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**Inclusive Innovation for Global Development:
the Role of Social Solidarity Economy (SSE) Ecosystems**

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Abstract

This paper examines agri-food organisations in the Social Solidarity Economy (SSE), especially how they responded to the Covid-19 crisis. For a long time, beforehand, they developed short supply chains for their agroecological products, bringing producers socially closer to consumers, while avoiding profit-driven middlemen. Such arrangements have been guided by social values of economic equity and democratic self-management. These organisations – including cooperatives or social enterprises, their networks, and supportive institutions – together comprise solidaristic ecosystems. By critically reviewing the literature, and then comparing the empirical cases of Brazil and Turkey, the paper shows how agri-food SSE ecosystems have mobilised inclusive innovation through agile adaptations and resilient processes, thus fulfilling the urgent needs of members and their communities in rapidly changing socio-economic environments. They have extended such dynamic capabilities for creative, socially equitable means to recover from the Covid-19 crisis, thus enabling members and their families to maintain their livelihoods. Alongside collective capacities embedded in prior routines, solidaristic relationships enable both agile adaptations and a transformative resilience that bounces forwards.

Key words: agroecology, short supply chains, SSE ecosystems, resilience, agility, inclusive innovation

1. Introduction

Over the last twenty years, the concept of inclusive innovation has become a crucial reference for making sense of global processes of alternative innovation which deliver bottom-up solutions to problems of lower-income people. This concept integrates public-action initiatives, public policy agendas and specific innovations which are counter-hegemonic to mainstream top-down technological innovations. The latter often lead to social inequality; they are generally expensive capital-intensive innovations which exclude the interests and aspirations of lower-income people. By contrast, the former are affordable innovations which serve such interests and aspirations, meeting basic human needs, enhancing human capabilities, improving social welfare and potentially empowering lower-income and/or marginalised people (e.g., Arocena and Sutz, 2003; Prahalad, 2005; Cozzens et al, 2007; Srinivas and Sutz, 2008; Kaplinsky et al., 2009; Chataway et al, 2014; Papaioannou, 2018, 2014a, 2014b).

As an overarching definition, inclusive innovation is a process that ‘harnesses science, technology, and innovation “know-how” to address the needs of lower-income groups’ (OECD, 2012: 9). Inclusive innovation contributes to global development not only in economic terms but also in terms of inclusion, sustainability, and social justice (Cozzens and Sutz, 2014). For example, inclusive innovation policies can enable the achievement of more equitable, sustainable, and inclusive development. As well as benefiting individuals, such alternative notion of innovation offers ‘... significant opportunities for economic growth that low-income markets represent’ (UNCTAD, 2014: 1, 6), especially for small-and medium-sized firms in developing countries. Bottom-up solutions are necessary for ‘... the inclusion of those left behind in the race to the top’ (Leach and Scoones, 2006: 66).

The ‘inclusive innovation’ research agenda has focused on bottom-up alternatives to top-down innovations. These are: bottom-of-the-pyramid products which are cheaper functional substitutes aimed at low-income populations (Prahalad, 2005; UNCTAD, 2014), e.g. India’s low-cost motorcar; Jaipur prosthetic foot; low-cost nets protecting people from mosquitos and thus malaria; cheap analogues of patented drugs or treatments; grassroots innovation networks design processes which serve different needs and aspirations (e.g. Smith et al, 2014, Fressoli et al., 2014) e.g. India’s Honey Bee Network promoting local knowledge, innovations, biodiversity conservation, etc.; Fab Labs and Hackerspaces; Brazil’s Social Technologies Network (RTS) providing solutions for social inclusion and improvement of livelihoods (Papaioannou, 2018).

However, despite shedding light into crucial bottom-up processes and products of ‘inclusive innovation’, this research agenda has so far overlooked the role of Social Solidarity Economy (SSE) innovation ecosystems in global development. The notion of innovation ecosystem is defined as an evolutionary structure within which a multilateral set of actors and institutions interact in order to learn from each other, adapt to a rapidly changing external environment and survive. According to Yuen Ng et al (2022: 1), ‘A key characteristic of an innovation ecosystem is that its members are loosely coupled and sectorally/spatially varied. Despite this nature, ecosystem members often coalesce into a cooperative community by revolving around the innovation at hand’. As widely recognised, SSE organizations offer many societal benefits. They depend upon a wider ‘SSE ecosystem’, encompassing interdependent enterprises and their support networks, including public policy actors (OECD, 2020, 2021, 2023).

This paper argues that SSE ecosystems are ‘innovation ecosystems’, which encompass cooperatives or social enterprises, their networks, and their supporting institutions e.g., civil society groups, banks, policy advocacy organisations, etc. These ecosystems have proven to

be more resilient and agile than other models of inclusive innovation e.g., frugal and below-the-radar models of inclusive innovation (Papaioannou, 2018; Kaplinsky et al., 2009). There is now compelling evidence to suggest that SSE ecosystems overcame many new challenges in the new disruptive, uncertain environment of the Covid-19 crisis, while also protecting their members' health and livelihoods (UN, 2021; ILO, 2020; Mohit, 2021). Advocates rightly attribute these achievements to solidaristic relationships, but the inclusive innovation processes and the internal dynamic capabilities which drive them remain obscure and undertheorized.

In what follows, we try to close this knowledge gap. We demonstrate that SSE ecosystems have mobilised inclusive innovation (especially grassroots innovation) through agile and resilient processes, fulfilling the urgent needs of individual members and their communities in rapidly changing socio-economic environments. They have adapted and extended such internal processes and dynamic capabilities, guided by social values of equity and democratic self-management. Thus, actors within SSE ecosystems, especially cooperatives, have devised creative, socially equitable means for recovering from the-Covid-19 crisis. By contrast with resilience as a restorative 'bouncing back' to the status quo ante, this transformative resilience has turned the crisis into greater opportunities for solidaristic bonds, cooperative relationships among SSE ecosystems and thus more inclusive socioeconomic benefits. This capacity has important relevance to future crises such as economic or climate disruptions.

To support the argument, our paper critically surveys the literatures on inclusive innovation and SSE ecosystems. These literatures provide us with conceptual distinctions e.g., social inclusion/exclusion and more importantly with bottom-up, comparative, case studies of actors within SSE ecosystems across several countries. By contrast, academia, and international organisations (i.e., UNTFSSSE, WB, ICA, NGOs, international development agencies. etc.)

have focused on top-down, R&D-driven and capital-intensive innovation solutions which could stimulate economic growth.

As the different focus here, inclusive innovation solutions (especially grassroots innovation) enable transformation to emerge from the bottom up, leaving no one behind. This type of innovation has never been studied or theorised in the context of SSE ecosystems. Grassroots innovation processes depend on knowledge sharing and equitable engagement of all SSE stakeholders for generating accessible solutions to problems created by the Covid-19 pandemic and other crises. These problems include youth unemployment, shortage of food and health products (likewise services) during lockdown, exclusion of low-income people and women, inadequate information, training, and micro-financing, etc.

This paper is structured as follows. Section 2 surveys the concept of inclusive innovation for global development, adding two more concepts (agility and resilience), towards a tripartite framework of analysis. Section 3 demonstrates how inclusive innovation relates to the SSE literature, draws on empirical evidence from case studies by other authors, and discusses SSE ecosystems as models of inclusive innovation responding to the Covid-19 crisis. It also briefly explains the methodology and the methods used in this research. Sections 4 and 5 focus on our two national cases: Brazil and Turkey. Section 6 offers a comparative analysis and general conclusion.

2. Understanding inclusive innovation for global development

As has been already stressed, the ‘inclusive innovation’ literature has built upon critiques of top-down innovation models which dominate global economies. As such, innovation has always existed in the broad sense of applying novel methods to daily practices. Yet over the past century the term ‘innovation’ has become more narrowly defined. According to Godin, innovation became an object of imagination and imaginaries in the 1950s:

On one side, people started producing thoughts on what innovation is, how it happens, and with what effects. Economic growth – “growthmanship” as some called it – supported by public policy, gave the concept of technological innovation a social existence. On the other side, policymakers started inventing policies and strategies to support innovation, thus legitimising the emerging discourse (Godin, 2020: 2).

Technological innovations have been accompanied by social innovations, especially various privileges and patent laws rewarding novelty. By the end of 20th century, innovation was well understood as commercialisation of scientific knowledge (Godin, 2008, 2015). In practice, technological innovation has been dependent on institutional change, but this relationship is obscured by the prevalent model.

In any case, the concept of technological innovation has promoted a technological determinist explanation of societal change. Although deriving from socio-economic innovations, power relations become reified as inherent properties of technological innovation. Socio-economic aspects are seen as ‘impacts’ or (at most) as favourable contexts for a quasi-inevitable technological advance.

Consequently, the top-down research and development (R&D) systems underpinning mainstream technological innovation have failed to address the basic needs of lower-income people (Papaioannou, 2018; Levidow and Papaioannou, 2017; Chataway et al., 2013; Smith et al., 2014; Arocena and Sutz, 2012; Srinivas and Sutz, 2008; Cozzens, 2007; Cozzens, et al., 2002; Prahalad, 2005; Arocena and Sutz, 2003). Technological innovation often worsens socio-economic inequity, e.g., by eliminating, transferring and/or deskilling employment. Thus, for example, the manufacturing sector has traditionally lost jobs due to successful innovation in production technologies (Cozzens et al., 2002) and will continue to do so in the 21st century due to artificial intelligence (AI) and machine learning (ML) and other automation

technologies. In such a context, any societal benefits have become more exclusive. To illuminate recent alternatives, this section presents a tripartite analytical framework (inclusive innovation, agility and resilience), which will be operationalised in subsequent sections.

2.1 Inclusive innovation

To generate societal benefits for lower-income people, publicly funded scientific inquiry should be designed as a public good. Even with such a design, research ‘does not always *remain* a public good’, especially through private appropriation of knowledge e.g., through monopoly-market power or proprietary knowledge (Woodhouse and Sarewitz, 2007: 144). This appropriation is encouraged by regulatory regimes, such as the 1980s Bayh-Dole Act, enabling commercial exploitation of technological advances resulting from publicly funded research (Block and Keller, 2011). Public funds were invested in mission-oriented scientific projects, whose results were privatised by powerful market actors (Mazzucato, 2014).

Similar issues are increasingly taken up in global political debate, as affluent workers in the North too face technological innovation threats to their livelihoods. This convergence of North and South in terms of the ‘creative destruction’ of new technologies e.g., AI has implications for global development (Horner and Hulme, 2017). It’s no longer only the global South that faces development challenges because of innovation. The global North increasingly has its own innovation-led inequalities. Evidence suggests that digital and automation technologies, including AI and ML, have been fast incorporating new skills, thus marginalising workers worldwide who can offer only ‘ordinary’ skills (Brynjolfsson and McAfee, 2014).

More subtly, any technological development has multiple alternative designs. For example, historically speaking, electronics were originally designed for more egalitarian social

relations, but private companies soon appropriated the technology for intensifying labour exploitation and market competition, thus demanding more environmental resources. In their recent work *Power and Progress*, Acemoglu and Johnson (2023) confirm that over our last thousand-year history, optimism about technological innovation and development did not bring prosperity for all. Rather, it excluded the interests and aspirations of the many.

Inclusive technological innovation and prosperity emerges only when new products and services serve more than a narrow elite.

As the term ‘inclusive’ is appropriated by global policy makers with specific agendas for innovation, this warrants critical scrutiny of innovative products and processes and their unequal consequences. As has been argued elsewhere (Levidow and Papaioannou, 2017), ‘inclusive innovation’ is a common term for various decade-long literatures (Chataway et al., 2014). This term encompasses implicit models for identifying socio-economic inequities, for describing and explaining social exclusion from technoscientific innovation, and for avoiding or remedying these outcomes.

Global issues of inequity and social exclusion have been the main justifications for redesigning innovation. As Foster and Heeks (2014: 2) point out, inclusive innovation ‘is of increasing interest as nations look to use innovations to bring about more inclusive and equitable development’. Indeed, reducing inequality has become an imperative for inclusive innovation and development, according to several global bodies (OECD, 2012, 2015; UNDP, 2015, 2016; World Bank, 2010). This imperative has motivated remedies through technology-driven economic growth (e.g., digital revolution) for expanding societal goods and more fairly distributing them. Such innovation-led growth needs to provide employment for all, financial inclusion and human capabilities (UNDP, 2016). This implies dealing with the so-called problem of ‘creative destruction’ such as skills deficit and impoverishment of low-income or under-employed workers.

Global politics and the state are crucial here for enabling these workers to gain social inclusion, catching up with the necessary education and skills to operate ‘more efficient’ ‘capital-intensive’ technology, in order to make the impacts more equitable. Yet, as has been argued by Levidow and Papaioannou (2017), global politics and the state in many countries are in line with a liberal-individualist model of market-led technological development whereby any losers bear the main responsibility. This model either ignores the political-economic context or disavows responsibility for it (cf. Woodhouse and Sarewitz, 2007). In addition, it overlooks collectivist and solidaristic efforts from the bottom-up which mitigate creative destruction often outside the formal market and inside the so-called informal economy and SSE ecosystems. The latter can provide a route to more equitable development. ‘Low-tech’ industries can be transformed into ‘tacit knowledge-intensive industries’ gaining a competitive advantage. But they lack protection for intellectual property (IP) thus obtaining less return on their inventiveness (Cozzens and Sutz, 2014: 13).

More fundamentally for a socially just inclusion, the literature so far underplays public goods and community access to innovations. Those features are crucial for an inclusive innovation research and action agenda, especially based on Social Solidarity Economy (SSE) ecosystems. Indeed, many SSE actors in low-income communities have generated grassroots inclusive innovations which create public goods and overcome socio-economic inequities (ibid). They have done so through SSE ecosystems which promote knowledge and capabilities sharing, endorsing alternative models of inclusion and emphasising more equitable participation, collective agency in co-creating innovation, as in grassroots innovation movements (Smith et al., 2014) or innovation in informal economies (Cozzens and Sutz, 2014; see above). These imply a societal transformation (cf. Schlosberg, 2013) towards more fairly defining societal goods and bads (Martin, 2013).

The literature emphasises that inclusive innovation depends on favourable conditions, especially institutional support, and policy frameworks to overcome inequality. For example, ‘Inclusive innovation policy presupposes a change in institutional culture and mandates the involvement of the poor in identifying their development priorities and in providing incentives for various actors to serve their needs more effectively’ (World Bank, 2010: 338). This policy highlights how cooperatives and social enterprises build resilient social arrangements which can deal with multiple crises e.g., socio-economic and health crises. However, it does not regard such actors as generating technoscientific innovation, nor an inclusive innovation ecosystem.

For SSE ecosystem practices to be properly understood, the concept of inclusive innovation needs to be complemented by the concepts of agility and resilience, as follows.

2.2 Agility

In the mainstream business literature, agility generally denotes an adaptive ability to rapidly exploit opportunities for gaining competitive advantage, especially in response to socio-economic change (Li and Holsapple, 2018). Research has demonstrated a strong correlation between agility and organisational performance. This implies organisations with higher levels of strategic, operational and leadership agility have a distinct competitive advantage (Joiner, 2019; Baškarada and Koronios, 2018). Here ‘agility’ generally denotes rapid responses to new commercial contexts, as if they were purely external. Perhaps for this reason, the term remains absent in the SSE literature.

For actors within SSE ecosystems, by contrast, agility can mean rapidly reconnecting internal and external solidaristic relationships. It can mean new arrangements which bypass or minimise exposure to conventional market competition. It can mean conscientizing

consumers about more socially just, environmentally sustainable production arrangements as the basis for novel products.

Although omitting the term ‘agility’, much documentation has shown rapid adaptive responses to the Covid-19 pandemic. Workers’ co-operatives started to manufacture PPE. In the cleaning, food production, pharmacy, and software sectors, cooperatives continued work by extending their services to non-cooperative members. Software cooperatives developed online platforms to help schools to sell and buy services and essential products (Ciriec, 2020). In Cuba SSE textile organisations started to manufacture PPE, food and cleaning organisations went beyond their member based to help the elderly and homeless people, and graphic designer and software organisation developed apps for track and tracing (Arencibia, 2021).

Yet the SSE literature implicitly subsumes agility within innovation. This silence misses important distinctions within inclusive innovation, such as the pace (slow or fast) and extent (incremental or radical) of change. Although these two concepts are complementary, inclusive innovation (especially its sub-category of grassroots innovation) is often a time-consuming, lengthy process, while agility is a fast, responsive process. SSE organisations’ agility lies in their ability to create opportunities (through collective action), extended protection (through mutual assistance) and empowerment of individuals and communities (through membership-based and democratic management). At the same time, both innovation and agility are related within dynamic capabilities which enable SSE organisations to address deep uncertainty during crises (Teece et al, 2016).

2.3 Resilience

This concept implies capacities to withstand stress or disruption through adaptation, but for what aims? This question involves diverse meanings of physical-biological metaphors. The English term has a Latin origin: *resilare* means a ‘leap backwards’. In that prevalent meaning, a resilient system can bounce back to its previous state. For good reasons, engineering generally designs physical structures so that they can withstand stresses and spring back to their original form. This engineering metaphor underlies some biological concepts of resilience: an ecosystem can restore its prior ‘natural balance’ or equilibrium.

The restorative sense of resilience is focused on stabilisation. In recent decades the state has weakened its own societal responsibility, while transferring this to individual, voluntary, and corporate responsibility, which at best fill gaps. In the name of resilience, communities are meant to become increasingly adaptable, flexible and self-reliant in responding to disruptions from market forces or other instabilities (Cretney, 2014). Socially harmful forms can resiliently bounce back, so adaptation should mean replacing those forms. Hence a transformative resilience focuses on radical change, collectively creating a different future.

From a different biological metaphor, ecosystems may make adjustments within a broad range of stable states, thus explaining ecosystem change (Holling, 1973). This understanding has served as an ecological metaphor for a societal system resiliently undergoing adaptive transformation while remaining within critical system thresholds (Walker et al. 2006). A transformative resilience involves fundamental change, requiring radical, systemic shifts in values, beliefs and social behaviours (Olsson et al., 2014; Westley et al., 2013). Such a transformative potential relates to grassroots innovation, as a sub-category of inclusive innovation.

3. Role of SSE ecosystems in achieving inclusive innovation

Our paper combines the above concepts as complementary means for SSE ecosystems to deal with global crises such as Covid-19. It avoids prior assumptions about the temporal or cause-effect relationships among the three concepts, namely: inclusive (especially grassroots) innovation, agility, and a transformative resilience. This section discusses further this tripartite conceptual framework for analysing SSE ecosystems.

3.1 Towards a transformative resilience

As mentioned above, SSE organizations can develop a transformative resilience from both their internal and external solidaristic relationships. Emphasising the latter, the RIPESS 2021-2023 Strategic Plan identifies several pathways to promote global linkages among SSE organizations, support groups and knowledge-exchange about such efforts. Specifically, it proposes ways for them to develop more alliances with other transformative initiatives (RIPESS, 2021). This practical agenda provides more participatory opportunities for research to investigate and illuminate external relationships which underlie their resilient capacities. Open questions concern the nature of learning through such relationships and the governance of external networks.

Policy frameworks play crucial roles in facilitating actors within SSE ecosystems and thus warrant study. In Quebec, social policies facilitate collaborative work between SSE actors, civil society actors, and the state, who thereby were able to co-construct and operationalise innovative policies for SSE organisations (RIPESS, 2021). In Liverpool collaborative work between policymakers and SSE practitioners led to co-constructing new policy tools, positioning SSE actors in a critical economic developmental role within the region (Heap et al. 2020). Similarly, in the city of Dunbar in South Africa, success in establishing a thriving SSE environment resulted from co-developing a Cooperative Development Plan (Steinman, 2020). In Barcelona's Plan to Boost the Social and Solidarity Economy (PIESS) resulted

from a public-community partnership approach between, SSE organisations, policy makers and grassroots organisations (Chaves-Avila and Garcia-Jane, 2020).

The SSE agenda has so far been seen as different from the inclusive innovation agenda. SSE ecosystems aim to transform the current mode of production and re-organise the relationship between public and private. According to the global network RIPESS (2015: 2) ‘In the SSE ordinary people play an active role in shaping all of the dimensions of human life: economic, social, cultural, political, and environmental’. SSE ecosystems’ ethics, values and guiding principles prioritise their members and local communities above profit, and embrace autonomous management, a democratic decision-making process and the primacy of people and work over capital (Amin, 2013, Kawano, 2013, Coraggio, 2014). SSE ecosystems are major economic players in the sense that they increase productivity in some formal and informal sectors (e.g., textiles, agriculture, and recycling) and create sufficient employment (Chaves et.al., 2013). In creating jobs, SSE ecosystems enable young and marginalised people to be included in communities.

Based on data from 156 countries, CICOPA found that co-operatives alone provide work for at least 280 million people across the globe which accounts for 9.46% of the world’s employed population. The number of co-operatives throughout the world is 2.94 million and the number of members in all types of cooperatives is 1,217 million (CICOPA, 2017). According to the UN Inter-Agency Working Group on SSE (UNRISD, 2014), SSE ecosystems constitute a sustainable way to tackle the growing increase in precarious employment and informal economy. Sustainability is based on a new model of inclusive productivity and distribution, enabling better remuneration and stable employment.

During the Covid-19 pandemic, more than 1.6 billion workers in the informal economy have been affected by ‘lockdown’ measures and by working in the most affected sectors. According

to the UN Inter-Agency Task Force on SSE (UNRISD, 2020: 3) ‘Estimates show the first month of the crisis is responsible for a 60 percent decrease in the earnings of informal workers around the world’. SSE ecosystems responded by promoting cooperation and basic services in a different way, and by creating innovative forms of employment through diverse and complementary models of production.

There is a growing need to illuminate how these SSE ecosystem processes influence innovative and agile work practices in response to multi-dimensional crises such as Covid-19 and future disruptions. Research on this topic remains fragmented, largely produced by the ILO (2022) and the USAID-funded Cooperative Development Programme (Tango International, 2020). Thus, some researchers have focused on how SSE organisations have responded to the Covid-19 pandemic, especially in the global South (Francesconi et al, 2021; Tango International, 2020). SSE organizations themselves have exchanged such knowledge informally through local, national and global networks, especially the Réseau intercontinental de promotion de l'économie sociale solidaire (RIPESS, 2015, 2021).

SSE ecosystems’ resilience for overcoming disruptions has been widely researched and documented (Borda-Rodriguez et al., 2015; Borda-Rodriguez and Johnson, 2020) but without reference to inclusive innovation. In their work on Malawian co-operatives, Borda-Rodriguez and Johnson (2020) reveal three interconnected processes in play: economic control, voice, and agency. Economic control derives from the collective sense of ownership that SSE ecosystems provide to their actors. Voice is about deliberative and democratic processes whereas agency is the capability to act in flexible and adaptive ways during crises. The adaptability and flexibility of SSE organisations were demonstrated during the recent economic crisis and the subsequent pandemic, achieving remarkable recovery (World Cooperative Monitor, 2020). This indicates resilience through inclusive innovation.

The available literature lacks an overall transformative perspective on inclusive innovation and agility in SSE ecosystems, as a basis for a generalisable analysis across different contexts. Thus, the research has barely asked how such organisations present innovative alternative means towards post-capitalist recovery from Covid-19. In addition, little is known about SSE ecosystems' capacities to use their sustainable, inclusive forms of innovative work and agile, resilient practices (especially those established or strengthened during the Covid-19 crisis) for helping disenfranchised, marginalised groups to recover economically and socially. It is important to investigate the social processes shaping the direction and effectiveness of SSEs as well as their importance for future crises. To do so we need to combine the concepts of agility and resilience under the broad umbrella of inclusive innovation. In what follows we do so empirically by examining the agri-food SSE ecosystems in Brazil and Turkey.

3.2 Comparative analysis: case-study methodology and key terms

For the next two sections on Brazil and Turkey, the national studies arose from separate research on the agri-food solidarity economy. Each study had a close involvement of such partners in the research, especially during the Covid-19 pandemic, which became a challenge and opportunity for adaptive practices. The research teams have already published case-study analyses explaining their methodologies (as cited in each section).

Drawing on that research, this paper emphasises nation-wide patterns, with brief local examples from publicly available literature. Here the patterns have been reconceptualised as SSE ecosystems around our tripartite analytical framework (inclusive innovation, agility, and resilience). Those key terms provided a basis to search for more sources, thus making the terms more explicit in the case-study sections. The analogous detailed information provides a basis for comparing the two national cases through the analytical framework, in turn a basis for wider relevance to SSE ecosystems elsewhere.

Key terms:

- ‘Short supply chains’ denotes a social proximity between producers and consumers. This gives a more specific meaning to another prevalent term, ‘alternative food network’.
- ‘Cooperatives’ denote an official registration category, which encompasses diverse forms and aims.

This paper emphasises those which are SSE organizations, by contrast with others which originated as capitalist enterprises or have accommodated neoliberal agendas.

4 Research Methodology

This paper draws on empirical data collected in the context of two projects. The first project was focused on agroecology-based solidarity economy in Brazil and in Bolivia, relating them to social movements in Latin America as the wider context (AgroEcos, 2022). The methodology for the Brazil project was qualitative. Participatory Action Research (PAR) was used, focusing on circuitos cortos. In addition, the research team reviewed the literature on the topics of EcoSol-agroecology in Latin America, Investigación Acción Participativa (IAP = PAR) and means of recording the research process, especially for PAR/IAP methods. Although the initial research plan also included workshop methods to engage local community actors, the COVID-19 restrictions in early 2020 forced the team to abandon this plan. Instead, the project first used several online means e.g., social media (local solidarity networks were publicising their circuitos cortos, expanding their activities, connecting more groups, appealing for practical support, etc.) and Facebook (this platform provided textual and visual information about new activities). Second, the project organised multi-stakeholder knowledge exchange events e.g., webinars, approximately two per month in the first year; participants included community practitioners from all three territories, especially on

adaptive responses to the COVID-19 pandemic. Third, the project carried out online interviews with key practitioners in the Brazilian project. Fourth, transcripts were put into Nvivo to identify key terms and inter-relationships.

The second research project underpinning this paper was focused on agri-food co-operatives and their networks in Turkey. The methodology for this research was also qualitative. It was based on in-depth interviews with founders, members, and producers/consumers of two food cooperatives in Turkey: one producer cooperative: Vakıfköy Women's Women's Enterprise Production and Management Coop (Vakıflı women's coop); and one consumer cooperative: Bogazici Members Consumer Coop (BÜKOOP). Research included two phases. The first was conducted on the consumer cooperative before the pandemic, which resulted in a publication (Öz and Aksoy, 2019). The second phase involved extension of this research to food cooperatives in Turkey (Öz and Aksoy 2024), with the addition of a producer cooperative. This second phase allowed for analysing how both cooperatives responded to the challenges stemming from the pandemic. In addition to the interviews conducted, data collection included archival and organizational documents, coop web pages, social media resources and other relevant sources (Öz and Aksoy, 2019; Öz and Aksoy, 2024). For the analysis of the consumer coop, being among the founders, research was also benefited from this experience, corresponding to analytic auto-ethnography. However, as in the Brazil case study, the Turkey study in this paper emphasises the country's nation-wide developments before and during the Covid-19 pandemic.

The empirical data collected from both projects provide the basis for a comparative analysis of agri-food SSE ecosystems in Brazil and Turkey at two historical moments: before the Covid-19 pandemic; and during the Covid-19 pandemic. The purpose of this comparison is to reveal similarities and differences in terms of inclusive innovation, agility, and transformative resilience.

5 Brazil: agri-food SSE ecosystem

5.1 Brazil's EcolSol-agroecology ecosystem: before the pandemic

In Latin America the solidarity economy is widely known as *Economía Social y Solidaria* (ESS), shortened as EcoSol. As the global network, RIPESS has a Latin American section with national and regional affiliates: 'The solidarity economy focuses on the empowerment of women and other marginalized groups, as well as the fight for social inclusion and against poverty' (RIPESS, 2015; also 2013). During the Covid-19 pandemic, its strategic plan proposed ESS as an alternative reconstruction. 'We must strengthen SSE ecosystems, starting from those which already exist', in order to achieve transformative impacts (RIPESS, 2021: 7-9).

Long beforehand, there was a strategic convergence between social movements for agroecological production and solidarity economy. Here this agroecology-based solidarity economy will be called EcoSol-agroecology. Agroecology has been promoted as an artisanal skill and product, highlighting affinities with various craft activities, especially within EcoSol networks.

This case study will focus on Brazil, whose support networks illustrate SSE ecosystems (as in OECD, 2020). Alongside the EcoSol network (FBES), policy officers have a parallel network promoting self-managed enterprises, democratic participation, and policy support measures (Rede de Gestores, 2018). This has regional affiliates, which often initiate proposals for national meetings. Both raise wider support from civil society groups.

Brazil's networks previously promoting either EcoSol or agroecology have converged to integrate them. As a turning point, in 2011 the National Agroecology Articulation (ANA)

and Forum Brasileiro de Economia Solidária (FBES) jointly organised an event for linking the agendas of agroecology and solidarity economy (FBES, 2011; Schmitt, 2020: 39).

Agroecological innovative producers were building local EcoSol networks, which raised their incomes, as well as conserving natural and cultural heritages (ANA, 2012: 3).

Conversely, agroecology was being incorporated into the EcoSol agenda (FBES, 2012).

This convergence has highlighted solidaristic mutual-aid practices, known as *mutirão* (joint work), while extending such arrangements from family or neighbour relationships to wider networks and contexts, including urban ones. In agroecological initiatives, reciprocity serves as a general means to enhance social integration, quality work, local culture, and communitarian belonging (Schmitt, 2020: 273). Such efforts have created solidaristic bonds between urban environmentalist initiatives and peri-urban or rural producers. Their *circuitos curtos* have a counter-hegemonic potential in contesting the commercial markets of anonymous food.

Agroecological producers develop skills to use environmentally sustainable methods; innovations combine traditional and scientific knowledge. A triple process of innovation - cognitive, technological and sociopolitical - is encompassed in the same transformation. Social movements have achieved technological improvements through knowledge-dialogue and participatory research (Toledo, 2012).

But producers face low market prices through profit-driven middlemen. So they have sought to retain more of the value that they add, thus gaining better livelihoods. They have built short food-supply chains (*circuitos cortos*), whereby consumer purchases support cooperative work organization and environmentally sustainable practices. They rarely sell 'agroecological' products, a term which is little known by consumers. The innovative products are variously promoted as, for example, peasant foods, poison-free products, true

food (*comida de verdade*) or *produtos de bem* (in Brazil), or organic products whenever they gain certification (ANA, 2021).

Such innovative advances in circuitos curtos have depended somewhat on state support measures, especially during Brazil's governments led by the Partido de Trabalhadores during 2003-16. Under the Programa de Aquisição de Alimentos (PAA), agroecological producers learned how to manage an *Organização de Controle Social (OCS)*. This sociotechnical innovation responded to long-time civil society demands for organic certification based on a farmers' knowledge-exchange process, as eventually authorised by the Agriculture Ministry (MAPA, 2007, 2020). The OCS option provides a low-cost solidaristic alternative to expensive third-party certification. Organic certification helps products to gain a higher price and consumer support, especially beyond direct producer-consumer relationships.

A major opportunity has been public procurement for school meals through the Programa Nacional de Alimentação Escolar (PNAE). Public institutions pay a 30% premium price for organic and agroecological products, making these methods economically more viable for producers and likewise improving food quality. The programme has sought to enhance students' biophysical development, learning and training in healthy food habits, especially to fulfil their nutritional needs during the school term (Brasil, 2009). Local procurement programmes favour such products from small family farms (CIAPO, 2013). Such programmes have helped family farms to strengthen their self-esteem, improve their agroecological methods and diversify their production (Grisa, 2009).

In parallel agroecological initiatives have also established short food-supply chains directly to consumers, especially on the basis that their purchases support cooperative work organization and environmentally sustainable practices. Self-managed *Feiras de Agricultor* (farmers' markets) are Brazil's second largest retail outlet for food and a crucial outlet for

agroecological producers (Matte & Preiss, 2019). Community-Supported Agriculture provides regular food baskets for subscribers, while promoting seasonal food as more environmentally sustainable. Small-scale producers bypass conventional markets, rather than seek a futile competition on the same terms.

Those solidaristic markets, collective self-certification schemes and their public credibility have been facilitated by national support networks such as the Rede Ecovida de Agroecologia. Since 2006 this has done group training in skills for collective certification of agroecological products of organic (Ecovida, 2007). Through solidaristic cooperation, it has also advised agroecological producers on supplying food with the appropriate, quantity, diversity and quality for year-round contracts.

Participants have periodically agreed on product swaps, their prices and operational costs to be shared (Magnanti, 2008). Its member-producers have coordinated long-distance transport networks for flexibly swapping products from places where they are in surplus, thus maximising producers' income and consumers' food diversity (van der Ploeg & Schneider, 2012: 158-159; also Schmitt, 2020). This experience set high-profile precedents for local product swaps during the Covid-19 crisis.

All those practices illustrate forms of inclusive innovation. These arrangements depend on solidaristic relationships among producers and with consumers, exemplifying SSE ecosystems more generally. Through democratic self-management, they have organized collective marketing as forms of inclusive innovation, facilitating the participation of marginalised low-income women. In Brazil's solidarity economy more generally, for example, approx 60% of the female participants are black (SOF, 2020). EcoSol networks have brought together agroecological and other artisanal producers, e.g. for clothing, jewellery, services, etc.

Through women's leadership in EcoSol-agroecology, they have exercised more decisions over family income and agroecosystem resources, thus somewhat overcoming gender inequalities (Action Aid, 2010: 272). Such initiatives have become larger and socially more diverse, while also contesting gender stereotypes to overcome inequalities (Schmitt, 2020: 277). Sometimes called *protagonismo feminino*, women's leadership has inspired, enlivened and spread such initiatives, while also reconfiguring women's roles in family agriculture (ANA, 2019: 21). These efforts have sought to overcome inequalities of class, race and gender.

5.2 Pandemic difficulties and adaptations in Brazil

For both EcoSol and agroecology initiatives, Brazil's support measures were degraded or dismantled by Right-wing governments after 2016 (Niederle et al., 2019, 2022). In early 2020 the Covid-19 pandemic worsened prior inequalities. Now workers had lower incomes, vulnerable families had difficulties accessing fresh food, and women faced greater burdens of care (SOF, 2020).

In March 2020 a fast response came from a Porto Alegre textile cooperative, [UNIVENS](#) ('United We Will Win') by shifting its production process. It initially produced 600 facemasks for free distribution to health centres, Feiras do Agricultor and other public places. The fabric was donated by the [Justa Trama](#) (fair-trade loom) network, which routinely supplies organic cotton to UNIVENS. The latter announced, 'We take care and care for others. It is a mission' (Glock, 2020). As a leader later commented on many exemplary actions, 'These examples make me believe even more in Brazilians' capacity to reinvent themselves, to innovate and be creative in the face of adversity' (Rede de Gestores, 2021).

For EcoSol-agroecology networks, the new hygiene requirements posed difficulties for the many Feiras, which needed fast adaptations. The new hygiene standards required several measures: disinfecting the food stalls, maintaining a minimum distance between them, wearing gloves and avoiding infection through product handling, packaging, plastic bags, electronic payment methods, etc. Farmers' markets are mainly sited outdoors; few have running water. They made special efforts to adopt hygiene measures; some markets had extra assistance from municipal authorities. But others could not comply with the regulations and had to shut down or move site or create alternative distribution methods (Preiss, 2020).

According to a feminist research network, the necessary innovation came from networks which already had a strong solidaristic basis. The productive units which best resisted the crisis and produced the most innovative responses were those which beforehand had chosen a model of autonomous production (like agroecology) and sales channels through personal or institutional relations which could maintain stable prices. This stability protected producers and consumers from the variable prices in non-regulated markets (SOF, 2021: 16). In women's EcoSol initiatives, members remembered faces, emotions, and personal bonds by circulating photos, videos and audios (ibid: 34).

With support from local solidarity networks, women's producers' associations created various innovations to minimise the virus spread while also building their consumers base, e.g. drive-thru Feiras for purchases from food stalls so that people feel more comfortable and safe; online Fairs offering products from multiple producers; home deliveries; and provision to vulnerable people. These opportunities stimulated food producers to exchange surplus products in order to provide greater variety and minimise food waste. These efforts

more broadly brought together artisanal producers of various kinds for mutual aid and joint publicity.

Solidarity initiatives sought to strengthen the social fabric through knowledge exchange about natural medications, defence of common goods against territorial expropriation, and agroecological practices for self-consumption, donations and barter of surplus products (SOF, 2021: 74). For example, Slow Food Brasil created an interactive map of small-scale producers to facilitate such activities. The Brazilian Institute for Consumer Defence created such a map for bringing sustainable family farms closer to consumers ([IDEC](#), 2020).

More generally, grassroots innovations needed new communication-logistic systems, adapting social media for solidaristic aims. Their Facebook pages announced the new arrangements and reached more consumers than before. However, commercially available apps were unsatisfactory for at least two reasons. Firstly, their standard design had no means to communicate the artisanal basis of the products on offer. Secondly, commercial app owners deducted a standard percentage of the sales; solidaristic tech experts helped to design alternative apps which could overcome those limitations.

When schools were closed down, some municipalities suspended the school meals programme. Others adapted it for provision to vulnerable families, responding to demands from local agroecological producers and solidarity networks. Solidarity networks emphasised that donations were solidarity rather than charity. In some cases, supportive municipal officers helped a marketing collective to obtain contracts with another municipality (Levidow et al., 2022). All these efforts raised the profile of EcoSol-agroecology as a broader solution to societal problems. EcoSol networks proposed that this model belongs in longer-term public policies to address poverty and malnutrition.

In all those ways, EcoSol-agroecology networks made agile, creative adaptations to deal with the pandemic obstacles in ways maintaining or extending the social inclusion from before the pandemic. Producers' incomes gained greater resilience through more diverse product combinations and sales outlets (Calgaro *et al.* 2022: 155). At the very least, they softened the general tendency for the pandemic to worsen inequalities; some went further in expanding the producers' income base and thus livelihoods.

Those grassroots innovations demonstrate a transformative resilience in maintaining members' livelihoods through agile, innovative means to deal with the pandemic. Their innovations came from sociotechnical networks combining diverse knowledges and experiences (Calgaro *et al.* 2022: 13). Resilience has depended on solidaristic relationships among initiatives and wider support networks including municipal officers and state agencies, despite the general decline in supportive policies. Going beyond the status quo ante, these practices resiliently bounced forward to stronger solidaristic relationships.

Through *protagonismo femenino*, women's agroecological initiatives have constructed collective subjects who militate for a more just world for everyone, rather than depend on top-down policies, according to a feminist network (SOF, 2021: 74). More generally, EcoSol needs a bottom-up basis of support measures, which thereby could be held accountable to the beneficiaries, according to a policy officers' network (Rede de Gestores, 2018, 2021).

6. Turkey: agri-food SSE ecosystem

6.1 Turkey's agri-food cooperative ecosystem: before the pandemic

Since around the year 2000 Turkey has had a rise of activities which comprise a Social Solidarity Economy. Academics call this the Sosyal Dayanışma Ekonomileri (ActHuman, 2021b) though practitioners do not call themselves as such. They take various forms ranging from cooperatives and unions to more informal alternative networks. Their systematic efforts potentially establish the foundations of a cooperative economy, amidst critical challenges posed by neo-liberalization and deeper market integration. These challenges have been reinforced by the Covid-19 pandemic and ongoing economic crisis.

SSE initiatives have been proliferating, including agri-food alternatives, producer, and consumer cooperatives; collective kitchens; supporting refugees (with the influx of Syrian refugees since the Syrian civil war); publishing cooperatives; just to name a few. Since the early 2000s there has been a rise of alternative agri-food initiatives, which correspond to short food supply chains in efforts to establish social proximity between consumers and producers as defined above. Their numbers have increased and geographical distribution has become more diverse. Yet most are still concentrated in three big cities: Istanbul, Ankara and İzmir (Karakaya Ayalp, 2021: 990). In this national context, this section will focus on agri-food cooperatives and their networks as an SSE ecosystem, with the aim to explore how some initiatives develop forms of inclusive innovation with resilience and agility.

Cooperatives and their networks represent an early example of collective solidarity in Turkey and worldwide. Working in areas such as housing, construction, transportation, food, and agriculture, according to 2020 statistics, there are about 60,000 cooperatives with 6,6 million members in Turkey. However, there are no data on how many of these cooperatives are currently active (ActHuman, 2021b: 23). Cooperatives have had various forms and legal-institutional frameworks in different historical periods. They traditionally have been heavily dependent on the public sector, enabling the state to intervene in their working, largely limiting their autonomy. Recently, however, ‘...there have been efforts towards the

development and transformation of cooperatives at the grass roots level, apart from the practices of the public at the level of central and local administrations.’ (ActHuman, 2021a: 3). These efforts have enabled cooperatives to develop some autonomy from the state. More recently, municipal procurement has become an important means for building solidaristic relations with cooperatives as partners within the SSE ecosystem, based on horizontal relations rather than creating dependencies.

Some solidarity economy initiatives in Turkey are newly established, while others are old cooperatives which have undergone major restructuring in their organizational mandate and operational terms. There is significant rejuvenation of the cooperative movement in several ways: an increase in the number of cooperatives; establishment of new cooperatives in non-traditional areas; novel forms of solidarity and partnerships with local administrations; and a significant increase in social cooperativism with a different organizational and business model from that of traditional cooperativism. (ActHuman 2021b: 8), as explained in the next paragraph.

In this context, Aykaç (2022: 57) differentiates traditional examples of economic solidarity – such as loncas (guilds) and imece (collective labour on equal terms in rural communities) -- from today’s solidarity economy initiatives. The former two were firmly embedded within the existing economic system they were operating, while the latter provide alternatives to address the challenges emerging from the system. In Turkey, “the process of the emergence of new solidarity economy initiatives outside of the public power and the market takes shape in a context of political contestation and social movements to meet expectations, unfulfilled aspirations and to achieve more justice” (Pelek and Gajac, 2020: 106).

Agricultural cooperatives, which have long been a crucial part of rural livelihoods, take several forms such as agriculture sales cooperatives, credit cooperatives, development

cooperatives, to name a few. Although a patchy neo-liberalization of the agriculture sector has been ongoing since the 1980s, this process has been significantly accelerated since the 2000s, with the World Bank financing an Agriculture Reform Implementation Project (Aksoy, 2010). Some cooperative unions — “such as Pankobirlik, the sugar beet cooperatives union and Tarım Kredi Kooperatifleri Birliği (Agriculture Credit Cooperatives Union) — have adopted this trend of corporate control and financialization” (Yeneroğlu and Aykaç, 2021: 141).

By contrast, other cooperatives have undergone a reorganization with the aim to strengthen solidaristic principles (Yeneroğlu and Aykaç, 2021: 141). For example, Tire Dairy Products Coop (established in 1967), and Hopa Tea Coop (established in 1959) as agricultural development coops are old cooperatives seeking to redefine themselves amidst this strong wave of neoliberalism (Hacısalıhoğlu and Şahin, 2019: 79-80). Hopa Tea Coop, for instance, had a large debt from the previous management in 2012 as an important setback. Yet the coop has been developing various social innovations to overcome the obstacles towards realizing its goals, including close relations with consumer coops in Istanbul, and Ankara and İzmir, as well as with İzmir municipality (Şahin, 2020: 97-98).

Gödence Agricultural Development Cooperative is another example of successfully regenerating itself. The very establishment of the coop itself in early 1970s manifested grassroots innovation: the coop ‘... emerged as the seed of the niche as a bottom-up solution responded to the needs of a local situation and needs of Gödence with a variety of actor involvement’ (Karakaya, 2016: 221). Gödence Coop faced the challenges of Turkey’s overall cooperative movement after the 1980 coup and the ensuing neo-liberalization process.

At the same time, it has been able to revive itself in the 1990s through multiple strategies, including long term plans, branding Gödence olive oil and renewing technologies in cooperation with several actors, including the Italian Union of Cooperatives, Ege University, Olive Research Institute, and increased the quality of oil produced (Özkaya, 2021; Karakaya, 2016: 222-223). More recently, the coop has been in close relationship with consumer coops. By 2021 more than 90 per cent of its branded products were sold either directly to consumers, or consumer coops and municipalities (Özkaya, 2021: 35).

Parallel to these examples of regenerating rural cooperatives, the relatively recent establishment of consumer cooperatives in urban areas have been an important complementary factor in enabling alternative forms of urban-rural relationships. Agri-food products have around 80 short supply chains in Turkey (Karakaya Ayalp, 2021). Some illustrate relatively affluent urbanites' search for healthy food. Yet other initiatives explicitly adopt the principle of food sovereignty, and which goes beyond direct producer consumer interaction; they provide the first steps for the foundation of a solidarity economy. As an important common point of these initiatives, Soysal Al (2020: 138) suggests 'Growing solidarity relations with small-scale ecological farmers, through a locally organized collective effort in the city.'

Analysing three agri-food SSEs in Istanbul, İnce and Kadirbeyoğlu (2020: 8) similarly point to the importance of 'working in horizontally organized settings in a collective manner, generating trust between the producers and consumers as well as among the consumers, and sharing knowledge'. Despite their differences, all these initiatives share 'their determination to have independence in accessing healthy and affordable food in creative, fair, and experimental ways' (İnce and Kadirbeyoğlu, 2020: 8). One important feature is their similar criteria to select producers, such as sustainable production processes (no use of chemical inputs, use of local/traditional varieties of seeds), non-exploitative labour, and small-scale

farmers. These criteria do not entail organic certification, which is too costly for small scale farmers, even if their production methods conform to the requirements. In that way, for these SSEs, solidarity with farmers is not jeopardized (Öz and Aksoy, 2024). Examples of these networks include neighbourhood coops such as Kadıköy Coop, or BÜKOOP, a university-based food coop and a pioneer that became a model for other food coops that would be established. An important characteristic of these initiatives is non-hierarchical organizational structure, volunteer work, democratic decision-making and enabling channels of participation (Öz and Aksoy, 2019; Kadıköy Cooperative Collective, 2020).

6.2 Pandemic difficulties and adaptations in Turkey

To address the pandemic, in March 2020 Turkey took measures which included: suspending face-to-face education; closing public spaces; locking-down people initially the elderly, which later was expanded to include everyone in metropolitan cities (Tuysuz et al. 2022: 1135). Accordingly, ‘All the measures carried out to control the outbreak have affected numerous areas of the economy, from industry to education, from agriculture to transportation, accommodation, food, beverage, and entertainment sectors’ (Tuysuz et al., 2022: 1135). The government’s agricultural policies, which had long been embedded within neo-liberalization of the economy, were now criticized by numerous professional organizations, specifically, reductions in subsidies to the agriculture sector at a time when protectionism was gaining momentum globally (Ertekin and Yıldızcan, 2023: 161). There was a greater vulnerability of the domestic agriculture sector at a time of crisis such as Covid 19, particularly jeopardizing national food security (Ertekin and Yıldızcan, 2023: 161). Indeed, despite exceptions for measures to deal with the pandemic, agriculture and food have been among the hardest-hit sectors.

As the pandemic harmed most economic sectors in Turkey, cooperatives faced challenges, in large part due to public health safety measures such as lock-down measures and interruptions in supply chains (ActHuman, 2021a: 4). According to a study conducted on women's cooperatives in the Western Mediterranean region, members experienced financial difficulties due to restrictions caused by the pandemic. Their production was severely affected and there were disruptions in supply chains (Demircan Yıldırım, 2022).

For the food cooperatives and other arrangements in cities, challenges included delays in establishing novel forms of short supply chains as well as in the operations of existing SSE initiatives. Despite the hardship, many food cooperatives managed to survive, thanks to several features: their earlier collaboration in the preparatory phase of the coop; their rapid adaptation, continuing their open call through routine meetings online; and their effective use of social media to reach consumers (Yeşil Gazete, 2020). Kadıköy Coop built a 'catflap' on their door so that members could access food without direct contact, a necessary health measure particularly in the early days of the pandemic. (Demoğlu and Yeşilkır, 2020).

During the pandemic, producers increased their sales by supplying niche markets and closely engaging with short supply chains (Keyder et al., 2020). This increase in sales was attributed to the rising demand from affluent urban dwellers for healthy and quality food. The recent rejuvenation of cooperatives and their collaboration with municipalities have been central in providing access to fresh, healthy food as well for lower-income groups during the pandemic (Keyder et al., 2020).

As regards agility, based on their earlier experiences and established relations of trust, food cooperatives quickly developed mechanisms to address the challenges posed by the pandemic. For example, BÜKOOP devised a pre-payment system to ensure the continuation of supply of products (Öz and Aksoy, 2024); the Natural Food Network and Kadıköy Coop

prepared solidarity food packages for those in need to enable uninterrupted access to food (Atalan-Helicke and Abiral, 2021). Kadıköy Coop distributed 36 solidarity packages “to migrants, neighbours who lost their jobs, and others in need, thereby strengthening solidarity in the neighbourhood” (Atalan-Helicke and Abiral, 2021:100). Natural Food Network, because of its success during the early days of the pandemic, was contacted by Ankara Municipality to develop a model for access to markets by small farmers located in proximity to Ankara (Atalan-Helicke and Abiral, 2021:97).

A multi-actor solidarity network quickly responding to the pandemic illustrates the SSE ecosystems approach. This important phenomenon arose for women cooperatives. Kadın Emeğini Değerlendirme Vakfı (KEDV), an association linking women producers, played a significant role in coordinating and strengthening their solidarity networks during the pandemic (Demircan Yıldırım, 2022).

Another important manifestation occurred after the artichoke festival in Urla (İzmir) was cancelled due to the pandemic. Urla Women’s Cooperative, which processes and supplies artichokes through social media, successfully asked consumers in three big cities to buy the artichokes at premium prices (Keyder et al., 2020). According to Kokulu, the chair of Gödence Coop, it was able to withstand the challenges of the pandemic after the initial shock by operationalizing a marketing system based on subscriptions, as well as continuing to supply urban food coops (Ege’de Sonsöz, 2023). Kokulu underlined the importance of bringing together producer and consumer coops in an organized form; coops have been developing this model (BÜKOOP, 2022).

Through their pandemic experience, Gödence Coop flexibly adapted its practices to the new conditions by using digital tools and social media in diverse ways and for multiple purposes. Many have been using these relatively novel tools to realize the common goal of providing

and accessing healthy food on fair terms under crisis conditions. In the case of another producer coop, Vakıflı, a women's coop, in addition to the pandemic, the massive earthquake that took place in February 2023 was a huge challenge, as the coop is located in the epicentre of the earthquake. However, the coop has been able to withstand these multiple crises, with the coop providing a collective working space for the women, which for some were therapeutic, as well as enhancement of solidaristic relations with other producer and consumer coops (Öz and Aksoy, 2024). This effort was enabled by the trust that had been built over the years with democratic and participatory organizational processes, which face their own challenges (Öz and Aksoy, 2024).

Finally, this SSE ecosystem has successfully engaged with other actors such as local administrations, particularly as regards producer and development cooperatives, enabling the change in their mandates towards sustainability as well as closer relations with consumers based on solidaristic ties. They overcame distrust from the earlier efforts at building cooperatives, which generally could not deliver economic or social benefits to its members, given their dependence on the public sector. One such instance is how Gödence provided the landrace for a long-forgotten wheat variety that would later be mass-produced in cooperation with the local municipality (Nizam and Yenal, 2020).

Anatolia is the centre of origin and diversity for several staple crops, including wheat and barley, cultivating numerous traditional varieties. However, there has been a significant erosion of this agricultural biodiversity since the introduction of modern wheat varieties along with standardization and high-yield requirements of the wheat market (Aksoy, 2005). In this context, Gödence makes a central contribution by helping to revive an ancient wheat variety. These organizations have the capability to engage in inclusive innovation towards sustainability; through the festivals, the coop organizes cooperation with the municipality and other actors (Karakaya, 2016; Nizam and Yenal, 2020).

Only some cooperatives have this capability. When different women's cooperatives produce the same products, for example, they essentially compete with one another. They become unable to develop complementary networks that would build the basis of an ESS ecosystem, e.g. by developing niche markets or innovating their business models (Yeneroglu and Aykaç, 2021: 147).

Given the constraints already due to the legal-institutional foundations of cooperatives, inclusive innovation becomes even more important for their autonomy and resilience. 'Direct democratic action, a locally distinguished repertoire of cooperative activity, strategic planning involving innovation and technical expansion are crucial for a revitalized cooperative development that will cater to the needs of the people rather than the state's political agenda', which promotes conventional markets (Yeneroğlu and Aykaç, 2021: 148). The case study here describes the capability of SSE ecosystems to realize their goals and become crucial actors in providing healthy, affordable food without disruption during the Covid-19 crisis; this capacity has long-term implications for a transformative resilience of the agri-food system.

7. Comparative Analysis and Conclusion

Agri-food SSE ecosystems in Brazil and Turkey have similarities alongside their differences. In each country, the relevant organisations cooperatively developed dynamic capabilities through solidaristic commitments and methods. Through these capabilities, they have been improving sustainable agri-food practices, managing knowledge exchange within SSE ecosystems, developing short supply chains, and adjusting their business models in response to new challenges.

Let us recapitulate the three aspects of our tripartite framework – each in turn, though they overlap in specific practices.

Inclusive innovation: In both countries, agri-food SSE ecosystems have sought to overcome social exclusion from livelihoods and healthy nutritious food. Their novel practices have given broader meanings to traditional rural concepts of mutual aid (*mutirão* in Brazil, or *imece* in Turkey), going beyond family or neighbour relationships to new contexts including urban ones. They have innovated agroecological production and distribution methods which can benefit lower-income groups, especially women, who have played leading roles.

Through democratic self-management, they have organized collective marketing, while facilitating the full participation of otherwise marginalised low-income people. They have maintained or created short supply chains which can avoid profit-driven middlemen, increase producers' incomes, and minimise the price of agroecological products. In these ways, they can more readily respond to consumer demand and even shape it through political education about societal benefits of agroecological production. Women's coops in Brazil and Turkey have facilitated collective capacities and self-confidence for women's leadership.

Agility: In both countries, SSE ecosystems proved to be agile during the Covid-19 pandemic. They had to address great challenges of disrupted supply chains, lock-down regulations and communities affected by illness and lost income. As characteristics of SSE ecosystems, their prior routines, collective capacities and solidaristic mutual-aid relationships were quickly mobilised for creative, adaptive responses. Collective marketing coops initiated or expanded the use of digital communications (social media for promotion and apps for orders) to maintain their sales, some expanding their consumer base through novel products or combinations. Agility went hand-in-hand with a transformative resilience.

Transformative resilience: In both countries, SSE organizations used the Covid-19 pandemic as an opportunity to strengthen solidaristic bonds among producers and with consumers, especially through support networks beyond their members. Our findings confirm global research on SSE ecosystems during the Covid-19 pandemic. Cooperative actors globally were resilient for two main reasons. First, they used their profits as a means to fulfil their social mission; they continue their production or service delivery for their members in times of crisis to sustain their needs, livelihoods and well-being. Second, ESS co-operatives were firmly embedded in their local communities, as well as linked with a global movement that inspires them to maintain their values and support their communities (Billiet et al., 2021). SSE ecosystems served to bounce forwards through a transformative resilience.

Table 1 below summarises our comparative findings within the tripartite framework:

Table 1: Comparing SSE ecosystems in Brazil and Turkey

	Brazil: EcoSol-agroecology	Turkey: Agri-Food Ecosystem
SSE ecosystem: main national networks	Convergence of ANA (agroecology)+ FBES (EcoSol) agendas with advice-support networks, e.g., Red Ecovida	<i>Sosyal Dayanışma Ekonomileri:</i> informal network of old and new-generation cooperatives redefining their mandates, as a bottom-up process for establishing an SSE.
Women's empowerment	<i>Sempreviva Organização Feminista (SOF)</i> linking various feminist networks	<i>Kadın Emeğini Değerlendirme Vakfı (KEDV):</i> Association valuing women's labour by finding marketing opportunities.
Inclusive innovation, esp. short supply chains	Collective marketing initiatives for farmers' markets, box schemes and municipal procurement. Include producers' and consumers' coops.	Collective marketing initiatives for farmers' markets, box schemes, and municipal procurement. Include producers' and consumers' coops .

Organic certification for premium price	Collective self-certification of agroecological products as organic through an <i>Organização de Controle Social</i>	Efforts to establish Participatory Guarantee Systems, which can gain a premium price for agroecological products.
Mutual-aid extended	<i>Mutirão</i> for urban-rural linkages	<i>imece</i> for urban-rural linkages
Agility: short supply chains adapting to pandemic	Fast adaptations reconciling hygiene restrictions with the earlier and new consumer base	Fast adaptations reconciling hygiene restrictions with their consumer base; pre-payment schemes in food coops
Resilience: bouncing forwards	Adaptations extended solidaristic relationships between producers-consumers	Adaptations extended solidaristic relationships between producers and consumers

Our findings in Brazil and Turkey resonate with the pandemic responses of SSE ecosystems in many other places. Within SSE ecosystems many actors expanded online platforms by adapting digital communications for delivering services and creating a shared economy. Some others promoted telework arrangements by supporting vulnerable workers, creating new jobs to address the upsurge of demand, shortening supply chains, shifting production towards much-needed supplies such as sanitisers and face masks. For example, Lokaliteit, a worker-owned co-operative restaurant in Belgium, turned perishable food into canned and fermented products, increased their shelf life and thereby kept its staff at work. India's Self-employed Women's Association (SEWA) trained their members to use digital communication channels to spread awareness of Covid-19 and started producing and distributing face masks, herbal sanitizers and soaps, and kits with protective gear to prevent the spread of virus.

Meanwhile support organizations collected information on how the Covid-19 pandemic was affecting SSE organizations and how they strategically responded. The knowledge was shared through video messages, WhatsApp and Telegram groups and guidance notes on online platforms (ILO, 2020; 2022). Their socially inclusive adaptations illustrate grassroots innovation. They were designed to be socially shared, replicated and spread at minimal cost

through knowledge-exchange; innovators are closely linked with users or become users (cf. Smith et al., 2014). As these empirical studies show, inclusive innovation and agility contributed to a transformative resilience, especially in responses to Covid-19.

Of course, there are substantial differences among SSE ecosystems across continents and countries as regards how they have achieved their objectives during the crisis. Alongside those differences, they have supported relevant stakeholders – staff, customers, and local communities – thus maintaining their organizations, livelihoods, and low-cost healthy food supply to consumers. SSE ecosystems offer special opportunities for promoting active citizenship, participatory democracy, and pluralistic economic systems.

As regards relationships with the state, the two cases have significant differences:

In Brazil, EcoSol-agroecology ecosystems arose from social movements and advocacy groups which seek a structural economic transformation. Many developed solidaristic initiatives which could provide alternatives to dominant markets, even to play a counter-hegemonic role in the political and economic spheres. Their long-time efforts eventually shifted government policy frameworks towards facilitating solidaristic collective capacities. Public procurement rules for school meals have offered favourable contracts to agroecological producers.

By contrast in Turkey, traditional agri-food cooperative networks have depended on state patronage for their survival, allowing less scope for autonomy. They have faced the state's neoliberal agenda for integrating their activities into conventional markets. Nevertheless, in recent years, many agri-food cooperatives have developed short supply chains which can overcome the state's constraints.

In conclusion: this paper has illuminated the relationship between inclusive innovation, agility, and resilience of SSE organisations. By critically reviewing the literature and comparing the empirical cases of Brazil and Turkey, we have shown how SSE organisations and their support networks operate as solidaristic ecosystems. They develop dynamic capabilities to address socio-economic challenges through inclusive innovation. In this comparison, short supply chains for agri-food products enabled members and their families to survive the Covid-19 pandemic. Alongside collective capacities embedded in prior routines, solidaristic relationships enabled both agile adaptations and a transformative resilience.

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