METHODS & TOOLS II

New approaches to monitoring, evaluation and learning (ME&L) for systemic change in agricultural practices.

Kevin Collins[a], Pier Paolo Roggero[b], Chiara Ceseracciu[c], Jorieke Potters[d], Ellen Bulten[e]

[a]Open University, UK, kevin.collins@open.ac.uk

[b]University of Sassari, Italy, pproggero@uniss.it

[c]University of Sassari, Italy, cceseracciu@uniss.it

[d]Wageningen University and Research, The Netherlands, jorieke.potters@wur.nl

[e]Wageningen University and Research, The Netherlands, ellen.bulten@wur.nl

Abstract:
This paper explores new approaches to monitoring, evaluation and learning (ME&L) for systemic change in agricultural practices. Monitoring and evaluation are commonplace and usually understood as a continuing systematic process of documenting and assessing ideas, events, activities and outcomes over time using criteria and indicators. However, rooted in systematic framings, tools and processes, existing M&E processes and approaches by design are unable to fully engage with the complex dynamics and interdependencies of many agricultural situations. Systemic change requires ME&L as a systemic learning process. Based on a tradition of systems thinking and practice, this paper draws on ME&L experiences in three research projects using open innovation processes of Living Labs (LL) and Communities of Practice (CoPs). The findings to date suggest that ME&L leads to new insights into the role and use of social learning spaces to strengthen capacity for new practices in agricultural contexts. However, a learning focus can challenge researchers' and stakeholders' traditions, understandings, expectations and experiences of both ME&L and their current practices. To be meaningful, ME&L requires careful co-design, clear aims and processes and dedicated resources, including training, to ensure it becomes a central part of enabling systemic change in agricultural practices.
Keywords: Monitoring, Evaluation & Learning (ME&L); systems thinking; Living Labs; Communities of Practice; social learning

Purpose

This paper explores new approaches to monitoring, evaluation and learning (ME&L) for systemic change in agricultural practices. The considerable literature on M&E is accompanied by equal variation in concepts and processes depending on sector and purpose. Monitoring is usually understood as a continuing systematic process of observing, measuring and documenting ideas, events, activities and outcomes over time

using criteria and indicators. This information is used by various stakeholders to the determine the extent of progress and achievement of objectives to support decision-making (OECD, 2002; TAP, 2016a). Good practice involves stakeholders in the design and process of monitoring (and evaluation) to promote ownership and build trust in the indicators used and data collected (TAP, 2016b; Serpe et al., 2022; Amin et al., 2023).

Evaluation is the systematic process of assessment using criteria related to objectives which represent the perceived importance, worth and success of the intervention or activity (after OECD, 2002). There is no set process and it can be both formal and/or informal. Monitoring and evaluation of projects and initiatives is commonplace in many sectors, but until recently, very little explicit attention has been paid to associated notions or processes of learning as the logical next step of M&E.

Learning is usually associated with a change in an individual's understanding and/or practices, but determining 'what kind of change is a delicate matter' (Bateson, 1972). Often understood as the acquisition of ideas knowledge, skills, practices, learning can also involve giving up habitual thinking, concepts, understandings and framings. Maladaption – where learning results in continuation or acquisition of inappropriate knowledge, skills and practices contrary to expectations or desired outcomes – is also possible (see Juhola et al., 2016). Based on a tradition of systems thinking and practice, this paper explores how engaging in ME&L can help support systemic change in agricultural practices and AKIS.

Design/Methodology/Approach

A case study approach is adopted to inform some of the key aspects of ME&L in relation to Living Labs (LL) and Communities of Practice (CoPs) (Lave and Wenger, 1991) in agricultural contexts.

LL represent a potential shift in the research-practice-policy dynamic. Although definitions vary, LL can be conceptualised as learning spaces for 'real-life' interactions between stakeholders (including researchers) to build capacity for addressing complex socio-ecological situations of direct concern to those involved. The 'empty container' notion of a LL offers considerable flexibility for their scope, design, content, purpose, process, duration and outcomes. LL have become a key part of public policy initiatives in many sectors (see, for example, von Wirth 2019; Sahakian *et al.*, 2021) and in agricultural research (EC, 2023a, b) while the *EU Horizon Soil Health and Food Mission* 23/24 aims for 100 LL to transition towards healthy soils to benefit food, people, nature and climate (EC, 2023c). Similarly, CoPs have been used in many contexts. Characterised by a shared domain of interest; ongoing interactions among its members; and development of shared practices, CoPs have a similar tradition with LL as collaborative learning spaces with very similar challenges for ME&L.

The case studies centre on ME&L in one completed and two ongoing international research projects involving the authors in different configurations: Agricultural Knowledge: Linking farmers, advisors and researchers to boost innovation (AgriLink); Sustainable Approaches to Land and water Management in Mediterranean Drylands (SALAM-MED) and Climate Smart Advisors (CSA).

The Horizon 2020 AgriLink project focussed on the role of innovation support and advisory services in agricultural innovation processes using six LL in Spain, Romania, Latvia, Italy, Norway and a joint living lab in the Netherlands and Belgium. This 3-year project completed in 2021. The PRIMA funded SALAM-MED project explores sustainable approaches to land and water management using six LL in Egypt, Tunisia, Morrocco, Greece, Spain and Italy. Its aim is to engage stakeholders in the design and testing of Nature Based Solutions to restore degraded dryland ecosystems and improve social and economic resilience for youth and women in agriculture. It completes in 2025. The Horizon Europe funded CSA project spans 27 countries across Europe to explore and

strengthen advisors' capacities through creation of 260 CoPs to accelerate climate smart farming. This project is 1.5 years into its 7-year duration.

Agrilink and SALAM-MED refer only to M&E in their technical material, but their evaluation processes aim to identify learning and thus all three cases can be considered as using a form of ME&L to assess and determine a cycle of interventions, emerging lessons and outputs and impacts to improve agricultural practices in a range of European farming systems in Europe and North Africa.

The design of the ME&L in the first two case studies is based on a combination of design thinking and systems thinking where the LL is assessed using the 3 Es criteria from soft systems traditions (see Checkland et al., 1990):

1. **Efficacy** - has the LL achieved its specific purpose (as defined by the stakeholders)?
2. **Efficiency** - has the LL used resources well (including budget, time, energy, skills and enthusiasm)?
3. **Effectiveness** - has the LL contributed to the overall purpose of the project?

The use of the 3 Es provides generic criteria for evaluating the LL at project level, allowing cross-comparison between LLs and also meta-analysis. The 3 Es also allow for flexibility. For example, an indicator of Efficacy for a specific LL focussing on restoring groundwater could be 'irrigation use' and measurement adapted to available data: number of days irrigated/year, or ML of water used, or fuel usage for groundwater pumps. Although not always precise and quantifiable in all cases, such data can be used to monitor and evaluate the performance of the LL within an overall narrative. Any initial criteria developed by the LL convenors (e.g. researchers) are reviewed, revised and/or wholly co-created with other participants in the LL to develop co-ownership and understanding of progress.

In the CSA project, a different approach has been adopted, centred on an explicit theory of change where interventions aim to boost advisors' capacities to advise on climate smart farming. A ME&L conceptual framework has been developed which includes a Dynamic Learning Agenda (DLA). This is a set of questions developed by the project related to key elements in the theory of change to help inform training within CoPs; inform practices across CoPs; and also gain insights to inform subsequent CoPs. The DLA questions are updated and answers added over time.

Whichever criteria are used, a key issue of ME&L in complex situations, with multiple actors and activities over extended time-frames, is determining cause and effect and impact (Noltze et al, 2021). To address this, all of the case studies include scope for reflective narrative accounts by researchers as part of the ME&L process to record and make sense of system-level interdependencies focussed on sense-making and meaning. This is to avoid over reliance on abstract measurement and on log frame lists of separated criteria, indicators and data (van Wessel, 2018; Haldrup, 2023).

Despite different aims, context and size, all three projects conceptualise ME&L as a continuous, 'real-time', reflexive learning process intersecting with other project activities at key points to learn from and shape further activities and interventions within the projects and beyond.

Resourcing for ME&L processes vary. In AgriLink, each LL had a facilitator and a coordinator supported by a project-wide work package team responsible for liaising with each LL, coordinating cross project training and cross-project learning and reporting. A more emergent process has developed in SALAM-MED as researcher experience, skills and training relating to ME&L have developed. In CSA, a very large project, a dedicated Work Package team supports and coordinates ME&L throughout the project. In all three case studies, qualitative and quantitative data include: scientific data: economic data; statistics; surveys and interviews; comments; exchange of correspondence; and observations.

Findings

Two of the case studies are ongoing and the insights reported here are a partial snapshot of our current understanding and are subject to future revision. The CoP element of the CSA project is only just beginning and is not reported here.

ME&L in AgriLink and SALAM-MED to date suggest that LL are important spaces for developing insights into complex situations and strengthening capacity for new practices in agricultural contexts. ME&L reveals that LL can enable individual as well as social learning – the latter involving groups of people agreeing about their purpose, goals and co-creating knowledge leading to new behaviours and actions to transform situations through concerted actions (Collins and Ison, 2009). This can lead to new insights about the situation and possible improvements. But the success of LL depends on many contextual historical, social, economic and environmental interdependent factors at start, during and end which are not always immediately apparent or even within scope of the initiating organisations or stakeholders to address.,

Even where trust is established, ME&L show that LL are not easy to continue without support and resourcing, including facilitation. In AgriLink, the LL ended with the research project. This may be appropriate if the LL have served their purpose (as defined by participants). In SALAM-MED, insights from ME&L have highlighted the importance of the coordinating and facilitating role and focussed attention on LL longevity after the research ends.

Whatever their lifespan, a key insight from ME&L reporting is that LL (and by extension similar initiatives) can be understood mechanistically and used as an applied tool: 'an outdoor lab' with all its connotations of replicability and experimentation- to endorse research aims, generate results and to disseminate ideas and practices *to* stakeholders. This can generate considerable valuable information and data, but offers less scope for and insight into the learning dynamics required for LL and CoPs to effect *systemic* change in agricultural practices. The 3Es criteria used in AgriLink and SALAM-MED LLs contribute to system level thinking, but their flexibility also requires careful and skilled interpretation.

It is clear from ME&L that understanding '*living'* as synonymous with ongoing co-learning has been more challenging for researchers without social science traditions or backgrounds. Similarly, ME&L in AgriLink reveals, the 'lab' element of LL was problematic for many stakeholders who were unreceptive to the idea that they and their livelihoods were available for study and experimentation. In SALAM-MED, the LL terminology has to date had varied reception and purchase amongst stakeholders.

In AgriLink, a clear commitment to ME&L across the project with dedicated resources enabled key lessons to be identified about the roles, functions, timings and conditions required for LL in agricultural contexts (see Potter, et. al, 2022). In SALAM-MED, researchers with less prior experience of ME&L have required additional training and support to design and use. In the CSA project, the emphasis on learning is explicit and ME&L is a key part of the project set-up and activity. However, in all of the case studies, the disciplinary mix of the researchers means understandings, expectations and experiences of ME&L differ significantly.

Focussing on 'living' is to recognise that LL and similar open innovation processes such as CoPs are *learning* spaces. Existing M&E processes and approaches rooted in a systematic framing, tools and process, by design are unable to fully engage with the multiple and complex dynamics of inter-dependencies of learning, especially social learning. This limits options for transformative insights. Systemic change in agricultural practices means effective ME&L must be equally systemic in design and use. This imperative and its implications for the design and role of ME&L have yet to be fully understood within agricultural research.

This is because effective ME&L requires 1st order *and* 2nd order reflective practices. 1st order thinking – how can an existing agricultural practice be improved? - is in often already 'baked into' the concept and ethos of standard M&E processes. However, there may be limited appetite for 2nd order thinking – why are we doing agriculture this way? - because agricultural contexts tend to emphasise the need for practical and incremental solutions within existing ecological, economic and socio-cultural framings and traditions.

Insufficient familiarity, training, skills or capacities in ME&L within the research community adds to these difficulties. While generally supported, ME&L is not yet regarded as a systemic learning process for researchers and practitioners, but instead something functional, additional and the remit of 'others' to undertake and assess. In some cases, the scientific tradition of experimentation and learning from, for example, field experiments in a LL, means additional time and effort on ME&L is deemed 'unnecessary' and 'repetitive'.

Practical Implications

M&E is a convenient label for a variety of established practices which vary considerably in scope, effectiveness and application. The addition of *learning* places a new emphasis on what ME&L can and should encompass and the role of researchers. However, learning is both a complex concept and phenomenon and rarely a straightforward linear process, particularly in situations involving multiple actors and perspectives. Learning can take time to emerge and is often stochastic.

A key practical implication is that ME&L requires people and processes able to document, evaluate and use the different facets and complexities of learning over time. These requirements may not be 'in step' with the timetabling, skills base, resources or expectations of participants, researchers or funders. For example, in AgriLink, ME&L revealed that the set up of a LL initially experienced as an unhelpful delay, was later reassessed as beneficial in refining the aims and ambitions of the LL.

ME&L also requires a shift away from expecting only linear outcomes, to capturing context, complex socio-ecological interactions, and allowing for uncertainty. This can be unsettling for those expecting ME&L to provide 'easy' answers. Good project design ME&L involves situating ME&L as a core and ongoing activity within projects, with clear roles and responsibilities for all participants to contribute and use. Additional resources and investment in skills and capacities may be needed, especially at project inception.

Theoretical Implications

Our ME&L processes in two of the case studies to date suggest that LL are not a panacea, are not without challenges and may not be appropriate in all contexts. They require appropriate conditions, effort, skills, capacities, investment, time and dedicated resources as well as a clear commitment to co-learning if the *living* dimension of LL is to be realised. As LL become a key feature of agricultural funding, a more critical view of their conceptualisation and practice is needed in a similar vein to the expansive literature on CoPs. ME&L is essential for this to happen.

Where there is a high degree of trust, ME&L can proceed collaboratively within (and between) learning spaces such as LL and CoPs based on mutual respect, fairness, transparency and professionalism (Luli, 2024). Challenges remain on how and by whom learning is interpreted, recognised, assessed and evaluated to improve systemic practices in agriculture. Currently, learning is poorly conceptualised and practised in a tradition of M&E dominated by log frames and criteria. Additionally, expectations of linear and replicable impacts ignore systemic and complex process occurring in agricultural contexts. But a new approach to ME&L based on learning brings greater potential for enacting systemic transformation of agricultural practices.

References

Amin, H., Scheepers, H. and Malik, M. (2023). Project monitoring and evaluation to engage stakeholders of international development projects for community impact, International Journal of Managing Projects in Business, Vol. 16 No. 2, pp. 405-427. https://doi.org/10.1108/IJMPB-02-2022-0043

Bateson, G. (1972). Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology. Jason Aronson.

Checkland, P., Forbes, P. and Martin, S. (1990). Techniques in soft systems practice: Part 3: monitoring and control in conceptual models and in evaluation studies. Journal of Applied Systems Analysis, 17: 29–37.

Collins K., Ison, R. (2009). Jumping off Arnstein's ladder: Social learning as a new policy paradigm for climate change adaptation. *Environmental Policy and Governance*, 19(6), 358–373. https://doi.org/10.1002/eet.523

EC (European Commission) (2023a) The European Agroecology Living Lab and Research Infrastructure Network: Preparation phase. Available at: https://cordis.europa.eu/project/id/101000349. Accessed 15 January 2024

EC (2023b) Agroecology for sustainable agricultural and food systems. Available at: https://cordis.europa.eu/project/id/101000478. Accessed 15 January 2024.

EC (2023c) Horizon Europe: A Soil Deal for Europe (HORIZON-MISS-2023-SOIL-01). Available at: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-miss-2023-soil-01-08. Accessed 15 January 2024.

Juhola, S., Glaas, E., Linnér, B., Neset, T. (2016) Redefining maladaptation, Environmental Science & Policy, Volume 55, Part 1, 135-140. https://doi.org/10.1016/j.envsci.2015.09.014.

Lave J, Wenger E. (1991) Legitimate Peripheral Participation in Communities of Practice. Situated Learning: Legitimate Peripheral Participation. Cambridge: Cambridge University Press

Luli, F. (2024) Ethical Considerations in Monitoring and Evaluation (M&E). Available at: https://www.evalcommunity.com/career-center/ethical-considerations-in-monitoring-and-evaluation-me/. Accessed 2 January 2024

OECD (2002). Glossary of Key Terms in Evaluation and Results Based Management. OECD, https://www.oecd.org/dac/evaluation/2754804.pdf.

Potters, J., Collins, K., Schoorlemmer, H., Stræte, E.P., Kilis, E., Lane, A. and Leloup, H. (2022), Living Labs as an Approach to Strengthen Agricultural Knowledge and Innovation Systems. EuroChoices, 21: 23-29. https://doi.org/10.1111/1746-692X.12342

Sahakian, M. *et al.* (2021) Challenging social norms to recraft practices: A Living Lab approach to reducing household energy use in eight European countries, *Energy Research & Social Science*, 72, p. 101881. Available at: https://doi.org/10.1016/j.erss.2020.101881.

Serpe, L., Ingram, M., & Byom, K. (2022). Nimble adaptation: Tailoring monitoring, evaluation, and learning methods to provide actionable data in complex environments. *New Directions for Evaluation*, 2022, 97–106. https://doi.org/10.1002/ev.20523

TAP (Tropical Agriculture Platform) (2016a) Common Framework on Capacity Development for Agricultural Innovation Systems: Conceptual Background. CAB International, Wallingford, UK. https://www.cabi.org/Uploads/CABI/about-us/4.8.5-other-business-policies-and-strategies/tap-conceptual-background.pdf

TAP (2016b) Common Framework on Capacity Development for Agricultural Innovation Systems: Guidance Note on Operationalization. CAB International, Wallingford, UK. https://www.cabi.org/Uploads/CABI/about-us/4.8.5-other-business-policies-and-strategies/tap-guidance-note.pdf

von Wirth, T., Fuenfschilling, L., Frantzeskaki, N. Coenen, L. (2019) Impacts of urban living labs on sustainability transitions: mechanisms and strategies for systemic change through experimentation, European Planning Studies, 27:2, 229-257, DOI: 10.1080/09654313.2018.1504895