



EGUsphere, referee comment RC3
<https://doi.org/10.5194/egusphere-2022-307-RC3>, 2022
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Comment on egusphere-2022-307

David Rossiter (Referee)

Referee comment on "Transforming living labs into lighthouses: a promising policy to achieve land-related sustainable development" by Johan Bouma, EGU sphere, <https://doi.org/10.5194/egusphere-2022-307-RC3>, 2022

Summary: This paper addresses a time-critical problem: how to transform European agriculture to achieve "sustainable" development. It focuses on the proposal for "Living Labs" proposed as part of the "Soil Deal for Europe" by the EC. These farms where changes in land use practices are implemented and evaluated, and if successful becoming "Lighthouses" where other farmers and the public can see the practices and adopt or adjust them for their own needs. In addition, the UN Sustainable Development Goals (SDGs) with associated targets and indicators have been developed, and would seem to be a logical basis for evaluating the Living Labs. The paper points out the major problem here: no concrete suggestions on how to reach the targets, and thus no way for farmers to understand the relation to their enterprises. The paper goes on to discuss how to engage the farmers, perhaps by means of ecosystem services provided. The next section discusses research approaches to be taken by the scientific community, and recommends to tame so-called "wicked" problems by the concept of ecosystem services and defined thresholds. This by necessity requires interdisciplinary; the example is given of soil-water-atmosphere-plant simulation models. A fourth section on engaging the public discusses the "knowledge level" paradigm adopted from Hoosbeek and Bryant and the distinction between "truth", "right" and "real" as perceived by the public, as related to the Living Labs concept. A fifth section is on policy development, mainly on how the ecosystem services concept could be incorporated into policy, to make it operational. A sixth section summarizes a case study from the Netherlands (details presented elsewhere), showing defined soil health indicators, their thresholds, the results on the model farm, and their relation to ecosystem services and the SDGs. This sort of accounting is recommended to evaluate Living Labs and their potential to be Lighthouses. Finally, the author makes a set of recommendations, based on the previous sections.

Evaluation: The paper is provocative and interesting and there is much to consider for researchers and policy-makers. However, the sequence of arguments is somewhat rambling so that the main points can get lost in the detail. This reviewer had to read the paper several times to pick out the main threads of the argument that lead to the list of conclusions. For example, key points such as L181-4 and L231-234, which are main points of the paper, are somewhat buried in surrounding (interesting) detail.

Details:

1. The paper needs copyediting to remove incorrect and unnecessary punctuation and spacing, and some typos (e.g., L233).

2. At many places quotes from the SDGs are given, but nowhere a reference. <https://sdgs.un.org/> is a general web page. The goals are listed at <https://sdgs.un.org/goals> but I could not find a publication with the wordings presented in this paper.

2. L147 the web reference is to a general page, not the document from which the quote was taken.

3. L146ff 'es' -> 'ES'. A reference is needed for the SDG definitions, see above.

4. L198-9 "So far, this fact has not widely been internalised by the various scientific disciplines." Maybe, but the statement is unsupported. As an opinion piece this could stand, but if

5. L203ff perhaps this paper is relevant: Falconi, S. M. and Palmer, R. N.: An interdisciplinary framework for participatory modeling design and evaluation. What makes models effective participatory decision tools?, *Water Resour. Res.*, 53, 1625–1645, <https://doi.org/10.1002/2016WR019373>, 2017.

6. L210-1 the frequentest approach to hypothesis testing and the rigid use of 5% (or any other) value of alpha is strongly discredited, and in any case does not lead to outright "acceptance", rather, strong evidence for or against a hypothesis. "Acceptance" just means the researcher was likely on the right track, and leads to more work. It should not be presented as the "truth". The popular press (*New Scientist*, *Guardian*) are responsible for confusiing the public on this, but even they have introduced Bayesian ideas to the public. The concept of a "tame" and limited research goal being the preferred target for many researchers is correct.

7. L307 "They can best be ignored." At least we hope they understand the logic by which the majority approved of the policy. That is also part of communication.

8. L472 incomplete reference to the Communiqué. Probably somewhere on <https://gffa-berlin.de/en/>.