Grassroots Innovation Ecosystems

Alternative Agri-Food Networks (AAFNs) in Brazil and Turkey

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ABSTRACT

This paper theorises how inclusive grassroots innovation responds to socio-economic inequalities and facilitates efforts to overcome them, contingent on solidaristic relationships. As a mainstream policy concept, the term 'innovation' has become more narrowly defined as capital-intensive technological innovation, which has often worsened social inequalities. In response, 'inclusive innovation' has become an umbrella term encompassing diverse alternatives seeking to reduce or avoid social inequalities. These have arisen especially in the Social Solidarity Economy (SSE), based on democratic self-management and mutual aid; its enterprises depend on wider ecosystems of support groups. The SSE has some overlaps with Alternative Agri-Food Networks (AAFNs), which build greater social proximity between producers and consumers. Hence the overlap is here called the SSE-AAFNs. During the Covid-19 pandemic, many SSE-AAFNs rapidly adapted to the disruptions through novel practices that could fulfil their members' needs. SSE-AAFNs ecosystems played this creative role through three general parameters: inclusive grassroots innovation, agile adaptations, and a transformative resilience bouncing forwards. These parameters form a tripartite framework that helps to analyse case studies of SSE-AAFNs in Brazil and Turkey. In both cases, grassroots innovation helped to overcome social inequalities (of class, race, gender), in ways contingent on each initiative and its context. SSE-AAFNs have demanded and gained support measures from municipalities, along lines helping to build collective capacities rather than dependence. The tripartite analytical framework here has wider relevance to SSE ecosystems developing grassroots innovation which can overcome inequalities.

Keywords: Alternative Agri-Food Networks (AAFNs); Inequalities; Social Solidarity Economy (SSE) Ecosystems; Inclusive Grassroots Innovation; Agile Adaptation; Transformative Resilience.

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INTRODUCTION

As a mainstream policy concept and academic area, the term 'innovation' has become narrowly defined as capital-intensive technological innovation, driven by research and development (R&D). This top-down innovation model has a long history of worsening social inequalities. Consequently, it has failed to address basic needs of lower-income people.

Such inequalities have stimulated demands for socially just alternatives. 'Inclusive innovation' has become an umbrella term, encompassing diverse alternatives. These have drivers especially in the Social Solidarity Economy (SSE), based on democratic self-management. This has some overlaps with Alternative Agri-Food Networks (AAFNs), which build greater social pro-ximity between producers and consumers. We give their overlap a hybrid name, SSE-AAFNs, as the research focus here.

This paper theorises how inclusive grassroots innovation responds to socio-economic inequalities and facilitates efforts to overcome them, contingent on solidaristic relationships. It explores the following questions: How do social inequalities (of class, race, gender) motivate involvement in SSE-AAFNs? How do their practitioners attempt to overcome inequalities, especially through inclusive innovation? What are the roles of wider support networks and care relationships? Under what conditions does inclusive innovation facilitate efforts to overcome inequalities? Given the societal benefits from SSE-AAFN, under what conditions can these be best developed and expanded? What are the main barriers?

To address these questions, we draw on a literature review and two empirical case studies: Brazil and Turkey. Our overall argument can be summarised as follows: SSE support networks can be understood as multi-actor ecosystems, which help generate alternative forms of economy. SSE-AAFNs mobilise inclusive grassroots innovation through collective capabilities, including agile adaptations and a transformative resilience. Through such collective capabilities, as manifest especially during the Covid-19 pandemic, SSE-AAFNs have helped to overcome or avoid social inequalities.

The paper is structured as follows: Section 1 surveys critical literature on the dominant innovation versus inclusive innovation. Section 2 theorises the SSE as innovation ecosystems through a tripartite framework: grassroots innovation, agile adaptation and a transformational resilience. Section 3 surveys AAFNs literature, especially as regards social inequalities and innovation. Section 4 briefly explains the methods used in this research. Sections 5 and 6 present our two empirical cases, Brazil and Turkey, respectively, empha-

sising how SSE-AAFNs responded to the Covid-19 crisis and how they continued some gains afterwards. Section 7 returns to the original research questions, giving answers with broader relevance than the specific case study.

1. CONTESTED INNOVATION STIMULATING ALTERNATIVES

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 as capital-intensive, R&D driven and top-down. In contrast, inclusive innovation has been devised as an alternative, even as resistance. This section outlines hegemonic versus alternative forms of innovation.

According to Benoit Godin, in the 1950s innovation became an object of imagination, linked with economic growth for common societal benefits:

> 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, p. 2)

Godin analyses the contradictory relationship between research and commercialisation at the heart of technological development: Although originating from the same conceptual framework (growthmanship), research and innovation are opposite values' (*ibid.*, p. 7).

As he emphasises, technological innovations have been generally accompanied by social innovations, especially various privileges and patent laws rewarding novelty. By the late 20th century, innovation was well understood as commercialisation of scientific knowledge (Godin, 2008, 2015). In practice, technological innovation has been dependent on institutional change, deriving from socio-economic innovations. But this relationship is obscured by the prevalent top-down model. Oppressive power relations become reified as inherent properties of technological innovation, promoting a technological determinist explanation of societal change (Godin, 2020). Socio-economic changes 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 & Papaioannou, 2017; Chataway *et al.*,

2013; Smith *et al.*, 2014; Arocena and Sutz, 2012; Srinivas & Sutz, 2008; Cozzens, 2007; Cozzens *et al.*, 2002; Prahalad, 2005; Arocena & Sutz, 2003). Technological innovation often worsens socio-economic inequity, e.g., by eliminating, transferring and/or deskilling employment. For example, the manufacturing sector has traditionally lost jobs due to innovative production technologies that required phasing roles and new skills (Cozzens *et al.*, 2002). When driven by R&D, technological innovation worsens disparities of wealth, control and privilege, benefiting some groups more than others (Wetmore, 2007). In fact, technological innovation has brought wealth, social respect, cultural prominence and further political voice for those already powerful, while excluding the interests and aspirations of the many (Acemoglu & Johnson, 2023). It may continue to do so in the 21st century through artificial intelligence (AI), machine learning (ML) and other automation technologies. In such a context, any societal benefits have often excluded lower-income and marginalised people.

Therefore, overcoming social inequality and exclusion has motivated redesigning innovation. As a general alternative, inclusive innovation is a process that 'harnesses science, technology, and innovation "know-how" to address the needs of lower-income groups' (OECD, 2012, p. 9). Bottom-up solutions are necessary for 'the inclusion of those left behind in the race to the top' (Leach & Scoones, 2006, p. 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). Examples include: 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.

In those ways, the hegemonic innovation model has stimulated popular resistance and alternative economic forms. As key drivers, 'The alternative pathways have emerged in the interstices of a world in which people see their communities, democratic institutions, jobs, material culture, and personal relationships being uprooted by distant economic and political institutions that seem unresponsive to their needs', argues David Hess (2007, p. 15). But alternative pathways often lose their original driver and aim; they either become marginalised or else are absorbed into the mainstream economy. To avoid those outcomes, it is necessary to localise political activism, innovation and economic activity in political alliances (*ibid.*).

Such solidaristic alternatives generally have arisen from grassroots innovation movements. They 'involve a base of local actors and therefore different forms of knowledge, including community-based and indigenous knowledge and the knowledge of the

lay public in the process of innovation' (Smith *et al.*, 2016). Such movements use their ideas, knowledge and capabilities to create their own innovative alternatives as well as to challenge political structures which produce socio-economic inequality (Smith *et al.*, 2017).

As a relatively new framing, transformative innovation aims to reduce inequality in all its forms, 'but does not necessarily replace existing framings' (Schot & Steinmuller, 2018, p. 1554). Indeed, it encounters tensions. Any transformative trajectory undergoes conflicts with the hegemonic regime, thus either contesting or accommodating it (Fressoli *et al.*, 2014). Amidst such tensions, SSE ecosystems can generate inclusive grassroots innovation, helping to maintain livelihoods and liberatory aims.

More specifically, grassroots innovation networks design processes that 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). These solutions are both technical and political. Through grassroots innovation people use their ideas, knowledge and capabilities to create their own innovative alternatives as well as to challenge political structures which produce unjustified socio-economic inequality (Smith *et al.*, 2017). This paper takes forward such alternatives by identifying sources of grassroots innovation in the Social Solidarity Economy (SSE). The latter has devised means to include lower-income people in providing bottom-up solutions.

2. SSE INNOVATION OVERCOMING INEQUALITIES: TRIPARTITE ANALYTICAL FRAMEWORK

First, let us see how the Social Solidarity Economy (SSE) understands and addresses social inequality. Globally the SSE promotes 'a comprehensive approach based on an equitable distribution of wealth and universal access to the commons' (RIPESS, 2011, p. 3). '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). SSE networks promote democratic self-management through cooperative, solidaristic, creative relationships.

The SSE aims to transform the current mode of production and exploitative division of labour, re-organising the relationship between public and private. 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 enterprises 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, the SSE enables young and marginalised people to be included in communities.

In recent years, the SSE has been understood as an 'ecosystem': SSE ecosystems are constructed and sustained by solidaristic interdependent actors; they encompass cooperatives or social enterprises, their networks, and their supporting institutions, e.g., civil society groups, banks, policy advocacy organisations, etc. enterprises and support networks (OECD, 2020, 2023). Through their various innovations, SSE ecosystems overcame many new challenges in the disruptive, uncertain context 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 parallel, relevant to the entire economy, an innovation ecosystem has been defined as an evolutionary structure where multiple 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.*, (2023, p. 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'.

By combining those concepts and insights, here we characterise SSE ecosystems as enabling to overcome or avoid inequalities. This role can be theorized through our tripartite analytical framework, linking three key parameters: inclusive grassroots innovation, agile adaptation, and a transformative resilience. Let us examine each parameter in turn.

2.1. INCLUSIVE GRASSROOTS INNOVATION

Over the last two decades, 'inclusive innovation' has become a crucial reference for alternative innovation that delivers bottom-up solutions to problems of lower-income people. As such, inclusive innovation integrates public-action initiatives, public policy agendas and specific innovations. This concept denotes low-cost innovations which serve such interests and aspirations. It fulfils basic human needs in sustainable ways, enhances human

capabilities, improves social welfare, potentially empowering lower-income and/or marginalised people and avoiding or overcoming social inequalities (e.g., Kaplinsky *et al.*, 2009; Chataway et al, 2014; Papaioannou, 2018; Smith *et al.*, 2014).

The 'inclusive innovation' research agenda has focused on such alternatives to top-down innovations (e.g. Smith *et al.*, 2014, Fressoli *et al.*, 2014). As Smith *et al.*, (2017) point out, inclusive grassroots innovation alternatives are motivated by explicit desire for economic and political change, committed to normative values of social justice and environmental sustainability. Indeed, theorists such as Papaioannou (2018), Onsongo and Schot (2017), Cozzens & Sutz (2014) and Eubanks (2007) have clarified the relation between ethico-political normativity and incentives for innovative change.

Global problems of inequality and social exclusion have been drivers for redesigning innovation to meet basic needs of low-income communities. Inclusive innovation 'is of increasing interest as nations look to use innovations to bring about more inclusive and equitable development' (Foster & Heeks, 2014, p. 2). Reducing inequality in generating and diffusing novel goods and services has become an imperative for inclusive innovation and development, according to several global bodies (UNDP, 2016; World Bank, 2010).

As a more specific term, *grassroots* inclusive innovation describes SSE actors in low-income communities creating public goods that help overcome social inequalities (Cozzens & Sutz, 2014, p. 13). Through capabilities for sharing, endorsing and developing alternative models, they have developed more equitable participation and collective agency in co-creating innovation. These networks have been theorised as grassroots innovation movements (Smith *et al.*, 2014) or innovation in informal economies (Cozzens & Sutz, 2014). In such ways, inclusive innovation in SSEs pertains to both substantive and process aspects of greater equality. Through participatory processes, marginalized communities become active agents in setting priorities and developing innovations fulfilling their basic needs to overcome inequalities (cf, Boström, 2012). Inclusive grassroots innovation 'underlined by counter-hegemonic values already exists, albeit in the cracks of the dominant system and in constant danger of co-optation', and so needs supportive policies (Robra *et al.*, 2023, p. 1). In Portugal, public funds have played a crucial role for social innovation projects of local associations (Ferreiro *et al.*, 2023).

Some AAFNs share such aims. They frame their actions as fulfilling the basic needs of food access; they enable non-exploitative agroecological production and build rural-urban connections. On this basis, low-income urban dwellers can access affordable quality food. Here inclusive innovation can be manifested in the diverse agricultural pro-

duction processes which are environmentally sustainable; traditional methods are often mixed with new scientific knowledge to maintain crop genetic resources and enable production in harsh environmental conditions without chemical inputs.

For example, some farmers in Italy have re-appropriated genetically diverse wheat. They have cooperated with several actors including scientists, processors, civil society and consumers, each playing diverse roles in the wheat value-chain. These innovations have been crucial in the steps towards transforming the agri-food system towards greater inequality (Rossi *et al.*, 2019). Inclusive innovation has generally helped overcome power asymmetries through non-hierarchical, solidaristic ties between small scale farmers, urban food coops and other actors of the SSE ecosystem; together this has empowered both producers and consumers (Rossi *et al.*, 2019; Alberio & Morelli, 2021).

In those various ways and contexts, 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 (Toledo, 2012).

2.2. AGILE ADAPTATIONS: SOLIDARISTIC BASIS

The second conceptual parameter of our tripartite framework is that of agility. In the mainstream business literature, agility generally denotes an adaptive ability to rapidly exploit opportunities for gaining competitive advantage, especially in response to social change (Li & Holsapple, 2018). This implies organisations with higher levels of strategic, operational and leadership agility have a distinct competitive advantage (Albayraktaroglu, 2023; Joiner, 2019; Baškarada & Koronios, 2018). Here 'agility' generally denotes rapid responses to new commercial contexts, as if they were purely external.

For actors within SSE ecosystems, by contrast, agility can mean rapidly reconnecting internal and external solidaristic relationships. It can also mean new arrangements which bypass or minimise exposure to conventional market competition. Finally, it can mean conscientizing consumers about more socially just, environmentally sustainable production arrangements as the basis for novel products.

Much documentation has shown rapid adaptive responses to the Covid-19 pandemic. In the sectors of cleaning, food production, pharmacy, and software, 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 and went beyond their member base to help elderly and homeless people(Arencibia, 2021; Betancourt and Arencibia, 2023).

Inclusive innovation (especially its sub-category of grassroots innovation) is often a time-consuming, lengthy process. By contrast, agility is a fast, responsive process. SSE organisations' agility lies in their ability to create opportunities through rapid collective action.

Both innovation and agility relate to dynamic capabilities which enable mainstream enterprises organisations to address deep uncertainty, e.g. from rapid technological change or financial disruption (Teece *et al.*, 2016). In SSE ecosystems, solidaristic bonds facilitated rapid flexible adaptation, as manifest in the Covid-19 crisis (Zollet *et al.*, 2021; Atalan-Helicke & Abiral, 2021).

2.3. TRANSFORMATIVE RESILIENCE: BOUNCING FORWARDS

The concept of agile adaptation can be complemented by transformative resilience. In its familiar conventional sense, resilience denotes capacities to withstand stress or disruption through adaptation. The English term has a Latin origin: *resilare* as a leap backwards, meaning a bounce-back to a previous state. This meaning became more prominent when the Covid-19 pandemic declined; commentators expressed approval that agri-food systems had sufficient resilience, i.e. the ability to 'bounce back' from a drastic change (e.g. Worstell, 2020).

By contrast with the mainstream version, 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.

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 (UNRISD, 2020). 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. These practices have been documented by the ILO (2022) and the USAID-funded Cooperative Development Programme

(Tango International, 2020). Some studies 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, 2021).

Those solidaristic responses can be understood as resiliently 'bouncing forwards' through a collective choice of transformative change. Originating in disaster management, this concept describes a community's capacity to 'adapt in order to survive by changing its non-essential attributes and rebuilding itself' (Manyena *et al.*, 2011, p. 3). The concept 'bouncing forwards' can describe many SSE agendas.

In many AAFNs, rapid innovative adaptations jointly benefited commercialization by small-scale farmers during Covid 19, e.g. through virtual farmers' markets (Mittal & Grimm 2020; Thilmany *et al.*, 2021). Such flexible rapid responses come from adaptive capabilities of cooperative arrangements, especially 'their self-help values, democracy, and solidarity', as well as a 'member-centred mission' (Billiet *et al.*, 2021, p. 105).

3. AAFNS OVERCOMING SOCIAL INEQUALITIES?

Having discussed those three parameters of SSE ecosystems, let us now move on to the agri-food sector. As widely documented, the dominant agri-industrial system has caused various harms such as: imposing social exclusion, inclusion into exploitative relationships, environmental degradation, resource burdens and pollution, while marginalising more sustainable agri-food systems. It has extended the long-time capitalist transformation of agriculture. Since that process began with land enclosures, small-scale peasants have been further dispossessed and driven off the land by more subtle but systemic means, e.g., state subsidies cheapening exports, farm and retail concentration driving down farm-gate prices, supermarket chains marginalising farmers' direct sales, etc. (Friedmann, 1993; McMichael, 2005).

Since the 1990s such changes have been globally neoliberalizing the agri-food sector. This agenda has reduced the state's role through privatization, deregulation and other measures prioritizing global markets to pursue economic growth. The techno-optimist neoliberal framework has privileged techno-innovation as central means to address social and environmental problems (Robert *et al.*, 2025, p. 926). In practice, technological innovations have not helped conserve natural resources, nor enhanced

livelihoods for most farmers; for instance, 'smart farming' can and does worsen social inequalities by displacing farmers (*ibid.*). Indeed, capital-intensive technology has been a key factor in consolidating larger firms, to the detriment of small-scale producers (Clapp & Purugganan, 2020, p. 1267).

To resist the dominant system, Alternative Agri-Food Networks (AAFNs) have sought more equitable, sustainable pathways from producers to distributors and consumers. Some AAFNs seek to prefigure deeper societal changes in the food system, expressed through concepts such as relocalizing, respatializing, resocializing and reconnecting food-system actors (Renting *et al.*, 2003). Generally known as short supply chains, these have offered products at lower prices than specialist shops and supermarkets; they bring economic efficiency, technical innovation and greater social participation (Lamine *et al.*, 2018). AAFNs build farming methods different than large-scale agri-businesses by establishing shorter social distances between producers and consumers through novel food purchasing arrangements, e.g., cooperatives, farmers' markets, community supported agriculture-CSA, etc. (Jarosz, 2008).

Some AAFNs emphasise 'quality' characteristics encompassing social and environmental benefits beyond simply consumer enjoyment. For 'quality' food and wine products, innovations often have come from outsiders to the sector, thus originally autonomous. 'The innovations were successful enough to rapidly spread at the local level, building on a renewed vision of food quality and on a vision of technical and economic autonomy' (Darrot *et al.*, 2014, p. 149). The innovation relies on constituting independent, self-sufficient AAFNs, i.e. independent of the dominant techno-market regime; such an alternative can fulfil local demand whilst ensuring reasonable income to the actors (production, processing and marketing) involved in the niche (*ibid.*, p. 153).

As an early hopeful description, AAFNs are 'rooted in particular places, [and] aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices, and enhance social inequality and democracy for all members of the community' (Feenstra, 2002, p. 2; Renting *et al.*, 2003, p. 2). Such gains towards social equality were often presumed but were rarely investigated (Allen, 1991). Early studies rarely addressed unequal relationships such as power, income, domination and oppression in the production process, nor wider access to quality food through AAFNs (Goodman, 2004, p. 7).

AAFNs minimally aim to enhance producers' income, based on product quality and reputation. AAFNs are driven by interpersonal ties, trust, and reciprocity: economic relations are socially embedded. Like grassroots innovations more generally, successful

ones 'become embedded in wider society through different dynamics: expansion, reframing, circulation of knowledge, shifting material arrangements and replication' (Roysen *et al.*, 2024, p. 8). Yet this basis does not inherently avoid or overcome unequal social relations of power, domination, oppression, hierarchies, conflict, and personal gain (Maye & Kirwan, 2010, p. 4, 8).

By contrast, solidaristic AAFNs also seek means to overcome socio-economic inequalities, both for producers and consumers. Their socially transformative potential lay in wider initiatives such as transition towns, solidarity districts, group purchasing, etc., according to some advocates (Renting *et al.*, 2012). In such ways, many AAFNs have further developed characteristics of the SSE. Solidaristic frameworks seek to de-commodify food through inclusive innovation processes, such as ensuring fair prices for primary producers, lowering prices for disadvantaged groups, improving access to good nutritional food, and fostering diverse forms of production.

As potential means forwards, AAFNs create new models that engage public concerns about community, social justice, health issues such as nutrition and food safety, and environmental sustainability. AAFNs differ from conventional agri-industrial networks as regards their organisational structures, farming systems, territorial setting, food supply chains, policy support, and food 'quality', which may include social, cultural, ethical, economic and environmental benefits. All those aspects may be closely inter-related (Karner, 2010, p. 9). For many participants of AAFNs, localisation expresses 'trust and cooperation between the actors who are working together to create a more sustainable food system', likewise decentralised governance models, encouraging local democracy, recognition, participation and empowerment, while countering the power of the globalised food system (*ibid.*, p. 10, 41).

In urban contexts, solidaristic AAFNs sometimes combine all those aims. In Manchester the various drivers encompass poverty, unequal access to goods and services, social exclusion, and health inequalities; together these have prompted the emergence of interlinked AAFNs (Psarikidou & Szerszynski, 2012, p. 34). They manifest 'social cooperation, solidarity, and trust'. More profoundly, 'relations of solidarity and justice with proximate and distant others, regard for land and for the global environment, social inclusion, the well-being of the disadvantaged, and the reskilling of everyday life' (Psarikidou & Szerszynski, 2012, p. 36). These novel interlinkages can be understood as grassroots inclusive innovation.

As one solidaristic form, community-supported agriculture (CSA) schemes, have sought to overcome material barriers such as land access and poor nutritional habits. In Wales some CSAs found ways to gain land access from private landlords and the local university (Mert-Cakal & Miele, 2021). To overcome nutritional inequalities, potential improvement include food-related social issues, requires supportive policies for sustainable eating, i.e. 'dedicated support policies for a plurality of components' (Giovannini, 2024, p. 931).

An unusual form of AAFN, agroecology-oriented food redistribution coalitions arose in Spain to address the rising levels of food insecurity during the Covid-19 pandemic. The coalitions represent a convergence of diverse social struggles, centring intersectionally marginalized groups, e.g. migrant, racialized women working as caregivers and the *pueblo gitano* (e.g. Romany). Tensions arose around needing to balance the goal of providing access to healthy and sustainable food with the affordability of such produce. In those initiatives the predominance of women reflected our society's unequal division of food-related care work. Mutual-aid groups collectivized such work of three kinds: food procurement and distribution, food preparation in community kitchens; and food-related knowledge exchange, e.g. through recipes. Moreover, the coalitions territorialized alliances between actors from urban and rural settings and between urban centres and peripheries. Together these efforts enabled participants to transform gender relations. But efforts to overcome wider subaltern roles faced many obstacles (Facchini *et al.*, 2024).

4. RESEARCH MATERIALS AND METHODS

Alongside the broad literature review in earlier sections, this paper draws on data from research projects in Brazil and Turkey, especially during the Covid-19 pandemic. Methodologically, both cases had multiple information sources. Through more Internet searches, those data have been extended and re-interpreted for the new analytical framework, which post-dates the original research projects. In both countries, the academic team structured a knowledge co-production process with SSE-AAFNs, supported by wider SSE ecosystems. Together this material provides a basis to compare the two cases (as in Yin, 2018); see Table 1.

The first project focused on the agroecology-based solidarity economy in Brazil, especially short supply chains, there called circuitos cortos (AgroEcos, 2022). The qualitative methodology was a knowledge-exchange among initiatives and with the research team. Beforehand, the team first reviewed the literature on three themes: the EcoSol-

agroecology convergence in Latin America, Participatory Action Research (PAR), and means of recording the research process.

The Brazil research plan included workshop methods to engage local actors. However, in early 2020 the Covid-19 restrictions precluded this plan. As a different way forward, local solidarity networks were adapting to the Covid-19 pandemic, expanding their activities, publicising their *circuitos curtos*, connecting more groups, appealing for practical support, etc. They were using social media such as Facebook and holding webinars as a multi-stakeholder knowledge exchange. So, the project was able to strengthen, publicise and record those efforts; it also did online interviews. The empirical material on specific initiatives has been published elsewhere (e.g. Levidow *et al.*, 2022a, 2022b, 2023). Rather than repeat such details, this paper updates the secondary sources for a national overview, alongside a specific initiative from a student thesis (Silva, 2022, 2023).

The second research project focused on Turkey's solidaristic networks of agri-food cooperatives. It gained both primary and secondary data. It initially analysed available secondary sources (e.g. archival data and organisational documents, coop web pages, press reports, bulletins and social media resources). Afterwards, open-ended, in-depth interviews were conducted between 2021 and 2022 with founders, members, volunteers, and producers/consumers of two food coops: one being a consumer and the other a producer coop: namely, Vakıfköy Women's Enterprise Production and Management Coop (Vakıflı women's coop) and Bogazici Members Consumer Coop (BÜKOOP). The project analysed how both cooperatives responded to the challenges of the pandemic (Öz & Aksoy, 2024). The two Turkish co-authors were among the founders and volunteers of the consumer coop analysed in the paper, enabling them to introduce direct experiences, in line with analytic auto-ethnography (Anderson, 2006).

Drawing on the two projects, the paper re-interprets AAFNs as SSE ecosystems through our tripartite analytical framework (i.e. inclusive innovation, agility, and resilience). This paper emphasises nation-wide patterns, with brief local examples. The information provides a basis for comparing the two national cases.

In both countries, the SSE-AAFNs sought to overcome inequalities, used agroecological production methods and often emphasised their environmentally sustainable methods to consumers. During the Covid-19 pandemic, several disruptions and constraints worsened inequalities, especially for lower-income groups. So, avoiding such a change was an achievement, warranting analysis. The next two sections present results on how they responded, taking each country in turn. Together they will be illuminated by our tripartite analytical framework.

5. BRAZIL: SSE-AAFNS ECOSYSTEMS

Let us begin with the case of Brazil. In this country, AAFNs are similarly called *Redes Alternativas Alimentares* (RAA). They are often called 'territorial markets', which build a territorial identity for linking various initiatives around agri-food quality and solidarity. Many AAFNs have arisen from a convergence between the *Economia Social y Solidaria* (ESS), EcoSol for short. Its global network has a Latin American section (RIPESS, 2013) with national and regional affiliates (e.g. FBES, 2021, 2022). Policies favouring the EcoSol-agroecology convergence have gained support from various mass movements.

5.1. BRAZIL'S ECOLSOL-AGROECOLOGY NETWORKS: BEFORE THE PANDEMIC

Brazil's networks previously promoting either EcoSol or agroecology 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, p. 39). Agroecological innovative producers were building local EcoSol networks, which raised their incomes, as well as conserving biodiversity and cultural heritages (ANA, 2012, p. 3). Conversely, agroecology was being incorporated into the EcoSol agenda (FBES, 2012).

Brazil's EcoSol-agroecology convergence has provided a support base stimulating SSE ecosystems (cf. OECD, 2020, 2023). This includes the Agroecology Association of Brazil (AAB) and Agroecology National Articulation (ANA). Support networks include agri-extensionists, both public-sector and third-sector, especially *Agricultura Familiar e Agroecologia* (AS-PTA). For EcoSol in general, 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. At the same time, Brazil's governments have supported *cooperativismo* with a neoliberal perspective, encompassing the rival aims of capitalist enterprises versus solidaristic ones (Pelegrini *et al.*, 2015).

The EcoSol-agroecology convergence has revived solidaristic mutual-aid practices, known as mutirão (joint work). This has been extended from traditional 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, p. 273).

As a long-time slogan, 'Without democracy, there is no agroecology'. Democracy provides means to overcome various inequalities, for example, by 'defending environmental justice, confronting the climate emergency, overcoming the racism and machismo that structure this unequal capitalist society; accessing common goods; recognising traditional communities which maintain them; and defending democracy'. Likewise, it means opposing agrichemicals, which threaten human health, the environment and agroecological methods (ABA, 2023). Together these aims have linked various groups in constructing AAFNs as SSE ecosystems much broader than producers.

But producers face low market prices through profit-driven middlemen, so they have sought means to retain more of the value that they add. 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 partly on state support measures, especially during Brazil's governments led by the *Partido de Trabalhadores* during 2003-16. As intended, these policies jointly opened new opportunities for lower-income farmers to raise their incomes, especially through cooperative means. Likewise, for lower-income consumers to access agroecologiccal products.

Various mass movements have demanded pro-agroecology policies to help overcome socio-economic inequalities of race, gender and class. These have been manifest in widespread hunger and malnutrition, as well as dispossession from land, as highlighted by the small farmers' movement (MPA, 2021, p. 13). Likewise, such arguments come from the landless rural workers movement (MST).

There was a long-time civil society demand for Participatory Guarantee Systems, authorising organic certification based on a farmers' process of knowledge-exchange. This sociotechnical innovation, an *Organização de Controle Social* (OCS), was eventually authorised by the Agriculture Ministry (MAPA, 2007, 2008, 2020). The OCS option provides a low-cost solidaristic alternative to expensive third-party certification. Under the *Programa de Aquisição de Alimentos* (PAA), agroecological producers learned how to organize col-lective marketing.

A major opportunity has been public procurement for school meals through the *Programa Nacional de Alimentação Escolar* (PNAE). Public procurement drives sustainable innovation practices forwards. 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 (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.

Producers 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, p. 158-159; also Schmitt, 2020). This experience set high-profile precedents for local product swaps during the Covid-19 crisis.

As a long-time demand of EcoSol-agroecology movements, state support should help to overcome inequalities. Responding to such demands, agroecology policy has aimed 'to recognize women's contributions to maintaining ecosystems, and to help reduce gender inequalities through actions and programmes that promote women's economic autonomy' (Brasil, 2012; Planapo, 2013, p. 221). Long-time feminist networks were raising awareness of gender inequalities and building ways to overcome them. Women farmers' participation in territorial markets bring a knowledge component about their socio-economic relations and means to confront inequalities (Lopes *et al.*, 2022, p. 58). Through democratic self-management, they have organized collective marketing as

forms of inclusive innovation, facilitating the participation of marginalised low-income women (SOF, 2020).

5.2. PANDEMIC DIFFICULTIES, ADAPTATIONS AND LATER ADVANCES

For both EcoSol and agroecology initiatives, Brazil's support measures were degraded or dismantled by Right-wing governments after 2016 (Niederle *et al.*, 2019, 2023). In early 2020 the Covid-19 pandemic worsened prior socio-economic inequalities. Now producers had lower incomes, vulnerable families had difficulties accessing fresh food, and women faced greater burdens of care (SOF, 2020). EcoSol-agroecology networks faced new obstacles from hygiene requirements and supply-chain disruptions.

In March 2020 a fast response came from a Porto Alegre textile cooperative, UNIVENS, 'United We Will Win'. Adapting its production process, it quickly 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 (2020). This high-profile initiative inspired wider solidaristic responses.

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).

Such adaptations needed grassroots innovations, especially new communications-logistics systems, adapting social media for solidaristic aims. Their Facebook pages announced the new arrangements such as online orders and alternative pick-up points; they 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. To avoid those problems, solidaristic tech experts or collectives helped to design alternative apps which could overcome those limitations.

As conventional retailers likewise faced disruptions, localised agri-food systems found a new opportunity, based on prior confidence between producers and consumers. They helped to innovate new products of family agriculture and various novel *circuitos curtos* (SOF, 20 21, p. 61). They devised innovative means to address all these problems together. Producers' incomes gained resilience by diversifying product combinations and sales outlets, while also building wider support networks (Calgaro *et al.*, 2022, p. 155).

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; this slogan was popularised by the landless workers' movement (MST, 2020; also Levidow *et al.*, 2022). All these efforts raised the profile of EcoSol as a broader solution to societal problems. EcoSol networks advocated this model for longer-term public policies to address poverty and malnutrition.

Beyond *circuitos curtos* per se, 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, p. 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).

Those nationwide patterns are illustrated by one urban region, Borborema in Paraíba state. New forms of commercialization found an opportunity to demonstrate that family agriculture can produce healthy products at scale, or in sufficient quantity to supply the sales outlets at an accessible price for all social groups. The initiatives also created food baskets for donating to families in vulnerable conditions and which face hunger. These activities revealed the territorial capacities to construct innovative solutions for the challenges posed by the pandemic. They strengthened food systems that are decentralized, more inclusive and more connected with natural cycles (Kato, 2022, p. 94-95).

The pandemic worsened inequalities of gender, race, class and age. Especially affected were those who depended on agricultural work or had difficult accessing health services. Those who remained healthy, especially women and youth, faced greater burdens to care for others and to maintain solidarity bonds despite social isolation (SOF, 2021, p. 19). Through women's wider solidarity networks:

> "Care for Yourself baskets" provided a source of affection and security at a time when we lacked accurate information from the state and effective public policies. When I receive this basket, I felt was as if I were receiving a hug from each of the women who were inside that basket. Each one produced something, such as soap, a plant extract, homeopathy, oil. And that was like affection (SOF, 2021, p. 82)

Seeking greater gender equality in all spheres, the same activists recorded family members' time spent on domestic tasks and paid work, comparing men and women. Some initiatives extended the Agroecological Notebook method to record such time allocations alongside income, thus making women's contributions more visible and raising their self-esteem (Schmitt, 2020, p. 294). There was greater prominence for the long-time slogan, 'The Agroecological Notebook empowers women and strengthens agroecology' (Rody and Telles, 2021).

In all those ways, grassroots innovations provided agile, creative adaptations to deal with new obstacles. At the very least, they alleviated the general tendency for the pandemic to worsen inequalities; some went further by expanding the producers' income base and thus livelihoods. These responses built a transformative resilience, further extending solidarity networks. They have helped to avoid or overcome inequalities of class, race and/or gender; the emphasis was contingent on each locality and initiative.

5.3. URBAN PERIPHERIES: RESPONSIBLE CONSUMPTION GROUPS

During the pandemic, those grassroots innovations became more publicly visible, attracting attention from low-income groups in urban peripheries. These are known as 'food deserts', where fresh food is scare or expensive. People there have become dependent on cheap ultra-processed food from supermarkets, undermining their health (Honório, 2020).

For alternatives, some consumer groups had already been collectively purchasing agroecological products from peri-urban farmers for distribution to members, at prices much lower than organic food in supermarkets. These initiatives are often called a Responsible Consumption Group (GCR). They demonstrate the consumer benefits; they also do political education about multiple inequalities and how the GCR seeks to address them.

Let us focus on the São Paulo metropolitan area known as ABC. For several decades, local authorities had been urbanizing the land, raising the financial value and transferring it to new companies with tax exemption and other benefits. Enterprises superexploited labour to supply multinational companies. Housing policy was denounced as 'favelization': owners were parceling buildings into tenements with small units, neglecting their maintenance, turning them into slums and often evicting their residents. Protests

resisted evictions, occupied empty buildings and demanded land as sites to build their own houses (Silva, 2022, p. 70)

Together those struggles inspired the Rural Urban Consumption Collective (*Coletivo de Consumo Rural Urbano*) Diadema from 2014 onwards. It emerged from the Low-income Residents' Association of Housing Estates, Tenements and Renters of the Diadema West Region, indicating its class basis. The CCRU Diadema has highlighted the class exploitation experienced by family farmers and urban workers alike, as an extra reason for solidaristic bonds between them. (Silva, 2022, p. 89-133; Silva, 2023).

It sought to create a horizontal basis for democratic decisions with everyone's participation, partly through mass assemblies. These have addressed inequalities of gender, race and class. It highlighted how women's work was generally made invisible and devalued, warranting a collective struggle for solutions that would make everyone's lives more sustainable (*ibid.*, p. 154). Within the management group, all members had completed secondary school education, and 70% have been women; under half are white, similar to Brazil's racial composition (*ibid.*, p. 112).

Its warehouse has stored food deliveries so that members could assemble the weekly food baskets. It arranged food deliveries from agroecological cooperatives in peri-urban areas and distant semi-rural ones, who otherwise would face low prices. These cooperatives featured women quilombolos, i.e. descendants of escaped slaves.

When Covid restrictions disrupted their distribution system, the CCRU sought alternative means, especially online orders. It participated in the Class Solidarity campaign, organizing donations to needy families and indigenous groups (*ibid.*, p.121). More local groups formed in low-income urban peripheries.

To extend orders beyond Wi-Fi access, in 2021 the CCRU partnered with a computer-program enterprise to construct a cell phone app called CCRU Diadema. New WhatsApp groups dealt with various tasks, such as monitoring orders, arranging deliveries and paying suppliers. Staff developed a blog for general information about the collective such as its identity, activities, experiences, partner farmers, publications, recipes and nutritional information. Likewise guides for training and collective purchasing via the app. The tasks were done by a combination of paid and voluntary labour (Silva, 2022, p. 109; Silva, 2023).

As the pandemic subsided, in 2022 the CCRU resumed assembling the baskets in its own warehouse, now offering greater food variety than before. To accommodate greater consumer demand, more farmers were included; the larger support base continued after

the pandemic (Silva, 2023, p. 122). The rural-urban alliance helped to recover and popularise knowledge about using and conserving biodiverse natural resources for food production (Silva, 2022, p. 109; Silva, 2023).

In all those ways, CCRU Diadema has helped to valorize diverse knowledges and contributions towards better lives, while overcoming various inequalities. It illustrates how solidaristic AAFNs have been extended to lower-income groups through inclusive grassroots innovation, agile adaptation and a transformative resilience.

5.4. POLICY SUPPORT MEASURES: DECLINE AND REVIVAL

Those advances have depended somewhat on policy support measures, which were greatly increased or innovated during the first Presidency led by the Workers' Party (2003-2016). Afterwards Right-wing governments reduced or abolished such measures, so SSE-AAFNs had greater difficulty to expand or even continue. After Lula won the 2023 Presidential election, support measures were expanded or revived.

The new government relaunched its earlier National Agroecology Plan along with many support programmes. Its advocates praised their basis as inspired by popular experiences, national advisory groups and social participation. The measures would help to decentralize food marketing, to make high-nutritional food more affordable, to distribute more income to primary producers, and especially to valorize women producers (ANA, 2024).

In addition, Plan Safra 2023/2024 incentivised peasants to adopt agroecological production methods, to recover degraded land and to learn skills for *circuitos cortos*, especially through collective marketing. The Plan also increased purchases of agroecological food for needy families (MAPA, 2023). Such practices soon increased. SSE-AAFNs had maintained collective capacities to use the new measures in solidaristic ways. However, supporters criticised overly bureaucratic procedures for obtaining loans, likewise the small budgets relative to the great subsidy for agribusiness practices, which undermine family farms and degrade natural resources (MST, 2024).

6. TURKEY: SSE-AAFNS ECOSYSTEMS

Let us now turn to the case of Turkey. Beginning in the 2000s, this country had a rise of alternative agri-food networks (AAFNs), whereby short food supply chains sought to establish social proximity between consumers and producers. They have manifested a

grass-root level response to the challenges of neo-liberalization and deep market integration within an increasingly corporatized agri-food system (İnce & Kadirbeyoğlu, 2020; Büke *et al.*, 2023). These initiatives overlap with the SSE and its support networks; which have been proliferating in various forms (ActHuman, 2021b).

Since then, the number of these AAFNs have increased and their geographical distribution became more diverse, though most are still concentrated in three big cities; namely, Istanbul, Ankara and İzmir (Karakaya Ayalp, 2021, p. 990). Agri-food products have around 80 short supply chains in Turkey (Karakaya Ayalp, 2021). They take several forms, including producer and consumer cooperatives, collective kitchens, farmers' markets, urban community gardens, community supported agriculture schemes, etc. Traditionally known as *imece* in rural areas, mutual aid has been extended (without the term) for urban-rural linkages.

6.1. TURKEY'S AGRI-FOOD COOPERATIVE ECOSYSTEM: BEFORE THE PANDEMIC

Cooperatives and their networks represent an early example of collective solidarity in Turkey. There are about 60,000 cooperatives with 6.6 million members, operating mainly in housing, construction, transportation, food, and agriculture (ActHuman, 2021b, p. 23). Cooperatives there traditionally have been heavily dependent on public sector support, enabling the state to intervene in their operations, limiting their autonomy.

Recently, however, 'there have been efforts towards transforming cooperatives at the grass roots level, apart from the practices of the public at the level of central and local administrations' (ActHuman, 2021a, p. 3). These efforts have enabled cooperatives to develop some autonomy from the state. More recently, municipalities' procurement has helped build solidaristic relations with cooperatives as partners within the SSE ecosystem, developing horizontal relations rather than creating dependencies.

In Turkey, agricultural cooperatives 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 1980s, this accelerated since 2000s, with the World Bank financing an Agriculture Reform Implementation Project (Aksoy, 2010). As a result, some cooperative unions—such as Pankobirlik, the sugar beet cooperatives union and Tarım Kredi Kooperatifleri Birliği (Agriculture Credit Cooperatives Union)—have followed the trend of corporate control and financialization. By contrast, other cooperatives have undergone a reorganization with the aim to strengthen solidaristic principles (Yeneroğlu & Aykaç, 2021, p. 141). Tire Dairy Products Coop (established in 1967), and Hopa Tea Coop (established in 1959) exemplify old agricultural deve-

lopment coops seeking to resist this strong wave of neoliberalism (Hacısalihoğlu & Şahin, 2019, p. 79-80).

Parallel to these examples of regenerating rural cooperatives, recently established urban consumer cooperatives complement more sustainable forms of urban-rural relationships. Although some of these express affluent urbanites' search for healthy food, others explicitly adopt the principle of food sovereignty, which goes beyond direct producer consumer interaction; providing the first steps for a solidarity economy. These novel forms of 'solidarity-based economy initiatives' aim to establish reciprocal, trust-based relations between diverse actors (producers, consumers, civil society organizations) as a means to avoid the problems from the market-driven food system (Pelek & Gajac, 2020, p. 112). These initiatives are characterized by non-hierarchical organizational structure, volunteer work, democratic decision-making and democratic participation (Öz & Aksoy, 2019; Kadıköy Cooperative Collective, 2020).

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, p. 8). They select producers according to criteria such as sustainable production processes (no use of chemical inputs, use of local/traditional varieties of seeds), non-exploitative labour (fair wages), 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 organic requirements. In this regard, we can take the case of a university-based consumer food coop, Bogazici Members Consumer Coop (BÜKOOP), supplied by small farmers. Many cannot afford to get organic certification, despite their commitment to ecological and organic production. This has important implications on the consumer side as well, since organic products are considerably more expensive.

Such considerations have led BÜKOOP to encourage instead alternative certification mechanisms such as 'participatory guarantee systems' (PGS) based on mutual trust, in an attempt to support agroecological practices of small-scale farmers to sell their produce at fair prices, while also enabling consumers to access high-quality products at affordable prices (Öz & Aksoy, 2024). In that way, many AAFNs prioritize solidarity with small farmers, giving special attention to women producers and recognizing their labour (Soysal Al, 2020). This centrality of solidarity to address class and gender inequalities goes beyond small-scale producers; Kadıköy Cooperative, for instance, "supports many disadvantaged communities, such as Migrant Women, Kazova workers, and Kadın Kadına Mülteci

Mutfağı [The Women-to-Women Refugee Kitchen], by selling their prepaid products on their solidarity shelf, separate from the ecological food shelves" (Soysal Al, 2020, p. 146).

In short food supply chains in İzmir, some small farmers received various types of support. In particular "rural-rooted and very small-scale farmers, which were mostly attached to more formal networks, mentioned a bigger change in their livelihoods" (Kurtsal *et al.*, 2020, p. 216), and "gained more visibility and respectability" (Kurtsal *et al.*, 2020, p. 214). For producers engaged in what the authors call 'food community networks,' and for many of whom agriculture is not the sole source of income, establishing and strengthening social ties and participating in the network seem crucial (Kurtsal *et al.*, 2020). Therefore, AAFNs have diverse forms and effects on different farmers' groups as regards economic and social equality.

Small scale producers face difficulties from market driven competition in a sector that is permeated by retail chains, increased industrial agricultural production and monopolistic structures in setting prices for agricultural inputs, all intensified by neoliberal policies (Öztürk *et al.*, 2018). To help resist such pressures, more local administrations have developed innovative support measures (Oba & Özsoy, 2024). Some municipalities support rural-urban solidarity initiatives, e.g. through more attractive products and short food supply chains.

İzmir has been a pioneer in this process. İzmir metropolitan municipality does not provide direct financial support or grants but does help small producers strengthen their capabilities for self- organization, as well as support producers' cooperatives via purchasing arrangements (Yıldırım 2020, p. 46). Beyond producers per se, the municipality purchases their products to supply lower income groups in need through staple food products such as milk, olive oil, yoghurt, cheese and potato (Yıldırım 2020, p. 46-47). To revive a traditional wheat variety, Izmir's local Seferihisar municipality supplied seeds to the producers and guaranteed purchases at a fair price through a social cooperative (Nizam & Yenal, 2020, p. 757).

Some provide market spaces for small-scale producers to facilitate their economic participation. For example, İzmir has restored a municipal building for use by an Urla women producers' market every Saturday (Aykaç, 2022). Bursa's Nilüfer municipality has an international city food system planning project (https://fusilli-project.eu), which seeks to establish a network of Living Labs in 12 European cities for open innovation; the project does a multi-scale coordination of various actors including farmers markets and community supported agriculture schemes (Karakaya Ayalp, 2023).

Ovacık Municipality played a pioneer role in the establishment of Ovacık Agricultural Development Cooperative. This has played a crucial role in reviving agricultural production in the region. By organizing producers, the cooperative generated employment opportunities in both the countryside and the town centre (Göçer, 2021). Through municipal support, some villages established collective production; they used the income to provide student scholarships and financial support to families in need (*ibid.*).

Those examples show the importance of a multi actor network in the SSE ecosystem in order to enable rights, equality, cooperation and solidarity. All those innovative measures help to resist the neo-liberalization that is promoted by national policies.

6.2. PANDEMIC DIFFICULTIES AND ADAPTATIONS

To address the pandemic, in March 2020 Turkish government took measures which included: suspending face-to-face education; closing public spaces; and lock-downs initially for the elderly, later expanded to include everyone in metropolitan cities. The measures affected various economic sectors including agriculture, food and beverages (Tuysuz *et al.*, 2022, p. 1135). The government's agricultural policies, which had long been rooted in neo-liberalization of the economy, were now criticized by numerous professional organizations; specifically, the reductions in subsidies to the agriculture sector at a time when protectionism was gaining momentum globally (Ertekin & Yıldızcan, 2023, p. 161).

As the pandemic harmed most economic sectors in Turkey, cooperatives faced challenges, too, largely due to public health safety measures such as lock-downs and interruptions in supply chains (ActHuman, 2021a, p. 4). Both measures worsened inequalities, in particular with regard to gender and class. In women's cooperatives in the Western Mediterranean region, for instance, members experienced both financial and social difficulties due to restrictions caused by the pandemic; their production was severely affected and there were disruptions in supply chains (Demircan Yıldırım, 2022).

Under these difficult circumstances, cooperation became even more necessary, as explained in the following statements of a co-op member: "Before the pandemic our sales were overwhelmingly to visitors to the village. Since the pandemic, 99% per cent of our sales are through other co-ops, consumer purchasing groups, etc." Here, most of these sales were conducted "via telephone ordering, Internet, Instagram, etc.". For women cooperatives this intensified a challenge that had already become an issue before the pandemic: namely, the weak capacity to build and operate online platforms for greater reach and sales. Many women co-operators lacked the technical skills to conduct such activities, though there were exceptions (e.g. Öz & Aksoy, 2024).

Pandemic restrictions also increased the importance of agile responses from a multi-actor solidarity network supporting women cooperatives. Kadın Emeğini Değerlendirme Vakfı (KEDV), an association linking women producers, illustrates the SSE ecosystems approach. KEDV plays a key role in providing platforms for women's coops to come together, for example, by organizing seminars and workshops in different provinces of Turkey. Such activities created opportunities to form networks, to share and improve skills and practices, and to enable them to connect with women from diverse income groups and ethnic backgrounds (Çınar *et al.*, 2021; Öz & Aksoy, 2024). 'To keep going, we need to hold each other's hands', said a woman co-operator from Vakıflı coop in Mediterranean Turkey (Capar, 2023). The prompt response of KEDV was very effective in serving to coordinate and strengthen the solidarity networks among women cooperatives during the pandemic (Demircan Yıldırım, 2022).

Gender and class inequalities might be intertwined, as illustrated by Vakıflı women's coop in Mediterranean Turkey. The pandemic forced them "to stop and think" about the prevalent inequalities in sharing the benefits. In the words of a co-operator:

> Before the official women's co-op, there was a duality between those who could contribute more capital and thus could produce more, earn more, and those who couldn't. During the pandemic, however, when sales to tourists practically stopped, since there were hardly any visitors, this problem became more obvious. We also had more time to think about how we could find a way out of this. Establishing an official co-operative, we decided, could enable us to re-organise everything. And that's how we developed a system that enables each member to be equal partners in profit or loss of the co-op, regardless of her means. In the new system, members make sure that every house in the village benefits from our common effort in the co-op, while those who work more get additional benefits (Capar, 2023)

At the same time, carrying all the domestic burden in times of crises, women co-operators emphasized the "care" and "affection" that emerged from their collective efforts; they find the "cure" in their cooperatives. In Hatay, a province which was hit severely by an earthquake in 2023, when they were still struggling to recover from the pandemic, a woman co-operator said the following:

> Economic benefits are of course very important, but it also feels very good to be together, to work together. I can give the example of the aftermath of the earthquakes. When we couldn't recover psychologically, the co-op healed us in a way. We as the women's co-op made everybody work, participate. You know, working heals you. The co-op there-fore provided means for people to recover (Capar, 2023)

In a similar vein, said another co-operator, "Working together in the coop is like therapy. It kept me on my feet in these difficult times". (Kartun, 2023)

In those ways, SSE-AAFNs provided economic benefits supporting the income base and livelihoods of their participants that proved especially critical during the pandemic. In addition, AAFNs played significant roles in supporting their members socially and psychologically, which in turn reinforced their resilience. At the same time, this resilience can only be maintained and strengthened via an SSE ecosystem with the involvement of multiple actors, including but not limited to public authorities, that bolsters these practices (Kurtsal *et al.*, 2020; Atalan-Helicke & Abiral, 2021).

6.3. URBAN FOOD COOPERATIVES

For consumer food cooperatives and other arrangements in cities, the pandemic imposed delays in establishing novel forms of short supply chains as well as in continuing current initiatives. For example, a newly established consumer food coop in Istanbul, Beşiktaş Coop, had just opened its shop when the pandemic hit; they could not admit consumers or hold face-to-face meetings with members, and so faced a setback from the very start (Sosyal Ekonomi, 2022). Despite such hardships, many food cooperatives managed to survive, thanks to several features: their earlier collaboration in the preparatory phase of the coop; their rapid agile adaptation; continuing their open call through routine meetings online; and their effective use of social media to reach consumers (Yeşil Gazete, 2020).

Based on their earlier experiences and relations of trust, food cooperatives quickly developed agile means to address the pandemic challenges. BÜKOOP devised a prepayment system to ensure the product supply would continue (Öz & Aksoy, 2024). The Natural Food Network and many neighbourhood cooperatives prepared solidarity food packages for those in need to enable uninterrupted access to food (Atalan-Helicke an&d Abiral, 2021).

Given its success during the early days of the pandemic, Natural Food Network was invited by Ankara Municipality to develop a model for access to markets by nearby small farmers (Atalan-Helicke & Abiral, 2021, p. 97). Coupled challenges of the pandemic as well as the severe economic crisis also led BÜKOOP to provide fruits to university students at a subsidised price. This was made possible with the support of producers, BÜKOOP volunteers and non-student buyers (Öz & Aksoy 2024); such cooperation has later continued, adding other products.

After the pandemic, however, some neighbourhood consumer coops in Istanbul had to close down. As plausible reasons, they faced macro-economic problems such as high rents and inflation, alongside excessive administrative burdens running their opera-

tions. More fundamentally, AAFNs face strong market competition as the agri-food sector becomes ever-more neo-liberalized.

6.4. SSE-AAFN ECOSYSTEMS: OVERVIEW AND LIMITATIONS

During the pandemic, producers in general managed to increase their sales by supplying niche markets and engaging or initiating short supply chains. AAFNs increased sales, especially as affluent urban dwellers sought healthy and quality food (Keyder *et al.*, 2020). Rejuvenated cooperatives and their collaboration with municipalities helped lower-income groups to access fresh, healthy food (*ibid.*). So an SSE ecosystem was crucial for overcoming inequalities.

Through the pandemic experience, the SSE-AAFNs ecosystem flexibly adapted 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. Importantly, this effort was enabled by the trust that has been built over the years with democratic, participatory organizational processes.

Despite several challenges, Turkey's SSE-AAFNs ecosystem successfully engaged with other actors such as local administrations. Some producer and development cooperatives changed their priorities towards emphasising closer relations with consumers based on solidaristic ties, especially for alleviating social inequalities. 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.

At both the production and consumption stages, they generated greater care and affection; this softened the impact of the demoralising difficulties, especially those associated with the pandemic. The examples here describe how the SSE-AAFN ecosystems gained capacities to realize their goals and provide 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.

In recent years Turkey's cooperative movement has brought together diverse institutional actors through platforms, and networks. These multi-stakeholder structures operate informally, sharing knowledge and experience. However, they remain 'at an embryonic stage', unable to upscale their joint activities (Adaman *et al.*, 2025).

7. COMPARATIVE ANALYSIS AND CONCLUSION

This paper has theorised how inclusive grassroots innovation responds to socio-economic inequalities and facilitates efforts to overcome them, contingent on solidaristic relationships. By juxtaposing a literature review with two national cases, this paper showed how some AAFNs with their support networks serve as Social Solidarity Economy (SSE) ecosystems, here called SSE-AAFNs for short. Based on principles of democratic self-management and mutual aid, SSE-AAFNs have developed inclusive grassroots innovation in various forms. Their collective capacities help overcome or avoid social inequalities (of class, gender and race). Given that SSE ecosystems were originally seen as solidaristic interdependent actors (OECD, 2020, 2023), here we have deepened the concept by highlighting inclusive grassroots innovation as central to their beneficial roles.

As outlined above, AAFNs in Brazil and Turkey have such similarities alongside their differences. Both have benefited from civil society groups, especially women's networks, within wider SSE ecosystems. Both have demanded and gained support measures from municipalities, along lines helping to build collective capacities rather than dependence. In each country, the relevant organisations cooperatively developed dynamic capabilities through solidaristic commitments and democratic self-management. Through those capabilities, they have improved sustainable agri-food practices, managed knowledge exchange within SSE ecosystems and developed short supply chains.

Moreover, they creatively adapted and extended those distribution methods during the Covid-19 pandemic. The health risks made many people feel anxious about food safety in conventional food chains (especially supermarkets), and so raised interest in alternative sources. Going beyond safety issues, SSE-AAFNs used the opportunity to reassure and educate people about sustainable, equitable production methods. Many new consumers continued a supportive role after the pandemic. This solidaristic expansion can be (and remains) a general role for inclusive grassroots innovation beyond an emergency. SSE-AAFNs have maintained or created short supply chains which can avoid profit-driven middlemen, increase producers' incomes, and minimise prices for lower-income consumers, as in responsible consumption groups.

Solidaristic aims, methods and inclusive grassroots innovation were extended by lower-income groups in urban peripheries to address their food needs. This exemplifies how wider SSE ecosystems responded in many other sectors and places, helping them to address social inequalities. As a major difference between the two countries here, Brazil has had a relatively greater convergence of social movements offering mutual support,

developing collective capacities, demanding policy support measures (especially at national level) and using them to strengthen solidaristic bonds alongside better livelihoods.

7.1 TRIPARTITE ANALYTICAL FRAMEWORK

To explain how SSE-AAFNs adapted to adverse contexts and used them, this paper elaborated a tripartite framework: grassroots innovation, agile adaptation and transformative resilience. The three parameters generally overlap in specific practices. Nevertheless let us recapitulate the parameters in turn, clarifying how each one helps to resist the hegemonic system and thus has wider significance for solidaristic innovation.

Inclusive grassroots innovation:

Non-capitalist economic initiatives, which sometimes overlap with grassroots innovation, have inspired efforts to expand such alternatives towards a solidaristic future. However, many such initiatives encounter difficult tensions with conventional markets; some have become marginalized, co-opted or subsumed by the hegemonic economic system (Hess, 2007; Fressoli *et al.*, 2014; Robra *et al.*, 2023). This paper has shown how some SSE-AAFNs have been maintained through wider SSE ecosystems, partly by embedding inclusive grassroots innovation (cf. Billiet *et al.*, 2021; Roysen et al, 2024).

SSE-AAFNs have sought to overcome social exclusion from decent livelihoods and healthy food. Their novel practices have given broader meanings to traditional rural concepts of mutual aid; such practices go beyond family or neighbour relationships to new contexts including urban ones. They have innovated agroecological production and distribution methods which can benefit lower-income and socially marginalised groups.

A care ethics has been globally developed across the places and spaces connecting food producers, consumers and environments, e.g. for a pesticide-free countryside (Goodman & Goodman, 2009). Women in particular have played leading roles by enabling greater inclusion and extending care relationships. Through democratic self-management, they have organized collective marketing, often using new electronic tools. Meanwhile they facilitated participation by otherwise marginalised low-income people. Through grassroots innovation, SSE-AAFNS made adaptations for several aims; to minimise or overcome inequalities, to enhance their members' stability, and to extend short supply chains; many continued after the pandemic.

Agile adaptation:

During the Covid-19 pandemic, many conventional agri-food chains demonstrated and emphasised agile adaptive responses. For example, some supermarket chains innovated or extended online ordering systems, especially through mobile phones (Machado, 2022). These maintained socially distant, anonymous relations between producers and consumers.

By contrast, in both countries, SSE-AAFNs innovated agile means to extend solidaristic relations during the pandemic. They had to address broken supply chains, lockdown regulations and communities affected by illness and lost income. As general characteristics of SSE ecosystems, their prior routines, collective capacities and solidaristic mutual-aid relationships were quickly mobilised for creative, adaptive responses.

Collective marketing coops maintained or expanded their sales by innovating digital communications, especially social media for promotion and apps for orders. Some expanded their consumer base through novel products or combinations. Solidaristic IT groups helped to design apps for those aims. Some adaptions were no longer necessary after the pandemic. Others continued, such as online ordering systems, also serving a political education role. An adaptive agility complemented a transformative resilience.

Transformative resilience:

During the pandemic the agri-food industry highlighted its resilience for a rapid 'return to normal', aka bouncing back to its previous state. Representing global elites, the World Economic Forum promoted various technofixes for strengthening the resilience of the dominant food system (Fraser *et al.*, 2020), in ways minimising dependence on human labour. Anticipating future crises, it proposed to enhance 'food-system resiliency' through 'data-driven' information platforms, especially by integrating small-scale farmers into distant markets (WEF, 2020).

By contrast, SSE-AAFNs used the Covid-19 pandemic as an opportunity to strengthen solidaristic bonds among producers and with consumers, through support networks beyond their members. SSE ecosystems were demonstrated here for the two case-study countries. Such actors were resilient in two main ways. First, they used their greater income 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, they were further embedded in local communities, as well as linked with a wider movement that inspires them (Billiet *et al.*, 2021).

As SSE ecosystems, some AAFNs deepened and expanded solidaristic bonds. We have analysed this shift as a transformative resilience bouncing forwards (cf. Manyena *et al.*, 2011, p. 3). The concept can theorise many solidaristic practices during the pandemic. It helps solidarity networks to open up collective pathways towards better futures.

7.2. BARRIERS VERSUS SUPPORT

As many SSE-AAFNs continued during the pandemic, they still faced structural limitations. A main barrier lies in the dominant political-economic forces, especially the agri-industrial food system perpetuating socio-economic inequalities. Major barriers include:

- Hierarchical governance: Conventional food-supply chains perpetuate a hierarchical governance of power relations. Centralized distribution systems perpetuate anonymous, socially distant relationships.
- Hegemonic markets: Market pressures perpetuate structural injustices such as unemployment, low-wages and private ownership. A strong political force would be necessary to displace those dominant roles. SSE-AAFN ecosystems cannot substitute for such a force.
- Adverse policy frameworks: The dominant agri-food system benefits from favou-rable support measures such as subsidy, procurement criteria, infrastructure (e.g. irrigation, ports for exports) and R&D priorities (for capital-intensive innova-tion). Market pressures readily marginalize SSE-AAFNs or pressurise them to accommodate the profit motive.

SSE-AAFNs can better flourish in a favourable policy-institutional environment. To overcome barriers, helpful measures would include the following: public procurement criteria favouring agroecological food; skills training for collective marketing; flexible regulations for hygiene and certification (organic or agroecological); agri-extension services facilitating materials recycling and higher-value products; infrastructure for storing and selling products, including transport from peri-urban areas; technical assistance for online ordering systems enhancing consumer knowledge. Such measures can help SSE-AAFNs to expand, for example: outscaling (replication), upscaling (enlargement) and/or creating rural-urban links across greater distances.

Solidaristic AAFNs have faced tensions and dilemmas, more subtle than barriers. According to a survey of non-profit agri-food networks: 'Tensions between idealism and pragmatism come up when organizers feel conflicted between observing the principles

they set out for the initiative and adapting or forgoing those principles for practical reasons. Indeed, their environmentalist, solidaristic principles often conflict with options to generate income. Several mentioned 'the pioneering nature' of their initiatives, seeking to clarify their alterity from conventional agri-food chains. Some emphasised that non-profit AAFNs depended on various external groups to help overcome barriers and find new opportunities (Ribeira *et al.*, 2021, p. 503; cf. Öz & Aksoy, 2019).

In those ways, SSE-AAFNs have helped overcome or avoid social inequalities through inclusive grassroots innovation. Members' democratic participation has played crucial roles: in defining issues, planning activities, extending mutual-aid practices, demanding policy support measures, using them effectively and thus gaining collective empowerment.

Beyond AAFNs, the tripartite framework here has wider relevance to SSE ecosystems. It can help them in several ways: to identify parameters that may otherwise remain latent; to develop strategies for strengthening and integrating them; to resist being marginalized or co-opted by the hegemonic system of competitive markets; and to advocate support measures which serve those aims.

Table 1. Comparing SSE-AAFNs in Brazil and Turkey.

	Brazil: EcoSol-agroecology	Turkey: Agri-Food Ecosystem
SSE ecosystem: main national networks. Socio-political forces Women's networks and empowerment.	Practical convergence of ANA (agroecology)+ FBES (EcoSol) agendas with advice-support networks, e.g. Red Ecovida, Mass movements of low-income peasants (MPA), landless rural workers (MST), environmentalists, quilombos, feminists, etc., alongside networks of agri-extensionists and public policy officers. *Sempreviva Organização Feminista* (SOF) linking various feminist networks.	*Sosyal Dayanışma Ekonomileri:* informal network of old and new-generation cooperatives as a bottom-up process for establishing an SSE. Growing social movements, e.g. Farmers' Union (Çiftçi-Sen), environmentalists and urban alternative food networks *Kadın Emeğini Değerlendirme Vakfı (KEDV):* Association valuing women's labour by finding marketing opportunities.
Grassroots innovation: esp. short supply chains. Higher price for agroecological products. Mutual-aid extended.	Collective marketing initiatives and consumers' coops. *Sistemas Participativos de Garantia* (SPG) help gain collective self-certification of agroecological products as organic through an *Organização de Controle Social*. Benefits to disadvantaged communities as producers and consumers. *Mutirão* among producers and for urban-rural linkages	Collective marketing initiatives and consumers' coops. Participatory Guaranteed Systems help gain a higher price for agroecological products (though not the premium price for organic). Benefits to disadvantaged communities as producers and consumers. *Imece* (without the term) was extended from rural contexts for urban-rural linkages.
Agility: short supply chains adapting.	Fast adaptations reconciling hygiene restrictions with the previous and new consumer base, esp. via digital ordering systems.	Fast adaptations reconciling hygiene restrictions with the previous and new consumer base. For example, pre-payment schemes in food coops.
Resilience bouncing forwards.	Adaptations extended solidaristic relationships between producers-consumers. Care roles softened difficulties of pandemic.	Adaptations extended solidaristic relationships between producers and consumers. Care roles softened difficulties of pandemic.
Public policies: National policies. Local government.	Support mainly agribusiness, with smaller programmes supporting EcoSol-agroecology. Support *cooperativismo*, favouring capitalist enterprises as well as alternatives. Some local authorities and extension services have helpful measures, extending supportive national policies.	Support agribusiness. Neoliberal policies have aimed to integrate coops (including AAFNs) into competitive markets, contrary to SSE aims. Some municipalities have offered helpful support measures, despite neoliberal national policies.

Source: elaborated by the author.

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