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ORIGINAL RESEARCH ARTICLE

Orchestrating Diversity: Aligning Organisations to Support Social Innovation for Sustainable Agriculture in Sub-Saharan Africa

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Abstract

Well-organized ecosystems for innovation support services are crucial to accelerate agricultural innovations and to address the Grand Challenges to achieving Sustainable Development Goals. Deepening our understanding of what drives the emergence of service ecosystems is crucial to facilitate their deployment. In this study, we use the service ecosystems framework and focus on organizational alignment dynamics and ecosystem emergence.

We provide an integrated perspective on how agricultural innovation support services are deployed through evolving coordination and institutional arrangements. Considering the specificities of agricultural innovation, we also provide new insights into the role played by hub organisations in their emergence by overcoming the constraints to organizational alignment for value co-creation. Our case study approach is based on semi-structured interviews and analysis of over 5 years of case study data concerning innovative labelling of organic farm products in sub-Saharan Africa. Participatory guarantee systems offer small-scale farmers the opportunity for organic or agroecological certification for national markets. This systemic innovation requires diverse technical, social, and organizational innovations and calls for several innovation support services. Processual analysis through temporal bracketing identified three stages of emergence: preliminary, birth, and growth. We differentiate between constraining factors, which are internal to the ecosystem and its functioning, and external factors, which depend on the context. We also enrich the theory of alignment and its relevance in the Global South in the form of two new constraining factors to alignment: international development projects and end-user demand, and the crucial role of hub organisations.

Keywords: *Innovation support services*; *Service ecosystems*; *Emergence*; *Participatory Guarantee systems*; *Inter-organizational alignment*

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The world, particularly the Global South, faces what scholars term Grand Challenges – complex, identifiable problems that profoundly affect large populations (Eisenhardt et al., 2016; Ferraro et al., 2015). Addressing them requires interdisciplinary approaches and coordinated action. The agricultural sector intersects with several Grand Challenges: food security, poverty alleviation, climate change mitigation, and addresses the negative consequences of the Green Revolution. The need for an agroecological transition is widely shared among actors, and international donors advocate and finance initiatives towards this goal.

In this process, organic labels are seen as one way to pull a variety of innovations that help transform food systems towards more sustainability. Participatory guarantee systems (PGS) are participatory certification systems for goods produced for local markets, based on standards co-defined by the stakeholders themselves, including farmers, retailers, and consumers. This systemic innovation requires several changes in the agricultural production systems. The biggest changes involve new farming practices, new bio-inputs, and new land management methods. Other changes affect not only farm operation but also the organizational structure of supply chains including the creation of cooperatives, associations, certification mechanisms, new marketing and trading operations, and finally, new financing modalities. These changes are both technological and socio-organizational and require support to emerge and scale.

The form taken by innovation support services ranges from knowledge transfer, intermediation, to access to resources (Faure et al., 2019; Toillier et al., 2021). However, the complexity of systemic innovations calls for specific support due to their multi-sectoral nature and the diversity

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of stakeholders involved including private companies, consumer associations, producer groups, and non-governmental organizations (NGOs). Institutional innovations like PGS call for compromise between actors with divergent goals that range from making a profit, to food quality, to safeguarding livelihoods, and often require facilitation to support collaboration and mediate conflicts, or both (Sartas et al., 2020).

Structural adjustments in the 1980s–1990s led to the decline and privatization of public agricultural advisory services in the Global South, which in turn, favoured export-oriented sectors (Faure et al., 2014; Klerkx et al., 2006). The resulting fragmented landscape risks uncoordinated interventions that hinder agroecological transition (Ndah et al., 2025; Toillier et al., 2023). Given the complexity of agroecological transitions (Côte et al., 2019), coordination is the key to sharing knowledge, good practices, and managing resources across scales (Angeon et al., 2024; Chaparro-Africano & Páramo, 2022). The literature on agricultural innovation support has mostly focused on macro- and micro-level approaches (Audouin et al., 2025; Faure et al., 2019), while overlooking inter-organizational collaboration at the meso-level, which is crucial for strengthening such interactions. This paper investigates coordination through the lens of innovation support service ecosystems (ISSE) (Orbell et al., 2024) by focusing on their emergence, with the goal of understanding and informing how development actors can better target public actions, capacity building, and appropriate investments.

In addition to reporting on-field concerns, this paper contributes to service ecosystem theory. Existing research mainly focuses on the secondary and tertiary sectors, whereas little attention is paid to service ecosystems in agriculture, especially in the Global South. Most existing studies on ecosystem emergence target business and innovation ecosystems, leaving service ecosystems under-explored. While coordination mechanisms have been extensively studied in the context of private companies, in ecosystem contexts, these mechanisms remain unknown (Picaud-Bello et al., 2022). In the Global South, support is often decentralized, locally driven, project-based, and adapted *ad hoc* to the demands of innovators (Audouin et al., 2025; Faure et al., 2019; Kilelu et al., 2014). Consequently, orchestration mechanisms differ significantly, highlighting the need to understand how stakeholders align and collaborate to achieve common objectives.

Our preliminary field observations in the present study revealed the central role played by a specific organization in facilitating interactions between stakeholders over time (Iyabano et al., 2022; Orbell et al., 2024; Toillier & Kola, 2020). We conceptualize this recurring actor as a 'hub organization'. To analyse how this hub facilitates long-term stakeholder relations, we hypothesize its pioneering role in laying the foundations for the service ecosystem and mobilizing others around shared goals such as social innovation and value co-creation. Instead of adapting the theory to the context of agriculture in the Global South, we chose a demarcation perspective (Djellal & Gallouj, 2012) to question the relevance of the theory in a new context. We reasoned that the theory can be enriched by identifying differences in the Global North and Global South plus any additional constraining factors that need to be taken into consideration.

For our analysis, we use the service ecosystems framework, which emphasizes value co-creation through relational and institutional dimensions. Within this framework, we highlight two key but often under-theorized dimensions: emergence and alignment. Here, emergence refers to evolving roles, coordination mechanisms, and institutions, while alignment explores how diverse actors converge around shared objectives. Combining the two dimensions enables a more dynamic understanding of ecosystem formation.

Our research question is the following: *How does a hub organization orchestrate the alignment of organisations to allow the emergence of a service ecosystem that supports systemic agricultural innovations in the context of the Global South?*

Our theoretical aim is to enrich alignment theory in two ways: first, by detailing the role of the hub organization, and second, by refining alignment criteria to better capture this process. To deepen insights into agroecological transitions, we build on existing works on business and service ecosystems outside agriculture. From a managerial viewpoint, we aim to improve the understanding of ISSE emergence and functioning to support more effective capacity development policies by governments and aid actors. We also aim to identify the conditions that enable such ecosystems to emerge and the role of hub organisations therein.

Theoretical framework

To answer our research question, we combine several concepts: ecosystems, organizational alignment, and the specific role of the hub organization. We briefly present how each is mobilized further in the text.

As discussed by Daymond et al. (2023), the literature tends to view ecosystems through two distinct analytical lenses. One focuses on a *shared object or purpose* that materially and conceptually unites participating organisations – such as innovation, a business environment, or a technological platform (Jacobides et al., 2018). In such cases, the prefix, such as 'innovation' or 'platform', refers to the focal object around which actors coordinate. We position our analysis within this perspective and more specifically adopt the concept of *service ecosystems*, defined as dynamic, self-adjusting networks of autonomous yet interdependent actors who co-create value through resource integration and service exchange within shared institutional arrangements (Kutsikos et al., 2014;

Vargo et al., 2020). This collaborative system relies on institutional rules, norms, and practices to facilitate coordination, innovation, and the efficient mobilization of collective capabilities (Koskela-Huotari et al., 2016; Picaud-Bello et al., 2022). The second perspective, exemplified by the literature on *entrepreneurial ecosystems*, focuses less on a shared object and more on a *shared purpose of supporting a specific category of actors* – entrepreneurs – within a geographically bounded environment. Entrepreneurial ecosystems are typically described as 'co-located elements where a variety of actors, functions, and institutions interact to support the creation and growth of new ventures' (Thompson et al., 2018). While these perspectives are not mutually exclusive, they emphasize different organizing logics: one object-centric, the other actor-centric. The concept of ISSEs we use (Orbell et al., 2024), refers to a service ecosystem composed of organisations that collaborate to deliver innovation support services to support social innovations in the agricultural sector. Thus, our work is situated at the intersection of the service and the entrepreneurial ecosystems. From the first system, it draws the idea of organisations joining forces to (co-)create a shared object, in this case, innovation support services. From the second system, it draws the interaction of diverse actors, functions, and institutions with the overarching aim of fostering entrepreneurship, employment, value creation, and development.

Emergence can be defined as the process of creating something new, for example, organisations, or structures, or in this case, an ecosystem, from pre-existing elements, in this case, the organisations, where the whole is greater than the sum of its parts (Bhaskar, 2008). In ecosystem research, emergence is not only important but compulsory to achieve successful ecosystems and is a valuable way to disentangle the complexity of service ecosystems (Polese et al., 2020) that are still under-explored due to the high failure rate of these organizational forms (Attour & Barbaroux, 2016). We use Thomas et al.'s (2022) definition of emergence as a collective process of discovery and negotiation. Emergence is a continuous process within the ecosystem lifecycle, not a one-off event. The process comprises all stages leading up to maturity – referred to as 'control' by Thomas (2013) and as 'stabilization' by Möller et al. (2020) – before potential decline, re-emergence, or dormancy (Cantner et al., 2021; Michel & Defiebre-Muller, 2025). Following these authors, who describe ecosystem lifecycle using distinct stages, we further analyse the emergence stage by identifying the key stages which compose it.

Emergence results from the interplay between actor agency and coordination mechanisms (Taillard et al., 2016), complemented by a structuralist view focused on alignment around shared value (Adner, 2017; Malherbe & Tellier, 2022). Orchestration complements these perspectives by focusing on how one or several actors enable such alignment by coordinating roles and interactions (Adner, 2017; Autio, 2022). We also account for external factors that can facilitate or hinder coordination, and thus influence ecosystem emergence (Malherbe & Tellier, 2023).

Alignment is widely acknowledged to be a critical factor for the success of ecosystems. Prior research has identified several challenges faced by emerging ecosystems, including the need to overcome bottlenecks (Hannah & Eisenhardt, 2018), to establish evidence of ecosystem viability (Thomas & Ritala, 2022), to develop a shared and evolving vision of value (Foss et al., 2023), as well as to meet coordination prerequisites (Jacobides et al., 2018). Nevertheless, Malherbe and Tellier (2023) note that the understanding of the factors that enable effective alignment remains incomplete. Building on their work, our conceptual framework focuses on six key alignment factors: technology, innovation, value distribution, identity, power, and public authorities. These six factors serve as a foundational lens to analyse alignment processes in emerging ecosystems. While technology is a key factor in some contexts, the US flipper industry for example (Malherbe & Tellier, 2023), it is not as important in the agricultural sector in the Global South for the introduction of a new label to support the agroecological transition, where access to new technologies remains limited (Mhlanga & Ndhlovu, 2023). Thus, while we retain five of the six original factors, we do not include technology in our analysis. The term *innovation* refers to the level of innovation, and more importantly, to the level of co-innovation in the ecosystem in the innovations that need other innovations to succeed. The level of co-innovation is particularly important due to the interdependence of agroecological innovations, such as certification labels and new supply chains. In these ecosystems, *value distribution* is shaped by the presence of non-profit organisations, and extends beyond financial gains to intellectual value like certification labels, agricultural input formulas, and social value like improved incomes and quality of life for farmers and traders. This emphasis on shared value (Rubio-Andrés et al., 2022) plays a fundamental role in how actors collaborate, ensure long-term engagement and alignment around a common purpose. *Identity* is mostly linked to the shared vision, and plays a central role in fostering cohesion and legitimacy (Thomas & Ritala, 2022). While *power* dynamics can hinder ecosystem emergence, they are less prominent in our case than in competitive business ecosystems. *Public authorities* also influence alignment through policy and funding. However, in the Global South, *international development projects* often play a particularly structuring role due to the limited capacity of existing public services. Project influence stems from their financial influence, from the fact their priorities are influenced by international agendas, and short project cycles, which can cause misalignments within the ecosystem (Alexandre, 2023). Additionally, this study highlights a constraining factor that is

particularly relevant in this context: evolving *end-user demand*. In our case studies, this challenge is tied to the implementation of PGS, a form of social innovation developed in the Global South to certify agroecological products through participatory processes. Each PGS is context specific, shaped by local agroecological and organizational characteristics. However, as Chaparro-Africano and Páramo (2022) show, sustaining these systems is difficult due to limited resources and the need to mobilize diverse stakeholders, making end-user participation a key yet fragile driver of ecosystem alignment.

Following Adner (2017), we apply the ecosystem-as-affiliation view, where alignment involves co-evolution around a central actor (Moore, 1997). The involvement of a central actor in orchestrating the significant challenges posed by the competitive, collaborative, and co-evolutionary aspects of relationships within an ecosystem (Picaud-Bello et al., 2022), is congruent with both our observations and several research streams. Despite bearing different names (hub firm, catalysing agent, focal firm, ecosystem leaders, keystones, architects[1]) (Daymond et al., 2023; Dhanaraj & Parkhe, 2006; Ekboir & Vera-Cruz, 2012; Gulati et al., 2012; Iansiti & Levien, 2004; Moore, 1993; Valente & Oliver, 2018) these organisations are described as having the same key objective, which is to bring the ecosystem partners 'into the positions and roles that its ecosystem strategy envisions' (Adner, 2017, p. 47). As Gulati et al. (2012) put it, it is their attempt to exercise influence over external partners which leads to the emergence. We use the term hub organization to highlight a facilitative, non-dominating role, particularly suited to contexts in the Global South and to ecosystems that are primarily composed of non-profit organisations. These organisations select members, foster collaboration, manage conflict, provide leadership, and represent the ecosystem, to give some examples (Adner, 2017; Favre-Bonté et al., 2016; Wegner et al., 2023). As Valente and Oliver (2018) point out, focal firms are essential to emergence, as they act as a rallying point that facilitates coordination and innovation between a variety of actors to tackle the complexity of sustainability issues in sub-Saharan Africa. Such orchestration enhances coordination and reduces transaction costs (Foss et al., 2023; Shen et al., 2024). Our aim is to understand how the hub organization orchestrates alignment to enable the emergence of ISSE that support agroecological innovation.

[1.] While these terms share a common objective of enabling coordination, they also vehicle nuanced differences. A hub firm manages knowledge flows, innovation appropriability, and network stability. A catalysing agent encourages actors to commit time and resources. A focal firm provides strategic leadership and defines 'the ecosystem value proposition'. Ecosystem leaders leverage their central position to capture greater value. Keystones sustain ecosystem health by offering stable and shared resources. Architects design and structure interactions to support long-term ecosystem development.

Methodology

To identify similar patterns in the emergence of innovation support services ecosystems (ISSE), we conducted a cumulative study based on three case studies which describe the creation of organic or agroecological PGS in three countries in sub-Saharan Africa, Burkina Faso, Senegal, and Madagascar. As noted in the literature, cumulative multiple case studies are 'particularly useful when studying processes' (Garreau, 2020, p. 56) as they enable the development of a suitable contextual model for countries of the Global South. Garreau (2020, p. 56) also states that '2 to 10 cases are generally used', justifying our selection of three.

We chose three case studies based on the assumption that different stages of ISSE emergence would reveal distinct features. We therefore selected cases involving the same innovation topic (PGS as a new label) but differing in national context and in the stage of implementation. The initiatives began in Burkina Faso and Senegal several years ago whereas the PGS in Madagascar is still in its infancy, providing a rare opportunity to observe ecosystem emergence directly. This cumulative analysis enabled us to identify different stages in the process of emergence. Additionally, all three cases provide retrospective data on the history of emergence (stages one and two), and on stage three analysed in two of them.

Case studies

In our analysis, we compare three case studies of ecosystems that facilitate the implementation of organic or agroecological PGS. PGS are defined as 'locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange' (IFOAM, 2008). Unlike many other service ecosystems in the health or energy sectors, PGS are territorialized, and foster proximity and familiarity among stakeholders. Rules and standards are defined collectively by, among others, input sellers, producers, shop owners, and end consumers.

PGS enable certification for local markets at a lower cost than third-party systems, while creating not only economic value but also significant social value, for example, improved farmer and consumer health, and environmental value, for example, reduced agricultural impacts. These shared values support the creation of a common vision.

Value capture differs from that in business ecosystems as there is less competition for it between members. PGS involve technical innovations such as new farming systems, organizational innovations such as new value chains, new suppliers for organic inputs, and institutional innovations such as the creation of the label thereby posing challenges for both evaluation and management. Collaboration is essential due to

the diverse skills and functions required for success which are almost impossible to find in any one individual actor (Malherbe & Tellier, 2023). We give a brief description of the three case studies (Figure 1) further in the text; for a detailed chronology, see Appendices B, C, and D.

The third case study explores the emergent agroecological PGS in Madagascar, which was initiated in 2018 by an umbrella organization of producers and an international NGO. The PGS involves farmer organisations, training centres, donors, and support projects. A draft PGS standard is currently being tested, and although a trademark exists, it remains underused. The 2020 national law recognizes PGS. In contrast to the more mature Burkina Faso and Senegal cases, Madagascar offers a unique opportunity to observe the initial dynamics of ISSE formation, including challenges and stakeholder engagement, which are often omitted in retrospective accounts.

Data collection

Data were collected from many different sources, including semi-structured interviews with key stakeholders and grey literature including activity reports, a master's thesis, websites, and project documentation (Table 1). Triangulating these sources helped minimize individual biases and deepened our understanding of the social phenomenon involved (Mathison, 1988). We chose semi-structured interviews, a qualitative research method that combines open-ended questions with a guiding framework, to allow both consistency across interviews and the flexibility to explore emergent themes (Möller et al., 2020). This approach was particularly suited to our study, as it gave us in-depth insights into a relatively new and underexplored topic while remaining responsive to interviewees' standpoints.

The interviews took place between May 2022 and December 2023. The extended timeline reflects our goal of tracking the evolving situation in Madagascar through interviews with the same interviewees. The interview guide focused on two main topics: (1) the emergence and path of the ecosystem supporting the PGS, and (2) its functioning, in other words, governance, collaboration, competition, and joint activities.

We used both snowball sampling (Eide et al., 2008) and purposive sampling (Palys, 2008). Snowball sampling consists of asking the first respondents the names and details of the next interesting person they think we should interview. This method is particularly appropriate in our situation because (1) these ISSE have never been described before so there is no list of the members currently involved; (2) we wanted to interview people who are involved in the same ecosystem and who are in contact with one another; (3) we started the interviews with the actor we thought played the most central role in the ecosystem and assumed they would know all the other actors in the ecosystem. However, to counterbalance possible biases linked to the intentional or unintentional omission of the names of any actors involved, we triangulated this information with purposive sampling which allowed us to identify other relevant actors to be interviewed from other sources including reports and websites. Our goal was not to be exhaustive but to present the points of view of the main types of actors, including NGOs, donors, civil society, producer organisations, research institutes (for a complete list of interviewees see Appendix A). Hereafter in the text, codes are used for citations. Some actors – particularly producer organisations – were more difficult to reach due to limited digital access, and in some cases, security concerns prevented in-person interviews. The interviews continued until theoretical saturation, that is, when either all core organisations were covered or no new information emerged.

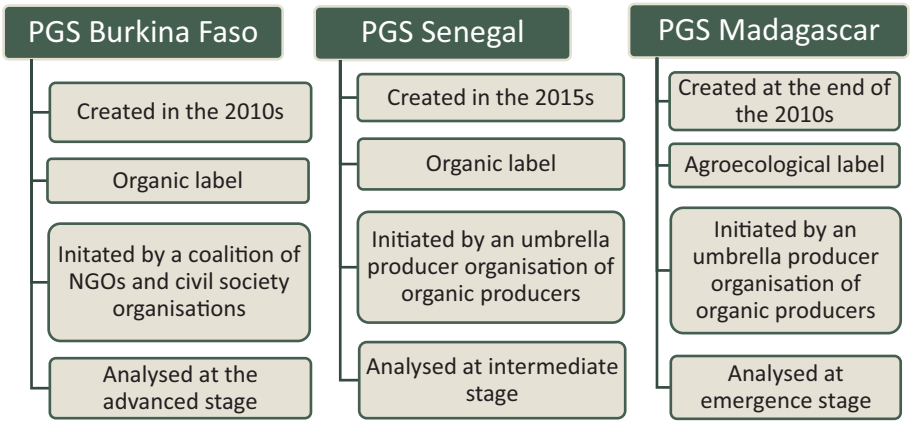

Figure 1. Summary presentation of the three cases of participatory guarantee systems studied.
Source: Own elaboration.
PGS, participatory guarantee systems; NGOs, Non Governmantal Organisations.

Table 1. Overview of the data collected and their analytical objectives

Source	Data from Burkina Faso	Data from Senegal	Data from Madagascar	Analytical objectives
Comprehensive interviews	• 6 individual interviews and 1 workshop; • 6 h 30 min of audio recordings; • 105 pages of transcripts.	• 6 individual interviews and 1 workshop; • 6 h of audio recordings; • 97 pages of transcripts.	• 8 individual interviews and 1 workshop; • 8 h of audio recordings; • 106 pages of transcripts.	• Gain a longitudinal understanding of the emergence; • Identify the critical points that delimit the stages; • Understand how the alignment criteria evolve over time; • Observe relationships between member organisations of the ecosystem.
Reports and students' dissertations	• 8 documents for a total of 418 pages.	• 5 documents for a total of 244 pages.	• 6 documents for a total of 373 pages.	• Gain a longitudinal understanding of the emergence; • Identify the critical points that delimit the stages.
Law and certification guidelines	• 2 documents for a total of 65 pages.	• 1 document for a total of 21 pages.	• 1 document for a total of 14 pages.	• Understand the legislative framework in each country.
Various documents (flyers, PowerPoint presentation, etc.)	• 4 documents for a total of 36 pages.	• 2 documents for a total of 14 pages.	• 9 documents for a total of 101 pages.	• Observe how the organisations communicate about the PGS initiative; • Observe how PGS concept is transmitted to the general public.

Source: Own elaboration.
PGS, participatory guarantee systems.

Data analysis

Interviews were fully transcribed and following Braun and Clarke (2006), adapted to management research by Linde et al. (2021), we undertook thematic coding of both the transcribed data and secondary data we collected. Thematic analysis proved an effective way to identify patterns and connections across the extensive data. Secondary sources, which were mainly 'official' documents like reports and laws, were mainly used to reconstruct the chronology of ISSE emergence (for details, see Appendices B, C, and D) while interviews provided insights into collaboration dynamics, challenges, and stakeholder standpoints.

We began our analysis with an inductive coding approach to examine how the hub orchestrates emergence and an abductive coding process to identify the factors which constrain organizational alignment. This led us to incorporate relevant constraints previously identified by Malherbe and Tellier (2023), but we also discovered two additional constraining factors through an iterative process of reading, interpreting, and reconceptualizing. This investigation allowed us to identify the phenomenon of emergence. To further analyse this process, we applied temporal bracketing (Langley, 1999) to deconstruct the separate stages and to explore the mechanisms underlying each (Figure 2). The analysis was facilitated by NVivo 14 software and identified 151 citations that supported our analysis (the most relevant are included in Supplementary Documents). To limit bias, the thematic analysis was conducted iteratively, thereby allowing for constant reassessment and refinement of the topics. Additionally, we shared our findings – including chronologies, phases, and constraints – with selected interviewees to obtain their feedback and confirm our results.

Results

Next, we present our main findings. From a dynamic point of view, we present the process of emergence of ISSE related to PGS. As illustrated in Figure 3, this process consists of switching from a situation where the organisations are scattered and working independently to a situation where they are organized in a service ecosystem. This is made possible thanks to the orchestration and coordination mechanisms implemented by the hub organization to overcome the factors that constrain the alignment of the different organisations.

We chose to conduct a processual analysis of the emergence through temporal bracketing because 'The decomposition of data into successive adjacent periods enables the explicit examination of how actions of one period lead to changes in the context that will affect action in subsequent periods' (Langley, 1999, p. 703). Three such periods were identified during emergence[2] (Figure 4): preliminary stages, birth of the ISSE, and growth. For each period, we describe the actors, activities, roles, and links, as well as coordination mechanisms implemented by the hub organization, the factors that constrain the alignment, and how the different layers influence

[2] As mentioned above, emergence is defined as encompassing all the stages that precede the ecosystem's maturity and then either decline, re-emergence, or dormancy.

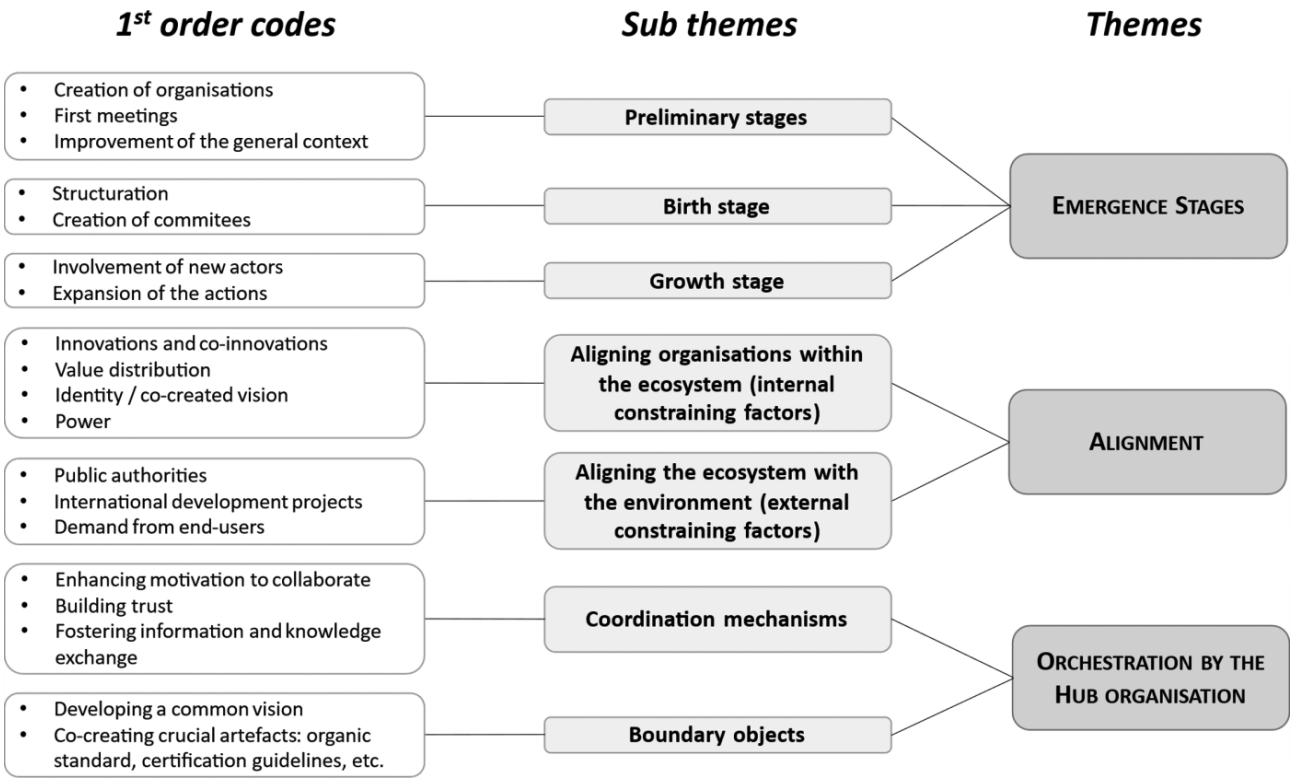

Figure 2. Data structure.
Source: Own elaboration.

each other. Changes in the factors which constrain alignment identify the break between two successive periods.

The chronologies of our three case studies are detailed in Appendices B, C, and D and show the ISSE actors and their activities in relation with changes in the context and the innovation path of PGS.

Stage 1: Preliminary stages of emergence

The first stage corresponds to a period of continuous improvement of the context until it is favourable enough for the emergence of the ISSE. One crucial accomplishment of this stage is the creation of the organization which will later become the 'hub organization'. In our case studies, the hub was either an NGO or a farmer organization. At this stage, the hub organization follows its own goals and supports farmers of the region, thereby gaining legitimacy among peers. This stage is the longest, and its length varies enormously depending on the country, for example, it lasted 30 years in Burkina Faso and Madagascar, while in Senegal, it only lasted 10 years. But the length of this stage also depended on what the actors we interviewed considered to be important when the aim is to create a favourable context for the emergence of the ISSE and how far they go back in the history of the process. During this stage, the stakeholders work independently, and encounter problems linked to the scaling up of their support to agroecology, in particular, issues related to marketing, relations with donors, and lobbying public actors.

Alignment is not yet possible at this stage because some constraints persist (Table 2). The level of innovation is medium, it mainly links agroecological and organic production but few innovations are visible in marketing modes as yet and most of all, the innovations are made in a silo, in other words individually, with no co-adoption by the other stakeholders despite attempts by the hub organization to diffuse knowledge through bilateral relationships. As yet, there is no agreement on value distribution, indeed, at this stage, the question is not even addressed. The identity of the ecosystem is weak and there is no agreement, but the actors begin to realize that they share some strong values. Power is widely distributed; each organization works in a silo and there is no power sharing.

Concerning the institutional framework, the context is neither favourable nor unfavourable: on the one hand, public authorities organize workshops on organic agriculture, but on the other hand, they express their reservations regarding the capacity of organic agriculture to meet the imperatives of food security in the country, as expressed by one interviewee:

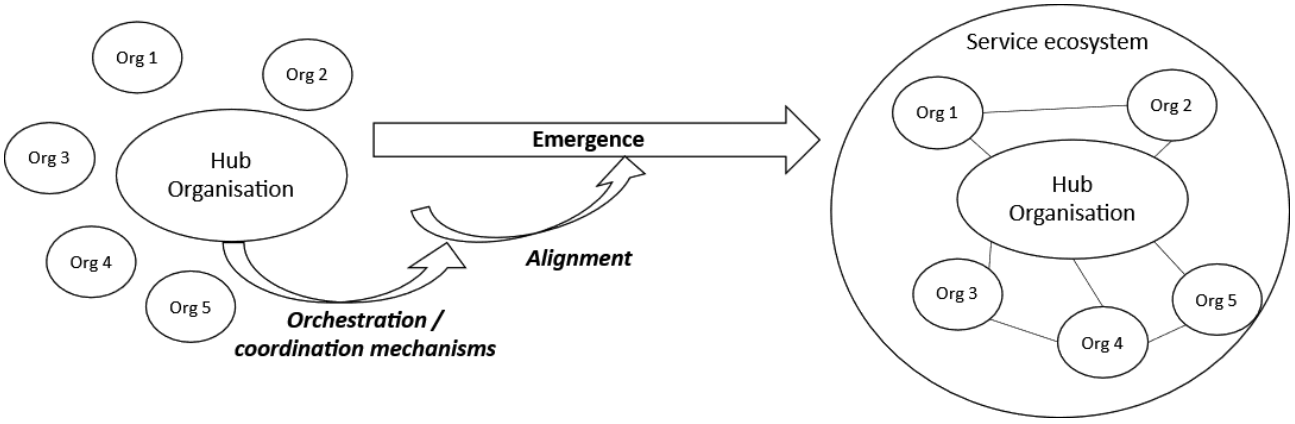

Figure 3. Theoretical framework used to study how the hub organization contributes to the emergence of service ecosystems through orchestration and through the alignment of its members.
Source: Own elaboration.

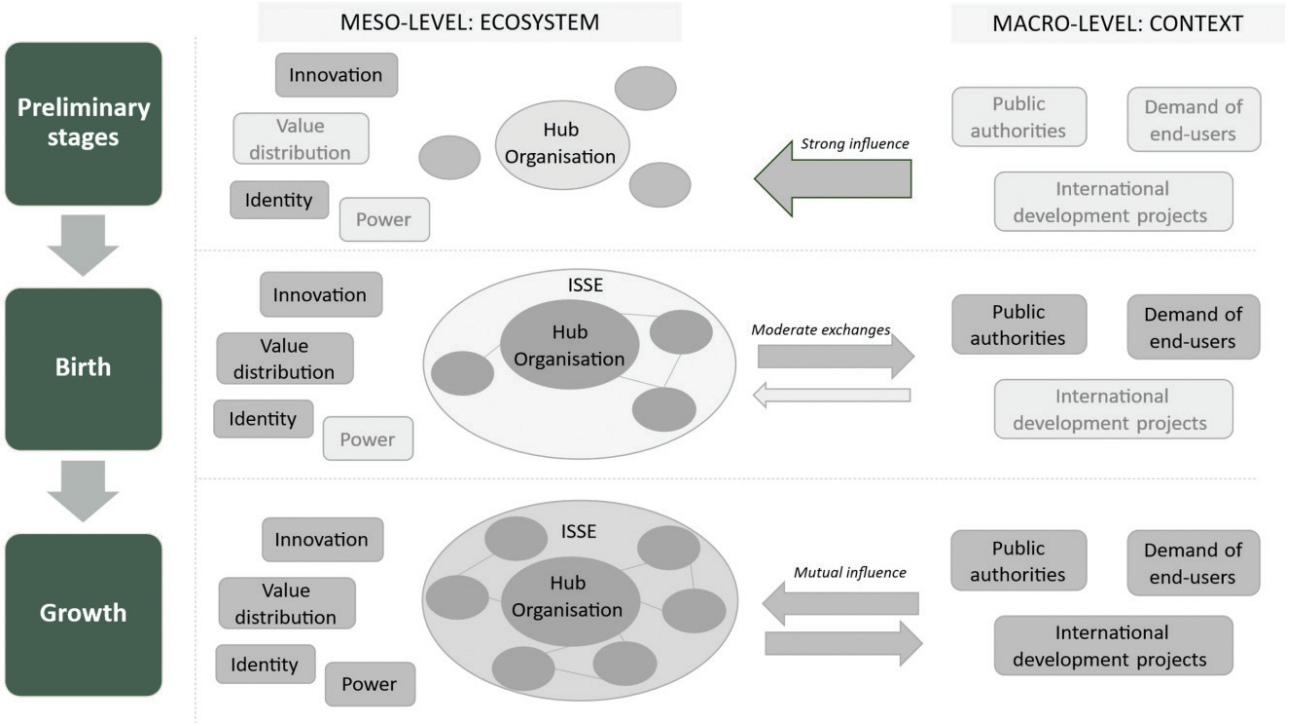

Figure 4. Stages of emergence of an innovation support services ecosystem (ISSE) and dimensions of alignment at the meso- and macro-level.

Source: Own elaboration.
Note: Dark grey squares indicate the constraining factors which can be considered as aligned at each stage.

'They're not totally reassured yet. [. . .] Sometimes they're not convinced that organic production can achieve better results than conventional production' (S_PO2). There is no legal framework on agroecology or organic farming at this stage despite calls for one made by the hub organization. However, awareness of the impacts of pesticides on health and on the environment is increasing among the general population leading to slowly increasing demand, as reported by one interviewee 'It's the demand on the market, because these days consumers, particularly in Burkina Faso, have become aware of the need to consume healthy products' (BF_Asso1). As illustrated in Figure 4, the main activities are conducted at the macro-level and at this stage, the context has a huge influence on the emerging ecosystem.

Table 2. Alignment of organisations impossible in the preliminary stages of emergence

Constraining factor	Characteristics of the constraining factor during preliminary stages	Orchestration activities implemented by the hub organization
Innovation	• Several initiatives concerning agroecological and organic production; • Different levels of co-adoption of innovations across cases.	Diffusion of information and knowledge to favour (co-) innovation mainly in bilateral relationships.
Value distribution	• The question of value distribution is not addressed at this stage.	–
Identity	• Different actors work on promoting agroecology and organic farming to improve farmers' income, soil health, the environment and population, and to promote long-term food security, etc. But they do not collaborate to achieve these aims.	–
Power	• Organizations still work in a silo, there is no power sharing.	–
Public authorities	• There is little support for organic farming and agroecology; • No legal framework exists.	There are calls to improve the legislative framework but advocacy by individual organisations carries little weight.
International development projects	• No development project concerning PGS at this stage.	–
Demand of end-users	• Awareness of healthy agricultural products is increasing; farmers are increasingly willing to produce organic food.	–

Source: Own elaboration.
PGS, participatory guarantee systems.

Another alignment factor that favours emergence is the creation and implementation of new organisations, including NGOs, civil society movements, dedicated to organic or agroecological agriculture in the country concerned; yet another is the introduction of farmers' capacity-building projects which will subsequently provide the basis for the implementation of PGS. During this period, attempts to create ecosystems often fail, but, in so doing, create a favourable background for new initiatives, as one interviewee explained: 'Through this framework, a lot of us knew one another, we had already established relationships, collaborated. So, we felt relatively at ease, we were kind of ready to set off on a new adventure' (BF_NNGO1).

The transition from the preliminary stages to the birth of an ecosystem can be identified as the point at which the hub organization successfully gets stakeholders to collaborate in creating a more enabling environment for innovation.

Stage 2: Birth of the ISSE

The second stage, 'birth of the ISSE', broadly represents the period when actors get together and organize themselves. The beginning of this stage is marked by the holding of an event during which the stakeholders confirm they are motivated to collaborate in order to maximize their action by '[pooling] their ideas so they can really move forward' (BF_NNGO1), 'sharing experiences' (BF_INGO), 'strengthening collective capabilities' (BF_Cs1), and 'representing all the stakeholders and defending their interests' (S_INGO). To reach this goal, the need for a hub organization is expressed because 'as long as there isn't someone neutral [. . .] we're not going to talk to each other, so the role we want to give [it] is to facilitate the exchange between us' (BF_Cs1). Neutrality here means the hub organization cannot be in competition with other ecosystem members. If it is perceived as pursuing its own interests, the hub organization risks losing trust, which could jeopardize the engagement of all the stakeholders. At this stage, the main actors of the ISSE meet regularly at workshops but also in smaller groups to structure the initiative, to agree on a vision and terms of collaboration. These meetings are considered crucial by the actors we interviewed, to better understand each other and create trust among members of the ISSE; and participants feel they are missing something when not enough meetings are held: 'We need more occasions when we can discuss together, more opportunities for interaction and sharing' (S_Cs). In our case studies, it was also during this period that several documents were designed and validated (Appendices B, C, and D). These documents concern: (1) the standard of PGS for organic or agroecological farming, (2) certification guidelines, (3) the national standard of organic or agroecological farming, (4) specification checks, (5) the articles and rules of procedure of the association, (6) the logo for the trademark. These documents are crucial for the implementation of the PGS, to make explicit what will be allowed or prohibited, who will make sure the rules are respected, what will

happen if they are not, and so on. But beyond these objectives *per se*, the fact they are conceived together allows members of the ecosystem to spend time together, get to know each other, pursue informal relationships, clarify each other's vision, create mutual trust, and so on. Many matters that will later be of the utmost importance when dealing with inevitable tensions and disagreements.

At the meso-level at this stage, factors mainly favour alignment (Table 3). The hub organization diffuses information and knowledge, leading to multiple innovations that are co-adopted: organic inputs developed by private companies and organic agriculture practices identified in research institutes are promoted by NGOs and farmer organisations to the farmers they support, new value chains proposed by traders are adopted by farmers, and so on. The organic standard is enacted, in itself an innovation. The PGS begins to be structured, and several different actors are involved in the certification process, an important innovation in a context where stakeholders are used to seeing foreigners in positions of power – for example, certifiers, state agricultural advisory technicians, or researchers – visit their farms to judge the quality of their work.

Agreements are reached on most economic, social, intellectual, and environmental aspects of value distribution, thanks to regular meetings organized by the hub organization and to the drawing up of rules of conduct to prevent opportunistic behaviours. Economic value is still low at this stage, and, except for the farmers and sellers, few stakeholders are getting richer but this is not perceived as a problem at this time, since most actors are not-for-profit organisations. Social value is created through improved farmers' incomes, as well as environmental value, but they do not currently face difficulties linked to the distribution of value. Intellectual value is created with the creation of the PGS, the concept of organic agriculture in the country, the label, and the associated logo. Tensions concerning this aspect of value may be more visible if actors are reluctant to abandon their own certification facility (in Senegal) or willing to formalize the value distribution to prevent one actor from taking over all the intellectual value (in Madagascar) as one employee from the ministry put it: 'our minister was sceptical because he was afraid that SYMABIO would take over the organic sector' (M_Min).

Power is partly shared among the stakeholders and meetings are held by the hub organization when the most important decisions for PGS are taken. In PGS initiatives there is a strong commitment to involving all the participants in the design of the label, its functioning, and in making decisions. But on the ground, participation can be hard to enforce and some countries encounter difficulties in getting stakeholders (notably non-farmers) involved in decision-making.

The last factor, identity, emerges from a shared vision co-developed through a hub organization which plays the role of a facilitator in dedicated meetings. After strengthening farmers' technical skills, organisations supporting organic agriculture and agroecology shift their focus to marketing, differentiating organic products from conventional ones to increase their value and hence farmers' incomes. This shared vision was clearly recognized by our interviewees as an important factor in the successful emergence of the ecosystem: 'If we really want to succeed in this process, all the members must have a common vision so that we can really make the PGS work' (BF_Asso1). On the contrary, when a divergence in the vision appears among stakeholders, as happened in Madagascar, it may become a reason for not including one actor in the ISSE and can hinder its development.

An ecosystem can be considered to transition from the birth stage to the growth stage when substantial investments are made by international donors through various projects to support the activities implemented by the ecosystem.

Stage 3: Growth

The third stage is scaling up, which we were only able to observe in the Burkina Faso and Senegal case studies, since in Madagascar, the process is still in the birth stage. During this period and after consolidating the structure and operational modes of the ISSE, the actors are ready to enrich the ecosystem with new members. They also intensify their level of activities, increasing the number of certified farmers and the geographical area they cover. This is possible because their structure and the previous projects in which they were involved are important references for international donors and development projects and lead to new projects and funding. At this stage, the ecosystem increases its relations with its environment and influences it (Figure 4).

At this stage, all alignment factors converge (Table 4). The level of innovation remains high with multiple co-adoptions in both the production and marketing of agroecological and organic products. Stakeholders agree on most aspects of value distribution, there is a shared idea that the cake is much bigger than they can eat, with increasing demand on the market, as mentioned by one interviewee: 'Production is not sufficient to cover the demand' (BF_INGO) and occasional meetings are held to discuss remaining disagreements. The problems of intellectual value distribution, mentioned in the previous stage, are in the process of being resolved with members agreeing on a 'more harmonized, more structured' PGS (S_PO2). The identity of the ecosystem is stabilized around a common vision that allows the hub organization to communicate more clearly to potential new entrants. Power is more centralized than in the previous stage, linked to the process of institutionalization the ecosystem encountered, which generally takes the form of a formal association. Important

Table 3. Alignment of organisations impossible in the birth stage of the ISSE

Constraining factor	Characteristics of the constraining factor in the birth stage	Orchestration activities implemented by the hub organization
Innovation	• High level of innovation across multiple dimensions, including production, the establishment of organic norms and participatory certification systems, creation of markets through new sales outlets and value chains.	• Diffusion of information and knowledge to favour (co-) innovation.
Value distribution	• Stakeholders generally reach consensus on key aspects of value distribution: like label ownership (Burkina Faso); • Certain issues remain contested: ownership of bio-input formulas and price fixing (Burkina Faso), concerns over the monopolization of intellectual value (Madagascar); • Some actors resist abandoning their own certification systems (Senegal).	• Organization and facilitation of regular meetings to discuss and agree on the distribution of the different values created; • Establishment of rules to prevent opportunistic behaviours with the aim of building trust.
Identity	• Agreement on the identity actors share: collective action to promote agroecology and organic farming to improve farmers' income, soil health, environmental health and the health of the population, to promote long-term food security, etc.; • Credibility of the label established through rigorous quality assessment and the drawing up of rules and sanctions; • However, in Madagascar, disagreements arose between proponents of agroecology and organic agriculture.	• Engaging members in co-developing the vision for the ISSE and negotiating the value proposition; • Identifying participants' roles.
Power	• In PGS initiatives, there is a strong desire to involve all the participants in decision making; • Variations in governance structures: Burkina Faso fosters democratization by limiting the tenure of the founding team, Senegal has a more vertical structure with a dominant leader, and Madagascar prioritizes farmers' involvement in developing the standard over other stakeholders.	• Organization and efficient facilitation of meetings to take decisions that are important for the ISSE.
Public authorities	• PGS stakeholders make the necessary effort to involve public authorities in the elaboration of the initiative; • Introduction of a fairly favourable legislative framework; • Concrete governmental support remains limited.	• Advocating to improve the legislative framework (adoption of an organic law); • Advocating to obtain or increase support for organic agriculture and PGS (subsidies).
International development projects	• Development projects are starting to support the PGS initiative but are still rare.	• Identifying resources for the ecosystem; • Building the legitimacy of the ISSE by concluding the Project; • Advocating for new projects.
Demand of end-users	• Farmers' interest in PGS is growing in order to reassure customers about the quality of their products; • Consumers' willingness to pay more for certified organic products remains to be confirmed.	• Communicating to consumers to promote the PGS; • Including consumer representatives to build trust.

Source: Own elaboration.
ISSE, innovation support service ecosystems; PGS, participatory guarantee systems.

decisions are taken collectively during meetings organized by the hub organization but activities are carried out by a technical team and other stakeholders are consulted which can lead to resentment among members who feel they have been deprived of their decision-making powers, as one private company director affirmed: 'Unfortunately, that's what's happening at CNABio: the technical team has really created quite strong leadership in conducting activities, and so on' (BF_Priv).

At this stage, public authority influence is in the right direction but results in few concrete actions: the legal framework has been established, but national strategies are not yet operational, no budgets have been allocated, etc. As already mentioned, the biggest difference concerning alignment between this and the previous stage lies in the existence of multiple projects and sources of funding, meaning more activities can be undertaken, more farmers supported, in more regions of the country, and may also encourage new entrants

Table 4. Alignment of organisations is possible at the growth stage

Constraining factor	Characteristics of the constraining factor in the growth phase	Orchestration activities conducted by the hub organization
Innovation	• Still high level of innovation in and co-adoption of production and marketing of agroecological and organic products.	• Diffusion of information and knowledge to favour (co-) innovation.
Value distribution	• Stakeholders agree on most aspects of value distribution. 'Dissenting' actors choose to align with the PGS in Senegal.	• Organization and facilitation of occasional meetings to discuss and reach agreement on the remaining disagreement regarding the distribution of the different values created.
Identity	• A clear, widely shared and accessible label for healthy food which helps preserve the environment yet increases farmers' incomes.	• Recalling the vision when necessary and sharing it with newcomers.
Power	• Actors are consulted before important decisions are taken, while day-to-day activities are managed by a technical team.	• Organizing meetings to take the important decisions for the ISSE; • Identifying participants' roles; • Applying the rules to prevent opportunistic behaviours and to maintain trust.
Public authorities	• Not opposed but not very helpful; • The other stakeholders think the authorities are lagging in advancing the initiative.	• Advocating to obtain or increase support for organic agriculture and PGS (subsidies).
International development projects	• An influx of projects and international donors, reassured by the organisations' ability to implement projects successfully and who are keen to get the PGS initiative off the ground.	• Identifying resources for the ecosystem; • Concluding ongoing projects and advocating for new ones.
Demand of end users	• High end-user demand for agroecological or organic products but difficulty meeting the demand from some markets, e.g., supermarkets, hotels, restaurants.	• Communication to consumers to promote the PGS.

Source: Own elaboration.
ISSE, innovation support service ecosystems; PGS, participatory guarantee systems.

(IFOAM, 2008). Finally, end-user demand is higher than the PGS can meet, which means there is considerable scope for growth in the market for organic and agroecological products, as one interviewee pointed out 'Today, the market is booming, and I'm not convinced that we can meet consumer demand, especially in a big city like Ouaga' (BF_NNGO2). But after concentrating on alternative markets including vegetable baskets, agroecological shops, among others, PGS is now trying to meet new market demand, for example, that of supermarkets, hotels, and restaurants, and faces new challenges concerning volumes and ensuring regular supplies.

Discussion

Enriching the theory of alignment

This article takes a broad view of alignment, focusing on compromise rather than on full convergence of diverse organisations. Facilitated by the hub organization, collaboration emerges around a goal that is complementary or collective rather than strictly shared (Strasser et al., 2022; Wegner et al., 2023). The alignment theory helps explore how organisations pursue a common objective while maintaining distinct roles and approaches. Temporal bracketing allowed us to identify three distinct stages in the emergence of a service ecosystem, characterized by progressive alignment of organisations with respect to the different constraining factors. We drew on Malherbe and Tellier's (2023) framework, which outlines six alignment constraints: technology, innovation, value distribution, identity, power, and public authorities. However, in our case studies, technological innovation played a minor role and was consequently excluded – not due to irrelevance, but due to its limited impact in this specific context.

Our findings highlight two additional constraining factors – international development projects and end-user demand – that remain under-studied in existing alignment literature yet play a central role in the alignment process in our study. We argue that these factors deserve to be made explicit in the alignment theory, in particular when applied to ecosystems in the Global South (Alexandre et al., 2022). Given their financial weight, externally driven agendas, and short project cycles, international development projects exert significant influence on service ecosystems in the Global South. Despite their pervasive presence, these factors are rarely formalized in alignment frameworks, and hence represent a gap we seek to address. By incorporating international development

projects as an alignment factor, we extend the theory to better capture structural constraints specific to aid-dependent contexts.

Similarly, end-user demand is another important but under-formalized dimension in alignment literature. While prominent in entrepreneurial ecosystem research (Colombelli et al., 2019; Stam, 2015), it is largely absent from alignment frameworks. Our empirical evidence reveals that user awareness and demand – particularly regarding the health risks linked to pesticides – catalyse collective action and foster ecosystem emergence. This context-sensitive demand, which is often fragmented and economically constrained in the Global South, poses unique challenges to alignment that are overlooked in current models. By identifying these factors as keys to understanding alignment in underexplored settings, we enrich the alignment theory both conceptually and empirically. We argue that, while many constraining factors may be broadly generic, their relevance, intensity, and operationalization are highly context-dependent. Thus, future research should pay close attention to how these and other potential factors manifest themselves and interact in diverse ecosystems.

National contexts also shape alignment. Public authorities act similarly across countries, with Senegal offering greater support for organic inputs. End-user demand is growing, although it is more advanced in Burkina Faso due to agroecology's longer history. In Madagascar, limited purchasing power remains a barrier. International development projects provide consistent support, although in Burkina Faso, in the future, this may be affected by political instability.

In this paper, we have considered the interactions between two layers (Figure 4): the innovation support service ecosystem and its environment. This new way of considering the alignment theory distinguishes between factors that are internal or external to the ecosystem. These two layers are in line with the layers proposed by Möller et al. (2020), and correspond respectively to the focal ecosystem (lower meso-layer) and the business field (upper meso-layer). While this framework accounts for four layers, the two we have just presented plus a macro-layer and a micro-layer, in this study, we only focused on the two meso-layers. The reason we disregarded the macro-layer is because the evolution of technological paradigms, the political and economic global, regional, and national context that it encompasses, are unlikely to change in the medium term. Furthermore, our research design was not set up to study the micro-layer.

Building on this layered view, our analysis highlights how external factors can both create tensions with internal factors and amplify them, thereby shaping the alignment process. For example, public authorities' policies can reinforce ecosystem identity by providing institutional recognition to actors engaged in agroecological transitions. However, ambiguous or contradictory policies may weaken shared visions and lead to internal divisions. Power dynamics within the ecosystem may shift when donors designate lead operators, thereby strengthening their influence, although participatory project governance can mitigate such asymmetries between international NGOs and local actors (Alexandre et al., 2022). The hub organization can play a pivotal role in this complex interplay by navigating these tensions and amplifications, by facilitating coordination to sustain alignment despite diverse and sometimes conflicting influences.

A key contribution of this article is to bring together the concepts of hub organization and alignment. While some authors believe that alignment is useful when considering coordination in a context of multiple leadership (Aarikka-Stenroos & Ritala, 2017; Malherbe & Tellier, 2022, 2023) with decentralized management as opposed to a platform approach, where a dominating actor creates complementary opportunities (Jacobides et al., 2018), we argue that the alignment theory can help describe a situation where the ecosystem is animated by a non-dominating hub organization. The existence of a hub organization rather than horizontal coordination stems from the unclear benefits of collaboration during the process of emergence (Ekboir & Vera-Cruz, 2012). The hub plays a crucial role in structuring the ecosystem and fostering engagement until shared governance can develop. By helping overcome alignment constraints, the hub enables ecosystem emergence through inclusive engagement.

Discussing the three stages of ecosystem emergence identified

In the results section, we underlined the different factors the hub organization must address at each stage of emergence to align organisations. This is in line with previous research on entrepreneurial ecosystems, indicating that the role of the hub organization – in that case termed anchor tenant – changes over time (Colombelli et al., 2019).

In the theoretical framework, we showed that research on ecosystem emergence failed to consider the preconditions for emergence, despite warnings that neglecting early social relationship-building, common identity formation, and informal capacity-building can waste resources (Daymond et al., 2023). Here, we choose to present them as a distinct first stage of the emergence, we consider essential for fostering a favourable context. While this stage may appear static, our results show that two different phenomena coexist: first, future ecosystem members begin forming trust-based relationships via external activities that lay the groundwork for future collaboration, and second, conditioning forces (Möller et al., 2020) gradually become more favourable thanks to external actors or future members.

In the second stage, actors unite around a shared objective, develop a collective vision, start exchanging financial, human,

and knowledge-based resources (Thomas et al., 2022), make the operational rules explicit (Koskela-Huotari et al., 2016), 'design and implement coordination mechanisms that [will] overcome the tensions that exist throughout the project' (Picaud-Bello et al., 2022, p. 453). This stage depends to a great extent on the trust that was built earlier. Even though the ecosystem is meant to remain dynamic (Frow et al., 2019), this is also the time when the institutionalization begins and as Lusch et al. (2016, p. 2960) put it, 'evolution towards at least some stability is part of an institutionalization process in which rules are developed and shared and become a vital coordination mechanism'. The structuring of ecosystems is not mandatory, rather a possible consequence of coordinated action enabling or constraining the actors' behaviour (Taillard et al., 2016). At this stage, we identified both the influences of the ecosystem on its environment and the influences of the environment on the ecosystem, in line with the work of Möller et al. (2020). The hub organization plays a pivotal role at this stage by identifying resources, aligning value propositions, assigning roles, and motivating participation (Möller et al., 2020; Thomas et al., 2022).

The third stage mirrors Thomas et al.'s (2022) second expansion stage, with rapid growth, new entrants, and increased external legitimacy. Similarities also exist with Möller et al.'s (2020) stabilization stage with a consolidating, expanding, and further institutionalizing ecosystem including attempts to influence regulatory bodies. Yet, the ecosystems we studied remain fragile, still grappling with problems of funding, conflict management, opportunism, and resilience to external shocks.

Finally, the last stage of the lifecycle identified by Thomas et al. (2022) in business ecosystems and the three stages of maturity, decline, and re-emergence identified by Cantner et al. (2021) in entrepreneurial ecosystems were not encountered in our case studies. This is probably for two reasons: first, the ecosystems we studied are relatively recent; and second, ISSEs differ from those in business ecosystems where orchestrators may seek dominance. In our cases, hub organisations have limited incentive – or intent – to dominate. Unlike entrepreneurial ecosystems, ISSEs are mission-driven: once the mission is fulfilled, some actors such as donors may exit. Remaining organisations may sustain, pause, or terminate collaboration, leading to renewal, decline, or dormancy.

Conclusion

This article contributes theoretically and empirically by advancing our understanding of how service ecosystems emerge, particularly in contexts where national agricultural innovation systems are not fully developed. It describes the pivotal role of hub organisations not only in overcoming constraints to the alignment of different organisations but also in orchestrating the influence of external factors on internal dynamics, through conflict mediation, adaptive coordination, and efforts to sustain collective engagement. This research underscores the significance of creating a conducive environment for ecosystem emergence, including the presence of collaborating actors, available funding, supportive legal frameworks, and the hub organization's external legitimacy. When such conditions are met, a small group of organisations can start collaborating before scaling up the initiative to enable both the PGS-label and the supporting service ecosystem.

Despite the credibility and confirmability of the research, its generalizability may be limited by the small number of case studies. Due to the long journey of both innovation and of the service ecosystem associated with it, the case studies were analysed retrospectively which may have introduced biases and omissions by the interviewees. While difficult to implement, a longitudinal study could provide more accurate data and trace the evolution of the ecosystems after the growth stage, which was not possible with our case studies. Replication in other sectors or contexts would help validate our findings: in particular, testing the influence of projects and donors in other Global South settings or examining the stages of emergence in different types of service ecosystems would enhance transferability.

Theoretically, our analysis identified two constraining factors to enrich the theory of alignment and make it more applicable in a diversity of situations. It also contributes to the literature on service ecosystems by deepening the understanding of their emergence stage, which we broke down into three key stages: (1) the preliminary stages of emergence, where informal coalitions begin to form; (2) the birth of the ISSE, marked by the consolidation of roles, coordination mechanisms, and shared visions; and (3) the growth stage, in which institutional arrangements and legitimacy are stabilized. By clarifying these dimensions, we offer a more dynamic and integrative view of collective action in innovation ecosystems and contribute a nuanced perspective on structural and temporal dynamics.

From a managerial standpoint, the research offers insights for various stakeholders. Practitioners can identify key alignment constraints in their own context and seek targeted solutions. Governments, donors, and development projects can support the preconditions for ecosystem emergence. In turn, this will help manage collective action to support and accelerate the wide range of innovations needed to meet the Grand Challenges to achieving the Sustainable Development Goals (SDGs).

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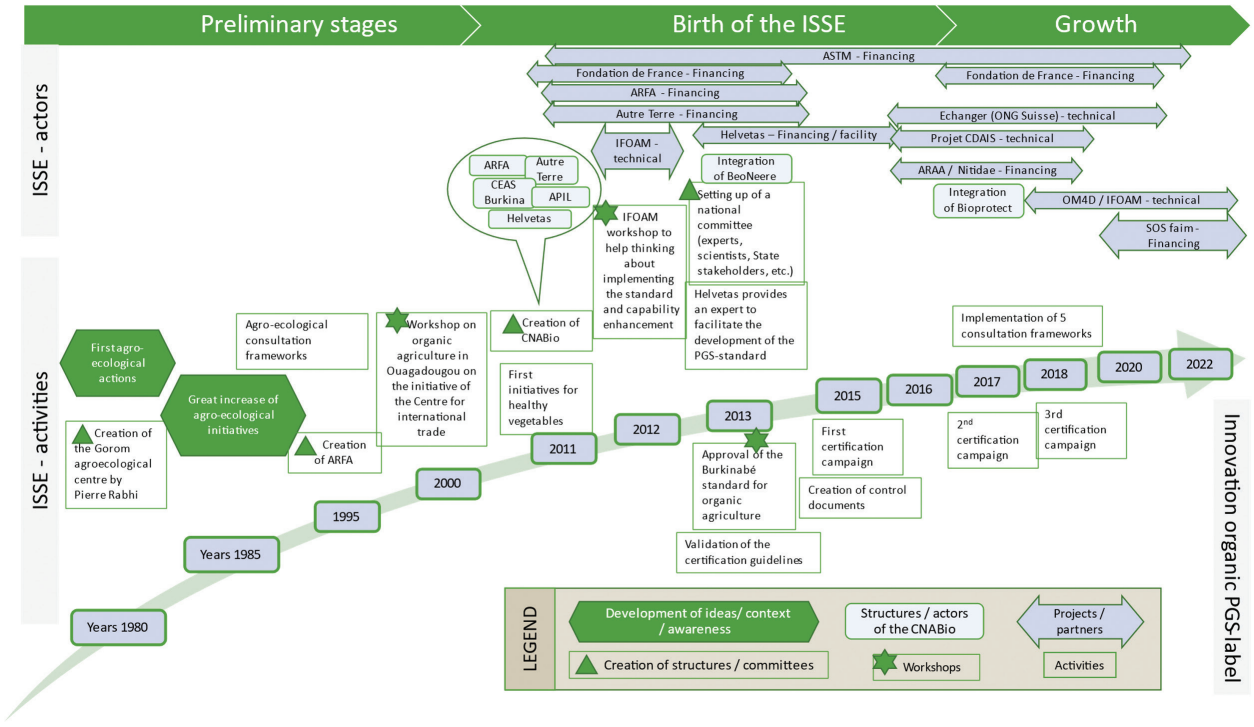
Appendices

Appendix A. Characteristics of the interviewees and reference codes for citations

Country	Organization	Interview code	Gender	Details on the interviewee
Burkina Faso	National NGO	BF_NNGO1	M	Founder and director
		BF_NNGO2	M	Founder and director
	Private company	BF_Priv	M	Founder and director
	International NGO	BF_INGO	F	Agricultural production officer/Member of the technical team
	Individual consultant	BF_Cs1	M	Individual consultant with extensive experience of PGS in West Africa
		BF_Cs2	M	Individual consultant with extensive experience of PGS in West and Central Africa
	Association	BF_Asso1	M	Member of the technical team dedicated to the PGS
		BF_Asso2	M	Member of the technical team dedicated to the PGS
Senegal	National NGO	S_ NNGO	M	Member of the technical team
	International NGO	S_INGO	M	Founder and director
	Technical consultant	S_Cs	M	Individual consultant with extensive experience of PGS in West Africa
	Producer Organization	S_PO1	M	Director
		S_PO2	F	Member of the technical team dedicated to the PGS
	Donor	S-Don	M	Member of the technical team dedicated to the PGS
Madagascar	International NGO	M_INGO1	M	Member of the technical team
		M_INGO2	M	Individual consultant with extensive experience of PGS in West and Central Africa
	Producer organization	M_PO1	M	Member of the technical team
		M_PO2	M	Member of the technical team dedicated to the PGS
		M_PO3	M	Member of the technical team
	Donor	M-Don1	F	Member of the technical team
		M-Don2	M	Member of the technical team in charge of the PGS
	Ministry of Agriculture	M-Min	F	Head of the department dedicated to organic agriculture
	Private company	M_Priv	M	Member of the technical team

Source: Own elaboration.

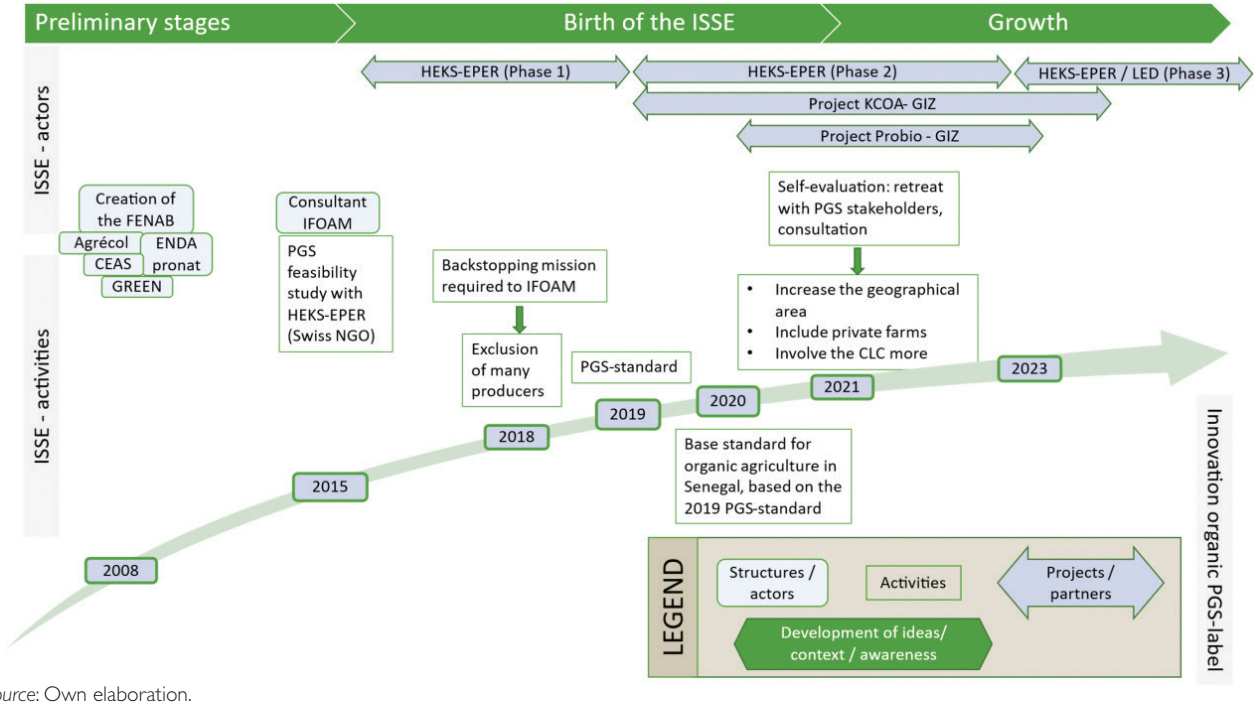
NGO, non-governmental organizations; PGS, participatory guarantee systems.



Source: own elaboration

PGS, participatory guarantee systems.

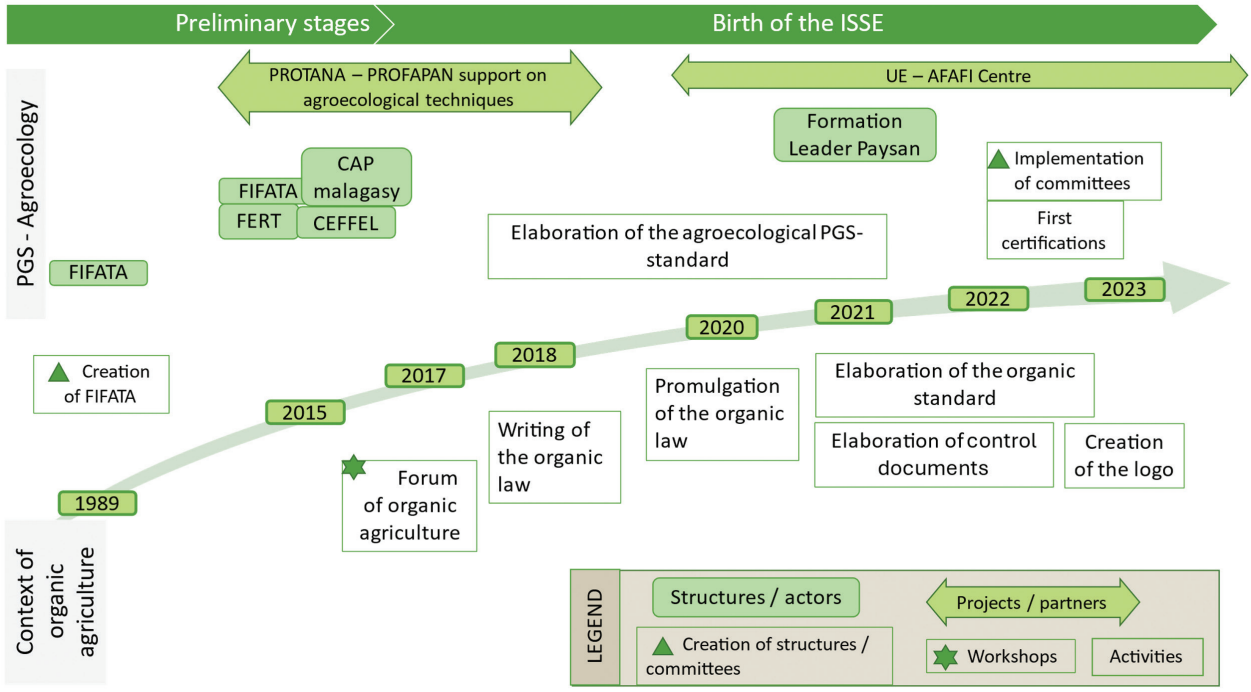
Appendix B. Chronology of the implementation of the innovation support services ecosystem (ISSE) organic PGS in Burkina Faso



Source: Own elaboration.

NGO, non-governmental organizations; PGS, participatory guarantee systems.

Appendix C. Chronology of the implementation of the innovation support services ecosystem (ISSE) organic PGS in Senegal



Source: Own elaboration.

PGS, participatory guarantee systems.

Appendix D. Chronology of the implementation of the innovation support services ecosystem (ISSE) agroecological PGS in Madagascar