



Perspective

Living labs in agrifood studies: An opportunity to revisit fundamental questions about participatory research?

Ane Kirstine Aare^{*}, Stine Rosenlund Hansen^{*}

Department of People and Technology, Roskilde University, Denmark



HIGHLIGHTS

- The use of living labs in agrifood studies is increasing.
- The tradition of participatory research provides important insights into researching through living labs.
- Introducing living labs in agrifood studies without the resources and skills needed includes several risks.
- Researchers embarking in living labs need to reflect on the ambitions, requirements and effects of doing so.

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ABSTRACT

The use of the term 'living lab' is now widespread, and in agrifood studies has been incorporated into research funding requirements. However, the methodological skills and prerequisites for successful living labs are not particularly well articulated. Based on our experience (five national and EU research projects) and our research backgrounds in (interdisciplinary) social science and participatory research, we highlight several risks associated with the use of living labs in agrifood studies without having the resources, reflectivity or skills required. These risks include: 1) imposing predefined agendas that are masked as participatory processes, 2) placing an over-emphasis on confidentiality or knowledge sharing, and 3) getting lost in researcher roles. We argue that there is a need to discuss and improve understanding of these risks in order to produce successful living labs in agrifood studies, as well as avoid conceptual dilution or confusion.

1. Living labs in agrifood studies

In recent years, an increasing number of agrifood researchers claim to be using living labs to conduct their research (McPhee et al., 2021). This trend fits with widespread acknowledgement now that close collaboration between researchers and a diverse range of stakeholders and practitioners is needed in order to produce sustainable and long-lasting transitions (Blok and Løvschal, 2023; Darnhofer, 2014; Frison and IPES-Food., 2016; Klerkx and Begemann, 2020; Meynard et al., 2017). The increased use of the living lab label has been encouraged by requirements set by a number of major funders, including the European Union (e.g. the 'A Soil Deal for Europe' mission (European Commission, 2022)), which has resulted in several research environments with no or little experience of including practitioners in their work having to familiarise themselves with and implement this methodological tradition. The concern that motivated this *perspective* is how to ensure that the

full potential of participatory research can be met when it is rapidly being introduced into a broader research community of agrifood studies.

Here, we draw on experiences and insights from the long tradition of participatory research, which spans a wide range of methods and theoretical ideas including action research (Lewin, 1946; Reason and Bradbury, 2001), participatory rural appraisal (Chambers, 1994), feminist participatory research (Maguire, 1987), and post-human and science and technology studies (Bastian et al., 2016). Common to all approaches is the acknowledgement of different types of knowledges (local, embodied, tacit etc.). Furthermore, they advocate that challenges and solutions are situated in specific contexts, and that actors can define valuable strategies and solutions against the backdrop of their own specific contexts and lived lives.

Living labs were originally used to test prototypes or develop better designs (Gamache et al., 2020; MCPhee et al., 2021). In this context, the role of the participants has been to evaluate a product or service, and the

^{*} Corresponding authors.

E-mail addresses: akaare@ruc.dk (A.K. Aare), stroha@ruc.dk (S.R. Hansen).

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0308-521X/© 2024 Elsevier Ltd. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

aim of living labs has been to ensure efficient and user-friendly implementation. However, when we work in the agrifood system, we engage with actors (farmers, industry, public authorities, civil society), including their economy, family traditions, values, identities, as well as common societal goods such as food and the environment. Thus, we argue that we need to look beyond mere implementation of researchers' predefined innovations, and prepare to engage in more complex and manifold realities, including the richness of knowledges, needs and trajectories of the participants involved. The facilitation of research that embraces such complexity requires reflexivity and a sensitivity to the process of transitions, innovation and knowledge creation, as well as their democratisation. In action research communities, issues of this kind have been discussed for decades (see e.g. [Boschetti et al., 2016](#); [Brydon-Miller, 2008](#); [Brydon-Miller and Aragón, 2018](#); [Eikeland, 2006](#); [Kristiansen and Bloch-Poulsen, 2014](#); [Westlander, 2006](#)). Similar discussions have seemed to emerge around researchers engaging in living lab approaches (see e.g. [Dell'Era and Landoni, 2014](#); [Ståhlbröst, 2012](#); [Waes et al., 2021](#)), and more recently also within the emergent community around living labs in agrifood studies (see e.g. [Hvitsand et al., 2022](#); [Lévesque et al., 2024](#); [Toffolini et al., 2023](#)).

Bearing these discussions in mind, we argue that there are several reasons to give consideration to how living labs are being introduced in agrifood studies. Firstly, there is no consensus on what a living lab is ([McPhee et al., 2021](#)). This is not necessarily a problem in itself, but having different enactments of the living lab concept (prototyping, policy making, innovation) without discussing its weaknesses and strengths or the many dilemmas involved in its application, risks living labs becoming an empty buzzword. If the living lab is to become a method that introduces new aspects to the toolbox of participatory methods (and fulfils the purposes of inclusive or democratic innovation processes), it is essential to build a literature around their limits and potential in relation to different situations and purposes, followed by a critical discussion of what does and does not constitute a living lab. Secondly, agrifood research has been dominated by reductionist sciences and a tradition of strong expert knowledge. How does this tradition unite with the ontological perception within participatory research? And what competences do research environments need in order to facilitate fruitful learning and apply this fundamentally different epistemological perception?

Over a period of six years, we have been involved in living labs¹ of various constellations, purposes and sizes as part of national or EU research, innovation and/or action-oriented projects within agrifood studies. Most of these living labs were conducted in a Danish context, while some were undertaken across Europe, spanning different constellations of representatives from local authorities, educational institutions, farmers, wholesalers, breeders, agricultural advisory services, chefs and (public) kitchen staff to individual citizens. Some had broad ambitions of policy or strategic development, others a delimited focus on, for example, food waste reduction, sustainable farming practices or food chain innovations. As researchers we have assumed the roles of facilitators or co-facilitators, including being designers of the living lab setup, as well as documented, analysed and produced scientific, and sometimes more practically oriented, outcomes. Our shared ambitions when embarking on these methodologies have been to acknowledge the perspectives, knowledges and will of actors who need or wish to be part of transition processes in the agrifood system, as well as facilitate space for potential learning, empowerment and/or change. Finally, our ambition is also to introduce this complexity and systemic perspective into the research community around agrifood studies. Across these experiences, we have identified several crosscutting risks and challenges. By discussing these here, we hope to increase awareness about what

facilitating a living lab entails and what essential reflections ensue regarding the way in which we perceive research for sustainable transitions in agrifood systems.

2. Risks and challenges of living labs

2.1. Risk 1: Imposing predefined agendas masked as participatory processes

The first risk concerns the framing of the overall purpose of a living lab. The aim of a living lab might be predefined when applications are made for its funding. However, inputs from participants and the evolution of the living lab might lead to new aims and research questions. The flexibility to redefine and adjust the aims and activities of the living lab is both insightful and necessary if it is to remain relevant; without it, living labs run the risk of masking processes as being participatory or co-constructive, when in fact predefined agendas are being imposed.

However, the co-construction of aims and activities leads to ambivalences and challenges. The participants might not agree on the prioritisation, methodologies or even overall ambition, while the dynamics of changing direction can also be a source of confusion and frustration, especially as participants are often motivated by and focused on outcomes rather than on the learning process. Thus, if not facilitated, analysed or communicated properly, the dynamic facilitation can be experienced as unconstructive and inefficient by participants (and funders).

A related challenge involves balancing the need for concrete solutions and research insights. While researchers are often interested in learning about processes and long-term perspectives, the key motivation for practitioners often lies in the fulfilment of the concrete living lab goals. In many cases, participants have specific and often personal or organisational interest in the topic of the living lab. This is an important argument for conducting a living lab in the first place, as it ensures practical relevance and implementability. In contrast, researchers are often obliged to have more universal interests in societal goods, such as when living labs are funded by public means or philanthropic foundations.

Thus, the success criteria of a living lab can differ substantially, but often implicitly, between practitioners and academic partners, as well as between the different practitioners. Besides the obvious relevance of attending to the needs of the practitioners whose day-to-day work is often being experimented on within the living lab, this difference in perspectives is also key to consider from an academic perspective. Among other things, research perspectives can help ensure that living labs are not restricted to short-term or very limited achievements, but rather consider tackling wicked or societal problems. However, it is difficult to require practitioners, who are often already almost too busy to participate in the living lab, to set aside time for knowledge production and reflection processes that lie beyond its specific activities, especially if they do not receive recompense for their participation. Furthermore, the success of living labs regarding the short-term changes they create in practice might be key to obtaining long-term support from decision-makers and thereby maintaining the work initiated through living labs, such as food system policy development.

Navigating unpredictability and potentially contradictory ambitions and ensuring relevance for both research and practice along the lifetime of the living lab is a continuous balancing act for its facilitators, which requires reflection, transparency and relationship-building over time. This unpredictability can be challenging for researchers who are often used to being (and are expected to be) in control of a research process, and the need to accept activities that are not explicitly part of a research design involves risk-taking and sometimes a waste of time. Without daring to embark on such processes that can feel uncertain and uncomfortable, there is a risk that living labs will not meet their potential to achieve an impact – either in practice or in research ([Table 1](#)).

¹ We consider a given set-up to be a living lab when the researchers themselves claim to be using this methodology to produce innovation with the involvement of both practitioners and academics.

2.2. Risk 2: Overemphasis on confidentiality or knowledge sharing?

As argued above, the dynamic process and empirical heterogeneity of living labs challenge standards for predefined methods, including for the analysis and presentation of data, and requires a reflective approach to research. Among other things, this relates to defining and navigating the diverse empirical material and balancing the needs for confidentiality and publication. Without continuous reflection and dialogue about how information is analysed and shared internally and externally, living labs risk losing their potential for providing in-depth understanding of the complexities, including the insecurities, trade-offs and vulnerabilities experienced by stakeholders and their ways of navigating these, which can be achieved in an environment based on trust, and for sharing knowledge in wider societal and research communities.

Part of the research within living labs is to define what 'counts' as data among the many formal and informal talks, emails, meetings etc. with partners, and how to document it. This entails finding a balance between confidentiality and the need for knowledge sharing and publication (stemming from deliverables connected to funding and researchers' careers, and from broader societal purposes of sharing knowledge to enhance sustainability transitions). When working closely with practitioners, researchers often gain deep insights into practitioners' ways of working, their internal relationships, and potential conflicts and tensions, as well as the challenges they face and compromises they make. The extent to which such insights can serve as data and be used in potential publications or should be dealt with as confidential background knowledge is not always clear-cut. It is often very difficult to ensure full anonymity in qualitative research, especially in ethnographic or case study analyses that emphasise the importance of situatedness. Even if the importance of undertaking critical research is explicated from the outset and agreed to by all participants, the researchers and practitioners might not share the same understanding of what this entails. To build and maintain trust between participants, as well as for ethical reasons more broadly, it is important that participants do not feel used. At the same time, it is crucial that researchers are able to publish their findings and thus ensure a research-based approach to agrifood system transitions. This taps into issues of guarding freedom of research, while ensuring that participants can speak freely without risking confidential information being published. A rigid approach to these dilemmas risks preventing important knowledge from being shared or breaches confidentiality.

A similar challenge occurs between practitioners, especially when working in living labs that involve competing organisations and/or organisations with different interests (e.g. actors in a value chain who normally meet in a bargaining situation). In such cases, it is important to establish trust and transparent processes of knowledge sharing, not only in relation to publication, but also to internal knowledge sharing between living lab participants. We have found that putting this issue on the agenda throughout the course of a living lab and openly discussing the relevance and purpose of publication with participants has been a key approach to avoid mistrust or breach confidentiality, while simultaneously enabling publication to take place. However, this is a time-consuming process, requires compromises from all parties and involves a complexity that – in our view – raises dilemmas that are in need of further exploration. Thus, again, handling unpredictable research processes calls for competences to adjust the methodology as the processes evolve, without which the living lab loses its 'melting pot' potential.

2.3. Risk 3: Getting lost in researcher roles

A common set-up of living labs is that researchers provide knowledge that helps practitioners with their experimentation and implementation, while documenting the process and/or evaluating its success. However, this means that researchers conducting participatory research are not 'just' experts or knowledge producers, but also facilitators of change and

responsible for documenting and analysing the unfolding processes. They often embody all these roles during a living lab, sometimes simultaneously or with no clear indication of when a change in role has arisen. Shifting between different positions can be challenging for the researcher and confusing or even unpleasant for the participants, as not all participants find it comfortable being observed and analysed for academic purposes. Finding a balance between studying the living lab (as a process of transition) while at the same time engaging with participants in respectful ways, thus making participants both subjects and objects of the living lab, imposes ethical and social challenges, requiring researcher competencies far beyond disciplinary expertise. Reflections about the researcher's positionality are therefore crucial for ensuring both a good process in the living lab as well as high-quality research.

Researchers need to be able to acknowledge the existence of different kinds of knowledge, including their own expert knowledge and the 'expert' knowledge of practitioners. To some researchers, practitioners' knowledge is not perceived as valid, especially in reductionist sciences, hence co-creation of knowledge requires a shift in ontological standpoints and the competences to make such differences come together in respectful ways. However, practitioners need to perceive their experiences and knowledge as valuable in the eyes of academia and – as already argued – potentially accept the relevance of spending time on reflections and discussions that may be abstract in nature. In this way, work is needed to create an understanding of what a living lab is, including the appreciation of diverse kinds of resources and knowledge. If unsuccessful, there is a risk that the participants lack ownership or engagement, or that participants' perspectives are not fully considered when deciding on the direction and outcomes of the living lab.

Finally, the extensive amount of time needed to run or be part of a living lab is a challenge. Establishing and running a living lab involves a wide range of tasks, many of which do not directly feed into the delivery of research results (or required project deliverables). These include relationship and trust building, coordination of practicalities, communication, facilitation and conflict management. Some of this is particularly necessary as participants often attend the living labs voluntarily. Time, resources and possibly training are a challenge as this (hidden) work does not have a merit in the accreditation of researchers or in concrete research budgets. Combined with the unpredictability of the outcomes and evolution of the living lab, researchers are placed in a vulnerable position in current research environments of precarious employment conditions and short project periods, combined with requirements for continuous and concrete outputs from project funders as well as research institutions. Altogether, this limits the incentives for researchers to work (properly) with these methodologies, despite the potential they have to offer valuable insight and make a societal contribution.

3. Running just another workshop: Diluting the method and losing its potential for change

The complexity associated with living labs makes us concerned about the prevalent use of the term and method. We argue that the risk of running a living lab without engaging in all its complexity is threefold. First, living labs need to offer flexibility in the process and in the handling of trade-offs and disagreements on the definition of the theme, participants and activities. If not, we risk inviting participants to embark on resource-intensive work with a claim of inclusion, but actually (unconsciously) use the living lab to validate predefined agendas and research questions. Second, living labs need to balance confidentiality and knowledge sharing in a sensitive and reflexive way, and invest in creating trust and transparency. If not, we risk losing the potential to acquire in-depth understanding of complexities and uncertainties, and develop innovative, sensible transformation processes that can come from such understandings. Third, living labs require an acknowledgement of, and ability to orchestrate, the multiple roles involved (facilitator, researcher, observer, knowledge provider) and unpredictable

Table 1

Risks and challenges associated with the introduction of living labs in agrifood studies.

Risks	Challenges
1) Imposing predefined agendas masked as participatory processes	- Embracing conflicting ambition between participants and project requirements - Handling confusion and frustration among participants - Ensuring relevance for both research and practice
2) Placing an overemphasis on confidentiality or knowledge sharing	- Sharing of information internally and externally - Avoiding mistrust or breach confidentiality, while simultaneously enabling publication
3) Getting lost in researcher roles	- Studying the living lab while at the same time engaging with participants in respectful ways - Ensuring the appreciation of multiple resources and knowledges - Acknowledging the extensive amount of time, resources and skills needed - Making room for continuous reflection and dialogue about the roles and tasks of researchers and participants

outcomes in existing research structures. If the related challenges related are not dealt with in a reflexive way, we risk losing the multiple nuances and situatedness of the data, including making premature or even invalid conclusions.

We argue that by diluting the method, we risk the living lab becoming just another workshop, and thereby undermining the credibility of ambitious participatory research, including the resources, knowledge and skills it requires. In doing so, we lose the actual potential for change through living labs, as well as how these new ways of working can enrich academic society to rethink itself and democratise knowledge production by decreasing the distance between research and practice. Engaging in participatory research requires a high level of reflexivity about its aim, the role of researchers, and the effect it has on the real people and actual lives engaged in the living lab.

CRedit authorship contribution statement

Ane Kirstine Aare: Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Stine Rosenlund Hansen:** Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

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Data availability

The authors do not have permission to share data.

References

- Bastian, M., Jones, O., Moore, N., Roe, E., 2016. Participatory research in more-than-human worlds. *Particip. Res. More-than-Human Worlds*. <https://doi.org/10.4324/9781315661698>.
- Blok, A., Lovschal, M., 2023. New human-landscape relations in the face of global environmental crises: a governance scoping statement based on the Danish agri-food transition. *Rural Lands. Soc. Environ. Hist.* 10 (1), 1–7. <https://doi.org/10.16993/rl.112>.
- Boschetti, F., Cvitanovic, C., Fleming, A., Fulton, E., 2016. A call for empirically based guidelines for building trust among stakeholders in environmental sustainability projects. *Sustain. Sci.* 11 (5), 855–859. <https://doi.org/10.1007/s11625-016-0382-4>.
- Brydon-Miller, M., 2008. Ethics and action research: Deepening our commitment to principles of social justice and redefining systems of democratic Practice1. In: *The SAGE Handbook of Action Research*. SAGE Publications Ltd., pp. 199–210. <https://doi.org/10.4135/9781848607934.n19>
- Brydon-Miller, M., Aragón, A.O., 2018. The 500 hats of the action researcher. In: Bilfeldt, A., Jørgensen, M.S., Andersen, J., Perry, K.A., et al. (Eds.), *Den ufaerdige fremtid aktionsforskningens potentialer og udfordringer*. Aalborg Universitetsforlag, pp. 19–47. <https://www.researchgate.net/publication/326235168>.
- Chambers, R., 1994. *The origins and practice of participatory rural appraisal**. *World Dev.* 22 (7).
- Darnhofer, I., 2014. Contributing to a transition to sustainability of Agri-Food systems: Potentials and pitfalls for organic farming. In: Bellon, S., Penvern, S. (Eds.), *Organic Farming, Prototype for Sustainable Agricultures*, vol. 9789400779. Springer, Netherlands, pp. 1–489. <https://doi.org/10.1007/978-94-007-7927-3>.
- Dell’Era, C., Landoni, P., 2014. Living lab: a methodology between user-centred design and participatory design. *Creat. Innov. Manag.* 23 (2), 137–154. <https://doi.org/10.1111/caim.12061>.
- Eikeland, O., 2006. The validity of action research - validity in action research. In: Nielsen, K.A., Svensson, L.G. (Eds.), *Action Research and Interactive Research: Beyond Practice and Theory*. Shaker Publishing. <http://hdl.handle.net/10642/837>.
- European Commission. Directorate-General for Research and Innovation, 2022. *EU Mission, Soil Deal for Europe (March)*.
- Frison, E.A., IPES-Food., 2016. *From Uniformity to Diversity: A Paradigm Shift from Industrial Agriculture to Diversified Agroecological Systems*. IPES.
- Gamache, G., Anglade, J., Feche, R., Barataud, F., Mignolet, C., Coquil, X., 2020. Can living labs offer a pathway to support local Agri-food sustainability transitions? *Environ. Innov. Soc. Trans.* 37 (September), 93–107. <https://doi.org/10.1016/j.eist.2020.08.002>.
- Hivitsand, C., Raanaas, R.K., Gjøtterud, S., Nicolaysen, A.M., 2022. Establishing an Agri-food living lab for sustainability transitions: methodological insight from a case of strengthening the niche of organic vegetables in the Vestfold region in Norway. *Agric. Syst.* 199 (March) <https://doi.org/10.1016/j.agsy.2022.103403>.
- Klerkx, L., Begemann, S., 2020. Supporting food systems transformation: the what, why, who, where and how of mission-oriented agricultural innovation systems. *Agric. Syst.* 184 (July), 102901 <https://doi.org/10.1016/j.agsy.2020.102901>.
- Kristiansen, M., Bloch-Poulsen, J., 2014. In: Kristiansen, M., Bloch-Poulsen, J. (Eds.), *Participation and Power in Participatory and Action Research*, 1st ed. Aalborg Universitetsforlag https://vbn.aau.dk/files/204018532/Participating_and_Power_In_Participatory_Research_And_Action_Research.pdf.
- Lévesque, A., McPhee, C., Chrétien, F., Gracia-Garza, J., Morissette, R., Huyghe, C., Mambri, M., 2024. Report on the first forum on agroecosystem living labs (IF-ALL). *Adaptation Futures 2023*. Available online: <https://il-lv.agr.gc.ca/ncloud/index.php/s/EPPJWAXAtelS4Be>.
- Levin, K., 1946. Action research and minority problems. *J. Soc. Issues* 2 (4), 34–46.
- Maguire, Patricia, 1987. *Doing Participatory Research : A Feminist Approach [Book]*. Center for International Education, School of Education, University of Massachusetts.
- McPhee, C., Banczerz, M., Mambri-Doudet, M., Chrétien, F., Huyghe, C., Gracia-Garza, J., 2021. The defining characteristics of agroecosystem living labs. *Sustainability (Switzerland)* 13 (4), 1–25. <https://doi.org/10.3390/su13041718>.
- Meynard, J.M., Jeuffroy, M.H., Le Bail, M., Lefevre, A., Magrini, M.B., Michon, C., 2017. Designing coupled innovations for the sustainability transition of agrifood systems. *Agric. Syst.* 157, 330–339. <https://doi.org/10.1016/j.agsy.2016.08.002>.
- Reason, Peter, Bradbury, Hilary, 2001. In: Reason, Peter, Bradbury, Hilary (Eds.), *Handbook of Action Research : Participative Inquiry and Practice*. SAGE.
- Ståhlbröst, A., 2012. A set of key principles to assess the impact of living labs. *Int. J. Prod. Dev.* 17 (1/2), 60. <https://doi.org/10.1504/IJPD.2012.051154>.
- Toffolini, Q., Hannachi, M., Capitaine, M., Cerf, M., 2023. Ideal-types of experimentation practices in agricultural living labs: various appropriations of an open innovation model. *Agric. Syst.* 208 (November 2022), 103661 <https://doi.org/10.1016/j.agsy.2023.103661>.
- Waes, A., Nikolaeva, A., Raven, R., 2021. Challenges and dilemmas in strategic urban experimentation an analysis of four cycling innovation living labs. *Technol. Forecast. Soc. Chang.* 172 (July), 121004 <https://doi.org/10.1016/j.techfore.2021.121004>.
- Westlander, G., 2006. Researchers roles in action research. In: Nielsen, K.A., Svensson, L. (Eds.), *Action and Interactive Research: Beyond Practice and Theory*. Shaker Publishing, pp. 45–63.