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► To cite this version:

Dominique Desclaux, Luca Colombo, Allison-Marie Loconto, Francesca Galli, Tara Dourian, et al.. Promoting change from field to plates: the case of nine European fair living-labs working collectively. ECSA2024 and Austrian Citizen Science Conference 2024, 2024, Vienna (Autriche), Austria. pp.207-212, 10.3897/ap.e127254 . hal-04931104

HAL Id: hal-04931104

<https://hal.science/hal-04931104v1>

Submitted on 5 Feb 2025

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Conference Paper · September 2024

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Change – The transformative power of citizen science

Promoting change from field to plates: the case of nine European fair living-labs working collectively

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Abstract

Gathering citizens, research organizations, companies, policymakers and practitioners is often considered sufficient for creating a Living-lab aimed at change towards food system sustainability.

However, sustainability remains a social construct calling for a deliberation about the values that must be prioritised. These values need to be debated at each level of the food chain, from the choice of crops (neglected vs. main crops) and seeds (commons vs. intellectual property) through production (organic vs. weak agroecology) and processing (small-scale vs. industrial) to food supply and retail (local vs. global).

The DIVINFOOD project's Living-labs create favorable conditions for the emergence of such debates, in a food democracy perspective. Further to farmers, processors and researchers, they all aim to engage, around neglected and underutilized agrobiodiversity, groups of stakeholders that are still too rarely represented in participatory research approaches, such as teachers and students of agricultural schools, chefs, marginalized people, gardeners and citizen-led organisations.

All actors are regularly invited into:

- farmer's fields to observe, evaluate and comment on cultivated biodiversity, and Genotype-Environment (GxE) interactions,
- chefs' kitchens to taste, co-create recipes,
- laboratories to analyze, raise research questions, discuss results,
- micro-enterprises to co-conduct diagnosis,
- neighborhood associations to increase awareness about sustainable food systems,
- meetings with policy-makers to co-develop short food chains and territorial networks.

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Each of the 9 Living-labs acts in its own territory. Bringing them together allows to shape a meta-Living-lab in which changes are studied, debated, observed, documented, initiated, and reflected.

The connection of Living-labs makes it possible to think these changes locally and act globally for their realisation. By making collective decisions to give voice to very small structures in each region, this meta-living lab contributes to profound changes for the sustainability and diversity of the global food system.

Keywords: participatory, collaborative, neglected and underutilised crops, minor crops, GxE interactions, food democracy.

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Published by NHM, BOKU and ECSA and peer-reviewed under responsibility of ECSA-ÖCSK-2024 (Change – The transformative power of citizen science)

Introduction

What does “Change” mean? Simple lick of paint? Adaptation? Modification? Revision? Transition? Revolution? Metamorphosis? Conversion? Or a major Switch? What do we want for agriculture and food in the future?

Does a Living-lab may promote Change from field to food? To what extent? and how ?

Living-labs are protean structures. Their definition is broad enough to allow each group of people to be named “Living-lab”. The grouping of a multinational seed company, a large agricultural cooperative, a company listed on the stock exchange, 2 farmers, 3 citizens and 1 researcher can claim the name of “Living-lab”.

But are the ethical values shared? Do everyone’s votes have the same weight? Are the power relations balanced? Is the degree of involvement expected from each stakeholder discussed?

The objective of this contribution is to propose new avenues for elaborating FAIR Living-labs addressing these issues to promote change in food systems.

How to build a FAIR Living-lab?

To date, the 9 Living-labs located in 7 countries (Denmark, France, Hungary, Italy, Portugal, Sweden, Switzerland) and built in the frame of the EU-DIVINFOOD project are highly diverse in terms of types of actors and history. Those in France, Switzerland and Italy emerge from participatory plant breeding programs implemented at least twenty years ago. At that time, researchers collaborated with organic farmers to select crop varieties adapted to their local environment (Chiffolleau and Desclaux 2006).

The program then evolved when farmers decided to process their harvest and sell the products (bread, pasta, etc.) on their own farm. New questions arose, requiring the involvement of a greater diversity of researchers from several disciplines and of partners, with whom they never worked before, such as food processors, chefs, teachers and students, citizens, gardeners, policy-makers, marginalized people, associations, etc.

Yet, gathering these different actors is not assumed to be sufficient to create a FAIR Living-lab aiming at promoting change. Each Living-lab must commit to create favorable conditions for the emergence of debates concerning values and commons, with the support of ethic charters and through processes and tools favoring democracy and learning for a critical participation (McTaggart et al. 2017).

In a food democracy perspective (Lang 1998), participatory researches are conducted in each Living-lab to determine i) the values to be prioritized when discussing crop varieties, production techniques (on-farm diversification), processing and marketing practices, ii) organizational dynamics that support sustainable food system valuing diversity, inclusion and justice (Ruben et al. 2021), (iii) the way to go further in mutual learning, co-construction of knowledge and capitalization of know-how at LLab and meta-LLab levels. Meetings of Living-labs coordinators are regularly scheduled to discuss objectives, statutes, governance, etc. Citizen consultations and prospective studies have also begun to take place in each Living-lab (Chiffolleau et al. 2024). The purpose is to discuss how to shift from fairly small local collectives involved in participatory research to the creation of FAIR Living-labs interconnected at European scale.

How to promote change from field to food?

DIVINFOOD is the acronym for “Co-constructing interactive short and mid-tier food chains to value agrobioDiversity IN healthy plant-based FOOD”. The first term “Co-constructing” is of key importance because “Change” is fundamentally a social construction (Camargo et al. 2013). The change is affecting the organizational structure as a whole, and consequently, there is a need to embrace a more inclusive approach by taking into account the expressed needs and wishes of people, thereby co-creating value (Payne 2008) and discussing also values with them. In the Living-lab, all actors have been invited to debate each level of the food chain, starting from the choice of the crops (do we investigate only main crops or rather neglected and underutilised crops?), the choice of the seeds (do we consider seed as a common or as an intellectual property?), the cropping system (do we target only organic producers or all producers?), the storage (is it interesting to consider the cold room or also the alternatives such as natural underground silo?), the processing (do we consider artisanal processes? industrial processes ? or both?), the packaging (do we target eco-friendly packaging or not only?), the transports logistics (do we focus only on local chains or do we also consider global chains needing long transport?), to food supply and marketing (is it relevant to consider both short and long chains?). It also includes the consideration of inputs and outputs needed or generated at each of these steps (e.g., sustainability at which costs? With which affordability of products for low-budget consumers?).

The nine Living-labs study minor cereals and legumes in European regions that face various climatic hazards and diverse socio-economic challenges (Laino 2023), with the aim of developing agrobiodiversity-rich value chains. One of the main topics of discussion concerns the notion of “environment”. Typically,



Figure 1. Culinary art around neglected crops studied in Divinfood project
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the term “environment” is simply considered to cover only climate, soil, cropping system including weed and pests (Kang 1997). We propose here to expand this notion to components related to processing, marketing, economy, social, cultural and regulation.

Therefore the interactions between genotypes and environments (GxE) are no more studied in terms of yield or food quality but are extended to biodiversity, ecosystem services, benefits and costs.

The “adaptation” of a genotype, or variety, to an environment is now strongly linked to the “contribution” of this variety to the different dimensions of the environment (Desclaux 2020), assessed with stakeholders throughout the project. The question is no longer to think “how to react” but “how to act”. Similarly, the food system must no longer think globally to act locally (Gianinazzi 2018), but conversely, think locally to act globally.

Through consultations and debates, neglected species, alternative cropping systems, peasant and artisan processes and fair value sharing conditions have been confirmed as priority avenues to promote healthier, more sustainable diets and food systems, with the vigilance point that these processes must not be elitist.

Significance of the work for policy and practice

According to Enoll (<https://enoll.org/about-us/what-are-living-labs/>) “*Living Labs are open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact. They focus on co-creation, rapid prototyping & testing and scaling-up innovations & businesses, providing (different types of) joint-value to the involved stakeholders.*”

Because this definition tends to be market-oriented, Living-labs may privilege certain types of “stakeholders”. But, a shared and fair “Change” supposes to involve a large diversity of actors, geared to a FAIR Living-lab, with the support of processes and tools favoring democracy and critical participation.

“*Scaling-up innovations & businesses*” first requires that these innovations and businesses are not in the hands of one or two stakeholders but are considered as common goods.

The expectations of policymakers regarding the transformative potential of Living-labs or their ability to foster transitions must be tempered due to the wide variety of outcomes depending on how the dynamics of democratic decision-making, trust and concept of “commons” are dominant modes of interaction.

Living-labs can be instruments that provide a “favorable” context. This, in itself, does not guarantee democratic processes, trust and the commons. Therefore, how do we define values and principles to guide FAIR Living-lab action? The DIVINFOOD project is currently tackling these aspects.

A major CHANGE even during the ECSA poster session: The Participatory Poster!

CHANGE also concerned the poster presented during ECSA congress (Desclaux 2024) which was intended to be participatory. This poster aimed to present the DIVINFOOD project and the different Living-labs and to invite people to get involved in one of the Living-labs. But the particularity was that this poster was completely blank! Everyone was invited to contribute to the construction of the poster using different pre-cut elements (type of actors, questions addressed, location of the Living-labs, etc.), which they could position on the poster as they wished. The exercise of co-constructing a blank poster was a great success and many researchers left with the idea of spreading this type of concept! Learning by contributing...



Figure 2. The participatory poster presented at ECSA Congress 2024
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