s is

commonly credited with sparking the emergence and refinement of the "European model" of living labs, which is dominant today (Leminen et al., 2017). The flames of this European model were fanned by the actions detailed in the Helsinki Manifesto (European Union, 2006) under the auspices Finnish Presidency of the European Union, which included the creation of the European Network of Living Labs (https://enoll.org/). As a means to solve persistent concerns about "European global competitiveness in productivity and creativity for innovation", living labs were valued as a means to accelerate innovation that could urgently address regional challenges, and so the model spread rapidly across Europe and beyond.

The spread of the living labs model was in no small part fuelled by the financial opportunities that accompanied it, especially through the European Commission, which triggered a sort of "living lab gold rush" in the form of funding for living lab implementation and research across Europe. On the plus side, the practice and theory of living labs was greatly accelerated by these efforts, and the field is now backed by a strong foundation of literature even if some conceptual and practical challenges remain (Westerlund et al., 2018; Hossain et al., 2019; Greve et al., 2021). On the negative side, the possibility of attracting funding by attaching a catchy label to a project proposal led to many non-living-labs being labelled as living labs, which muddied the waters conceptually at a time when the field was emerging and searching for common understanding and definitions, and differentiation from other approaches.

Proponents of the living labs model point to the combination of three core principles that make "a living lab" a living lab: 1) user-centred innovation through the involvement and contributions of users in the innovation process, 2) multi-stakeholder collaboration, and 3) developing, testing, and validating innovations in real-world contexts. When combined through an iterative innovation cycle involving co-creation and integrating multiple research and collaboration methods, these core principles are the key ingredients that reveal great promise in the approach – promise that has attracted the attention of researchers, practitioners, organizations, and governments around the globe.

At its core, the living lab model is an innovation management approach – one that increases the chances of winning a stubbornly challenging game. By involving users and centring activities on their needs and insights throughout the innovation process, drawing in expertise from broad and diverse partnerships, and iteratively improving the resulting innovations based on how they fared when tested by users in their real-life contexts, the central promise of the living lab is downstream adoption – adoption that is more likely, more rapid, and more widespread. However, the side benefits are equally attractive, particularly from the perspective of participating public sector organizations. Living labs can bring organizations closer to their user communities, increase the relevance of research and development activities, provide a mechanism for citizen input, build connections through collaboration with organizations in local innovation ecosystems, explore transitions to future visions or alternative systems, and foster engagement with complex topics such as sustainability, economic development, or any number of wicked problems affecting societies.

However, living labs are not a panacea for all innovation challenges or societal problems, nor are they without their critics. Most importantly, despite having more than 20 years to demonstrate the effectiveness of the living labs approach, there is an inadequate quantity and quality of evidence to show whether or not living labs actually live up to their promise (Paskaleva & Cooper, 2021). This paucity of evidence one way or another is, at least in part, due to a lack of evaluation activities and frameworks, which urgently needs to be addressed (Bancerz, 2021; Beaudoin et al., 2022; Berberi et al., 2023; Vervoort et al., 2023).

The living labs approach also suffers from its apparent simplicity: in isolation, each of the core principles of the living labs approach is familiar and shared with other approaches, even if the

combination of these principles may be novel and potentially synergistic. Thus, living labs are sometimes accused of being "old wine in new bottles" (Mulvenna et al., 2011), especially when introduced into new contexts where some of the core principles may be part of "business as usual" innovation or research practices. Nonetheless, the novelty and allure of the living labs approach have been attractive in new contexts, and the approach expanded from its strongly technological roots to be applied in many sectors over the years, gaining interest most recently within the agriculture and agri-food sector, including through the emergence of "the agroecosystem living lab".

3 The Agroecosystem Living Labs Concept

After working on the concept internally starting in 2017, Agriculture and Agri-Food Canada (AAFC) presented "the agroecosystem living lab" to its key counterparts in the G20 Meeting of Chief Agricultural Scientists, whose immediate interest led to the creation of an international working group to further explore the concept by mapping relevant activities already under way in G20 countries. Early implementations in Canada and France were described as most closely fitting the definition the working group provided in its executive report, which described agroecosystem living labs as:

> *"Transdisciplinary approaches involving farmers, scientists, and other interested partners in the co-design, monitoring, and evaluation of new and existing agricultural practices and technologies on working landscapes to improve their effectiveness and early adoption."* (G20 MACS, 2019)

Subsequent collaborations between Canada (AAFC) and France's National Research Institute for Agriculture, Food and Environment (INRAE) included a joint research project to identify the defining characteristics of agroecosystem living labs based on case studies from Canada, France, and other countries (McPhee et al., 2021). Drawing on lessons learned from the mid-2010s as urban living labs sought to differentiate their unique challenges from the general, more technology-focused model of living labs, this collaboration led to the identification of a new-but-unsurprising typology of "place-based living labs", which includes urban, rural, and agroecosystem living labs – united by their sustainability goals, complexity of stakeholders, and broad embeddedness of the living lab in a geographical region or location, which is separate from the core living lab principle of testing in the user's real-life context of use. This family tree (Figure 1) highlights common challenges faced by these living labs, but also helps to more clearly identify what makes them unique. In the case of agroecosystem living labs, key defining characteristics include long innovation cycles and high uncertainty associated with growing seasons, exceptionally high requirements for supporting scientific research and data management, high diversity and number of partners, and the embeddedness of the living lab in an agroecosystem context (McPhee et al., 2021).

This fruitful conceptual collaboration between Canada and France on agroecosystem living labs has been accompanied by practical implementations of the approach in each country. In Canada, AAFC's implementations of the agroecosystem living labs approach have come through two major programs: the recently completed Living Laboratories Initiative (2018–2023) and the ongoing Agricultural Climate Solutions (ACS) – Living Labs (2021–2031) program, which consists of a nationwide network of 14 interlinked living labs with more than 1,000 people now directly involved in the innovation and research activities. In France, the Territoires d'Innovation and TETRAE programs, started in 2019 and 2022 respectively, support large-scale and long-term transitions with a strong emphasis on agroecology and the use of the agroecosystem living lab approach in

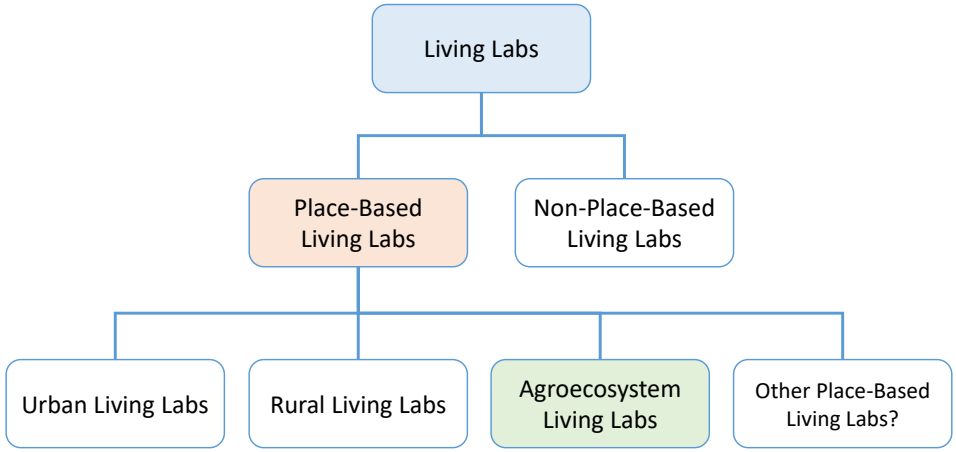

Figure 1. The family tree of "place-based living labs", which implies common characteristics and challenges shared by urban living labs, rural living labs, agroecosystem labs, and potentially other living labs that are strongly embedded in a geographical region or location (based on McPhee et al., 2021).

about 30 projects that contribute to such transitions. However, it is not only Canada and France that have taken an interest in agroecosystem living labs.

4 A Surge of International Attention

At the time when it gathered its data in 2018, the G20 International Working Group on Agroecosystem Living Labs concluded that the approach had "not been widely applied to agricultural research and innovation, though these core concepts offer the potential to better address current agroecosystem challenges" (G20 MACS, 2019). Canada and France had just begun rolling out large-scale initiatives that fully aligned with the agroecosystem living lab concept, while other countries were seen to have some components in place but not at any significant scale. Fast forward just five years and the situation had changed remarkably, especially in Europe due to the recent launch of two major initiatives: the Agroecology Partnership and the Soil Mission.

Funded by the European Commission and participating countries, the Agroecology Partnership brings together €300 million and 72 partners from across 26 countries to accelerate a farming system transition through agroecology living labs and research infrastructures (https://www.agroecologypartnership.eu/). In parallel, the European Commission's Soil Mission seeks to mobilize an estimated €1 billion budget "to establish 100 living labs and lighthouses to lead the transition towards healthy soils by 2030" (https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/soil-deal-europe_en). Related approaches are also being employed at scale by the United States Department of Agriculture (USDA) Long-Term Agroecosystem Research (LTAR) Network (Guo et al., 2024), CGIAR (Habermann et al., 2023), and the FAO (FAO, 2019), among others.

In the context of this surge in international attention and implementation Canada (AAFC) and France (INRAE) invited the international agroecosystem living labs community to Montreal for the first International Forum on Agroecosystem Living Labs (IF-ALL 2023; see Lévesque et al., 2024 for details). Several papers from this event are in fact featured in this special issue of the *Journal of Innovation Management* and serve as specific examples within a broader international trend:

- Busse et al. (2024) examine transdisciplinary co-design processes in a landscape lab to promote insect biodiversity in agricultural landscapes in Germany as part of a broader, long-term agroecological transformation. Their paper also includes some discussion of the related concepts and confusing "landscape" of agroecosystem living labs, agricultural living labs, landscape labs, real-world labs, innovation labs, action labs, among others.
- Rojas Gómez (2024) examines innovation processes in agroecosystem living labs from a "biocultural" perspective and uses a participatory action research approach to better understand the role of nonhuman actors in promoting a more holistic innovation process for rotational grazing in Columbia.
- Colombo et al. (2024) reflect on their experiences in an agroecology living lab in Italy, where local community efforts in organic farming were empowered primarily by "full deployment of genuine participatory processes". They also emphasize a number of key requirements for an agroecology living lab to reach its full potential, which we suggest also apply to living labs more generally: actor motivation, responsiveness to operational and relational needs, urgency of challenges, legitimacy of the living lab proponents, concreteness and realism of tested options, and flexibility of involvement.

5 Key Questions to Help Guide the Way Forward

This surge of international attention has brought living labs into the mainstream as an approach to accelerate innovation and research to address urgent and complex issues in agriculture. But to move forward and fully deliver on the promise of this approach in this sector, some key questions need to be asked and answered. Below, we offer some key questions to help guide the way forward based on our observations of current trends and challenges emerging in the field. We offer these questions as both a starting point for conversations and a potential research agenda to help us answer the broader question of "Where does the approach go from here?". We share some of our views on each question to help start the conversation, but we do not mean to suggest that these are "the answers":

- ***How can we maintain the innovation focus inherent in the living lab approach?***
  In a sector where biophysical research quite rightly plays such an important role, and where research-focused actors are prominent, there is a risk that research activities may dominate the attention of participants. However, a living lab is not a research project; it is an innovation project supported by research. To fully unleash the promise of the living lab approach, outcomes must come in the form of practical solutions that meet the needs of users and have been shown to work. This outcome depends on an innovation focus and strong supporting research.

- ***How can we ensure that "good science" can be done within the iterative cycles that characterize living lab innovation processes?***
  We must reconcile the need for rigorous scientific research into longer-term biophysical processes with the need for faster and more dynamic iteration in the development and fine tuning of agricultural innovations using the living lab approach. Research supporting innovations in agriculture is subject to the variabilities of the weather, heterogeneous soil conditions, and various other real-world uncertainties but "good science" still depends on replication, control, and a commitment of time. Even though the yearly innovation cycles typical of an agroecosystem living lab are relatively long compared to other innovation management contexts, this context of change, iteration, and improvement poses challenges

for researchers who may be asked to weigh in on improvements to innovations to test in the upcoming growing season while they still have some soil samples sitting in a freezer awaiting analysis, for example. Guidance is urgently needed on how best to play this challenging role, including through novel experimental design, as well as method guidelines clearly defining roles in co-creation processes (Busse et al., 2023).

- ***How can living labs play a more direct role in agriculture policy development?***
  There is growing interest in exploring the role of policy development in living labs, either integrated within living lab innovation activities, focussing on innovations in policy design and implementation (e.g., experimenting with public policies for agri-food systems at territorial level or novel contract models in agri-environmental policies), or as downstream inputs or upstream outputs of policy. Bringing innovation activities and policy development activities closer together can help facilitate adoption, because potential future adopters will not make their decisions in a policy vacuum, and also merits further attention as a means of fostering co-learning on characteristics and implementation of transformative governance interventions that are effective for systems-wide transformations.

- ***What role(s) can living labs best play in contributing to system-wide transformations in agriculture?***
  Even within large-scale mission-oriented initiatives, the precise role of living labs in enabling transformation is an open question. Should we try to focus living lab activities on incremental innovations that can readily be integrated into today's agriculture and agri-food systems, or should we seek to leverage the collaborative complexity to tackle more transformative innovations and solutions to "wicked problems" facing the sector? While we acknowledge the emerging desire and potential of living labs to advance transformations of agriculture and agri-food systems (e.g., Vicente-Vicente et al., 2025, Cascone et al., 2024), we suggest that it is not yet clear whether living labs are better suited to incremental or transformative innovation in agriculture, but research and implementation guidance to orient living lab approaches toward more transformative outcomes at different systems levels (e.g., agroecosystem and agri-food system levels) would be timely.

- ***How can we keep true to the core characteristics of the living lab approach while acknowledging the value of other "living-lab-like" approaches (and also avoid mislabelling)?***
  A balance must be found between defending what really is "a living lab" while recognizing that many other approaches may be complementary allies in facilitating system-wide transformation. Equally, we must learn from the previous surge in living lab funding from the mid-2000s and prevent history from repeating. In agriculture, the scaling up of the approach internationally is accompanied by substantial funding; care must be taken to ensure that project proposals truly are following the living lab approach and not mislabelling themselves in order to secure funding. Funding "living labs" that are not living labs will only serve to blur the conceptual boundaries of the approach and make it harder to deliver on its promise.

- ***How can we ensure that the increasing number of types of living labs actually improves our understanding?***
  The increased funding in European research and innovation programmes for living labs contributed to the use of new thematic labels of living labs that led to the definition of

new types of living labs. For example, within the group of place-based living labs (Figure 1), agroecology living labs have emerged. Building on key characteristics of agroecosystem living labs, agroecology living labs do not only work to improve sustainability, resilience, and diversity at the agroecosystem level, but also aim to address transformative change at the food system level. Other examples of new thematic labels and types of living labs include soil health living labs, food systems living labs and water-oriented living labs. While there are plausible justifications for the use of these labels, concerns arise about fragmentation with so many new types of living labs and the risk of undermining the already threatened cohesiveness of the approach (Greve et al., 2020). This suggests the need for a reflection of the usefulness of all these different new labels and the extent to which these really represent distinct types of living labs. Or in other words, when people still wonder what exactly a living lab is, does it always help to make all these different types that need their own defining characteristics? To move forward as a community, it may be better to concentrate our efforts on consolidating what these various types have in common rather than further emphasizing their uniqueness. We could then refocus our efforts to promote (and defend) the core principles of the living lab approach, especially its absolutely essential character of "innovation supported by research".

- ***How can we ensure that the potential of the living lab approach is broadly understood across the agricultural domain?***
  It is obvious to the innovation management community that living labs are not new and have been used across a wide variety of sectors, especially with high-tech information technology innovations. However, this broad applicability of the approach may be less obvious to those working in the agriculture sector who may first encounter living labs being used in an agri-environmental context simply because it is an area of recent, high-profile activity. The living lab approach is particularly attractive to those working on complex, wicked problems of system-wide transformation because of its high degree of collaboration and embedded transdisciplinarity. However, this does not mean that the living lab approach is not suitable to other innovation contexts in agriculture such as productivity, agri-food, or digital agriculture, for example.

- ***What is the role of living lab networks?***
  The recent surge in interest in living labs for innovation in agriculture has been accompanied by equally keen interest in the linking together of living labs into networks, or even "networks of networks". Expected benefits of such networks of living labs include strengthened collaboration and knowledge exchange, support for long-term funding strategies, continuity and enhanced portfolios of innovation and research activities, and opportunities to scale up the innovations being developed. However, not all living lab networks are the same, depending on how they were created and the relative homogeneity of their constituent living labs. Previously, we have offered policy recommendations for the development of living lab networks, emphasizing the long-term nature of network implementation and the essential role of coordination, support, evaluation, and data management to fully harness the benefits of such networks (McPhee & Schwarz, 2023).

- ***How can we provide better evidence of the impact and effectiveness of the living lab approach?***
  There is an imbalance in the literature on living labs, where early case studies and project

descriptions dominate but are not supported by a sufficient number of later-stage critical evaluations of input (e.g., commitment and trust), processes (e.g. decision-making and learning processes), outcomes (e.g., benefits and innovations) and impacts (e.g., capacity building and changes in social and physical structures) (Lüderitz et al., 2017) compared to those expected using alternative approaches. If we are to deliver on the "alluring promise" of the living lab approach, the evaluation frameworks under development must be put into practice and the results must be shared. We also propose that organizations consider not only the direct impact of their use of the living lab approach in terms of innovation outcomes but also share stories of impact that demonstrate both the positive "ripple effects" that can be seen when introducing the living lab approach into new innovation contexts as well as the challenges that must be confronted.

6 Conclusion and Next Steps

In the conference rooms of the first International Forum on Agroecosystem Living Labs in Montreal in October 2023, we saw strong commitment among delegates to collective and international efforts to take actions that will scale up the approach and enable greater learning and success in its implementations. But the Forum also demonstrated that the most important actions will not take place in conference rooms. Rather, they will take place on farms, informed through the collaborative efforts of farmers, scientists, and other partners working together to co-develop and refine solutions for broader adoption. On the last day of the Forum, 90 lucky delegates were transported from the urban conference centre of downtown Montreal to the rural agricultural fields of Quebec, where they were welcomed by a participating farmer and his family for a tour of their farm. This farmer was a user-participant in Living Lab – Quebec, one of AAFC's first-wave agroecosystem living labs, supported by Union des producteurs agricoles (UPA), which had led the living lab's consortium of industry partners alongside a scientific team from Agriculture and Agri-Food Canada under the Living Laboratories Initiative (2018–2023). Delegates saw and felt the value of this collaboration at the heart of a living lab, where on-farm innovation work brings together farmers, scientists, and partners to find local solutions to local challenges. But they also knew that the ideas, lessons, and patterns of innovation could scale up to regional, national, and global solutions.

So, where do we go from here? Well, we start by going to Bordeaux, France. From October 15-17, 2025, the international living labs community will gather in the conference rooms of Bordeaux and the fields of Nouvelle-Acquitaine to celebrate the 2nd International Forum on Agroecosystem Living Labs (https://ifall2025.web-events.fr/), co-hosted once again by INRAE and AAFC. We will be drawn together by the alluring promise of the living lab approach to innovation, but given the stakes in agriculture, we must ensure that living labs actually deliver on this promise. How the approach further evolves will depend on openly sharing our perspectives on key questions like the ones raised here, so we can chart a path forward as a community.

Acknowledgement

The contributions of Gerald Schwarz have been funded by the Horizon Europe project AGROECOLOGY – the European Partnership 'Accelerating Farming Systems Transition: Agroecology Living Labs and Research Infrastructures' – (Grant Agreement no: 101132349).

The contributions of Chris McPhee © His Majesty the King in Right of Canada as represented by the Minister of Agriculture and Agri-Food, 2024.

7 References

Bancerz, M. (2021). Exploring Collaborative Innovation Approaches: Early Deliberations from the Living Laboratories Initiative. *International Public Management Review,* 21(1): 46–79. https://ipmr.net/index.php/ipmr/article/view/427

Beaudoin, C., Joncoux, S., Jasmin, J.-F., Berberi, A. McPhee, C., Schillo, R. S., Nguyen, V. M. (2022). A research agenda for evaluating living labs as an open innovation model for environmental and agricultural sustainability. *Environmental Challenges,* 7, 100505. https://doi.org/10.1016/j.envc.2022.100505

Berberi, A., Beaudoin, C., McPhee, C., Guay, J., Bronson, K., Nguyen, V. M. (2023). Enablers, barriers, and future considerations for living lab effectiveness in environmental and agricultural sustainability transitions: a review of studies evaluating living labs, *Local Environment, 1–19*. https://doi.org/10.1080/13549839.2023.2238750

Busse, M., Zscheischler, J., Zoll, F., Rogga, S., Siebert, R. (2023). Co-design approaches in land use related sustainability science - A systematic review, *Land Use Policy; 129*, 1-15. https://doi.org/10.1016/j.landusepol.2023.106623

Busse, M., Bartels, A., Beutnagel, K., Fick-Haas, V., Glemnitz, M., Holzhauer, S. I. J., Plass, E., & Scharschmidt, P. (2024). Conceptualizing and Reflecting Co-design Processes for the Transformation Towards Insect-friendly Agricultural Landscapes - Experiences from Transdisciplinary Processes in three German Landscape Labs. *Journal of Innovation Management, 12*(3). https://doi.org/10.24840/2183-0606_012.003_0012

Colombo, L., Ciaccia, C., Ritunnano V., Fiore A., Diacono M., Canali, S., (2024). Participatory research in organic farming: insights from an Agroecology Living Lab in a Mediterranean area , *Journal of Innovation Management, 12*(3), 73-93.; DOI: https://doi.org/10.24840/2183-0606_012.003_0004

Cascone, G., Scuderi, A., Guarnaccia, P., & Timpanaro, G. (2024). Promoting innovations in agriculture: Living labs in the development of rural areas. *Journal of Cleaner Production,* 443: 141247. https://doi.org/10.1016/j.jclepro.2024.141247

European Union. (2006). *The Helsinki Manifesto.* European Union. Helsinki, Finland, 2006. https://issuu.com/enoll/docs/290101063-helsinki-manifesto-201106

FAO. (2019). Farmers taking the lead - Thirty years of farmer field schools. Food and Agriculture Organization of the United Nations (FAO). Rome. https://www.fao.org/3/ca5131en/ca5131en.pdf

G20-MACS. (2019). International Agroecosystem Living Laboratories Working Group. Agroecosystem Living Laboratories: Executive Report. G20 Meeting of Agricultural Chief Scientists (G20-MACS). https://www.macs-g20.org/fileadmin/macs/Annual_Meetings/2019_Japan/ALL_Executive_Report.pdf

Greve, K., Leminen, S., Vita, R. D. E., & Westerlund, M. (2020). Unveiling the Diversity of Scholarly Debate on Living Labs: A Bibliometric Approach. *International Journal of Innovation Management, 24*(8). https://doi.org/10.1142/S1363919620400034

Greve, K.; Vita, R.D.; Leminen, S.; Westerlund, M. (2021). Living Labs: From Niche to Mainstream Innovation Management. *Sustainability*, *13*, 791. https://doi.org/10.3390/su13020791

Guo, T., Marquart-Pyatt, S., Ulbrich, T., Doll, J. E., Wilke, B., & Robertson, G. P. (2024). Assessing the impacts of stakeholder involvement in long-term agricultural experiments via a case

study in the upper US Midwest. *Journal of Environmental Quality,* 1–12. https://doi.org/10.1002/jeq2.20676

Habermann, B.; Nehring, R.; Zhang, W.; Hettiarachchi, U.; Leñero, E. M.-V.; Falk, T.; Rietveld, A. M.; Woltering, L.; Kumar, P.; Wang, X.; Zhou, Y.; Chen, K. Z.; Pham, T. T.; Rodríguez, L. Á.; Venegas, M. (2023). A conceptual framework of living labs for people for sustainable food systems. IFPRI Discussion Paper 2227. Washington, DC: International Food Policy Research Institute (IFPRI). https://doi.org/10.2499/p15738coll2.137077

Hossain, M.; Leminen, S.; Westerlund, M. (2019). A Systematic Review of Living Lab Literature. *Journal of Cleaner Production*, *213*, 976–988. https://doi.org/10.1016/j.jclepro.2018.12.257

Leminen, S., Niitamo, V.-P., & Westerlund, M. (2017). A Brief History of Living Labs: From Scattered Initiatives to Global Movement. European Network of Living Labs: Open Living Lab Days Conference 2017. Krakow, Poland.

Lévesque, A., McPhee, C., Chrétien, F., Gracia-Garza, J., Morissette, R., Huyghe, C. & Mambrini, M. (2024). *Report on the First Forum on Agroecosystem Living Labs (IF-ALL).* Adaptation Futures 2023. https://ll-lv.agr.gc.ca/ncloud/index.php/s/EPPJWAxAteLs4Be

Luederitz, C., Schäpke, N., Wiek, A., Lang, D.J., Bergmann, M., Bos, J.J., Burch, S., Davies, A., Evans, J., König, A. and Farrelly, M.A. (2017). Learning through evaluation–A tentative evaluative scheme for sustainability transition experiments. *Journal of Cleaner Production*, *169*, 61-76. https://10.1016/j.jclepro.2016.09.005

McPhee, C.; Bancerz, M.; Mambrini-Doudet, M.; Chrétien, F.; Huyghe, C.; Gracia-Garza, J. (2021). The Defining Characteristics of Agroecosystem Living Labs. *Sustainability*, *13*, 1718. https://doi.org/10.3390/su13041718

McPhee, C., & Schwarz, G. (2023). Living Lab Networks in Agriculture: Success Factors and Policy Implications. Policy brief from ALL-Ready - The European Agroecology Living Lab and Research Infrastructure Network: Preparation Phase. https://doi.org/10.5281/zenodo.10042096

Mulvenna, M.D., Bergvall-Kåreborn, B., Galbraith, B., Wallace, J., Martin, S. (2011). Living Labs Are Innovation Catalysts. In: Howlett, R.J. (eds) *Innovation through Knowledge Transfer* 2010. Smart Innovation, Systems and Technologies, vol 9. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-20508-8_22

Paskaleva, K., & Cooper, I. (2021). Are living labs effective? Exploring the evidence. *Technovation,* 106, 102311.https://doi.org/10.1016/j.technovation.2021.102311

Rojas-Gómez, J. C., (2024). Rethinking innovation in agroecosystem living labs: insights from a biocultural perspective and participatory action research in agroecology, *Journal of Innovation Management, 12*(3), 138-164.; DOI: https://doi.org/10.24840/2183-0606_012.003_0007

Vervoort, K., Konstantinidis, E., Santonen, T., Petsani,D., Servais, D., De Boer, D., Spagnoli, F., Onur, O., Bertolin, J., Trousse, B., Desole, M., Bamidis, P. (2023). Harmonizing the evaluation of living labs: a standardized evaluation framework. *XXXIII ISPIM innovation Conference "Innovating in a Digital World"*, Copenhagen, June 5-8 2023.

Vicente-Vicente, J. L., B. Walthall, J. Borderieux, K. Martens, and A. Piorr. (2025). Harvesting change: unraveling social-ecological impacts of a food hub (LebensMittelPunkt) through a living lab approach. *Ecology and Society, 30*(1):12. https://doi.org/10.5751/ES-15716-300112

Westerlund, M., Leminen, S., & Rajahonka, M. (2018). A Topic Modelling Analysis of Living Labs Research. *Technology Innovation Management Review, 8*(7): 40-51. http://doi.org/10.22215/timreview/1170

Biographies

Chris McPhee. Chris McPhee is an Innovation Management Specialist at Agriculture and Agri-Food Canada, where he supports a nationwide network of projects applying the living lab approach to agricultural innovation. He is also a co-lead of the Special Interest Group on Living Labs for the International Society of Professional Innovation Management (ISPIM), the Theme Lead for Agricultural and Rural Living Labs for the Research Community of the European Network of Living Labs (ENoLL), and a member of the Scientific Committee for the 2nd International Forum on Agroecosystem Living Labs (IF-ALL 2025). He served for nine years as the founding Editor-in-Chief of the *Technology Innovation Management Review*, publishing nine peer-reviewed special issues on living labs. He holds an MASc degree in Technology Innovation Management from Carleton University in Ottawa, Canada, and BScH and MSc degrees in Biology (Plant Ecology) from Queen's University in Kingston, Canada. In both Canada and Scotland, he has held various innovation-related roles in the private sector, the public sector, and academia, primarily in the areas of technology innovation, agriculture, health, and education.

ORCID: https://orcid.org/0000-0003-3070-5274

CRediT Statement: Conceptualisation, Writing - original draft, Writing - review and editing

Gerald Schwarz. Gerald Schwarz is a researcher at the Thünen Institute of Farm Economics, Germany. He is an agricultural economist and holds a MSc and PhD in agricultural economics from the Humboldt University, Germany. His current work focuses on transdisciplinary research into the transformation of farming and food systems in Europe and innovative market and policy instruments for public good provision from agriculture. He has been involved in a variety of national and international projects on agroecology, organic farming, sustainable farming systems and he is currently co-leading research on strengthening the capacity of living labs and research infrastructures in agroecology transitions in the Horizon Europe AGROECOLOGY Partnership. He is also a member of the Scientific Committee for the 2nd International Forum on Agroecosystem Living Labs in (IF-ALL 2025).

ORCID: https://orcid.org/0000-0001-9833-7362

CRediT Statement: Conceptualisation, Writing - original draft, Writing - review and editing