ATP-AgriLandLab: A TOOL FOR ANALYSING TRANSFORMATION PROCESSES WITHIN LANDSCAPE LABS

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Summary

Agriculture is one of the main drivers of biodiversity loss. Several studies concluded that minor changes within the current framework conditions would not be enough to solve the problem, a societal transformation is needed (IPBES, 2019). Transformation means fundamental changes in structural, functional, relational, and cognitive aspects of socio-technical-ecological systems that lead to new patterns of interactions and outcomes (PATTERSON ET AL., 2017). several projects, initiatives, and innovative research strategies are being developed to transform agriculture systems, however, how to monitor (for reporting) and analyse (for learning) transformative performance of these initiatives is still unclear. The aim of this document is to present a concept to analyse and monitor the level of transformative change on Agriculture within Landscape Laboratories oriented to enhance insect biodiversity in Germany. The concept "ATP-AgriLandLab" (Analysis of Transformation Processes within Agriculture Landscape Laboratories) is based on theoretical frameworks of transformation and transdisciplinary research combined with cases studies, used to identify, and summarize key elements of transformative change. ATP-AgriLandLab is based on the three dimensions of transformative change: changes in the way of thinking, acting, and organizing, where a set of components are linked to each dimension and are used to describe, monitor, and evaluate the performance of transformation processes. Components as technological and social innovations, social values, knowledge, social inclusion, and natural resources management are proposed to monitoring outputs and outcomes of process of change, meanwhile, components as dynamic, flexibility, timing, transparency, and communication allows to monitor the behaviour of the process on-going. This concept seeks to provide a methodology to facilitate the understanding and evaluation of complexity of transformation processes accessible to researchers, practitioners, and advisory agents, working within a Landscape Laboratories in agricultural sector.

Keywords

Transformative research, Landscape Laboratories, Dimensions of change, Components, Monitoring.

1   Introduction

Agricultural expansion and intensification are one of the most important drivers of terrestrial biodiversity loss at local and global scales (TSCHARNTKE ET AL. 2012). Minor changes within the current framework conditions of agricultural land-use would not be enough to solve the problem of biodiversity loss and reduce the risk of a sixth major extinction event, a societal transformation is needed (IPBES, 2019; ROCKSTRÖM ET AL., 2009). Transformation, according to PATTERSON ET AL., (2017) implies fundamental changes in structural, functional, relational, and cognitive aspects of socio-technical-ecological systems that lead to new patterns of interactions and outcomes. A simple way to describe the complexity of transformative change is by using three dimensions of change: changes in the way of people´s think, act, and organize them self to generate outputs, outcomes, and impacts (LOORBACH ET AL., 2017). The main goal on Transformation is to kick-start and accelerate the "change from one sociotechnical regime to another" (GEELS AND SCHOT 2007), that means moving from the current dominant industrialized agriculture system towards a new dominant and more sustainable land-use systems, such as Biodiversity-based agriculture systems. This is a long-term and complex process that requires the participation of multiple stakeholders and actors, presence of key

components, and several conditions interacting on the right time and space, to test and better understand transformation under real-life conditions, diverse strategies are developed.

Real-world laboratories, Living Labs or Landscape Laboratories approach has been promoted as a suitable approach to understand, learn, test, promote, and accelerate transformation processes of current systems. The Agroecosystem Living Labs (ALL) are defined 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" (MCPHEE ET AL., 2021). Landscape Laboratories or Living Labs contribute to transformation by generating new knowledge, developing better technologies, creating networks between actors, accelerating adoption processes, and enabling experimentation and creative solutions to complex problems on real time, on the field, with a deep sense of participation and engagement of local actors. Within a Landscape Laboratories co-creation and participation of local actors to design, implement, and evaluate diverse measures to enhance local biodiversity is a key point. On this work, we are focused on the process of analyse and monitoring of transformation processes on agriculture using Landscape Laboratories approach. Based on this challenge, our key question was: how to analyse (for learning), and monitor (for reporting) transformative processes within landscape laboratories to enhance biodiversity? The aim of this document is to present a concept to analyse and monitor the level of transformative change on Agriculture within Landscape Laboratories oriented to enhance insect biodiversity in Germany.
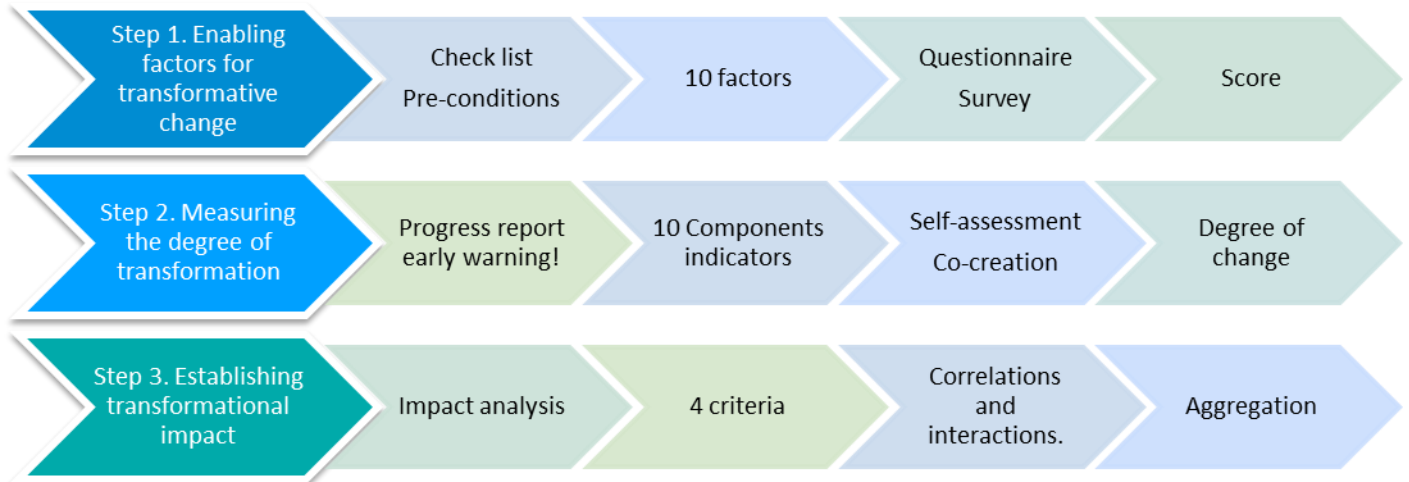
2 Empirical methods and analytical frameworks

2.1 Methodology

The methodology to develop the concept "ATP-AgriLandLab" Analysis of Transformation Processes in Agricultural Landscape Laboratories consisted of a comprehensive literature review (conceptual framework, methodological approaches, cases studies) and expert´s consultations on transformation focus on identify key elements of successful process of change. Based on this approach, set of key components of transformative change and their interactions, associated to three dimensions of change, changes in the way of acting, thinking, and organising were described (Figure 1). The methodology to consolidate these components was developed on five steps: 1) Identification of patterns and key aspects on transformation processes independent of sector or system definition. 2) Aggregation of patterns and development of a logic framework: structure of the concept on dimensions of change, components, indicators, and evaluation procedure. 3) Summarize and define a list of key components on the transformation processes. 4) Doble-check of pertinence and feasibility of the concept structure and its components with external experts on transdisciplinary research in agriculture systems. 5) Adjustment and redefinition of final components and concept definition. A total of 15 components were defined and clustered in groups of five pro dimension of change (thinking, acting, organizing), seven components were classified as functional for describing behaviour and performance of transformative change, meanwhile, eight components were classified as structural to monitoring outputs and outcomes of the process of change.

Figure 1:   General structure of ATP-AgriLandLab

Source: Author

Step 1. Enabling factors for transformative change	Check list Pre-conditions	10 factors	Questionnaire Survey	Score
Step 2. Measuring the degree of transformation	Progress report early warning!	10 Components indicators	Self-assessment Co-creation	Degree of change
Step 3. Establishing transformational impact	Impact analysis	4 criteria	Correlations and interactions.	Aggregation

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