



Organizações & Sociedade Journal

2024, 31(110), 001-036

© Author(s) 2024

Section: article

DOI 10.1590/1984-92302024v31n0014EN

e-location: ev31n0014EN

eISSN 1984-9230 | ISSN 1413-585X

www.revistaoes.ufba.br

NPGA, School of Management

Federal University of Bahia

Associate Editor:

Valeria Gianella

Received: 12/09/2022

Accepted: 04/15/2024

Rural Social Innovation: An Exploratory Study in Rural Brazil

Anderson Luis do Espírito Santo ^a

Carolina Andion ^b

^a Universidade Federal de Mato Grosso do Sul, Corumbá,
Brazil

^b Universidade do Estado de Santa Catarina, Florianópolis,
Brazil

Abstract

The purpose of this study is to understand how social innovations occur in rural areas – what facilitates and/or hinders them – and how they affect rural development. To achieve this, a systematic review was conducted to identify the current state of the discussions surrounding social innovation in rural areas, followed by extensive ethnographic fieldwork to examine the practices promoted by families living in the rural settlement of Taquaral, located in Corumbá, within the Pantanal region of Mato Grosso do Sul. Using an analytical and methodological approach built under the aegis of the sociology of public problems, with a pragmatist basis, and considering settlements as laboratories for experimentation, the main findings indicate that rural social innovation is a powerful instrument for addressing the socio-environmental challenges that affect rural families and can provide vitality to rural development. However, studying social innovation requires robust fieldwork to capture how it unfolds. After all, much more than the dissemination of techniques, it emerges from the collective confrontation of various problematic situations that affect actors over time.

Keywords: rural social innovation; settlements; new ruralities; rural development; ethnography.

Introduction

If we look carefully at the scientific debate and rural development practices in Brazil, we can see the coexistence of multiple visions, projects, and different currents and paradigms about what it means to develop rural areas. Based on the contributions of Schneider (2010), we can understand that Brazilian researchers are constantly rediscovering the rural environment: from Agrarian Reform to the advancement and consolidation of family farming; from technology in the field to the growth of grain and commodity crops; from the challenge of promoting agroecological and organic production to envisioning rural areas beyond agriculture and the traditional sustainability paradigm.

In fact, there are several rural “Brazils”. However, the progress of the past (Cazella *et al.*, 2016), or that we thought we had achieved¹, has remained caught between pseudo-development² and various persistent problems and challenges, such as the current malaise in democracy, hyperinflation, environmental devastation, increased violence, poverty and extreme poverty, the mass release of pesticides, environmental destruction, among others. These factors have been intensified by the COVID-19 pandemic, whose impact is high due to the vulnerability of rural areas and inland regions (The expansion of COVID, 2020). Thus, rural areas have been rapidly transforming in the country and are currently experiencing complex public problems reported daily by the media, which raises the need to rethink the development routes for these regions.

In the wake of discussions on the challenges of implementing more sustainable, fair and inclusive development styles, the discussion on social innovations (SI) has emerged more recently, identified as important vectors with the potential to influence the development trajectories of territories, whether in urban areas (Andion, Alperstedt, & Graeff, 2020; Moulaert & Sekia, 2003) or in rural areas (Bock, 2012, 2015; Espírito Santo, 2021; Lindberg, 2017; Muñoz & Muñoz, 2017; Neumeier, 2012, 2017). In many of these studies, social innovations are expressed as dynamics of social change promoted by the experience and collective action of actors in the territory, in the face of the challenges³ they face, with a view to improving their quality of life, guaranteeing rights, combating poverty and social exclusion, and/or co-constructing solutions to the different contemporary socio-environmental challenges (Klein *et al.*, 2012).

Given this scenario, it is important to discuss social innovation in rural areas. After all, when it comes to rural development, the social aspect is presented as a central element of innovation (Jean, 2012; Zavrtnik, Superina, & Duh, 2019). Thus, our objective is to understand how social innovation occurs in rural areas based on the practices – experiences and actions – of families and their interactions, indicating how they impact rural development. Against this backdrop, we seek to contribute to the advancement of the theoretical-methodological discussion on social innovation, moving beyond the polarization that dominates this field, where most approaches remain exclusively focused on an instrumental perspective (Cajaiba-Santana, 2014; Howaldt, Domanski, & Kalekta, 2016; Manoel & Andion, 2023; Zavrtnik *et al.*, 2019). Social innovations are understood here as the result of the intervention and interconnection of different actors and objects, originating from multiple sectors that mobilize and act around public problems. In other words, it is about capturing “the ‘social reconfigurations arising from the interplay between creative actions and established norms’” (Andion *et al.*, 2020).

To this end, we present the results of a qualitative case study conducted between 2019 and 2021 in the Taquaral Agrarian Reform settlement, located in the Southern Pantanal biome, in the

municipality of Corumbá (MS). This research was conducted in a rural settlement primarily to resume and reinforce discussions on rural settlements, land concentration, and Agrarian Reform. This urgency arises from the fragility of democracy and the dismantling or precarious functioning of public policies supporting Agrarian Reform. Secondly, there was also the opportunity to have contact with several groups of rural families. In summary, this research challenges the dominant perspective of innovation in rural areas, which is often limited to its role as a technological tool for fostering economic growth (Muñoz & Muñoz, 2017). From this perspective, the literature is already full of studies that seek to encourage agribusiness, even at high socio-environmental costs, or to replicate part of this model for family farming.

Structured in seven parts, our work continues, after this introduction, by presenting the methodological approach of the research. The article proceeds by reviewing rural social innovation, detailing the pragmatic approach adopted and discussing the key findings from the fieldwork. Subsequently, the main results that demonstrate how social innovations emerge in rural areas are reported, followed by the final considerations and the list of references.

Methodological path

We began this case study (theoretical-empirical) by adopting a qualitative research approach, operationalized through the articulation of three surveys: the bibliographical one – articles, books and theses –, the documentary one – 550 pages of books, minutes of associations, research already conducted and journalistic articles, which allowed us to systematize the history of the Taquaral settlement – and the systematic review⁴, aiming to understand the approach to rural development, new ruralities and the discussion on social innovation in rural areas. To gain deeper insight into the phenomenon, we conducted detailed ethnographic work with the families of the Taquaral Settlement. This included direct and participant observation at the Association of Beekeepers of Family Farming of Corumbá (AAAF), along with interviews with other families in Taquaral and various experts, as outlined in Table 1 below. Finally, all materials were analyzed through the lens of the sociology of public problems, adopting a pragmatist framework as detailed in Section 4.

According to Goode and Hatt (1968, p. 422), “a case study is a means of organizing social data while preserving the unitary nature of the social object studied; any social unit is considered as a whole, whether a person, a family or a social group”. In this sense, what is important is to recognize its relationships and the diffuse social processes – crises, commitments, silences and other elements that make up its culture. Therefore, our interest is much more focused on discovering and understanding the in-depth social processes that occur around the Taquaral settlement, than on inventorying and verifying hypotheses. In other words, this case study is not a simple methodological choice, nor is it generic qualitative research, much less a local/evaluative study of a specific “context”. Based on the analysis, we seek to promote an interaction between the dimensions and scales that make up the phenomenon.

Inspired by Godoy (2010), the case study is both descriptive, presenting the data obtained during fieldwork from multiple sources, and inductive, as the data collection process focuses on capturing the experiences and practices of the actors to understand how social innovation occurs. Finally, it is also interpretative, as theorization emerges from the data, with the ethnographic

approach contributing to the case study by confronting the findings and addressing the theoretical gaps identified in the literature review.

The ethnography carried out is considered a “global research strategy that implies not only the adoption of a method, but an epistemological stance” (Andion & Serva, 2010, p. 147), that is, through detailed and immersive ethnographic descriptions, we aimed to offer theoretical contributions by capturing lived experiences, uncovering hidden dynamics, and moving beyond surface-level consensus, transcend the particular and locate the divergences, the commitments, the interactions, the negotiations, the struggle, in short, everything that penetrates the meanings constructed by the actors of this territory.

Based on Cefai (2013), our ethnographic work lasted six months – from August 5, 2019, to February 25, 2020 –, totaling approximately 310 hours of observations and interactions, being interrupted by the advance and intensification of the COVID-19 pandemic. To this end, it involved a systematization of work based on continuous prolonged observation – identifying and accompanying 58 Taquaral market vendors in open-air markets, in the sale of public purchases, and others –, fractionated (coming and going) and in a specific public space – on the producers' properties, in public offices of *experts* and, among others, in associations – which allowed us to access dense, valuable information based on the experience of fieldwork – narrated in the public scenes, fifth section.

At AAAFC, we participated in all group meetings, helped manage financial control and organize documentation. We conducted 67 interviews: five with AAAFC members and 62 with families from Taquaral, market vendors, public servants, families from other settlements, and project managers. These interviews aimed to understand “the meanings that the interviewees attribute to the issues and situations related to the topic of interest” (Godoy, 2010, p. 134). In addition to the interviews, we also held 16 informal conversations with people who were not interviewed but who were essential bridges to lead us to other people or to report on conflicting situations. This ethnographic journey was recorded in a field diary. Photographic records, taken with permission, provided a visual dimension to specific events or discourses. Complementing this, we frequently used a recorder to capture detailed notes, later transcribed into the field diary and the interview script, prepared based on all the questions and concerns that the actors themselves revealed during the observations undertaken.

Finally, the analysis of all the material took a year – from May 2020 to May 2021 – and required the following activities: reading the field diary, analyzing the photographs, documents obtained, observations made and interviews. The great challenge is to pass on to the readers everything we perceived in the fieldwork. So, the narration, description, and interpretation—essentially, the writing of this article—were structured around the five public scenes of Taquaral (specific events and interactions observed) and the analysis of three public arenas (broader social spaces where collective actions and negotiations occurred), after all, “the ethnographer becomes a translator of several public scenes” (Cefai, 2010, p. 22), that is, of the acts and events of public life. He does not just popularize the knowledge learned during the fieldwork. Based on Quéré & Terzi (2015), the ethnographer travels between several worlds, the natural and the social, of the different actors and recognizes the endogenous production of the social order. It reconnects several actions and now, unlike in the past, it takes on the problem and positions itself in the face of circumstances and consequences; it gives birth to actors, it dialogues with voices that fight to be heard or excluded.

The search for a style and a way to write the text is another challenge. Thus, the writing of the text combined a description of the actors' trajectory and the constitution of Taquaral itself, considering the main mobilizations along this path. Furthermore, the nomenclature of the public scenes and several expressions that appear represent an attempt by the "researcher to speak the same language as the interviewees" (Andion & Serva, 2010, p. 160), to bring the actors into the article, whether in these expressions or in transcriptions of parts of their speeches/opinions. Finally, all this empirical work was analyzed in light of the theoretical discussion and the systematic review, which allowed us to list the research results and draw the conclusion.

Situating the discussion of social innovation in rural areas

Discussing rural development involves a complex theoretical, interdisciplinary and practical effort. After all, its debate has undergone profound transformations, motivated by economic, political, cultural, social and environmental issues, which have affected both its modernization and the activities and sociabilities within it (Cazella, 2006). In short, three dominant approaches in political and scientific discourses on rural development influence and are reflected in research on rural areas and in the very notion of rurality that changes over time: the Green Revolution, the territorial development approach and new ruralities.

Until the 1980s, the predominant concept focused on promoting the Green Revolution in the countryside, anchored in a universalist development perspective – modernization theories – which occurred through the transfer of productive techniques and technological innovations to rural areas, with the goal of promoting economic growth that would consequently lead to the reduction of social inequalities. Traditional agriculture, seen as outdated, needed to give way to the new and prosperous development model propagated by the Green Revolution. This project, in fact, managed to implement an agro-export model based on large estates, its main target. However, the utopian promise of reducing inequalities was not achieved; on the contrary, this model further promoted polarization between rural and urban areas, increased poverty in the countryside, rural exodus, the intensive use of chemical inputs and scientific and technological dependence on foreign countries, since it was an imported model and due to the lack of true national agrarian innovation (Delgado, 2001; Navarro, 2001).

The territorial development approach emerged in Brazil with force in the 1990s, causing rural development to receive a new interpretation (Schneider, 2010). This occurred in a scenario of economic stabilization – beginning of the Plano Real –consolidation of the new Constitution (1988) and reinforcement of the sustainability paradigm, driven in the country especially by the Eco-92 and the dissemination of the concept of sustainable development. If, in the past, rural development received centralized and technocratic state intervention actions, which kept researchers away from looking at other possibilities, now they return to the field and dedicate themselves to understanding it from a territorial perspective (Favareto, 2010). The Federal Constitution of 1988, for example, consolidated the National Agrarian Reform Program (PNRA) and contributed to the intensification of the process of creating rural settlements which, together with other programs and public policies that emerged during the 1990s and 2000s, encouraged the growth and expansion of family farming.

In this process, the notion of new ruralities emerged, gaining momentum around the idea that "it no longer makes sense to treat the rural as synonymous with the agrarian – it is necessary

to understand it, above all, by its eminently territorial nature” (Favareto, 2010, p. 299). The notion of new ruralities will give central emphasis to the roots, culture, traditions, and ways of life of the rural population, and not just to the sectoral issue, as had been done. The rural space begins to be interpreted based on the practices of the actors who are plural and diverse and go beyond the mere productive space. The countryside begins to be understood as a space of life that includes other non-agricultural activities, such as rural and ecological tourism, environmental preservation, leisure, crafts, cultural traditions, in short, life itself (Carneiro, 1998). This justifies the fact that there is no hegemonic rurality, which is expressed singularly across distinct cultural and socioeconomic contexts. Hence the need to investigate the localized processes of cooperation between the actors’ actions – with economic, social, political, cultural and environmental repercussions –, including their relationships, alliances and conflicts (Cazella, Bonnal, & Maluf, 2009), in order to understand the diverse ruralities that exist in the territory.

In this sense, it seems fruitful to consider social innovations as an analytical key to thinking about new ruralities, given that the discussion on social innovation in rural areas is recent and scarce (as discussed below) and that the notion of new ruralities is not a state achieved once and for all, but rather a process that is constructed empirically, through daily exercise (Carneiro, 1998) and from the action and invention of actors on the environment in which they are embedded (Espírito Santo *et al.*, 2023).

The relationship between development and innovation from the perspectives of economics, technology and management is a debate that has a long tradition. Studies based on the pioneering work of Schumpeter (1985) stand out, focusing on understanding innovation – whether in the city or in the countryside – from an economic, technological or productive perspective, with an emphasis on strengthening economic cycles. This view has influenced many of the theoretical currents that address social innovation (Cajaiba-Santana, 2014), which, based on an instrumental perspective, prioritize entrepreneurship, inventiveness and impact businesses as key to responding to the social needs of a group, through access to the market, technology, human capital and the production cycle (Lévesque, 2016).

A more critical look at this purely instrumental focus on social innovation highlights the fragility of this approach, which disregards the social demand of the group and its trajectory (reasons for its emergence), its composition, the institutional context, the consequences (real and practical) of social innovations in the territories and the need for a more active role of the government (Andion, Ronconi, Moraes, Gonsalves, & Serafim, 2017; Howaldt *et al.*, 2016, Espírito Santo & Voks, 2021 a). From this perspective, “there is little space to look at the creative action of the actors” (Manoel & Andion, 2023, p. 567).

In this context, another tradition has linked the discussion of social innovation more closely to debates on governance, public action, and territorial issues, indicating social innovation as an important vector of development (Moulaert & Sekia, 2003). In this perspective, social innovation has been positioned as a notion capable of rooting processes of territorial change more firmly in the local social and political fabric or as a way to exercise new practices in terms of development (Andion *et al.*, 2020) ⁵. The perspective of critical pragmatism, which we favor in this study, views social innovations as processes of change driven by diverse actors and agents, through formal or informal collective actions – including multiple dimensions of reality, be they economic, social, environmental, cultural, institutional, etc. These processes respond to challenges and aim to

promote positive outcomes or prevent negative ones, from a perspective of promoting desired futures, as defended by classical pragmatist authors and contemporary sociological pragmatism.

Thus, more recent studies on social innovation have advocated the importance of conducting more research that demonstrates the configuration of social practices in certain areas and contexts, placing emphasis on the roles and actions of social actors themselves (Andion *et al.*, 2020). However, before discussing this approach and presenting the results obtained in the fieldwork, how have studies on “social innovation in rural areas” perceived this type of innovation?

When addressing social innovations in rural areas, Muñoz & Muñoz (2017) indicate that they do not occur equally or randomly. During the Green Revolution, as previously discussed, innovation was predominantly viewed through a technological lens, often imported from other countries for application in Brazil's rural areas. In the late 1990s and much of the 2000s, there was a great incentive for national technological development. The valorization of research in rural areas directly impacted programs, public policies and the generation of innovations in the field of science and technology promoted to stimulate development in Brazilian rural areas. However, most innovation projects are designed and implemented in urban areas, often viewed in contrast to rural areas. In agribusiness, although the country has experienced significant growth in the sector, the innovations undertaken have not been sufficient to solve the old issues experienced in rural areas, such as poverty, land concentration, access to financial resources and technological dependence. For the authors, this reality demands a different stance from the scientific community and, therefore, the concept of innovation needs to be redefined beyond economic growth.

Faced with these problems – and the urgent need to redefine the term innovation –, social innovation has been strongly proclaimed in political and scientific discourses as a new paradigm, a solution to overcome the great challenges of the present century in rural areas (Neumeier, 2012). This is due to the fact that rural social innovation takes place within specific social and cultural contexts, as well as networks of relationships (Noack & Federwisch, 2018), stimulating the development of concrete and abstract inventions (Sabourin, Thomas, Egret, & Avilla, 2014), as well as new technologies and products (Franzoni & Silva, 2016) that affect social relationships, behaviors, and attitudes (Rover, 2011). In addition, they are based on the creation of a collective reference based on the values of solidarity and the installation of learning processes based on the local reality, allowing an intervention in the environment (Piroux & Bonnal, 2011).

Seeking to recognize how social innovation has been treated in rural studies, it was possible to identify advances and gaps in the literature – detailed in note 4 –, described in Table 1 and discussed below.

Table 1
Conception of rural social innovation

Authors/year	Understanding Social Innovation	Theoretical/ Empirical	Keywords
Correia <i>et al.</i> (2018)	Process of transformation in the patterns of response to social needs	Empirical	Sustainable territorial development; governance
Franzoni & Silva (2016)	SI as an economic and technological perspective	Empirical	Social Technology (ST); National School Feeding Program (NSFP); Agri-food chains
Araujo & Candido (2015)	SI and ST are interdependent and act as a vector of social change	Theoretical	Rural Development (RD); TS; Sustainable Development (SD)
Paula <i>et al.</i> (2015)	SI aims to meet a social demand	Empirical	DS; gender;
Neumeier (2017)	Factors that support SI and increase the adoption rate	Theoretical	Diffusion; DR Public policies.
Rover, De Gennaro & Roselli (2017)	Transformation of new social projects - fundamental in promoting RD	Empirical	Agroecology; SD; stakeholder network
Navarro <i>et al.</i> , (2018)	SI as a source of growth and TD	Theoretical-empirical	Public policies
Stop (2016)	SI is a structure/idea to promote a smart territory.	Theoretical-empirical	Smart Territory Governance. Technology
Jean (2012)	SI is much more than technical innovation; it involves the three dimensions of SD: social, economic and environmental	Theoretical	Sustainability; rural communities. Public policies.
Munoz & Munoz (2017)	SI does not happen randomly and requires participation from the scientific community	Theoretical-empirical	<i>Triple Helix</i> model; technologies
Rover (2011)	SIs can emerge from the network of actors and their organizations	Empirical	Agroecology; Markets; networks
Sabourin <i>et al.</i> (2014)	SI as an idea, social enterprise	Empirical	Agroecology, organic production
Lindberg (2017)	Empower and mobilize vulnerable groups to transform the territory	Empirical	Social Empowerment in Rural Areas Project (SEMPRE)
Bock (2012)	IS presupposes a critical attitude towards the existing system and its inherent failures. Search for social justice and transition to sustainability	Theoretical	Sustainability; RD; governance
Butkeviciene (2009)	The main actor in the dissemination of SI is the community	Theoretical	<i>bottom up</i> rural communities
Neumeier (2012)	SI indicates a change in attitude and perceptions of a collective	Theoretical	RD; research; research agenda
Bock (2015)	Rural marginalization arises from the spatial disparity of the place where it is located. It demands public policy and a broad process of change.	Theoretical	Marginalization; RD; public policies; empowerment

Source: research data.

The analysis of the materials shows that the discussion is more robust in the Global North and focuses more on conceptual aspects and complementing the Welfare State, which, while functional, is in crisis. Despite the different analytical perspectives adopted, in general, the works argue that the main promoter of social innovation in rural areas is the community. From the seventeen articles, ten are empirical or theoretical-empirical. Of these, all have a theoretical framework on social innovation, but some do not take a clear stance on the survey or how they

perceive social innovation in this process (Franzoni & Silva, 2016; Rover *et al.*, 2017; Sabourin *et al.*, 2014; Lindberg, 2017; Navarro *et al.*, 2018) and only state that the case study presented is a social innovation. Others categorize social innovation as the result of collective action (Correia *et al.*, 2018) or a product/service that should be intended for a specific rural community (Muñoz & Muñoz, 2017). In this debate, some argue that social innovation should be viewed as a robust concept capable of driving rural development (Bock, 2012; Lindberg, 2017). However, some say that many studies are nothing more than a fad, not making clear what social innovation actually is, or why it is so.

Theoretical studies are still limited – seven in total. Overall, there is a great conceptual race to define rural social innovation. These studies initially discussed the term “social innovation” and its association with rural areas, and then proposed *frameworks* and research agendas, in addition to emphasizing the role of public policies and State participation in transforming production and consumption practices while empowering rural communities (Bock, 2012, 2015; Butkeviciene, 2009; Jean, 2012; Neumeier, 2012, 2017). However, it was noteworthy that the theoretical works started from an analysis of secondary data to arrive at the theoretical concepts presented. They argue that “to fully understand social innovation in rural development, there is an urgent need for empirical research based on case studies” (Neumeier, 2017, p. 43). However, none of them conducted fieldwork or examined the practical mechanisms behind the occurrence—or lack thereof—of such innovations.

During the analysis of the seventeen materials, we identified the seven most cited/referenced articles by all. Five of these appeared in the systematic review itself (Bock, 2012, 2015; Lindberg, 2017; Neumeier, 2012, 2017). Two others did not, and they are the works of Noack & Federwisch (2018) and Piraux & Bonnal (2011). In the first of these, through ethnographic work in Germany, the authors identified that rural social innovation demands development policies and projects and their understanding favors recognizing the intersection of elements between the rural and the urban, understanding their complementarity and their reciprocal dependence, in order to avoid eternal polarization. In the second, Piraux & Bonnal (2011) analyzed territorial public actions and social and institutional innovations based on a case study in the semi-arid region of Paraíba/Brazil. From this, they concluded that territorialized public action in rural areas arises from the concern to solve social problems, such as the lack of water. Such action requires both institutional innovation, starting from the State, and the mobilization of social actors.

In general terms, international studies question the absence of the State and the resurgence of neoliberal policies. This was widely discussed, for example, by Bock (2015), who argued that such policies, combined with financial crises, austerity measures and numerous budget cuts, ended up removing the State from various public actions and decisions, transferring them to private actors, thus affecting the provision of the Welfare State and the pressure on individuals, increasing social inequality. As a result, the differences between the most favorable rural areas and the marginalized ones have increased, increasing inequalities, poverty and contributing to migration to urban areas. Another discussion refers to the importance of government participation – through project financing – in various programs, such as the Project HUB Rural, in Italy, which seeks to develop entrepreneurial ideas and activities in rural areas (Butkeviciene, 2009).

In Brazil, the studies are heavily influenced by the instrumental approach, with an exhaustive concern for defining the term social innovation, in addition to validating models and case studies, most of them European, that can (possibly) be applied in the country. In general, they present rural

social innovation based on the provision of new services and products, rural tourism, productive inclusion, agroecological agriculture, marketing at organic fairs, and highlighting the challenges for Brazilian institutions.

Finally, reading these materials allows us to summarize the most worked axes on social innovation in rural areas:

- Formation of social relationship networks for the empowerment of rural actors;
- Offering new services and products based on sustainability (agroecology and organic production and their improvement in quality of life and preservation of nature);
- They require the participation of the State in different programs/public policies;
- Valuing social, cultural aspects and long-term rural history;
- Identification of methodologies and development of new knowledge/research.

In this sense, once again, we believe that the approximation of the debates on new ruralities and social innovation is a fruitful analytical lens for understanding the social changes promoted – or prevented from happening – in the countryside. After all, rural social innovation, understood in terms of effects and processes (Moulaert & Sekia, 2003), begins to indicate intentional reconfigurations, directed at social practices in the rural development plan, directly impacting the lives of social actors (Bock, 2012). Associated with this is sustainability, which is central to understanding this type of innovation in rural areas, as it is composed of an interdisciplinary field of research that deals with issues related to the society-nature relationship, which arise from numerous environmental conflicts and empirical evidence (Zavratnik *et al.*, 2019; Espírito Santo & Voks, 2021a).

Much more than defining the term *a priori*, what moves us is to actually understand how social innovation occurs, or what hinders its process. Exploring the gaps pointed out in this section, we present, below, a brief explanation of the analytical and methodological framework of the ethnography of public arenas for the study of social innovations, a research path idealized by Andion *et al.* (2017), detailed in Andion (2023) and validated in numerous empirical studies (Espírito Santo & Voks, 2021a, 2021b; Manoel & Andion, 2023; Moraes & Andion, 2018; Gonsalves & Andion, 2019; Magalhães; Andion, & Alperstedt, 2020) that served as the basis for this study.

A pragmatist approach to understanding social innovations

The present study, focusing on the occurrences of social innovations and their consequences for rural development, is grounded in the contemporary sociology of public problems with a pragmatist foundation (Chateauraynaud, 2017; Cefaï, 2017, 2019) who, inspired by John Dewey (1927, 1938), explore the notion of public inquiry, a method that seeks to capture the public action promoted by the experience and collective practices of actors in the territory in the face of the public problems they face, with a view to co-construct responses (social innovations) to the different contemporary socio-environmental challenges (Andion, 2023; Andion *et al.*, 2017; 2020; Espírito Santo & Voks, 2021a, 2021b).

According to Cefaï (2017, 2019), pragmatist work can begin by recovering diverse public scenes, in order to understand all the conflicts, achievements and interactions between the actors. For Cefaï, public scenes are a dramatic topography that demonstrates the lived world; the configuration of actors involved; power dynamics and representation (who speaks and acts on behalf of whom); the themes discussed, denounced, claimed and made invisible; the unfolding of the action (what actually happens after this publicization); the conflicts and the goals pursued. In this first phase, the focus is to reconstruct the scenes based on the identification of a network of actors (public, private and civil society) who act in the face of specific problems in the public arenas.

The notion of public arena emerges from the socio-anthropological approach proposed by Cefaï (2007), which allows us to reconnect social micro-problems from a democratic perspective (Espírito Santo & Voks, 2021b). An arena emerges as a co-produced discussion forum where actors meet, demand explanations, take positions, and respond to criticism. Arenas often arise from institutional scenes where public problems induce “more or less consequential transformations, depending on the severity and scope of the political crisis, the administrative dispute, the parliamentary battle, the judicial process, the scientific controversy, the media controversy that is at stake” (Cefaï, 2019, p. 35). Therefore, reconstructing and analyzing the trajectory of the public arena – the second phase – will allow us to understand the developments of the public problem, that is, to visualize what is actually faced, overcome, or dragged out over time.

However, public problems go beyond institutional frameworks; they gain form, life, and resonance in society through problematization and publicization – the ability to demonstrate, argue and support a given public problem. A public arena is permeated by conflicts, after all, it is made up of multiple groups with convergent and divergent ideals, who, as Cefaï (2017, 2019) notes, strive to influence the management of government problems in the eyes of public opinion and public authorities.

Therefore, the third phase of this approach requires following the different collectives and their life experiences to understand the experience and practices of the actors in a given territory from the public scenes, that is, to recognize how an ecology of existing public problems – hunger, violence, unemployment, etc. – is staged and argued before vast audiences – collective mobilization, protests, media denunciations and others –, as it is inscribed in political representation – laws, decrees, programs and public policies, etc. –, in the programs/projects of *experts* – agents/development technicians: universities, foundations and other research and extension institutes –; in statistics and in the legal field. From time to time, due to recursions, some problems return to the scene, gaining strength through collective mobilizations – for example, through mobilizations around access to land and microcredits – that seek to challenge their objectives within the state sphere, gaining recognition and reparation, or, sometimes, continuing to deny – as in the case of racism and/or massacres in the favelas.

Based on this view, this work adopted and defends a pragmatist approach. and critique of social innovations, according to which social innovation is interpreted as a political process of social change that requires democratic experimentation, that is, the mobilization and engagement of different groups in facing problematic situations arising from socio-environmental catastrophes resulting from historical development processes. This approach allowed us to delimit three fundamental assumptions about social innovation processes, discussed in Andion *et al.* (2017), and highlighted below.

- IS is part of long trajectories of configuration: research needs to reconnect the micro-sociological analysis of the confrontation of public problems, to the macro-structural dimension – from macro to micro, and vice-versa – to understand the unfolding of the action over time before a certain situation – for example, the creation of the settlement; what led these families to need the land – and regarding the practical effects of the action – what were the consequences after the conquest –;
- IS is inserted in fields of experience: global/macro effects reverberate in the local/micro, hence the importance of understanding the actors' experiences, practices, consequences, and limitations. In this, ethnographic work proves fruitful, as it allows coexistence with the actors researched and the deepening of social understanding.
- Reconnecting IS and social change processes to understand their consequences: it is necessary to identify a public problem; understand how it is faced or dragged out, what the controversies are, the modes of engagement, the crises and the justifications. It is these public scenes, more or less institutionalized, that need to be reconnected, including different actors and collectives and their interactions, describing their visions, existing public policies and programs, their actions, inactions, silences, responses and resistance in promoting rural development. This will allow us to understand how broader social transformation processes occur.

This is a path of public investigation that has allowed us to understand social innovation by identifying and analyzing the experience and practice processes of actors and the formation of Social Innovation Ecosystems (SIEs) ⁶, a notion that allows us to visualize, map, and understand a network of actors, identifying their interactions and their field of action – environment, childhood, health, education, and others –, in addition to the constitution of public problems and the democratic dynamics underway in the territory (Andion *et al.* , 2020; Magalhães *et al.* , 2020; Espírito Santo & Voks, 2021a). Recognizing an SIE, through the recovery of public scenes, allows, firstly, to study social innovation based on the public problem and, secondly, to strengthen democratic experimentation, as it becomes evident how a given disorder is problematized and published, as well as the struggle for its solution. In the words of Dewey (1938), it is about seeing democracy in practice.

Against this backdrop, we propose to delve into the reality of the Taquaral settlement to explore how its dynamics contribute to the lives of families and the territory, and to what extent its actions and practices qualify as social innovations.

Rural social innovation: supporting the understanding the paths of rural development

To understand the paths of rural development in the Taquaral settlement, its opportunities, achievements and obstacles, we took the following steps. First, we briefly examined the political ecology of Mato Grosso do Sul. After all, when we talk about development, we need to understand the place where the phenomenon under study originates, to later identify and understand the different public scenes that permeate the settlement. We concluded by recognizing the EIS composed of a network of actors that (inter)act in Taquaral in various public arenas, which end up

dialoguing with each other, producing important effects in terms of social innovation, as will be demonstrated.

Political ecology of Mato Grosso do Sul

Politically, Mato Grosso do Sul (MS) is a very young state, which emerged from the division of the state of Mato Grosso (MT) when the southern portion was created in 1977. Revisiting the first development policies and programs of MT and current MS, it becomes evident that all actions aimed to populate the region—interpreted as a colonizing effort—and to develop it economically from an extractive perspective (Espírito Santo, Costa, & Prado, 2023). As of 2022, the state has had eleven governors. All ran for reelection and were reelected. Of these, ten have or had ties to agribusiness and landowners. As pointed out by Queiroz (2006), all of them went through corruption scandals, embezzlement of funds, and maneuvers to favor the sector.

Economic data published by the MS government itself and agrarian data published in the last agricultural census show that, despite the crisis, MS's Gross Domestic Product (GDP) grew in 2019, closing the year with R\$109.6 billion, of which R\$33.2 billion came from agribusiness - of which R\$21 billion was generated by crops and R\$12.2 billion by livestock (Brazilian Institute of Geography and Statistics, 2017; State Secretariat for Environment, Development, Science, Technology and Innovation, 2020). Reading these reports, as pointed out by Nardoque, Melo and Kudlavicz (2018), reveals that this notable outcome stems from various policies supporting and promoting the production of *commodities*; after all, a large part of MS's agricultural production is destined for export, mainly soybeans. It also results from the high concentration of land, after all, 68% of properties are small, while only 1.2% are large, yet these occupy most of the state's rural area.

Currently, the prevailing development project is perfectly illustrated by the *slogan* “Agro is pop”⁷, so common in Brazil today and in 1500, therefore not so popular and modern! This configuration disregards, devalues and delegitimizes the natural riches of MS, as seen in the burnings and land grabbing in the Pantanal – proven to be caused by the essentially agrarian-extractive focus⁸ – and the vast majority of the impoverished population, here embodied by the family farmer. This is because, in addition to the practices and effects of family farming being weakened in Brazil, they practically disappear in the trajectory/history of MS when we look at official data, policies and programs⁹. In fact, there is no massive dissemination of these data or specific policies, such as *commodities*. As a result, family farming in MS appears invisible and insignificant when compared to the prominence of 'Agropop' statistics, which have been naturalized as the sole pathway to 'development' for the region and the country.

The survey carried out allows us to conclude that the political ecology of MS, examined through its rural development dynamics, indicates that the interest behind the creation of the state has been reaffirming itself, configuring this region as a great frontier of agricultural expansion and a granary of *commodity production* for Brazil and the world.

In this not-at-all-popular scenario, family farming and settled families, despite being invisible, are present. According to the Data Luta pela Terra Report (2019), from 1979 to 2019, 206 settlements were created in Mato Grosso do Sul, settling 32,280 families. In Brazil, family farming produces diverse and quality food for the tables of Brazilian families and was responsible for 23% of the total produced in the country. The state of Mato Grosso do Sul represents 5.9% of this total, the

lowest number in the country (Brazilian Institute of Geography and Statistics, 2017), justifying the invisibility mentioned above. However, as we will see in the case of Taquaral, family farming practices are present and do play a relevant role, both in the production system and in the landscape of the region's political ecology, resulting in the creation of rural settlements and their dynamics in a state essentially permeated by agro-exporting large estates.

Recognizing the public scenes of the Taquaral settlement

Focusing studies and analyses on rural settlements ¹⁰ is fruitful, as it allows us to understand the developments regarding democratic participatory action in rural territories. After all, as we will see in the public scenes of Taquaral (Figure 1), access to land is just one of the stages in the formation of the settlement and, as well, of rural development. The struggle to implement Agrarian Reform is daily and demands a struggle for inclusion, to gain visibility and recognition.

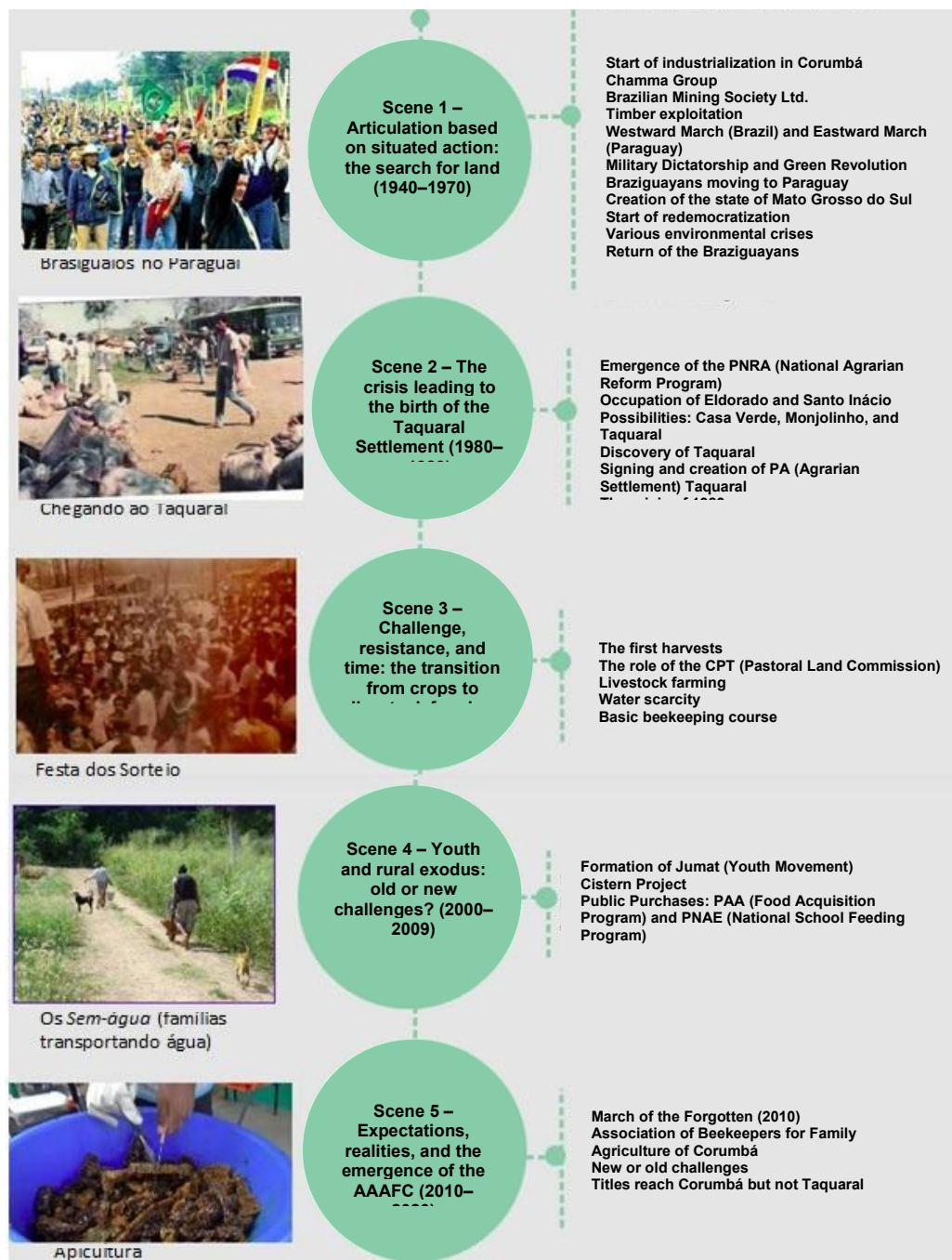


Figure 1. Public scenes of the Taquaral Settlement – Corumbá (MS)

Source: prepared by the authors (images provided during the interview).

Caption: I) The name of each scene was created by the authors because of their experience during fieldwork. II) The description presented on the right represents the main event during the respective public scene.

The Taquaral Settlement Project was officially established through Resolution No. 044 on October 20, 1989, issued by the National Institute of Colonization and Agrarian Reform (Incra). This resolution involved the expropriation of lands from the Chamma Group—a former mining and steel company—and their redistribution among 394 families. It is located near Baía do Jacadigo in the

Pantanal region, bordering Bolivia. Taquaral is the result of the struggle for land that began in the city of Ivinhema (MS), where pressure from rural families and the Pastoral Land Commission (CPT) made the state government accelerate the process of creating this settlement. However, its creation involves various social trajectories, emergencies, and the historical use of the land before it was repurposed for settlement, as illustrated in Figure 1.

By recovering the trajectories that preceded the creation of Taquaral, it was possible to create **scene 1 (articulation based on the situated action: the search for land and inclusion)**, which demonstrates that everything begins with the shared discomfort of diverse individuals from different origins, united by their experiences of exclusion, such as the peasants of Santa Catarina after the intense frosts of the 1970s; the peasants of Paraná after the coffee crisis; the Brazilians who were unable to establish themselves in Paraguay and returned to Brazil; the people of Corumba who lived in the slums without adequate housing; the people of the Pantanal who either had their lands illegally seized by large producers or who suffered from the great floods of the Pantanal in the 1970s; and the northeastern seasonal workers who arrived in Taquaral to work in the exploitation of wood that served as fossil fuel for the Chamma Group plant, under the promise that, at the end of the work, land would be given to these people, which did not happen. Instead, the exploitation left behind intense environmental degradation resulting from this exploitation. However, instead of settling down and accepting this condition of exclusion, these individuals decided to get upset, seek new possibilities, experience an “end in sight” (Dewey, 1938), a better life for themselves and their families.

Here we have the association of the individual – interests, desires and dreams – with the common – shared – (Zask, 2021), in addition to the search for land ownership and, through it, social inclusion and the achievement of basic rights, so difficult to put into practice in a country like Brazil and, specifically in MS, where we have the lasting centrality of *commodity production* that generates the invisibility and degradation of the Pantanal, as discussed previously.

In this process, the land and the relationship with nature, or simply 'having a place to call their own' (producer from Taquaral, interviewee 1), is presented as this desired end, which feeds a second discomfort “the *fight for land and inclusion*” (producer from Taquaral, interviewee 2), which portrays **scene 2 – the fight for the creation of Taquaral**. As mentioned, the fight for land began in Ivinhema (MS) in partnership with the CPT. The occupation of land in the south of the state (Eldorado and Santo Inácio) was crucial not only for the creation of Taquaral, but for the development of the Agrarian Reform in MS, since a series of settlements were created from there (Casa Verde, Monjolinho and others). This is the result of a historical struggle, but one that is strengthened by the process of redemocratization in Brazil (the political transition from military dictatorship - 1964–1985) to a democratic regime, marked by the 1988 Constitution and free elections). After all, during the dictatorship, social movements were strongly repressed, and in rural Brazil, this is illustrated by a series of massacres and violence in the countryside.

It is clear here that the interrelations between the Taquaral experience and the Brazilian reality – from the micro to the macro – are evident in this scene through the support of the CPT and the formation of the Landless Workers Movement (MST) in the state, essential events for the formation and legitimization of the social movement nationally, without losing sight of its achievements in the Agrarian Reform policy in Brazil in formation and, later, in policies aimed at supporting family farming, such as the Food Acquisition Program (PAA) and the PNAE. Here, an

important relationship can also be seen between collective actions, social innovations and public action. In this sense, the settlement, as a public policy device, does not emerge from government planning and an abstract idea of the right to land, defined in the Constitution and the PNRA. Justice in the distribution of land, especially in a region like this, permeated by historical social, political and environmental conflicts, is built through “struggle”, an essential word in the vocabulary of the subjects studied.

However, the fight for land and inclusion does not guarantee success. From **scene 3 (challenges, resistance and time)**, the importance of resistance and resilience becomes clear of staying strong and standing firm despite all the adversities, which are constant and recursive. This scene begins with the *Festa dos Sorteios* (1989), an episode in which families organized themselves to draw lots to decide which lot each would get. However, if before this draw these families were called “landless”, after the draw, they faced severe water scarcity, since the PNRA was not strictly followed and INCRA created a rural settlement in the middle of the Pantanal – the largest flooded area in the world –, but in a region without water, containing only brackish water ¹¹, which impacts both human and animal nutrition and crop irrigation.

In addition to the lack of water, farming also suffers from the region's climate conditions, marked by heavy rainfall in the summer and a strong dry season in the winter and spring, impacting these families at the beginning of their journey in Taquaral. How can they make a living from land that is difficult to cultivate, lacks water for irrigation, and offers no technical support to identify suitable crops? It is in this process that several families in Taquaral begin to migrate from agriculture to livestock farming, an activity that has proven to be more viable in this region.

However, not all families were able to make this transition due to lack of resources. Given this, the process of giving up and abandoning the lot is common and understandable, as we have seen in several experiences narrated or observed by those who abandon and/or those who sell the lot (even though the sale is illegal¹²) to seek other alternatives; or even those who seek other ways to survive, entering other formal dynamics (working as salespeople in local businesses, teachers, domestic workers, general services and others with a formal contract), informal (street vendors, market vendors and others) or even clandestine (logging, smuggling of products coming from Bolivia and others), based on the various opportunities offered, often much more viable and profitable than working on the land.

Those who remain continuously adapt and innovate, striving to find practical solutions to achieve their goals. They will dig for water (build wells), they will discover which economic activity is viable in a land that is difficult to cultivate, they will create schools and contextualize rural school education – seeking to educate their children for a better future –, they will seek to improve roads, in addition to building and strengthening alliances and dialogues with other actors, such as the CPT and the MST initially, and later with other civil society organizations and local politicians, aiming to make the desired ends happen, creating new productive practices (honey production) and institutions (associations). By doing this, these individuals will transform themselves (becoming more plural and diverse) and modify the space in which they live and the rural environment. It is this process that makes it possible for settlements and rural development to exist, with their dilemmas, conflicts, difficulties and achievements, and not just through legal frameworks and political will, as often idealized in Brazil.

However, the process of confronting testing situations is far from linear or evolutionary, which are characteristics typically associated with progress and central to the concept of development. Instead, what is observed in this experience is a cyclical, back-and-forth, and continuous process that is closer to what Dewey (1938) calls “improvementism”, that is, what is always sought is “to be better than before”, but this is constructed as one goes along and does not always produce desirable effects.

The history of Taquaral, as demonstrated in **scene 4 (youth and rural exodus: how to ensure possible futures?)**, shows that despite all the struggle and the evident collective effort, many problematic situations remain and some are growing, not by chance, but as a result of a historical neglect, both on the part of governments and society in general, of these experiences. These patterns of repetition unfold unevenly, with varying rates of change, delays, and accelerations, as seen in issues like the lack of water, inadequate technical support, and the unresolved land titling process, which has persisted for 35 years (1989–2024).

The lack of water, which still exists, was improved with the cistern project, a partnership between the CPT, the government of MS and the city of Corumbá that taught families how to collect rainwater. Production flow improved through public purchases under the PAA and PNAE programs, as well as the recent implementation of the municipal PAA. Notably, Corumbá is the only municipality in MS to establish this policy, addressing a long-standing regional demand with greater flexibility for producers compared to the national PAA. This demonstrates the importance and role of public administration in taking the lead in resolving several public problems in rural areas, by enabling the productive inclusion of rural family farming in Taquaral (local policy) and throughout the country (national policies). Even so, with each generation in which these difficult situations are repeated, new demands, discourses and actors are incorporated into the problem, which, over time, rekindles the discomfort and conflicts, but also causes discouragement and dissatisfaction in these people. Amid these challenges, to what extent can the experimentation in Taquaral be maintained and sustained?

Based on this question, **scene 5 (future possibilities)** highlights the importance of renewing desired goals, dreams and projects, based on the plurality of ways of existing that permeate this settlement, whose natural and human landscape and desires – individual and collective – are very different from what they had when it was created. In this context, the aging of the first-generation pioneers—who arrived in 1989—and the differing perspectives between them and their children—who either arrived as children or were born in Taquaral—stand out, leading to generational conflicts.

Two important issues emerge in this scene 5, which are reflected in two demands evident in the statements of these actors. The first concerns land titling, which for them will represent a milestone, an important rupture, generating new possibilities for the future. In 2020, families from three settlements in Corumbá obtained definitive titling, but, 34 years later, Taquaral is still waiting and is still being called a “Settlement Project”, a project that has not yet fulfilled basic demands provided for in the National Agrarian Reform Policy, including definitive titling, and this already reveals the disregard for Agrarian Reform.

The second issue that appears clearly in scene 5, but permeates the entire trajectory of Taquaral, is illustrated by the slogan of a social mobilization held in 2010, the “March of the

Forgotten” (Figure 2), which required effective participation by the state, mainly in the repair of roads, technical support, construction of cisterns, drilling of wells and health clinics. In this regard, the experiences of the families of Taquaral refer us to a struggle not only for them, or for the family farmer category, but for all those groups in Brazil – and there are many – who have been historically excluded, marginalized, made vulnerable and incapacitated, not only by governments and public policies and programs, but by the dominant discourses and practices of Brazilian society itself, which is quite unequal and undemocratic.



Figure 2. March of the Forgotten
Source: After the March (2010, p. 5).

By analyzing the history of Taquaral, it was possible to identify its territorial inscription. The social life of these individuals is shaped by economic and social practices arising from numerous interactions among various actors seeking to address local challenges and foster rural development. In the next section, we will discuss how these actors connect in various public arenas, constituting the Social Innovation Ecosystem (EIS) producing evident effects on the dynamics of rural development in Taquaral.

EIS and public arenas in the Taquaral settlement

Drawing from the political ecology of MS and the analysis of public dynamics in Taquaral, the EIS was identified. It is comprised of rural families—primarily organized around the Association of the Union of Rural Producers of the Taquaral Settlement (Auprat) and the AAAFC—along with numerous experts contributing to rural development in the region. The main ones are described below.

Table 2

Main experts in rural development that make up the Taquaral EIS

Universidade Federal de Mato Grosso do Sul (UFMS)	Present in the state since 1962, and in Corumbá since 1967, UFMS's mission is to develop knowledge through research, teaching and extension on the transformation of society and the sustainable growth of its region. In Corumbá, its main activity is through the Center for Studies in Agroecology and Organic Production of the Pantanal (Neap), a group of professors, technicians and students that works in partnership with the Federal Institute of Mato Grosso do Sul (IFMS), with researchers from the Brazilian Agricultural Research Corporation (Embrapa) of the Pantanal, the team from the Agency for Agrarian Development and Rural Extension (Agraer), and with technicians who work with family farming from the municipal governments of Corumbá and Ladário, a neighboring municipality located 10 km from the center of Corumbá.
Embrapa	Created in 1973, Embrapa operates throughout Brazil through mesoregions, enhancing the use of technology in agriculture. In Corumbá, the main areas of activity are family farming, agroecology, organic farming, management of native pastures and livestock production.
Incra	It was founded in 1970 with the aim of implementing the Agrarian Reform and implementing national land management. The Corumbá unit is completely run down. The yards are full of defective cars, the building is in an advanced state of deterioration and there is only one person in charge in the city.
IFMS	Federal institutes emerged in Brazil in 2000, with the aim of offering professional and technological education. Once a week, the Agroecological Transition Fair takes place, which, in addition to marketing itself, organizes some research projects that began to emerge within the institution, focused, directly or indirectly, on agroecological agriculture.
Sebrae	The Brazilian Micro and Small Business Support Service (Sebrae) seeks to contribute to the development of business activities for micro and small businesses. This is extended to rural areas through projects related to beekeeping; dairy farming; rural entrepreneurship, and other sectors.
Serviço Nacional de Aprendizagem Rural (Senar)	The mission of Senar is to promote the training and professionalization of all those who work in rural activities. Corumbá does not have a Senar headquarters, only a room inside the Rural Union. Over the years, whenever requested, it has offered mini-courses and other training to producers.
Agraer	This state agency coordinates the implementation of technical assistance activities for livestock and crops. The region has two technicians, one for each city, who are responsible for assisting producers with the regularization and documentation of school lunch projects, credit financing, Declaration of Eligibility for the National Program for Strengthening Family Farming [Pronaf] (DAP) and others.
Navy and Army	The two military organizations contribute to the rural development of the region through acquisitions made by the PAA.
VALE	The mining company operates in Corumbá and Ladário extracting iron and manganese ore. It directly affects the lives of the settlements in the region, due to its proximity and the environmental impact it causes. Among its programs with the community, the Participatory Community Program stands out, which has already included both the beekeeping project and the agroecology project.
Banco do Brasil/ Caixa Econômica	These are two banking institutions linked to the federal government. It is through them that producers fight/manage to obtain credit and special lines, such as Pronaf.
Secretariats of Agriculture and Rural Development	Both the Corumbá Department and the Ladário Foundation are responsible for developing agricultural activities in the region. They organized the acquisition of the PAA; they have a staff that works with family farming in this territory. Since Ladário has only one rural settlement, the municipality also buys from producers located in Corumbá.
Education Departments	They are responsible for preparing the menus for the school meals offered in Corumbá and Ladário. Their role is fundamental, as it involves the acquisition of 30% of products from the Agrarian Reform: a major challenge that has not been met in Corumbá, but which has been raised by the nutritionists in Ladário, who have begun to prioritize local production.

Source: prepared by the authors.

As shown in Figure 3 and explained below, these *experts* are generally institutions, researchers, technicians, project managers and others who work to promote rural development in Taquaral and other settlements in the region. This entire network shows that, once created, the Taquaral Settlement Project is not just a “device” (Dodier & Barbot, 2017) conceived and regulated by the State – in a centralized, hierarchical and unidirectional manner – it comes to life and becomes the object of interests and a space for interventions by multiple actors. This network is an intersection of human actors, devices – laws, public policies and programs, news articles and everything that the actors narrate and add their social skills¹³ – and institutions. Together, this large network of actors interacts with the families of Taquaral in three public arenas.

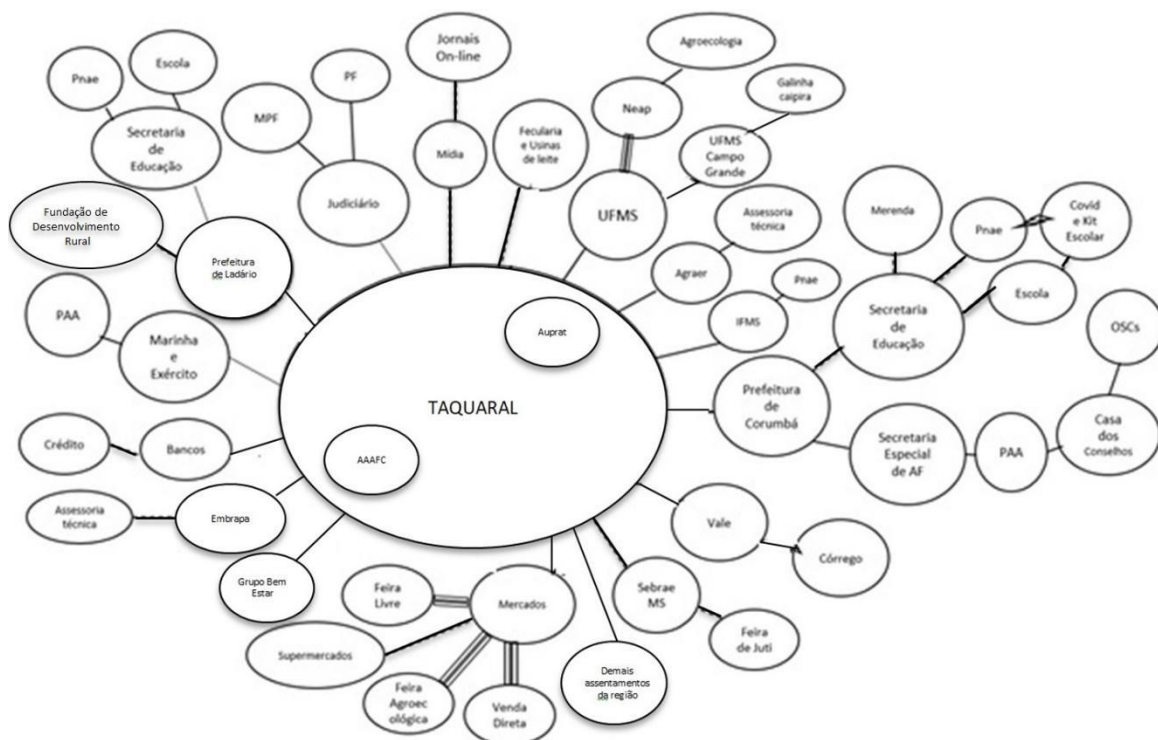


Figure 3 – EIS of the Taquaral settlement

Source: prepared by the authors.

The first is the **public arena of family and sustainable agriculture**, formed by a network of actors who engage in rural development in Taquaral through the operationalization of public purchasers. The main products cultivated and exploited by families in Taquaral are cassava, pumpkin, various vegetables, honey, milk, cattle, chicken, duck and pork.

To market their products, families collaborate, primarily through AUPRAT and/or AAAFC, and participate in public purchase programs with support from educational institutions (UFMS, IFMS, Embrapa) and government agencies (Agraer, Senar). However, this support is not long-lasting, varies by project and occurs in different time periods. Most of these purchases are made through PAA (by the Navy, Army, and the Special Secretariat for Family Farming of Corumbá) or Pnae (by the Education Secretariats of Corumbá and Ladário). The state schools in Corumbá and Ladário, due to

decentralization, purchase their own lunches. The surplus is either consumed by the families or sold, primarily in the region's open-air markets.

This relationship is neither easy nor stable, marked by conflicts such as involving the Judiciary and local media to address issues with Pnae operations. In Corumbá, Pnae was paralyzed for three years (2019–2021) due to mismanagement, operational failures, and the COVID-19 pandemic –; or by raising awareness among nutritionists and lunch ladies at state schools to create menus that prioritize local production; in addition to requesting state technical support (Agraer and Senar) to improve productivity and support from city governments in basic infrastructure – roads, schools, machinery, etc.

The purpose of the PAA and Pnae is to contribute to the development of family farming in settlements – to promote rural productive inclusion – and to guarantee quality nutritional food for students in the municipal and state education systems. However, during our fieldwork, we observed four municipal schools that did not offer hot meals, and that students consumed industrialized cookies with powdered juice, with the principals justifying that the number of students had increased, and the amount of funding had fallen due to the budget cuts that the Bolsonaro government (2019-2022) implemented during the period. This reflects the widespread dismantling of such policies across the country, failing to ensure students' nutritional rights and rural families' productive inclusion.

Another major goal of this arena revolves around beekeeping – developing sustainable production in the heart of the Pantanal. Beekeepers work together through AAAFC and, over the last decade (2010-2020), have had the support of UFMS, Embrapa, CPT, the mining company Vale, IFMS and the Federal University of Grande Dourados (UFGD) to achieve productive inclusion and promote the preservation of the Pantanal. AAAFC is certified by the Municipal Inspection Service (SIM), which means it can sell to the PAA, Pnae and local businesses. However, the challenge is huge and involves both raising awareness among nutritionists and school lunch ladies to include honey in school meals, as beekeepers report that they see honey as a medicine, which is why they are very resistant to inclusion, and facing unfair competition from large producers from other cities in the state, who end up entering supermarkets in Corumbá more easily and at much more attractive prices. During the research, in the largest wholesale supermarket in Corumbá, a liter of AAAFC honey costs R\$60.95, while the competitor's honey costs R\$45.65.

The second is the **public arena of access to water**. Corumbá is located in the Southern Pantanal, the largest flooded area in the world, however, this water resource does not meet the needs of everyone in the region. Public scenes demonstrate that this problem is the most serious of all. It practically arose with the creation of Taquaral and affects the three public arenas simultaneously, since the lack of water harms agriculture and human and animal hydration (public arena 1), thus delegitimizing the Agrarian Reform itself (public arena 3).

In Taquaral, it is possible to find several artesian wells with brackish water and a piped network – which transports water from these wells. A certain number of families live near Baía do Jacadigo and other temporary low water sources. Others, however, live in completely dry areas, with no access to water. As a result, families face serious problems due to the lack of a network or an ineffective system for accessing water, which, according to the PNRA, should have been installed by INCRA.

The problem of water shortages has been going on for a long time, with successive disturbances, an uncertainty that the actors around Taquaral have sought to limit to the region through demonstrations, demonstrating all the harm that the lack of water causes to families. These disturbances have gained media attention, with several reports being published by TV Morena (affiliated with TV Globo) and local *online newspapers*, drawing society's attention to the social urgency. This is important to demonstrate that the problem is before us, even though the Pantanal is a biome rich in water. In this case, the EIS is beginning to form around this problem through the celebration of strategies of cooperation, competition and conflict.

The cooperation arises from major alliances established between the families of Taquaral, CPT, Embrapa and the City of Corumbá to implement the Cistern Project – a process of storing rainwater to remedy the lack of water. Partnerships were also established with the state government for the implementation of the piped network, which, by the way, requires a lot of maintenance, because the water is brackish and, over time, limestone sediments accumulate inside this network, obstructing the circulation of the water.

As for artesian wells, some were drilled by families themselves on their property, who managed to save up enough money to carry out the work. The cost is high and varies depending on the depth, from R\$7,500 to R\$15,000, according to the producers. This brackish water is used for cleaning, household chores, irrigation, and animal hydration but is unsuitable for drinking. Nonetheless, some families still use it for consumption. Due to the cost of drilling, not everyone has this amount, and they are forced to either use the piped network provided by the state, or buy water from a tanker truck, which costs between R\$350.00 and R\$500.00. This amount is also not affordable for all families, who, for the most part, transport water in plastic bottles and other containers from the houses of friends and family who live in urban areas to their lot.

The existence of Jacadigo Bay also creates a water supply potential, but competition and conflicts are beginning to emerge here, especially with the surrounding farmers who are dedicated to livestock farming. Between 2019 and 2021, fires in the Pantanal worsened stream drying and increased temperatures by up to 4°C. As a result, farmers from Taquaral began to take their cattle to the bay, as many animals were already dying of thirst. However, when they got there, they were/are strongly repressed by farmers in the region, who want exclusive access to the Jacadigo water, thus ensuring the hydration of their livestock. In addition, another conflict arises with the Judiciary, which, in an attempt to protect the rights of nature (preservation), ended up finding some of these Taquaral farmers, due to the compaction/silting that the cattle cause on the edge of the bay, which could cause future desertification processes.

Water scarcity is a global problem and reflects the great social inequality and the difficulties in devising and implementing sustainable use of this resource. Drought contributes to the spread of fires and this, combined with the lack of rain, further increases access to water in Taquaral.

Finally, we have **the public arena of Agrarian Reform**, which mobilizes various actors through networks of conventions, agreements and institutions, each with varying powers and permeated by many conflicts. Among the main actors are all the settlements of Corumbá and Ladário – ten in total –, in addition to INCRA – the federal government –, the Municipal Governments of Corumbá and Ladário and the Government of the State of MS. In theory, what drives these actors is to enforce the Agrarian Reform program – access to water, roads, schools, technical assistance

and others –, especially obtaining definitive titles. The actions of this arena follow a larger sphere, after all, it is the federal government that ends up dictating the pace of INCRA's (in)actions. In this arena, several problematic situations were visualized, of which we highlight three below.

The first is the scrapping of INCRA's Corumbá Advanced Unit. During the fieldwork, it was possible to see how deteriorated the unit's building and fleet are. All of the vehicles are broken or unusable, which hinders trips to the settlements, inspections, and other inherent activities. To manage ten settlements in the region, where approximately 1,500 families are installed, only one employee was found. This exposes the dismantling to which the project has been subjected. It is important to emphasize that this did not begin with the current federal administration. Given the condition of the unit, the scrapping has been going on for a long time and, currently, intensified with budget cuts that have practically eliminated the funds allocated to INCRA ¹⁴.

Another major challenge in this area is the lack of fiscal and credit incentives. According to the Data Luta Report (2019), MS has 206 rural settlements, with 32,280 families distributed across an area of 718,147 hectares (ha). Despite these figures, land concentration remains in the hands of a few large landowners, reaffirming the maintenance of power and land grabbing that mark the history of the region. Since 2010, the lack of a real debate on the issue of deconcentration and land redistribution has been in line with the state's interest in maintaining development projects based on monocultures of soybeans, beef cattle, and other grains, as discussed previously. It is precisely this focus that ends up defining the framework of government policies reserved for the dominant group, leaving settlers and other small producers (non-settlers) or family farmers without a place on the agenda.

Finally, but not exhausting the adversities of this arena, we have clientelism, which, as a political phenomenon, changes facets over the course of history and its power can increase and/or decrease according to the political actors involved and the specific demands of a given situation. Access to water and the provision of basic food baskets, recurring proposals made in Taquaral by candidates for city council and state deputy, are good examples of this. Clientelism changes and alters over time; however, the only thing that does not change are the consequences of this system, which is the intensification of social vulnerability. Corruption and clientelism are deeply entrenched in the municipal administrations of Corumbá and Ladário, evident in recent years through mayoral impeachments, arrests of officials, scandals, embezzlement, and the decline of public infrastructure.

These different obstacles are what disrupt rural development and shape the micropolitics that are constituted and operationalized in different public arenas. They are not just characteristics, achievements and obstacles, they are the subject of experiences that may – or may not – indicate horizons for collective life.

Recognizing these arenas allowed us to identify a wide variety of actors from different worlds – especially *experts*, many of whom were mentioned above – who make up the EIS around Taquaral. Through rules, commitments, projects and counterparts, they will try to reverse various public problems that permeate all actors simultaneously, such as access to water; the need for technical support; and the implementation of Agrarian Reform. However, in general, what we saw in this ethnographic work in Taquaral is that despite the improvement in the productive inclusion of families, with several of them managing to implement and commercialize their cultivation/raising, the problems drag on for a long time.

Findings

The public arenas mapped and analyzed here represent a complex 'political ecology' (Cefai, 2007) that extends beyond Taquaral, involving a myriad of actors and interventions that are not always connected or synchronized, as typically expected in traditional public administration literature. Thus, the main result of this work is to demonstrate the importance of ethnography of public arenas to understand the complexity and to what extent the dilemmas of articulating collective actions and public action in response to increasingly complex socio-environmental problems can be considered social innovations.

In the research in question, we saw that public action is multicentric, multi-actor and multifaceted, guided by different worldviews and put into practice by various collective actions – more or less coordinated –, promoted by various sectors that meet and confront each other in the identified public arenas. The mapping of the EIS allows us to understand how public action emerges from the confluence of these collective (inter)actions that form around the issues and situations experienced in Taquaral, but goes far beyond it, generating an ecosystem around the public problem, formed by *experts*, bureaucrats, researchers, Civil Society Organizations (CSOs), media, etc. It is these different audiences that engage, interpret, discuss, publicize and promote solutions to the public problems surrounding rural development in this region.

However, this political ecology and the interactions produced in public arenas do not always represent a solution to the problems faced in relation to rural productive inclusion. This is because many of the co-produced public actions do not reach everyone, are not operationalized, are not understood or do not generate effects among the families of Taquaral, who see their challenges reproduced each year. In other words, it is not the simple existence of the EIS that is of interest here, but, above all, the interactions that are produced by it and the effects (response capacity) on public problems.

In the case analyzed, despite the presence of diverse and complex networks of actors around Taquaral, the effects generated indicate a reproduction of socio-environmental inequities rather than their resolution. This results in the formation of true 'industries'—water, Agrarian Reform, technical support for family farmers—but which do not always lead to permanent changes or improved well-being in these spaces, as the issue, such as the perennial water shortage, remains a part of families' daily lives. "This reinforces the need to include in discussions about social innovation, in addition to its political character, a concern for democracy and social justice" (Manoel & Andion, 2023, p. 581), factors that are not always taken into account by the instrumental view of social innovation.

In addition to these concerns, the emergence of new ruralities is significant, especially since the study focuses on a rural settlement in an agrarian state that underestimates the socio-environmental effects and costs of Agro Pop (the popularization of agribusiness in Brazil, often associated with a cultural and political movement that promotes the idea of agriculture as a modern, high-tech, and highly profitable industry). Therefore, prioritizing the non-agricultural activities pointed out by Carneiro (1998) and the alliances and conflicts investigated by Cazella *et al.* (2009), is a necessary exercise during the research to visualize and understand the different ruralities of this settlement, which is dedicated to beekeeping, farming – mainly cassava and pumpkin –, dairy farming – even if outside the regulations –, a series of public services (teachers, health agents and

others), illegal and illicit activities and moves to the urban area to supplement its income and, thus, have the conditions to remain in the rural area. In this sense, the rurality present in Taquaral is a form of resistance to this “settlement project” that has already lasted 34 years and has been slow to materialize with the definitive title and the guarantee of the rights of the PNRA fully met. It is clear that the discussion of social innovation in the rural environment is fundamental for us to think about a rural productive inclusion that is built on democracy and social justice.

Returning to the central question of this study, about how social innovation occurs in rural areas and its effects, based on the literature review (presented in the third section) aligned with the results of the fieldwork (fifth section) and from a pragmatist and critical perspective of social innovations (fourth section), we present some findings on rural social innovations (RSI) that result from this work:

- ISR goes beyond any transposition of new productive techniques, as pointed out by *mainstream literature*. It involves processes of social change in interactions and practices that require mobilization of actors, engagement and continuity over time;
- ISR emerges from the convergence of varied and plural collective actions through which actors attempt to problematize and publicize their lived situations, in addition to constructing responses to public problems seen as common. These collective actions may be more or less coordinated or conflict with each other, as they are immersed in and influenced by the political ecology of the public arenas and territories of which they are part. In view of this, it is not only the existence of an EIS that guarantees the promotion of social innovations, but also the interactions and effects produced by these ecosystems in rural areas;
- ISR emerges in rural areas through popular experiments, as it does not depend exclusively on the world of science. It does not arise only from the effects of adopting and replicating the best techniques, but rather from the practices, struggles, resistance and insistence of the actors who produce long-term consequences for the rural human and natural landscape. This became clear in the recovery of the public scenes of Taquaral. Agrarian Reform is a daily struggle. If at first the struggle was to have access to land – to settle –, the demand advances and moves on to access to water, technical support and development lines, the operationalization of the Pnae, among other narrated;
- The diffusion of ISR relies on social carriers who hold positions within local social structures. For this reason, some development projects that aim to help rural families end up lasting only a certain period, while the carriers are in place. This indicates the importance of considering the pace and processes of social change incorporated and promoted by the rural populations themselves, seeing them as the main carriers of social innovations based on their experience and relationships;
- During the research, the localized analysis, such as the one we undertook, does not specifically indicate a micro study in the individual and isolated sense, after all, the actions of the actors in the rural environment do not occur alone and are not empty of meaning. They are social processes of interaction permeated by experience and interconnections that reflect local and global effects and problems, being important to understand this interaction with memory and the relationship between the actors (social cohesion), as well as the relationships between the micro and macro scales of social reality.

Conclusion

In this article, we seek to understand how social innovation occurs in rural areas based on the practices experienced by families in the Taquaral rural settlement and their interactions with *experts*, seeking to identify how this interdependence affects rural development. By recognizing these practices and mapping ecosystems and their political ecologies, we arrived at three public arenas – that of family and sustainable agriculture, access to water, and Agrarian Reform – in which it was possible to understand how social innovations occur in rural areas, or what hinders their process, in light of the systematic review presented.

In rural Brazil, there are several logics, visions and practices that coexist regarding rural development and that will substantially change life, structure, production and sociability within it. Initially, it was supported by the ideals of the Green Revolution and, more recently, it has been illustrated by the mythical program “*Agro is pop, Agro is tech, Agro is everything!*”. The result of this attack has generated consequently an accumulated socio-environmental debt in Mato Grosso do Sul and specifically in the region studied here, such as land concentration, rural poverty, the expansion of social inequities, lack of water, the exploitation of environmental reserves and indigenous lands, in addition to stagnation and dismantling of policies for Agrarian Reform and support for family farming more recently.

Given this reality, we interpret the rural from the perspective of new ruralities, where it is studied as a multidimensional phenomenon (economic, social, cultural, political and environmental) and not essentially agrarian, which derives from the daily practices of actors at the local level. Family farming is demystified here, as there are various forms of agriculture that incorporate market logic but are not limited to it, just as there are diverse subjects that form the fabric of these settlements. Therefore, it is necessary to go beyond stereotypes and the easy path of pre-established “social categories” to analyze the real experiences of actors facing different problematic situations that they must face daily, in addition to verifying to what extent these responses can be considered social innovations.

Therefore, we initially sought to identify how the main works have discussed rural social innovation. This allowed us to verify that most of them refer to theoretical studies, without applying a particular analytical approach and with few empirical works. This review also demonstrated the relevance of studying social innovations from a pragmatic and critical perspective, which transcends the classic opposition between neo-Schumpeterian and institutional views. It focuses on the co-produced interactions within local social innovation ecosystems and their effects on the interconnection between multiple actors and sectors—State, civil society, and even business—and how these influence collective well-being and the expectations of the rural settlement population.

Based on this effort and aiming to contribute to it, we seek to advance the research agenda on social innovations in rural areas, after all, in the different studies identified, it has been pointed out as a catalytic element to deal with the significant challenges that societies are facing now and will have to face in the future.

This statement takes us back to the conclusions of John Dewey (1927), when in the final lines of *The Public and Its Problems*, he argues that social research and the communication of results are crucial tools for remedying the problems that afflict the public in the contemporary world, as they provide material for a lasting opinion on public matters. In this case, this occurs both in the

emergence of the public problem surrounding rural settlements and in the scientific discussion on the occurrence of social innovations.

The theoretical-analytical approach of this work, which is pragmatic in nature, is based on generating knowledge that can translate politics and promote and/or improve democratic governance. Therefore, this study, based on political ecology, the recovery of public scenes and the identification of public arenas, provided an assessment of the social emergency that affects not only rural families in Taquaral, but also illustrates the reality of several families spread throughout rural Brazil. It became clear that as a problem grows and evolves, a set of normative principles will attempt to address it publicly, as seen with the PNRA. Hence the importance of a community of local researchers, because, as Dewey (1927) teaches us, they will be able to denounce the subsequent phases of a problem, from its confrontation to its dragging, as described throughout this article. Therefore, the role of research is not limited to just a form of exposure, but also contributes to the co-production of responses to the setback.

Regarding social innovation, there is no ideal concept. What we have seen is that social innovation is what these diverse and plural rural families, in their experience with nature – in the successive trials they face – co-produce to survive, exist and resist in these spaces. Therefore, we must start treating it in the plural – social innovations – because, for example, throughout the history of Taquaral, a ballistic of social innovations has emerged, allowing Agrarian Reform, rural development and life itself to happen.

The results found may support a better understanding of how social innovations occur in rural areas based on the case studied here, but they do not establish rules. However, more than defining the term *a priori*, It is necessary to investigate and go to the field to understand how social innovations in rural areas emerge. Recognizing them as products of the ecosystems that operate in the territory and their consequences can be a trigger for a new democratic governance in rural areas, associated with the new ruralities and that can encourage rural development. However, for this to happen, it is necessary to make room for the experience of the actors, to shed light on the rural community. It is the actors who will dictate the pace of actions, will have to execute the projects and define what changes they want. It is up to these plural actors, no longer invisible, to think about the desirable futures for rural areas and to put into practice those possible ones, with the instruments and possibilities they have at hand. By doing so, they reinvent not only their rural world, but that of everyone, as well as our Pantanal and our planet.

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Financing

This work was carried out with the support of the National Council for Scientific and Technological Development (CNPq) - Universal Call (nº 10/2023).

Notes

1. Exemplified on the political level by public policies encouraging family farming, agrarian reform, the demarcation of indigenous lands, and market access; and on the scientific level by the concept of new ruralities, which re-centers agriculture within discussions of territory, integrating it—especially family farming—with the environment. This approach addresses social, health, and environmental crises, particularly in Brazil, where social inequalities perpetuate poverty and rural exodus.
2. Brazil has historically promoted modern grain agriculture, mainly in the pioneering fronts of the Central-West, the region where this study was conducted. The monocultures of the "green desert"—soybeans, corn, and pasture/livestock—generate high GDP and dominate the national production landscape, as illustrated by the celebrated annual harvests. However, the social and ecological costs of this development policy are high, exemplified by the recent fires in the Pantanal and the Amazon, which demonstrate a true setback for the country's rural development.
3. Anything that causes a disturbance in the actors' lives. For more see Dewey (1938).
4. The review was carried out from October to December 2018, in the Spell, Scopus and Capes Theses and Dissertations databases. The following terms were defined: "social innovation" and "rural social innovation"; "*rural social innovation*". We reached 51 materials – 45 articles and six doctoral theses. Focusing on the analysis of scientific articles, 29 of them deal with SI, in a

broader way, and of these, 17 specifically address IS in rural areas – ten empirical and seven theoretical – being used in this work.

5. It is not our goal to present a broad conceptual and historical review of social innovation. After all, countless studies in this sense have already been carried out. Therefore, we opted to explore alternative paths in social innovation beyond the dominant instrumental approach (influenced by Schumpeter), adopting a pragmatist perspective on social innovations. We recognize that this knowledge is necessary, after all, there are countless approaches with specific biases that ended up influencing the studies found in the systematic review. To recognize and deepen this discussion, we recommend Andion *et al.* (2017) and Magalhães *et al.* (2020), who discuss the main paradigms of SI; and Santo (2021, p.84-104), who presents an interdisciplinary trajectory on SI.
6. To learn more about the operationalization of this approach, access the EIS network of the Florianópolis Social Innovation Observatory (Obisf). See <https://observafloripa.com.br/> and check out Andion (2023).
7. Refers to the current rural development model in Brazil, which, underpinned by the monetization and globalization of capital, seeks to boost the export of *commodities*. This generates high revenues for landowners but comes with significant socio-environmental costs, including increased poverty and biome destruction. The political propaganda “*Agribusiness is pop, Agribusiness is tech, Agribusiness is everything*” seeks to legitimize Brazilian agribusiness, hiding truths, destruction and historical domination.
8. 99% of fire is of human origin. See <https://bit.ly/3dBTfAv>
9. No updated institutional state data from government reports were found on state family farming production; however, extensive data on MS commodity production is available.
10. The discussion on rural settlements is broad and deep. For a more in-depth look, see Leite, S., & Medeiros, L. (2004) *Impacts of rural settlements: a study on the Brazilian rural environment*. São Paulo: Editora Unesp, in addition to the materials contained in the references of this work.
11. Refers to water that has an intermediate salinity between salt water (marine) and freshwater. This occurs due to higher levels of dissolved salts, primarily chlorides (Espírito Santo et al., 2023).
12. The sale of lots in an irregular manner may be considered a crime of fraud. See <https://bit.ly/3BErhkr>
13. According to Latour (2012, p. 104), “Actors express themselves through guidelines, manuals, and spokespersons. [To learn from actors,] follow them as they navigate the tools, they've developed to make constantly evolving interactions more durable”.
14. With a tight budget, Incra maps parliamentarians looking for amendment funds. See <https://bit.ly/3wiloVd>

Authorship

Anderson Luis do Espírito Santo

PhD in Administration from Universidade do Estado de Santa Catarina. Professor in the Master's Program in Border Studies at Universidade Federal de Mato Grosso do Sul, Pantanal *Campus*. Coordinator of the Border Social Innovation Observatory and the Center for Studies in Social Innovation of the Border.

Email: anderson84lui@gmail.com

ORCID: orcid.org/0000-0001-6507-974X

Carolina Andion

PhD in Human Sciences from Universidade do Estado de Santa Catarina with a post-doctorate in Social Economy from the University of Valencia and in Public Administration and Government from Escola de Administração de Empresas de São Paulo (EAESP/FGV). Coordinator of the Florianópolis Social Innovation Observatory and the Center for Studies in Social Innovations in the Public Sphere (Nisp).

Email: andion.esag@gmail.com

ORCID: <https://orcid.org/0000-0003-4723-3437>

Conflict of interest

The authors report that there is no conflict of interest.

Authors' contributions

First author: conceptualization (equal), data curation (lead), formal analysis (equal), investigation (lead), methodology (equal), project administration (equal), resources (equal), supervision (equal), validation (equal), preview (equal), writing – original draft (equal), writing – review and editing (lead).

Second author: conceptualization (equal), data curation (supporting), formal analysis (equal), investigation (supporting), methodology (equal), project administration (equal), resources (equal), supervision (equal), validation (equal), visualization (equal), writing-original draft (equal), writing-review & editing (supporting).

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